

To society  
from SINTEF



 **SINTEF**

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*Annual Report 2009*  
*Technology for a better society*



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Technology for a better society

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## The SINTEF year in brief

■ The Norwegian government and the Research Council of Norway set up eight national research centres for six fields of study in environmentally friendly energy. SINTEF and NTNU are participants in six of the centres, covering all the fields.

■ SINTEF and the Horten-based company Northrop Grumman Park Air Systems are awarded contracts to the value of NOK 230 million for EU projects aimed at developing future technologies for air-traffic management.

■ SINTEF's Dynamis project receives the international Carbon Sequestration Leadership Forum (CSLF) Recognition Award for its important contributions to research on CO<sub>2</sub> capture and storage (CCS).

■ A recent report from SINTEF Building Research, the Low-Energy Project and the Federation of Norwegian Construction Industries, shows how Norway can save 12 TWh of energy a year, an amount equivalent to the energy consumption of 600,000 houses, by making buildings more energy-efficient.

■ SINTEF's new multiphase technology laboratories are inaugurated. Multiphase transportation of oil, gas and water in the same pipeline has been of decisive importance for the development of the Norwegian petroleum sector.

■ Driverless vehicles are trialled in Trondheim as part of the EU's CityMobil research programme, in which SINTEF is a participant.

■ SINTEF Materials and Chemistry brought its "Oil and Ice" programme to an end. With a budget of NOK 65 million, this was the largest research project that has been performed to date on oil spills in the Arctic and ice-infested waters.

■ Minister of Fisheries Helga Pedersen opens a new laboratory centre for the aquaculture industry at SINTEF SeaLab. The Centre will help fish farmers to become more secure, environmentally friendly and efficient.

■ In connection with the 2009 General Election, NTNU and SINTEF submit their recommendations for an integrated national research effort on climate and energy.

■ SINTEF's prize for excellence in research is awarded to a multidisciplinary group of six researchers for their contributions to the development of Helly Hansen's SeaAire helicopter/survival suit.

■ MARINTEK launched a pilot study for a future maritime knowledge centre, to be known as the Ocean Space Centre. The study was financed by the Ministry of Business and Industry, industrial partners and several other centres of expertise.

# This is SINTEF

SINTEF is the largest independent research organisation in Scandinavia. We create value through knowledge generation, research and innovation, and develop technological solutions that are brought into practical use.

SINTEF is a broadly based, multidisciplinary research group with international top-level expertise in technology, medicine and the social sciences. Our aim is to become the most renowned research institution in Europe.

The SINTEF Group comprises the SINTEF Foundation, plus four limited companies and SINTEF Holding. We are a competitive research group with significant potential to make a positive contribution to the development of society at regional, national and international level.

SINTEF is a non-commercial organisation. The profits of our contract research projects are invested in new research, scientific equipment and competence development.

## Key figures

At the turn of the year, the SINTEF Group had 2123 employees from 67 different countries, who generated new knowledge worth NOK 2.8 billion in the course of 2009.

Contracts for industry and the private sector and project funding provided by the Research Council of Norway account for more than 90 % of our income. Around eight percent takes the form of basic grants from the Research Council.

## Partners in cooperation

SINTEF operates in partnership with the Norwegian University of Science and Technology (NTNU) in Trondheim, and collaborates with the University of Oslo. NTNU personnel work on SINTEF projects, while many SINTEF staff teach at NTNU. Our collaboration involves the extensive joint use of laboratories and equipment, and more than 500 people are employed by both NTNU and SINTEF.

## International activity

In 2009, 15 percent of our turnover was derived from international contracts. About one third of our international turnover comes from the EU's research programmes. We give these high priority, because we believe that it is important to participate in multinational knowledge-generation efforts, and because such projects give us access to interesting networks.

The remainder of our international turnover comes from contract research projects performed on behalf of overseas clients. Our ambition is to grow in the international R & D market, and for this reason we are investing in areas in which we are particularly strong: oil and gas, energy and the environment, materials technology and marine technology.

## Commercial spin-offs

SINTEF also acts as an incubator for new industrial companies. In

2009, we were involved in the commercialisation of six different SINTEF technologies, through licensing agreements and the establishment of new companies. We are actively involved owners of our start-up companies, and we help them to continue to develop. Selling our shareholdings in successful spin-offs realises liquid assets that we subsequently invest in the generation of new knowledge. Nevertheless, the most important part of our work is the development of existing industrial activity. Every year, SINTEF supports the ongoing development of some 2000 Norwegian and foreign companies through its research and development activities.

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## Vision

- Technology for a better society

## Core values

- Honesty • Generosity • Courage • Solidarity

## Role

- To create value through knowledge generation, research and innovation
  - to develop technological solutions that are brought into practical use
  - to act as an R & D partner for industry and the public sector
  - to develop new industrial companies
- Sustainable development
- Develop and operate research laboratories
- Offer premises for social debate and policy design

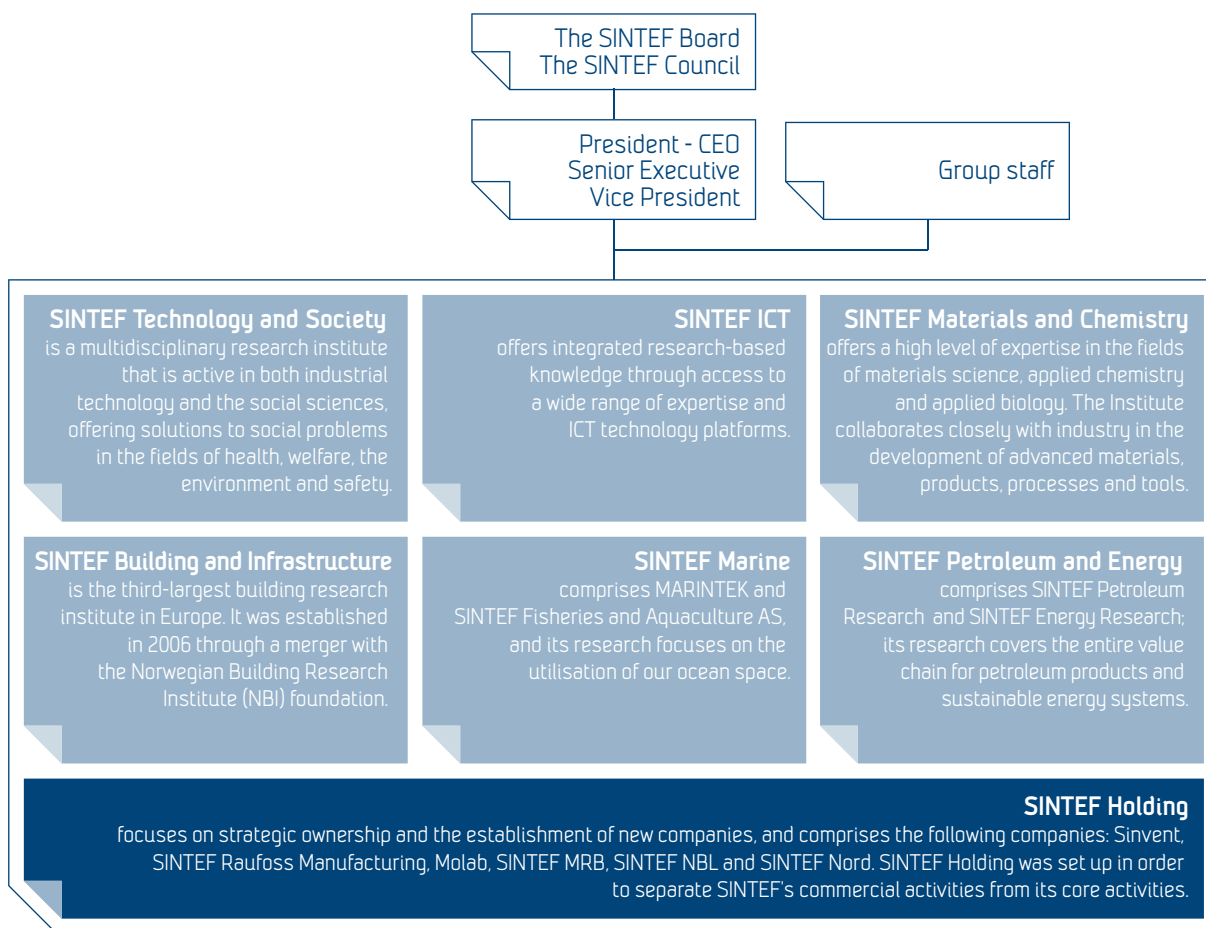
## Special nature

- We are a multidisciplinary research group with an internationally high level of expertise in a number of chosen areas.
- We collaborate closely with universities, the authorities and industry.
- We have the ability to perceive potential, and to develop and create successful products and services for our clients and partners.
- We successfully unite research and commercial cultures.
- We accept our responsibility vis-à-vis society and maintain a high ethical standard throughout our range of activities.

## Our principle objective

- SINTEF intends to become Europe's most highly respected contract research organisation.

# Organisation



## Group management

<b>Unni M. Steinsmo</b>	President – CEO	
<b>Reidar Bye</b>	Senior Executive Vice President	
<b>Hanne Rønneberg</b>	Executive Vice President	SINTEF Building and Infrastructure
<b>Tonje Hamar</b>	Executive Vice President	SINTEF Technology and Society
<b>Aage J. Thunem</b>	Executive Vice President	SINTEF ICT
<b>Torstein Hæarberg</b>	Executive Vice President	SINTEF Materials and Chemistry
<b>Oddvar I. Eide</b>	President	MARINTEK
<b>Sverre Aam</b>	President	SINTEF Energy Research
<b>Karl A. Almås</b>	President	SINTEF Fisheries and Aquaculture
<b>May Britt Myhr</b>	President	SINTEF Petroleum Research
<b>Ernst H. Kristiansen</b>	Executive Vice President	Area Manager, Oslo
<b>Anders Lian</b>	President	Sinvent
<b>Ingeborg Lund</b>	Vice President, Human Resources	
<b>Petter Haugan</b>	Vice President, Corporate Communications	





## Research that creates value

Research extends the boundaries of what we understand and what we achieve. It has its own value, as knowledge enriches society. Research and experienced-based knowledge enable us to find solutions to the great challenges facing society: global warming, health, access to water, energy and food.

The special nature and the expertise of SINTEF lie in supplying solutions and technology. They are about needs-driven knowledge generation. In this Annual Report, we describe some examples of the research we did in 2009. We produced these results in collaboration with our partners in research, industry and the public sector.

These cooperative efforts have developed over a long period of time. This year is SINTEF's 60<sup>th</sup> anniversary. The Central Institute for Industrial Research (SI) was set up in 1949 as a Norwegian centre of interdisciplinary industrial research. Soon afterwards, a group of professors in Trondheim took the initiative to create the SINTEF Foundation, which was to be a contract research institute for industrial research, closely linked to the Norwegian Institute of Technology. In 1994, SI and SINTEF merged. Ten years previously, a number of other institutes had already become part of SINTEF, which thus became one of the leading centres of research in Norway and Scandinavia. Today, we are one of the four largest organisations of this sort in Europe.

This development is based on daring and far-sighted decisions. After the Second World War, our political leaders decided to establish centres of knowledge generation whose principal objective would be applied research. Subsequently, other leaders in politics, academia, research and industry followed up by making important decisions that have provided the foundations of large-scale value creation.

We were able to exploit the vast oil and gas resources of the Norwegian continental shelf because we had invested in research and development. The knowledge generated by this process has enabled us both to manage our resources and to develop world-leading production and supply industries for the offshore petroleum sector.

In the course of these sixty years, together with our academic, industrial and public-sector partners, we have developed an innovation model based on the close collaboration of education, research and industry. This type of interaction involves working in parallel along the lines of basic understanding, multidisciplinary problem-oriented research and industrial implementation of the results. This triangular model allows us to generate generic knowledge which is made available to everybody, at the same time as we develop concrete solutions and technology that become the property of the companies that invest in research. This is what we now call "open innovation".

Open innovation means that fresh knowledge becomes available for the development of new, future-oriented solutions. For example, what we have built up through our petroleum industry can now be utilised in the development of offshore wind-power generation.

We look forward to continuing to cooperate in creating value for society.



**Unni M. Steinsmo**  
President of SINTEF





Listen





# Annual Report 2009

SINTEF is a private, non-profit research group, which is organised in the form of a foundation with a number of subsidiary companies. Via first-rate solution-oriented research and knowledge generation, SINTEF creates significant value for its Norwegian and international clients, the public sector and society as a whole.

SINTEF partners and shares a strategy with NTNU in Trondheim, and collaborates closely with the University of Oslo. These partnerships contribute to the high scientific quality of our work and to our strong international position.

2009 was a good year for SINTEF in both financial and scientific terms. Our operations went well and produced a satisfactory profit in a year marked by the international economic crisis. Our good results enabled SINTEF to invest in laboratories and scientific equipment, and to undertake self-financed efforts in certain special areas of research.

## Technology for a better society

SINTEF's vision is of "Technology for a better society". It is essential for our research to produce results that are put to good use and contribute to concrete improvements for society. Here are some examples, taken from our range of activities in 2009:

In February 2009, the Norwegian government and the Research Council of Norway announced the establishment of eight Centres of Research on Environmentally Friendly Energy (FMEs) in six fields related to renewable energy and CO<sub>2</sub> capture and storage. The centres will be operated for a period of up to eight years, and will be responsible for a concentrated, focused long-term research effort at high international level. SINTEF and NTNU are participating in six of these centres, in all the prioritised fields of research; offshore wind energy, solar-cell technology, energy-efficient buildings, CO<sub>2</sub> capture and storage, bio-energy and integrated solutions for renewable energy production. All the centres operate in close collaboration with industry and with other Norwegian and international research centres.

On behalf of the Ministry of Labour and Social Inclusion, SINTEF Technology and

Society has evaluated the effects of the Inclusive Working Life Agreements (IA Agreements). The evaluation utilised data from several different sources, including records from the national sick leave register, interviews with management and staff representatives in 16 IA companies, a survey of more than 3,000 IA companies and a study of 377 companies that do not operate IA agreements. The evaluation shows that two of the three main objectives of the scheme have not been met, but that the IA Agreements have had many positive effects. Among other things, the studies demonstrate that the agreements have reduced sick leave in IA companies by an average of 0.25 percent at national level, and raised the age of retirement of employees over 50 by six months. The data from the SINTEF report form an important foundation for efforts to improve and continue the IA Agreement.

In August 2009, Helga Pedersen, Minister of Fisheries and Coastal Affairs, opened a new laboratory centre at SINTEF Fisheries and Aquaculture Research in Trondheim. The laboratory is called SeaLab SSO (Simulation, Surveillance and Operation) and provides an advanced electronic infrastructure for basic and applied research and education in aquaculture, fisheries and petroleum contingency planning. The computer laboratory takes the form of an operations centre with monitoring screens and advanced computing facilities. The centre will receive large quantities of data from sensors at the international ACE field station, a full-scale test centre that SINTEF and NTNU are currently building at Valsneset in Fosen. With the expertise and tools available at SINTEF and NTNU, the centre will be capable of making prognoses regarding the spread of toxic algae, diseases, salmon lice and oil spills along the coast. The centre will be able to offer acute help in emergencies, as well as ongoing research-based advice that will enable fish farms to be operated more safely and in a more environmentally friendly and efficient way. It will also be possible to run experiments at SINTEF's laboratory in Hirtshals in Denmark.

Developing technology to improve home health-care and make it more effective will be very important as a means of dealing with a future that will bring major increases in the

numbers of elderly people. SINTEF ICT has led the EU's M-power project, which is developing a software platform for a range of aids for dementia patients. Besides SINTEF, the project partners also come from Cyprus, Poland, Spain and Austria. Two pilot systems have already been developed and trialled in Trondheim, Grimstad and Krakow. The system tested in Norway is a simple screen-based communication system aimed at elderly persons who live at home and whose memory is failing. A touch-screen system offers them simple messages about taking medicines, appointments and routines, and it will be possible for family members and health service personnel to share information and to check whether appointments have been kept and routine activities carried out. The smart-house technology trialled in Poland involved detectors to report falls, heart-rhythm sensors and GPS monitoring systems that can trigger an alarm if a user is moving around in a hazardous area outside her own house.

The global demand for energy is rising. Even with huge investments in renewable energy sources, it will be several decades before renewable sources make up a significant proportion of the world's energy supply. The International Energy Bureau (IEA) points out in "Energy Foresight 2009" that world demand for oil and gas will be much the same in 2030 as it is today. In this perspective, petroleum research needs to maintain its focus on finding and producing oil and gas in as environmentally friendly a way as possible, as well as on developing efficient carbon capture and storage (CCT) technologies. SINTEF Petroleum Research is developing technology that will offer us better images of the strata below the seabed ahead of drilling, so that optimised exploration drilling can both save money and protect the environment. Other research being done by this Institute will enable us to produce more from existing fields and to produce from small reservoirs. The Norwegian Petroleum Directorate estimates that a single percentage point improvement in the recovery rate from Norwegian offshore fields would bring net profits of NOK 100 – 150 billion.

In 2009, SINTEF's Multiphase Laboratory at Tiller in Trondheim was upgraded, with



the installation of an indoor medium-scale flow-loop that will enable year-round testing of fluids to be carried out under controlled temperature conditions, and with a laboratory in which experiments can be performed under conditions of high temperature and pressure. Some twenty-five years of multiphase research at SINTEF and IFE have turned out to be one of the greatest successes of Norwegian research and an important factor in the development of the Norwegian and international petroleum industry.

In November 2009, the world's first saline power plant was opened by HRH Crown Princess Mette Marit, and the launch of Statkraft's prototype at Tofte attracted a great deal of national and international interest. A saline power plant utilises the energy released by the mixing of salt water and freshwater that are separated by a membrane. The difference in the ionic concentrations of the two liquids forces the freshwater through the membrane, and the increase in pressure on the salt water side drives a turbine that generates electricity. The exploit-able potential is equivalent to an additional fall of 100 m for river water that runs into the sea, and the total global potential is around 1,700 TWh a year. The saline power concept emerged around 1970, and scientists at SINTEF Building Research and SINTEF Petroleum Research have been developing the concept since the early 80s. The first research project supported by Statkraft began in 1997, since when saline power has been an ongoing research activity in SINTEF.

In April 2009, a major EU project called Cachet came to an end. This project involved the development and comparative cost-benefit analysis of a number of promising methods of CCS in electricity generation. Calculations based on the results of the project show that membrane technology developed by SINTEF, in which hydrogen is separated from CO<sub>2</sub> before being burnt in a gas turbine, may be the cheapest and most energy-efficient way of capturing CO<sub>2</sub> in such processes. The membrane that we have developed has demonstrated a flow-through capacity of 2.5 litres of hydrogen per square metre per minute, the highest value ever reported for such membranes.

The project has been supported by the Research Council of Norway, the EU and CCP (the CO<sub>2</sub> Capture Project, a collaborative effort involving several major oil companies), in cooperation with other research organisations.

At a ministerial meeting in London last October, SINTEF was awarded the prestigious "CSLF Recognition Award" for our contribution to CCS research, particularly in connection with the EU-financed DYNAMIS project, which is led by SINTEF Energy Research. The project is the first phase of the EU's Hypogen Programme, which aims to develop a full-scale power station incorporating hydrogen and electricity generation and CCS. The power station is intended to come into operation by 2015.

Buildings are responsible for about 40 percent of Norwegian energy consumption. Making buildings more energy-efficient is among the most important climate-change mitigation measures available to us, and one from which significant benefits can be gained rapidly. In 2009, SINTEF Building Research, the Low-energy Programme and the National Construction Industry Association published a report that showed how Norway can save 12 TWh of energy a year before 2020 by improving the energy efficiency of buildings. This is equivalent to the annual energy consumption of 600,000 houses, and a reduction in greenhouse gas emissions of six million tonnes CO<sub>2</sub> equivalents. The potential savings have been estimated to correspond to a commercial potential of around NOK 80 billion between 2010 and 2020.

2009 was the 70th anniversary of the opening of MARINTEK's Ship Model Towing Tank. Research using the Tank and the Ocean Basin, which was completed in 1981, has been of great importance for the Norwegian and international shipping and offshore industries. In collaboration with NTNU, the Norwegian Shipowners' Association and many other industrial companies, MARINTEK has therefore produced a pilot study for a new marine technology knowledge centre, to be known as the Ocean Space Centre. The pilot study was carried out on behalf of the Ministry of Trade and Industry.

## Clientele

SINTEF creates opportunities for its clients and contributes in this way to the creation of value and the development of society in a positive direction. This is our most important contribution to society. In 2009, SINTEF performed 7,216 projects for a total of 2,236 clients, both large and small.

Our relationship with our customers and our understanding of their needs are of great importance. We therefore carry out systematic measurements of client satisfaction, and the results are used to improve the performance of our contracts to the best of our ability.

The use of technology affects every facet of society. Our vision inspires us to strive to create technology for a better society. An important task, therefore, is to disseminate both our knowledge and our evaluations both to the general public and to the authorities at political and administrative level. In 2009, for example, SINTEF offered recommendations to the authorities regarding an integrated effort on climate and energy and on oil-spill contingency planning, and contributed to a forward-looking study on industrial development in Northern Norway from the present day until 2030. SINTEF experts are members of a number of Norwegian and European committees and expert groups, including the EU's EERA Executive Committee.

Internationalisation is an integral part of SINTEF's activities. The concept covers reinforcing our academic networks, participating in the EU's Framework Programme for research and development, selling our contract research on the international market, international recruitment and establishing a presence in other countries. SINTEF is by far the largest Norwegian participant in the EU's 7th Framework Programme, which enables us to develop competence in areas of great importance for this country. The fact that SINTEF is competitive in this market demonstrates that we have been able to develop internationally recognised expertise. This is essential for SINTEF's ability to play its role in domestic society.

Our international turnover in 2009 was MNOK 400, as against MNOK 348 in 2008, and is equivalent to 14.5 percent of SINTEF's total turnover, as against 13.8 percent in

2008. We have performed project for clients in 57 countries. EU projects make up around one third of our international activities. Apart from the EU, the USA is our most important market for R & D cooperation, but we have also extended our cooperation with China, India and South Africa, where we are involved in research on limiting the spread of HIV. SINTEF is also expanding its presence in South America, for example in the Brazilian petroleum sector and in aquaculture in Chile.

### Research

SINTEF's ambition is to be the most respected applied research group in Europe. This means being the world leader in certain areas of research of importance to our clients and to society in general, which in turn requires the conscious development of our research groups and of individual scientists. Strategies have been drawn up for important areas of technology and competence development routes for researchers and other staff categories.

Efforts to reinforce SINTEF's profile as a research group continued in 2009, with an emphasis on international publishing. The Board wishes to emphasise the importance of publications as a means of contributing to the generation of new knowledge at international level. Publishing helps to profile and strengthen the scientific quality of our work, and our aim is to publish in excess of one publication per year of researcher effort. In 2009, we published 1,471 articles in recognised international peer-reviewed journals, vis-à-vis 1,608 in 2008. This is equivalent to 1.2 publications per year of researcher effort, as against 1.3 in 2008 and 0.7 in 2007.

Strategic cooperation with universities and other research institutes is of decisive importance for efforts to develop powerful communities of knowledge at national level. An evaluation of our chemistry and materials science research groups revealed that groups which collaborate closely with NTNU are of high scientific quality. In this connection, the Board wishes to emphasise the collaborative efforts of the Gemini centres, in which university and SINTEF staff cooperate in teaching, research and laboratory operation. To date, 23 of these centres have been established, 20 of them with NTNU, two with the University of Oslo and one with St.

Olav's University Hospital in Trondheim. A new Gemini Centre, Marine Fry and Plankton Technology, was established in 2009. This centre aims to be an important partner for the Norwegian aquaculture industry, and it involves multidisciplinary collaboration between SINTEF Fisheries and Aquaculture and several departments of NTNU.

SINTEF's strategic cooperation with NTNU is of great importance. This cooperative effort helps to place SINTEF's applied research at the cutting edge of international applied science, and ensures that NTNU's wide range of research is oriented towards practical solutions for industry and society in general.

### Personnel

SINTEF aims to be an attractive workplace that offers unique prospects for personal development to people who "can and will". The fact that SINTEF is perceived in this light is confirmed every two years by our work environment survey. This survey was last carried out in the winter of 2008, and it documented SINTEF's solid qualities as a workplace. The process of utilising the survey to further develop SINTEF as an attractive workplace continued throughout 2009, and in January 2010 a new work environment survey was carried out. This is being followed up throughout the organisation.

Management is important in this connection, and SINTEF makes systematic efforts to develop its individual and team management resources in line with its joint management principles. We are steadily increasing our stress on developing our managerial staff for large, complex projects and strengthening their ability to cooperate effectively across scientific and organisational boundaries. This process is essential if we are to be able to address the major challenges that lie ahead of us.

SINTEF is doing well in the struggle to recruit highly competent staff in a global market. We place a great deal of emphasis on looking after and developing the people we already have, while making efforts to ensure that recruitment will go well in the future by developing our "brand" and through national and international profiling efforts. According

to the Universum survey, SINTEF is one of the most attractive workplaces in Norway for engineering and science students.

In autumn 2009, we organised a SINTEF Day, to which we invited all our staff and a selection of partners and clients, with the aim of developing a sense of pride, identity and energy. The event attracted some 1,800 guests, and was a great success.

In 2009, SINTEF focused on consolidating its activities at a challenging time. Some scientific groups were downsized in order to match their capacity to a lower level of activity in certain markets. The total number of employees fell by 22, and on 31 December, 2009, SINTEF had a staff of 2,123, of whom 1,259 were employed by the SINTEF Foundation. Seventy-two new academic staff (8 percent) joined us in the course of 2009, while 120 (13 percent) left. Research staff who leave SINTEF make important contributions to the development of competence in industry and the public sector.

Forty-four percent of SINTEF's researchers hold a doctorate. A total of 313 employees in 2009 came from a total of 67 countries other than Norway, which demonstrates both that SINTEF is attractive to international scientists and that we help to recruit highly qualified workers to this country. An international staff also gives SINTEF access to valuable scientific and cultural competence.

### Equal opportunities and family policy

One of the aims of SINTEF is to increase the proportion of female researchers and managers. This means that SINTEF attempts to recruit women to new appointments and to develop female managers from its own ranks. The 2008 work environment survey revealed no significant differences between women and men in how they perceive their work situation at SINTEF.

SINTEF will continue to develop goal-oriented measures to ensure that we will be an attractive workplace for women.

The gender distribution within the Foundation is shown in the following table.

### Gender distribution (percent):

Twenty percent (260) of the Foundation's



employees work part-time; of these, 124 (48 percent) are women.

Men	Women
Board	
44%	56%
Group management	
64%	36%
Chief scientists and managerial staff	
63%	37%
Research staff	
69%	31%
SINTEF Foundation	
64%	36%

SINTEF runs an integration programme for employees from other countries, and their families. The programme offers free courses in Norwegian and English at the SINTEF School. Five Norwegian courses were held in 2009. The spouses and partners of staff are also entitled to attend these courses. Managing a diversity of personnel is among the topics taught by the SINTEF School's management development programme.

SINTEF makes serious efforts to meet the needs of employees with special requirements. The SINTEF Foundation participates in the national Inclusive Working Life (IA) Programme, which commits us to adapting workplaces for our staff who either are or become disabled, and we cooperate closely with the Social Security Administration in these efforts. We avail ourselves of available public-sector support schemes. Moreover, a stated IA objective is to continue our current practice of focusing on competence when we are recruiting new members of staff rather than on their limitations due to disability.

### Health, safety and the environment (HSE)

In SINTEF, the safety of our staff is our absolutely highest priority. Management is responsible for HSE, and in this it is supported by local staff. SINTEF's governance system makes clear this responsibility. We employ a computer-based system for reporting undesirable incidents and hazardous conditions, and this has improved our ability to follow up deviations.

In 2009, six injuries led to sick leave being taken (H1 1.7 as against 1.8 in 2008). Seven employees suffered injuries that required medical treatment beyond first-aid (H2 2.0 as against 2.6 in 2007). Sick leave was 3.6

percent in 2009 as against 3.4 percent in 2008. Work-related sick leave was 0.5 percent, as against 0.6 percent in the previous year. Better statistics have improved our follow-up of staff who take work-related sick leave.

SINTEF was well-prepared for the swine-flu epidemic, and our activities were not significantly affected. Contingency plans and precautions were introduced, and free vaccine shots were offered to our staff, a measure that received a good response. Only a modest number of cases of illness were reported.

SINTEF has made efforts to identify and promote a healthy environment and a good company culture. Efforts have been made to improve management and to follow up the IA agreement adequately.

In 2009, the Norwegian Radiation Protection Authority inspected one of SINTEF's divisions. The inspection focused on following up the finding of an unregistered radioactive source and on the use of industrial control sources. The Authority reported that its general impression was that SINTEF's radiation protection practices are good. SINTEF reported back to the Authority that the two issues have been rectified in line with its recommendations.

SINTEF needs to continue its efforts to achieve its goal of eliminating personnel injuries. We have sharpened our focus on negative occurrences during field-work, and in 2010 will particularly prioritise risk-reduction measures in the field.

The work environment committee held four meetings in 2009. The safety representatives have represented the interests of our staff in work environment issues and have ensured that HSE has been evaluated in all our planning and for all operative functions.

### The external environment

SINTEF carries out, and is involved in, various activities that affect the environment. These concern travel, energy consumption, laboratory operation and participation in projects on our clients' premises. SINTEF's environmental policy has been adopted by the Board, and ensures that both our

research and the operation of our own activities take the external environment into account. We are committed to making systematic efforts to reduce emissions of greenhouse gases, reduce our energy consumption and avoid hazardous emissions to the atmosphere and water in the course of our own activities.

We actively strive to establish national and international R & D programmes to develop environmentally friendly technology, and we contribute to this goal with our high-level expertise.

SINTEF did not suffer any accidents that led to damage to the physical environment in 2009. We stress consideration for the external environment when projects are being planned.

We have surveyed all the environmental aspects of our activity throughout the Group, prioritised the most important of these and drawn up environmental plans for 2010.

We perform systematic evaluations of our suppliers regarding their policy for the external environment when contracts are signed or renegotiated. The resulting requirements have been incorporated in our standard contracts.

SINTEF's environmental profile is communicated externally via our research and expertise in the environmental field, and we have set up a gateway on the Internet to our research on climate and the environment.

### Ethics

SINTEF accepts its responsibilities vis-à-vis society, and intends to maintain a high standard of ethics throughout its range of activities. Our efforts in the field of ethics have three dimensions: research ethics, business ethics and the ethics of interpersonal relationships. Our research ethics policy is based on the regulations of national ethics committees, the principles of the European Group of Ethics in Science and New Technologies and international conventions such as the Vancouver Convention.

SINTEF is a member of Transparency International, which works to prevent corruption at national and international level, and of

UN Global Compact. Membership involves a commitment to observe ten principles regarding human rights, work standards, the environment and combating corruption.

The follow-up of ethical guidelines is a responsibility of line management. SINTEF also has an Ethics Council and an Ethics Representative to back up our efforts in this field. The Ethics Council has six members, all of whom are SINTEF managerial staff or have been elected by our employees. The Ethics Representative acts as an advisor and discussion partner for the entire organisation, and also participates in a number of external fora. The ethics representative system means that SINTEF satisfies the requirements of the Work Environment Act regarding the need for an internal alert channel.

#### **Financial freedom of action**

In 2009, the SINTEF Group made an operating profit of MNOK 107.2, which was a rise of MNOK 4.5 over the figure for 2008. The result before tax was MNOK 138.8 as against MNOK 145.3 in 2008.

There was a positive growth in turnover in 2009, in a market that is still challenging in several of our business areas. The global economy peaked early in 2008, and we have been affected by the current difficult economic conditions. At the same time, our efforts in energy and climate research have led to significant growth in some of our areas of activity. We are focusing on good operating practices, in order to ensure that our results continue to be good in a market that we expect will still be difficult in 2010.

On 31.12.2009, the equity capital of the SINTEF Group was MNOK 1,526, (MNOK 1,396 in 2008) which is equivalent to 55 percent (55%) of our total capital. The corresponding figures for the SINTEF Foundation are an equity capital of MNOK 1,339 (MNOK 1,231), or 66 percent (65%) of total capital.

At the end of 2009, our liquidity was good, having evolved in a positive direction in the course of the year. SINTEF has established a Group-wide scheme for placing our liquid reserves. The portfolio is placed in accordance with the "Regulations for financial management in SINTEF" of June 2009. Our

low-risk profile helped us to avoid portfolio losses in the turbulent financial market of 2009. SINTEF is exposed to exchange rate fluctuations, since project revenues are in foreign currencies, while all or parts of our project costs are in Norwegian kroner. In order to limit the risks involved, we utilise futures contracts.

It is important for SINTEF to be able to create a financial profit that is invested in new research and competence development. In 2009, SINTEF invested MNOK 129.2 in laboratories and scientific equipment, and MNOK 15.2 in self-financed research projects at Group level.

Our equity capital and operating conditions, combined with growth in revenue, cost-saving measures and a satisfactory order reserve, provide a good basis for continued operation. The boards of our subsidiary companies have performed similar analyses, and all have concluded that continued operation is justified.

To the best of the knowledge of the Board, since the closing of the annual accounts there have been no developments of significance for the evaluation of the Foundation or the Group. The Foundation's annual profits for 2009 amount to MNOK 110.6, all of which has been transferred to other equity.

#### **Governance structures**

SINTEF performs most of its work in Trondheim and Oslo, and has its headquarters in Trondheim. The Foundation and its subsidiaries operate businesses on behalf of SINTEF in several cities in Norway and abroad.

SINTEF wishes to be professional in its governance and management and to combine this with the ability to be creative and innovative on the foundations of a bureaucratic decision-making structure.

SINTEF's central management bodies are its Council and Board. The Board is the ultimate governance organ of the Foundation, while the Council provides advice to the Board, based on the authority set out in the Foundations Act and revised statutes.

The Council ensures that the objectives of the Foundation are pursued in accordance

with its statutes, elects the Board, sets the fees to be paid to the members of the board and appoints an auditor. The Council is chaired by the Rector of NTNU, and consists of 28 members, comprising representatives of NTNU, the University of Oslo, the Research Council of Norway, industry, employee and employer organisations, and members elected by and among SINTEF's own staff.

The Board of the SINTEF Foundation is also the Board of the SINTEF Group. The activities of the four research companies are regulated by their statutes, shareholder agreements and group agreements. Our principles for group governance and for coordination with related organisations have been adopted in accordance with SINTEF's overarching objectives and strategy.

The Board consists of nine persons, two of whom are primarily employed by NTNU, four are from industry or the public sector and three are tenured employees of the SINTEF Foundation. The Board has responsibility and authority in all matters that are not assigned to the Council. The Board acts in accordance with SINTEF's statutes, the Foundations Act, and such provisions of the Limited Companies Act as apply to foundations. The Board appoints the President of SINTEF and sets her salary and other conditions of employment, as well as the framework and principles of remuneration of the Group's management team. The Board held ten meetings in 2009.

The SINTEF Group's management team is responsible for strategic management of the overall business of the group. The President of SINTEF is responsible for the day-to-day running of the company in accordance with the statutes of the SINTEF Foundation, Group agreements and the Limited Companies Act. The President has the authority to act on behalf of the Foundation, with the exception of the purchase, sale and mortgaging of property and the purchase and sale of companies. Either the President or Vice-president of SINTEF chairs the boards of all of SINTEF's research companies.

SINTEF operates a quarterly risk reporting system. The risk situation for each of the Group's divisions and companies is discussed by the management team, as well as by

Group management and the Board of the Group. Risk-reduction measures are defined and implemented on an ongoing basis.

SINTEF's quality assurance system has been certified according to ISO 9001:2000, which covers the implementation of a common system for dealing with accident reports, undesirable incidents, other deviations and suggestions for improvements. SINTEF is also registered in Achilles, a joint qualification system for suppliers to the petroleum industry.

#### Prospects and challenges for the future

Its many groups of highly qualified researchers enable SINTEF to make an active contribution to the efforts of the authorities to meet their goals in areas of importance to society.

New technology is of great importance for the development of solutions to central challenges facing society, such as providing the world with pure water, healthy food and clean energy, and exploiting the resources of a vulnerable natural world in a responsible manner.

Energy and the environment are important topics at global level. On the background of the Storting's broadly based climate agreement, more research resources will be channelled into the fields of climate technology, renewable energy, energy efficiency and CO<sub>2</sub> capture and storage in the future.

SINTEF has built up internationally leading-edge research groups in CO<sub>2</sub> treatment, renewable energy and construction technology, and will give high priority to increased research efforts in these areas in the future. Petroleum research also continues to be important, as oil and gas will be essential elements of global energy supply for many years to come.

The intention of the authorities to develop the Arctic has great potential. With its broad knowledge base, SINTEF can help to realise national ambitions for the Arctic, and balance the interests of industrial development, long-term resource management and the environment. SINTEF intends to give this task high priority in the future. In 2008, we established SINTEF Nord AS, which has its offices in Tromsø.

The EU's 7th Framework Programme will form a core element of SINTEF's work in the coming period. Participation in the Framework Programme involves competing with research institutes that benefit from much higher basic grants than does SINTEF. We are anxious that the frame conditions for EU research may be worsened by the increasing pressure being placed by the EU's auditors on SINTEF and other major research institutes. This pressure could lead to a lower proportion of the costs of our projects being met, and represents a challenge to our possibilities of exploiting the EU's research programmes.

It is of decisive importance for Norway to be able to renew its national laboratory and scientific equipment infrastructure in order to make this country competitive in the international arena. The establishment of a research infrastructure fund in the National Budget has been a step in the right direction. Nonetheless, there is still a need to increase budgetary commitments to far above their current levels.

The international financial crisis continues to affect many industries of importance to SINTEF, and we can observe a reduction in the amount of research being performed by industry. The Board regards it as a positive sign that in 2009, the authorities launched countermeasures aimed at the R & D sector, but is concerned that some of the measures involved were discontinued too early. This has negatively affected the Research Council's BIA 2010 programme, which was one of its most important public-sector industry-oriented research policy instruments. It is vital that our political authorities keep a close eye on developments, so that our competence and ability to innovate are maintained in this difficult economic situation.

Good results are produced by the efforts of many people, both our own employees and our scientific and business partners. The Board wishes to thank everyone involved for their good work and positive spirit of cooperation during the past year.

Trondheim, 23 March 2010



R. Rasmus Sunde  
Chairman



Ingrid Dahl Hovland



Elin Grimstad



Kathrine Skretting



Terje J. K. Andersen



Ingunn Holmen Geving



Unni M. Steinsmo  
President - CEO



Stig A. Slørdahl



Ellen Cathrine Rasmussen



Gorm Johansen





SINTEF's Board of Directors.

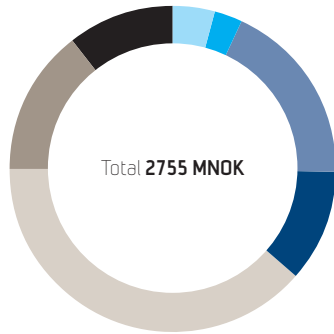
Sitting from the left: Ingrid Dahl Hovland, Stig A. Slørdahl, Gorm Johansen, Ingunn Geving, Terje J. K. Andersen and Rasmus Sunde (chairman).  
Standing from the left: Ellen Cathrine Rasmussen, Kathrine Skretting and Elin Grimstad.

## Key financial figures

MNOK	2005	2006	2007	2008	2009
<b>Result</b>					
Gross operating revenue	1 785	1 959	2 271	2 592	2 754
Net operating revenue	1 448	1 566	1 846	2 100	2 232
<b>Operating result</b>	<b>24</b>	<b>35</b>	<b>133</b>	<b>103</b>	<b>107</b>
<b>Annual result</b>	<b>59</b>	<b>92</b>	<b>254</b>	<b>137</b>	<b>131</b>
<b>Balance</b>					
Fixed assets	511	510	654	719	788
Liquid assets	1 181	1 426	1 599	1 821	1 966
<b>Sum assets</b>	<b>1 692</b>	<b>1 936</b>	<b>2 253</b>	<b>2 540</b>	<b>2 754</b>
Equity capital	897	988	1 259	1 397	1 526
Debt	795	948	994	1 144	1 228
<b>Sum equity capital and debt</b>	<b>1 692</b>	<b>1 936</b>	<b>2 253</b>	<b>2 540</b>	<b>2 754</b>
<b>Profitability</b>					
Operating margin %	1.7	2.2	7.2	4.9	4.8
Total profitability %	4.2	5.2	11.3	4.7	5.7
Profit on equity %	6.9	9.3	19.9	10.3	9.5
<b>Liquidity</b>					
Net cash flow from operations	64	179	300	89	325
Degree of liquidity	1.6	1.6	1.7	1.7	1.7
<b>Solidity</b>					
Equity capital in %	53	51	56	55	55
Operating working capital	322	397	508	616	738

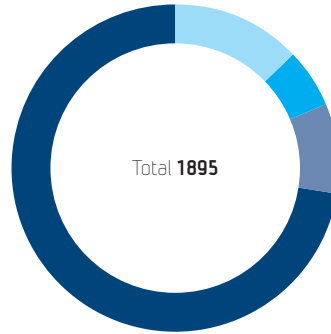


### Sources of finance (% of gross operating revenue)



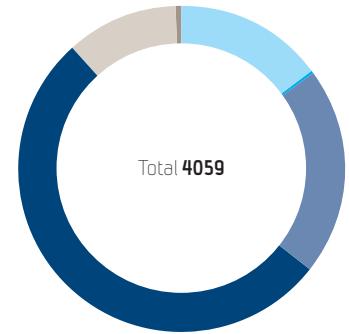
- RCN basic grant 4%
- RCN strategic programmes 3%
- RCN project support 18%
- Public sector 11%
- Industry and commerce 39%
- International contracts 14%
- Other sources of income 11%

### Employees



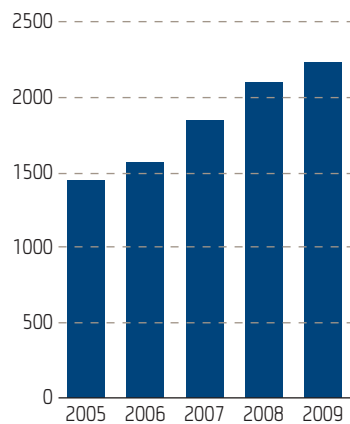
- Administration 243
  - Technical personnel 110
  - Engineers 166
  - Researchers 1376\*
- \*Of whom 634 hold doctorates

### Publications (incl. communication)

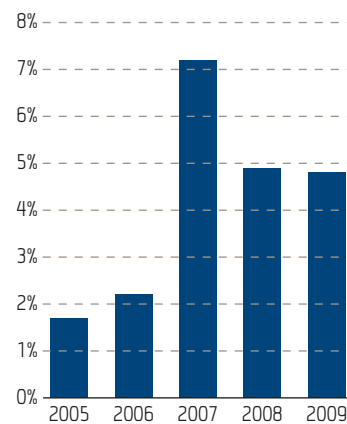


- Scientific articles in journals, series or anthologies 14.9%
- Academic monographs 0.2%
- Scientific talks and posters 20.7%
- Reports 52.6%
- Popular science articles and talks 11.1%
- Academic books, textbooks, etc. 0.5%

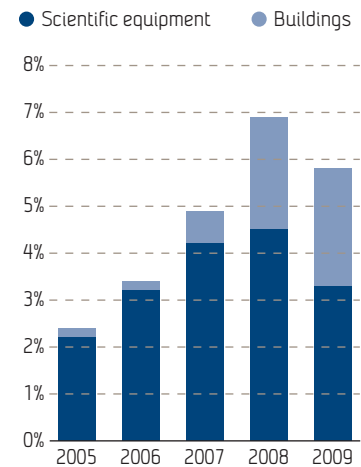
### Net operating revenue (MNOK)



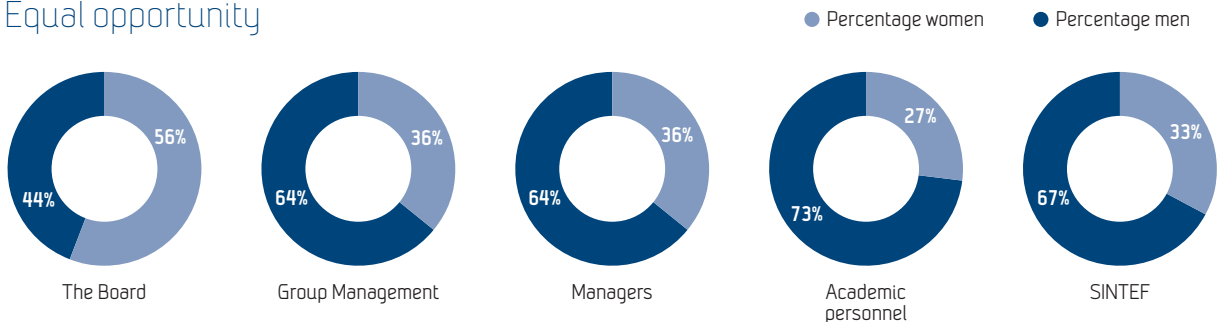
### Net operating margin (%)



### Investments (% of net operating revenues)



### Equal opportunity



When vacant positions are advertised within research groups where women are under-represented, we actively encourage women to apply. SINTEF conducts systematic working environment surveys throughout the organisation in order to identify gender-related inequalities. The results of the 2010 working environment survey revealed no significant gender-related inequalities.

# Accounts

## Income statement

Figures in NOK thousand

SINTEF		SINTEF Foundation		
2008	2009	Notes	2009	2008
<b>OPERATING INCOME AND EXPENSES</b>				
2 100 659	2 023 933		1 170 444	1 185 429
352 441	548 037		338 758	289 478
75 300	125 904		76 456	49 900
64 008	56 604		93 371	90 618
<b>2 592 407</b>	<b>2 754 478</b>	<b>4</b>	<b>1 679 029</b>	<b>1 615 426</b>
492 270	522 252		356 106	355 229
<b>2 100 137</b>	<b>2 232 227</b>		<b>1 322 924</b>	<b>1 260 197</b>
1 482 654	1 572 916	6, 7	930 960	882 202
85 885	100 735	8	63 720	54 308
943	854	8		
427 954	450 492	6	274 997	258 291
<b>1 997 435</b>	<b>2 124 997</b>		<b>1 269 677</b>	<b>1 194 801</b>
<b>102 702</b>	<b>107 230</b>		<b>53 247</b>	<b>65 396</b>
<b>FINANCIAL INCOME AND EXPENSES</b>				
33 787	14 405		7 403	19 516
18 552	29 800		11 324	4 259
2 304	229		92	509
7 393	12 381		4 976	545
<b>42 642</b>	<b>31 594</b>	<b>3</b>	<b>13 659</b>	<b>22 721</b>
<b>145 344</b>	<b>138 824</b>		<b>66 906</b>	<b>88 118</b>
		9	42 713	38 436
<b>145 344</b>	<b>138 824</b>		<b>109 618</b>	<b>126 553</b>
<b>145 344</b>	<b>138 824</b>		<b>109 618</b>	<b>126 553</b>
8 843	8 205	19	-1 000	5 871
<b>136 501</b>	<b>130 619</b>		<b>110 618</b>	<b>120 683</b>
15 818	20 001			
120 683	110 618		110 618	120 683
			110 618	120 683
			<b>110 618</b>	<b>120 683</b>

## Balance sheet as of 31.12.

Figures in NOK thousand

SINTEF			SINTEF Foundation	
2008	2009	Notes	2009	2008
<b>ASSETS</b>				
<b>Long-term assets</b>				
38 509	36 991	19	15 000	15 000
4 373	3 518	8		
<b>42 882</b>	<b>40 510</b>		<b>15 000</b>	<b>15 000</b>
<b>Intangible assets</b>				
388 390	434 000	8	361 305	350 875
37 631	21 941	8	21 941	15 109
129 319	125 801	8	57 202	61 849
31 929	29 310	8,14	12 436	16 373
<b>587 268</b>	<b>611 051</b>		<b>452 883</b>	<b>444 206</b>
<b>Long-term operating assets</b>				
	914	9	519 949	480 144
32 146	36 285	10	48	48
		11	37 771	29 771
47 149	80 533	7	47 273	21 979
9 875	18 785	6, 11	2 428	2 425
<b>89 170</b>	<b>136 517</b>		<b>607 468</b>	<b>534 366</b>
<b>Financial long-term assets</b>				
<b>719 321</b>	<b>788 078</b>		<b>1 075 351</b>	<b>993 572</b>
<b>Total long-term assets</b>				
<b>Liquid assets</b>				
6 257	5 841		4 531	4 947
233 271	240 989	5	132 664	128 474
<b>239 527</b>	<b>246 830</b>		<b>137 195</b>	<b>133 421</b>
<b>Goods</b>				
541 585	585 697	14	240 088	292 208
		14	24 363	23 345
37 536	88 332	14	41 086	5 395
<b>579 121</b>	<b>674 028</b>		<b>305 536</b>	<b>320 948</b>
<b>Receivables</b>				
7 041	6 804	10		
	563			
443 063	277 977	2, 12	123 820	173 408
<b>450 104</b>	<b>285 345</b>		<b>123 820</b>	<b>173 408</b>
<b>Investments</b>				
552 166	759 398	15	392 881	281 230
<b>552 166</b>	<b>759 398</b>		<b>392 881</b>	<b>281 230</b>
<b>Cash, bank deposits</b>				
<b>1 820 918</b>	<b>1 965 601</b>		<b>959 433</b>	<b>909 007</b>
<b>Total liquid assets</b>				
<b>2 540 239</b>	<b>2 753 679</b>		<b>2 034 784</b>	<b>1 902 579</b>
<b>TOTAL ASSETS</b>				

Balance sheet as of 31.12.

Figures in NOK thousand

SINTEF			SINTEF Foundation	
2008	2009	Notes	2009	2008
<b>EQUITY AND LIABILITY</b>				
<b>Equity</b>				
69 300	69 300	17	69 300	69 300
<b>69 300</b>	<b>69 300</b>		<b>69 300</b>	<b>69 300</b>
1 162 098	1 269 448	17	1 269 809	1 162 098
<b>1 162 098</b>	<b>1 269 448</b>		<b>1 269 809</b>	<b>1 162 098</b>
165 245	187 235			
<b>1 396 644</b>	<b>1 525 983</b>		<b>1 339 109</b>	<b>1 231 398</b>
<b>Liabilities</b>				
52 519	63 895	7	19 678	9 331
<b>52 519</b>	<b>63 895</b>		<b>19 678</b>	<b>9 331</b>
2 257	6 375	14		
5 269	15 165	14	884	1 581
<b>7 526</b>	<b>21 540</b>		<b>884</b>	<b>1 581</b>
129 411	153 520		72 957	61 198
7 713	11 410			
2 043	6 691	19		1 000
178 143	165 772		92 053	104 209
402 324	406 447		251 152	271 254
	361		6 635	12 438
363 915	398 060	18	252 316	210 169
<b>1 083 549</b>	<b>1 142 261</b>		<b>675 113</b>	<b>660 269</b>
<b>1 143 595</b>	<b>1 227 696</b>		<b>695 675</b>	<b>671 181</b>
<b>2 540 239</b>	<b>2 753 679</b>		<b>2 034 784</b>	<b>1 902 579</b>

Trondheim, 23 March 2010

*Kathrine Skretting*  
Kathrine Skretting  
Vice Chairman

*R. Rasmus Sunde*  
R. Rasmus Sunde  
Chairman

*Elin Grimstad*  
Elin Grimstad

*Stig A. Slørdal*  
Stig A. Slørdal

*Terje J. K. Andersen*  
Terje J. K. Andersen

*Ingunn Holmeier Geving*  
Ingunn Geving

*Ingrid Dahl Hovland*  
Ingrid Dahl Hovland

*Ellen Cathrine Rasmussen*  
Ellen Cathrine Rasmussen

*Gorm Johansen*  
Gorm Johansen

*Unni M. Steinsmo*  
Unni M. Steinsmo  
President - CEO

Cash flow analysis as of 31.12.

Figures in NOK thousand

SINTEF			SINTEF Foundation	
2008	2009		2009	2008
		<b>Cash flow from operations</b>		
145 344	138 824	Result before tax	109 618	126 553
		Percentage of profit from subsidiaries/associated companies	-42 713	-38 436
86 828	100 735	Ordinary depreciations/write-downs	63 720	54 308
	854	Depreciation of goodwill		
-202		Disposal of fixed assets at book value		
274	2 152	Profit/loss on sales of shares in fixed assets		
-159 519	165 086	Change in investments (current assets)	49 587	-50 499
	317	Depreciation of share investments		
-77 789	-7 718	Change in work in progress	-4 190	-19 614
391	416	Change in stock holdings	416	391
-30 942	-44 112	Change in accounts receivable	52 120	-36 172
2 540	24 109	Change in accounts payable	11 759	-14 811
111 933	-32 524	Change in other items in balance sheet	-40 518	92 917
-5 198	-1 043	Tax paid		-5 281
15 009	-22 008	Change in pension obligations	-14 947	10 967
<b>88 669</b>	<b>325 087</b>	<b>Net cash flow from operations (A)</b>	<b>184 852</b>	<b>120 324</b>
		<b>Cash flow from investments</b>		
	18 821	Subsidies on purchase of long-term operating assets		
-142 354	-143 808	Purchases of long-term operating assets	-72 505	-70 723
-14 031	-7 919	Investments in financial assets		-55 050
1 340	172	Sales of long-term operating assets		
1 596	75	Sales of other financial assets		
<b>-153 449</b>	<b>-132 659</b>	<b>Net cash flow from investment activities (B)</b>	<b>-72 505</b>	<b>-125 773</b>
		<b>Cash flow from financial activities</b>		
2 231	3 697	Change in overdraft facility		
-2 366	14 014	Liquidation of long-term debt	-697	-896
-957		Dividends paid		
1 442	-2 907	Changes charged directly to equity capital		2 306
<b>350</b>	<b>14 804</b>	<b>Net cash flow from financial activities (C)</b>	<b>-697</b>	<b>1 410</b>
-64 430	207 231	Net change in cash holdings (A + B + C)	111 650	-4 040
616 596	552 166	Cash balance as of 01.01.	281 231	285 271
<b>552 166</b>	<b>759 398</b>	<b>Cash balance as of 31.12.</b>	<b>392 881</b>	<b>281 231</b>



## 1. Accounting principles

### General

The annual accounts have been set out in accordance with the Company Accounts Act of 17.07.1998, and have been drawn up in accordance with Norwegian accounting standards and recommendations regarding good accounting practice.

### Consolidation principles

The consolidated accounts indicate the overall economic result and financial position when the parent company the SINTEF Foundation and its shareholdings in other companies are presented as a financial unit. The consolidated accounts include all companies in which the SINTEF Foundation owns more than 50% of the share capital and/or in which it has a decisive influence. Subsidiary companies that are of no significance for the evaluation of the Group's results have not been included in the consolidated figures.

In addition to the SINTEF Foundation, the parent company, the consolidated accounts include:

SINTEF Petroleum Research  
 SINTEF Energy Research  
 SINTEF Fisheries and Aquaculture  
 MARINTEK – Norwegian Marine Technology Research Institute (Group)  
 SINTEF Holding AS (Group)  
 SINTEF Development AS  
 SINTEF Polska SP.Z.O.O

The SINTEF Group is hereinafter termed SINTEF. Please also refer to note 9, concerning subsidiaries.

All significant inter-company transactions, debts and unrealised internal earnings have been eliminated. The minority interests' share of the result forms part of the Group's result and the minority interests' share of equity forms part of the Group's equity.

Shares in SINTEF Holding AS have been eliminated from the consolidated accounts in accordance with the purchasing method, which means that the assets and debts of the company purchased have been assessed at their real value on the date of purchase, and any price over this is treated as goodwill. For partly owned subsidiaries, only SINTEF Holding's share of the goodwill is included in the balance.

### Principles employed in entering revenue

Project income is entered on a current basis, i.e. as a percentage of the work completed, such that the completed proportion of the earnings expected from a project is treated as income. The degree of completion is based on what has actually been produced.

Where projects are expected to result in a loss, the entire loss is entered as a cost item.

Public-sector support in the form of research council funding, etc. is entered in accordance with basic principles for entering income and expenses, i.e. that funding is entered at the same time as the income it is intended to generate or the cost that it is intended to reduce. Funding to which conditions are attached are not entered as income until it is likely that the conditions have been met, or that they will be.

Investments and support items are entered net. Investment support is deducted from the historical cost of the investment item. Licence revenue is entered pro rata for the period of the licence.

### Classification

Current assets are items related to project activity or debts due to be repaid within one year, as well as other assets that are not intended for long-term ownership or use by the company. Other assets are long-term assets. The distinction between short-term and long-term debts is drawn at a due date of one year.

Shares in subsidiaries and other shareholdings of strategic or "non-financial" character are classified as long-term assets. Other shares are classified as current assets.

### Estimates of value of assets

Current assets are valued at historical cost or real value, whichever is lower. Long-term assets are valued at historical cost. If the real value of long-term assets is lower than their book value, and the fall in value is not expected to be temporary, their value is written down to their real value.

### Shares in subsidiary companies

Investments in consolidated associated companies are entered in accordance with the equity capital method in the SINTEF Foundation's accounts. According to this method, the investment is valued as the Foundation's share of the subsidiary's equity capital, and the result of the share is entered as revenue or cost.

### Other long-term stocks and shares

Long-term shares in companies in which SINTEF does not have a significant influence are balanced at historical cost. Investments are written down to their real value if their fall in value is not temporary. Dividends received and other payments from company surpluses are entered as "Other financial income".

### Shares in other companies (current shares)

Shares that form part of the business portfolio are valued at their real value on balancing day. Other current shares are valued at mean historical cost or real value on balancing day, whichever is lower.

### Foreign currency

Foreign-currency items are valued at the exchange rate on balance day. Incoming and outgoing foreign exchange rate risks are reduced by means of futures contracts directly related to contracts. Unsecured foreign currency payments received are used for current expenses incurred in foreign currencies.

### Receivables

Accounts receivable and other receivables are valued at their nominal value, with deductions for anticipated losses. Provisions for losses are made on the basis of an individual evaluation of the specific receivable involved.

### Work in progress

This item includes work done but not invoiced. Accrued hours are valued at invoiceable rates and relative to the percentage of the project actually completed, with deductions for anticipated losses.

### **Intangible assets**

The costs of intangible assets, including research and development, are entered as costs in their entirety.

### **Long-term operating assets**

Operating assets costing more than NOK 15,000 and with an anticipated economic lifetime of three years or more, are activated and depreciated on purchase.

Operating assets are depreciated linearly at the following rates: scientific equipment, office equipment, furniture and vehicles: 33%; buildings: 2 – 5%.

### **Tax**

The SINTEF Foundation and its subsidiary companies SINTEF Energy Research AS, SINTEF Fisheries and Aquaculture Research AS, SINTEF Petroleum Research AS and MARINTEK lost their case in Frostating Court of Appeal against the Norwegian State's Sør-Trøndelag County Tax Office, regarding the introduction of general tax liability introduced in the 2001 tax year. On 12 November 2007, the SINTEF Foundation and its subsidiaries appealed the judgement to the Supreme Court. The Courts Appeals Committee handed down its decision on 23 January 2009, in which it refused to submit the case to the Supreme Court. This decision cannot be appealed, and the judgment of the Frostating Court of Appeal thus has the force of law.

There is wide political support for our point of view for a general tax exemption for research institutes. To date, this has resulted in a change in the law that exempts research institutes from taxes on capital, starting from 2008. The SINTEF Foundation has applied for capital tax to be waived for 2001 – 2007, but has yet to receive a reply regarding whether compensation will be made for this. SINTEF, under the aegis of the Joint Arena of Norwegian Research Institutes (FFA), is continuing its efforts in favour of a change in the law that will confirm research institutes' exemption from capital tax.

Since the SINTEF Foundation lost its case and is thus liable to pay income tax, entering the deferred tax advantage will increase the book value of its profits, fixed assets and equity capital. On the basis of the figures as per 31.12.2009, the deferred tax advantage could theoretically amount to some MNOK 310, in the case that the total basis for reversing interim differences can be exploited. Given the likelihood of a change in tax legislation, we believe that this advantage will not be utilised beyond 2009.

The estimated tax cost for the SINTEF Foundation for 2009 comes to MNOK 1, which is entirely the result of the reversal of the estimated capital tax due from 2008.

### **Pensions**

The SINTEF Foundation and all its consolidated companies are legally required to operate public-sector pension schemes, and they have established schemes that satisfy this obligation.

Pension costs are entered in the accounts in accordance with the provisions of the Norwegian Standard for Pension Cost Accounting. Net pension costs consist of the present value of pensions earned in the course of the year plus the cost of interest on pension obligations, less the anticipated yield of the pension fund, corrected for the distributed effects of changes in the pension plan, estimates and deviations. Net pension costs are entered under "Salaries and Social Costs".

The Norwegian Accounting Standard states that a company's pension scheme is to be treated as a compensation plan, in which future pension payments are based on the number of years of earnings and the salary level at age of retirement. The value of the pension fund is based on its estimated value on the date of the closure of the accounts. The estimated value is adjusted annually in accordance with the statement provided by the life-insurance company on the basis of the transferable value of the pension funds.

Measurements of accumulated pension liabilities utilise estimated liability at the end of the accounting year. This estimated value is adjusted annually in accordance with the statement provided by the insurance company regarding accumulated pension liability. Actuarial estimates are made every year by the insurance company on the basis of information provided by SINTEF.

Differences between estimated and actual values that are due to changes in economic or actuarial assumptions are regarded as changes in accounting estimates. The Accounting Standard allows for a special method of dealing with such differences, in that differences of up to 10% of the larger of pension liability or pension funds may be excluded from the basis for calculating the result. Differences above the 10% limit must be entered in the result over the remaining earnings period. Differences due to changes in the pension plan are distributed systematically over the average remaining earnings period.

Agreed pension plans (the AFP scheme) are covered by the Standard for Pension Cost Accounting.

The SINTEF Group has a collective performance-based pension plan with an insurance company for all its employees. Our liability covers 1314 SINTEF Foundation employees and 330 pensioners. The pensions of a further three former employees are paid as part of our operating costs. Contributions by employees towards the partial financing of the pension scheme are treated as a reduction in salary costs and do not affect the pension costs for the period.

One of SINTEF Holding's subsidiary companies has a collective agreement for contributory pensions. The annual cost of pensions is equivalent to the paid-in contributions.

## **2. Financial market risks**

The SINTEF Group is exposed to changes in exchange rates in that its project revenues are in different currencies from some or all of its costs. Most of the exposure is in EUR and USD, and order to reduce the exchange rate risk involved, the company utilises foreign exchange futures contracts.

The SINTEF Group maintains considerable liquid reserves, which are centrally placed in accordance with the "Guidelines for Financial Management" of June 2009.

On 31.12. 2009, the market value of the portfolio was MNOK 277.9. The SINTEF Foundation was responsible for 44.5% of this amount..

Virtually the whole of the portfolio consists of bonds and other securities which per 31.12.2009 had a duration of 0.45. A one percent change in the rate of interest would have an effect of MNOK 0.6 on the result for the total portfolio. The SINTEF Foundation's share of this risk is MNOK 0.3. The remainder of the portfolio is made up of liquid assets and moderate-risk investments. All investments in foreign funds are insured against exchange-rate fluctuations.

### 3. Consolidated financial items

Figures in NOK 1000

SINTEF			SINTEF Foundation	
2008	2009		2009	2008
33 787	14 405	Interest received	7 403	19 516
15 112	4 380	Profit on exchange transactions	1 912	4 228
70	21 131	Yield from capital placements	9 412	31
878		Gains on sales of shares		
2 492	4 289	Other financial revenues		
<b>52 339</b>	<b>44 205</b>	<b>Total financial revenues</b>	<b>18 728</b>	<b>23 775</b>
2 304	229	Interest costs	92	509
204	102	Interest on late payments	91	135
532	352	Bank costs and fee	277	404
4 643	6 868	Currency exchange losses	3 609	6
	1 400	Depreciation of financial liquid assets	1 000	
	2 199	Losses made on depreciation of shares		
2 014	1 461	Other financial expenses		
<b>9 697</b>	<b>12 611</b>	<b>Total financial expenses</b>	<b>5 069</b>	<b>1 054</b>
<b>42 642</b>	<b>31 594</b>	<b>Sum financial items</b>	<b>13 659</b>	<b>22 721</b>

### 4. Sales revenues for the SINTEF Group

Figures in NOK 1000

By division	2009	2008	SINTEF Foundation		
SINTEF Building and Infrastructure	270 303	263 694	<b>Geographical distribution</b>		
SINTEF Health Research*		116 928		<b>2009</b>	<b>2008</b>
SINTEF ICT	336 884	324 477	Norway	1 473 757	1 442 811
SINTEF Materials and chemistry	603 569	558 550	EU	96 876	72 725
SINTEF Technology and Society*	343 493	239 819	Rest of the world	108 396	99 890
Service exchanges within the Group	124 780	111 958	<b>Total</b>	<b>1 679 029</b>	<b>1 615 426</b>
<b>SINTEF Foundation</b>	<b>1 679 029</b>	<b>1 615 426</b>	<b>SINTEF</b>		
MARINTEK	309 572	292 337	<b>Geographical distribution</b>		
SINTEF Fisheries and Aquaculture	140 137	116 682		<b>2009</b>	<b>2008</b>
<b>SINTEF Marine</b>	<b>449 709</b>	<b>409 019</b>	Norway	2 353 814	2 244 568
SINTEF Petroleum Research	183 453	196 088	EU	170 910	122 514
SINTEF Energy Research	375 553	298 610	Rest of the world	229 754	225 325
<b>SINTEF Petroleum and Energy</b>	<b>559 006</b>	<b>494 698</b>	<b>Total</b>	<b>2 754 478</b>	<b>2 592 407</b>
SINTEF Holding	229 320	203 161			
Eliminated internal turnover	-162 586	-129 897			
<b>SINTEF</b>	<b>2 754 478</b>	<b>2 592 407</b>			

\*SINTEF Health Research merged with SINTEF Technology and Society on 1 January 2009.

### 5. Work in progress

In addition to individual evaluations, we have included a depreciation of 3% in the value of our companies' average monthly production for the past 12 months.

### 6. Salary costs, number of employees, fees, loans to employees, etc.

Figures in NOK 1000

SINTEF			SINTEF Foundation	
2008	2009		2009	2008
1 105 827	1 170 215	Wages and salaries		
173 332	183 480	Salaries	674 752	658 580
168 010	189 093	Employers' national insurance contributions	113 710	106 850
35 485	30 129	Pension costs	114 367	97 238
		Other benefits	28 131	19 533
<b>1 482 654</b>	<b>1 572 916</b>	<b>Total salary costs</b>	<b>930 960</b>	<b>882 202</b>
<b>1 949</b>	<b>1 948</b>	<b>Man-years</b>	<b>1 134</b>	<b>1 187</b>

Members of the SINTEF Group's corporate management are enrolled in the company's collective pension scheme, and also in a supplementary contributory pension scheme. The President is also entitled to a voluntary early retirement pension which will cover 66% of her full salary from the age of 60 until she is 67. The President has six months mutual notice of termination of employment, and is also the beneficiary of a post-salary arrangement whereby she will receive 12 months' salary if the Board wishes her to resign from her position. Any other earnings during this period will be deducted from this sum.

The total remuneration package of the President in 2009 came to MNOK 2.5, of which MNOK 1.9 was in the form of salary and MNOK 0.5 supplementary pension contribution, in addition to taxable benefits totalling MNOK 0.1.

The Board has drawn up guidelines for a bonus scheme for the President of the Group and members of the group management team. Any payments will be performance-related and may not exceed two months' salary.

Honoraria to SINTEF's Board of Directors amounted to MNOK 1.06 in 2009. No fees were paid to the Council of SINTEF.

Figures in NOK 1000

SINTEF		Fees paid to auditors and cooperating companies	SINTEF Foundation	
2008	2009		2009	2008
1 020	1 430	Audit required by law	538	419
538	703	Other certification duties	455	250
678	191	Legal assistance	39	668
294	332	Other non-audit services	139	278
<b>2 530</b>	<b>2 655</b>	<b>Total</b>	<b>1 171</b>	<b>1 614</b>

Deloitte Advokatfirma AS is a company in collaboration with Deloitte AS.

#### Loans to employees

Loans to SINTEF employees came to a total of MNOK 0.9, of which MNOK 0.7 in the SINTEF Foundation.

## 7. Pensions

### Pension costs

Figures in NOK 1000

SINTEF			SINTEF Foundation	
2008	2009		2009	2008
103 283	116 215	Present value of pensions earned in the course of the year	62 672	52 180
81 957	84 531	Cost of interest on pension obligations	52 179	51 636
-69 264	-83 794	Yield on pension funds	-55 088	-46 476
	3 839	Management fee	1 690	1 766
49 418	50 958	Gains/losses on estimates in accounts	49 176	42 383
7 406	11 697	Share of pension plan alterations entered in the profit and loss account	284	1 125
9 845	12 787	Interim employee tax paid	8 665	8 334
<b>182 646</b>	<b>196 233</b>	<b>Net cost of pensions after employer tax</b>	<b>119 578</b>	<b>110 949</b>

From 2009 on, a management fee will be defined on a separate line. For SINTEF, in 2008 the management fee was included in the figure for "Return on pension funds".

### Pension obligations and funds

Figures in NOK 1000

SINTEF	Insured (group)	Uninsured (AFP)	Other uninsured	Sum
Accrued pension obligations	2 128 067	18 464	18 346	2 164 877
Pension funds (at marked value)	-1 473 358			-1 473 358
Non-entered effects of difference from estimates	-753 790	-1 236	-11 473	-766 499
Non-booked effects of changes in plan	-5 618			-5 618
Accrued employment tax	60 146	1 227	2 587	63 960
<b>Net pension obligations, including</b>	<b>-44 554</b>	<b>18 455</b>	<b>9 460</b>	<b>-16 639</b>
Underfinanced pension commitments				63 895
Overfinanced pension commitments				80 533

SINTEF Foundation	Insured (group)	Uninsured (AFP)	Other uninsured	Sum
Accrued pension obligations	1 395 070	2 430	17 907	1 415 407
Pension funds (at marked value)	-971 162			-971 162
Non-entered effects of difference from estimates	-496 412	-4 039	-11 069	-511 520
Non-booked effects of changes in plan	-5 618			-5 618
Accrued employment tax	42 431	343	2 525	45 299
<b>Net pension obligations, including</b>	<b>-35 692</b>	<b>-1 266</b>	<b>9 363</b>	<b>-27 595</b>
Underfinanced pension commitments				19 678
Overfinanced pension commitments				47 273



The following parameters have been used in the Group estimates:

Economic assumptions	2009	2008
Discounting rate	4.50%	3.80%
Anticipated salary adjustments	4.50%	4.00%
Anticipated pension adjustments	4.25%	3.75%
Anticipated adjustment of national base rate (G)	4.25%	3.50%
Anticipated yield on pension funds	5.70%	5.80%
Actuarial assumptions		
Mortality table utilised	K2005	K2005
Disability tariff utilised	K2005/K63	K2005/K63
Anticipated outtake frequency AFP	0-50%	0-50%
Voluntary resignation (all ages)	0-15%	0-15%

In the actuarial estimates of our pension obligations, we have utilised assumptions regarding annual salary growth, discount rate and expected rate of return in accordance with the guidelines to NRS 6.

## 8. Long-term operating assets: research equipment, furniture and buildings

Figures in NOK 1000

SINTEF	Buildings	Buildings under construction	Scientific equipment	Office equipment, inventory and vehicles	Sum
Historical cost as of 01.01.	892 959	15 109	606 875	188 858	1 703 801
Acquisition during the year	48 182	6 832	74 186	14 608	143 808
Divestiture at acquisition cost			-960	-195	-1 155
Investment grant			-18 821		-18 821
Historical cost as of 31.12.	941 141	21 941	661 279	203 272	1 827 633
Total ordinary depreciation	507 141		535 477	173 959	1 216 578
<b>Book value as of 31.12.</b>	<b>434 000</b>	<b>21 941</b>	<b>125 801</b>	<b>29 310</b>	<b>611 051</b>
<b>Annual ordinary depreciation</b>	<b>25 092</b>		<b>58 777</b>	<b>16 864</b>	<b>100 735</b>
Economic lifetime	10-50 years		3 years	3 years	
Depreciation plan	Linear		Linear	Linear	
Annual rental costs of operating assets not entered in Balance Sheet	68 919				68 919
<b>Purchases in 2009 &lt;15,000</b>			<b>10 674</b>	<b>5 661</b>	<b>16 335</b>

SINTEF	Goodwill
Historical cost as of 01.01.	9 524
Historical cost as of 31.12.	9 524
Total ordinary depreciation	6 006
<b>Book value as of 31.12.</b>	<b>3 518</b>
<b>Annual ordinary depreciation</b>	<b>854</b>
Economic lifetime	5-10 years
Depreciation plan	Linear

Goodwill from the purchase of SINTEF MRB will be written off linearly over ten years on the basis of anticipated cash flows.

Figures in NOK 1000

SINTEF Foundation	Buildings	Buildings under construction	Scientific equipment	Office equipment, inventory and vehicles	Sum
Historical cost as of 01.01.	783 209	15 109	339 818	141 569	1 279 705
Acquisitions during the year	31 091	6 831	28 612	5 970	72 505
Divestiture at acquisition cost			-107		-107
Historical cost as of 31.12.	814 301	21 941	368 322	147 539	1 352 103
Total ordinary depreciation	452 996		311 120	135 103	899 219
<b>Book value as of 31.12.</b>	<b>361 305</b>	<b>21 941</b>	<b>57 202</b>	<b>12 436</b>	<b>452 883</b>
<b>Annual ordinary depreciation</b>	<b>20 661</b>		<b>33 151</b>	<b>9 907</b>	<b>63 720</b>
Economic lifetime	10-50 years		3 years	3 years	
Depreciation plan	Linear		Linear	Linear	
Annual rental costs of operating assets not entered in Balance Sheet	43 021				43 021
<b>Purchases in 2009 &lt;15,000</b>			<b>6 856</b>	<b>4 583</b>	<b>11 439</b>

In 2009, the SINTEF Foundation leased 29 202 m<sup>2</sup> from NTNU. In addition, SINTEF Energy Research leased 4 282 m<sup>2</sup> and MARINTEK 23 580 m<sup>2</sup> from NTNU. NTNU leased 16 131 m<sup>2</sup> from the SINTEF Foundation, and 296 m<sup>2</sup> of SINTEF Energy Research's premises.

## 9. Subsidiaries

Subsidiaries of the SINTEF Foundation	Date of acquisition	Registered office	Ownership share
MARINTEK – Norwegian Marine Technology Research Institute	19.12.1984	Trondheim	56%
SINTEF Petroleum Research	01.01.1985	Trondheim	100%
SINTEF Energy Research	16.12.1985	Trondheim	61%
SINTEF Holding	01.01.1988	Trondheim	100%
SINTEF Fisheries and Aquaculture	01.01.1999	Trondheim	96.9%
SINTEF Polska SP.Z.O.O	01.07.2005	Warsaw	100%
SINTEF Development	01.10.2009	Trondheim	100%

Shareholdings and voting rights are identical. The companies' accounting procedures follow the equity method; please see the following table.

Figures in NOK 1000	MARINTEK	SINTEF Petroleum Research	SINTEF Energy Research	SINTEF Holding	SINTEF Fisheries and Aquaculture	SINTEF Polska	SINTEF Development	Sum
Historical cost = equity capital in Balance Sheet at time of purchase	6 500	9 000	4 600	6 670	11 219			26 770
<b>Balance as of 01.01.09</b>	<b>78 124</b>	<b>162 763</b>	<b>137 597</b>	<b>77 369</b>	<b>25 492</b>	<b>-3 141</b>	<b>1 943</b>	<b>480 144</b>
Share of result for 2009	8 306	15 173	19 960	450	-1 176			42 713
Items entered directly against equity capital	-418			-1 271	-1 218			-2 907
<b>Balance as of 31.12.09</b>	<b>86 011</b>	<b>177 937</b>	<b>157 557</b>	<b>76 548</b>	<b>23 099</b>	<b>-3 141</b>	<b>1 943</b>	<b>519 949</b>

The annual result of MNOK 42.7, less items entered directly under Equity Capital (MNOK 2.9) have been transferred to Other Equity Capital.

SINTEF Holding's subsidiaries	Date of acquisition	Registered office	Voting and ownership share
SINTEF NBL (Norwegian Fire Research Laboratory)	31.12.2000	Trondheim	100%
SINTEF MRB	01.11.2004	Ålesund	100%
Sinvent	24.11.2004	Trondheim	100%
Link ftr	28.11.2007	Trondheim	72%
SINTEF Venture II	21.08.2006	Trondheim	63%
SINTEF Venture III	28.11.2006	Trondheim	63%
Molab	01.01.1990	Mo i Rana	60%
SINTEF Raufoss Manufacturing	09.02.2004	Raufoss	50.07%
NATMIG AS	26.03.2008	Oslo	25%
SINTEF North	07.05.2008	Tromsø	70 %

Shareholdings and voting rights are identical. The companies' accounting procedures follow the equity method; please see the following table.

Figures in NOK 1000	SINTEF NBL	Sinvent	SINTEF MRB	Link ftr	SINTEF Venture II	Molab	SINTEF Raufoss	Natmig	SINTEF North	Sum
Historical cost	1 300	10 000	7 600	2 880	16 000	1 000	6 991	100	700	45 771
Equity capital in Balance Sheet at time of purchase	1 300	10 000	2 246	1 285	16 000	1 500	4 078	100	700	36 409
Goodwill			5 354	1 595			2 923			9 872
<b>Balance as of 01.01.09</b>	<b>2 389</b>	<b>27 590</b>	<b>8 442</b>	<b>2 512</b>	<b>24 899</b>	<b>14 033</b>	<b>5 882</b>	<b>103</b>	<b>286</b>	<b>86 136</b>
Capital expansion					8 000					8 000
Share of annual result	2 827	763	298	-112	-1 810	1 081	90		-286	2 851
Depreciation of goodwill			-535	-319						-854
Disposal of subsidiary company					185			-103		82
Paid-in group contribution	-1 086									-1 086
Dividends		-2 500	-298			-541				-3 339
<b>Balance as of 31.12.09</b>	<b>4 130</b>	<b>25 854</b>	<b>7 907</b>	<b>2 081</b>	<b>31 274</b>	<b>14 573</b>	<b>5 973</b>			<b>91 791</b>

SINTEF Holding and its subsidiaries are wholly consolidated in SINTEF.

## 10. Shares and holdings of the SINTEF Group in other companies

Figures in NOK 1000

SINTEF	Owner SINTEF	Ownership share	Book value
Fixed assets			
SolSilc AS	SINTEF Foundation		22
Other shares			26
MonAqua AS Associated company	SINTEF Fisheries and Aquaculture	33.33%	0
AVS Chile SA Associated company	SINTEF Fisheries and Aquaculture	33.33%	546
Dil Trøndersk Mat og Drikke AS	SINTEF Fisheries and Aquaculture	1.00%	20
Other minor shareholdings	SINTEF Fisheries and Aquaculture		224
Mo Industripark	Molab	2.00%	3 000
MoTest AS	Molab	49.00%	201
Leiv Eriksson AS	SINTEF Holding	3.60%	0
MedTech AS	SINTEF Holding	19.40%	19
Forskningsparken AS	SINTEF Holding	0.90%	30
Spin Out Venture I	SINTEF Holding	25.00%	14 094
SINTEF Venture III AS	SINTEF Holding	100.00%	15 520
Lean Lab AS	SINTEF Holding		200
Adjustments in value			-19
Reclassification of minority shares			2 403
<b>Total long-term assets</b>			<b>36 285</b>
Liquid assets			
LogIT Systems AS	MARINTEK	4.77 %	3 984
Offshore Simulator Center	MARINTEK	25.00 %	910
Alcon Gruppen AS	SINTEF Holding	22.50 %	980
DAT AS	SINTEF Holding	4.90 %	575
Simula Research Lab. AS	SINTEF Holding	10.00 %	150
Såkominvest Midt-Norge AS	SINTEF Holding	11.90 %	7 500
Spider Solution AS	SINTEF Holding	92.90 %	0
Trøndelag Forskning og Utvikling AS	SINTEF Holding	10.00 %	500
ProVenture Seed AS	SINTEF Holding	3.00 %	572
RFID Innovasjonssenter AS	SINTEF Holding	27.50 %	0
AmbieSense AS	SINTEF Holding	37.00 %	0
Sonowand	SINTEF Holding	0.60 %	393
Natmig AS	SINTEF Holding	25.00 %	25
Catenda	SINTEF Holding	25.00 %	20
Other minor shareholdings	SINTEF Holding	<10.0 %	678
Adjustments in value*			-9 482
<b>Sum total other shares</b>			<b>6 804</b>
<b>SINTEF Foundation</b>		<b>Ownership share</b>	<b>Book value</b>
<b>Long-term assets</b>			
SolSilc AS			22
Other minor shareholdings			26

\*Adjustments in value increased from -8 948 in 2008 to -9 482 in 2009.

## 11. Receivables with due date beyond one year

Figures in NOK 1000

SINTEF			SINTEF Foundation	
2008	2009		2009	2008
9 875	18 785	Long-term receivables from companies within the Group	37 771	29 771
		Other long-term receivables	2 428	2 425
<b>9 875</b>	<b>18 785</b>	<b>Sum long-term accounts receivable</b>	<b>40 199</b>	<b>32 196</b>

In 2008, the SINTEF Foundation converted MNOK 36.7 of long-term debt to share capital.

## 12. Bonds and other securities

Figures in NOK 1000

Portfolio distributed as follows	Historical cost	Currency	Book value	Market value	SINTEF Foundation's share 44.54%
<b>Bank deposits and derivatives</b>	<b>134 279</b>	<b>NOK</b>	<b>134 279</b>	<b>134 279</b>	<b>59 813</b>
<b>Interest-bearing securities</b>					
Money market fund	39 376	NOK	40 355	40 355	17 976
Interest-bearing funds	88 647	NOK	90 792	90 792	40 442
<b>Total interest-bearing securities</b>	<b>128 023</b>	<b>NOK</b>	<b>131 147</b>	<b>131 147</b>	<b>58 417</b>
Scandinavian unit trusts	8 000	NOK	8 197	8 197	3 651
Foreign unit trusts	3 400	NOK	4 354	4 354	1 939
<b>Total investments for distribution</b>	<b>273 703</b>		<b>277 977</b>	<b>277 977</b>	<b>123 820</b>

### 13. Foreign currencies

SINTEF insures its revenues in other currencies via futures contracts with banks. These futures contracts are either specific to individual projects or form part of a number of block insurance policies with quarterly due dates.

Bank contracts are exclusive of EU coordinator projects.

In the table below, "Revenues 2009 – 2012" are the sum of contracts whose exchange rates have been insured in NOK as per 31.12.2009 (market value). Futures contracts are the net position (purchase – sale) outstanding at year end, measured in NOK at the date due.

Figures in NOK 1000

SINTEF							
Currencies	EUR	USD	GBP	DKK	SEK	Other	SUM
Bank deposits	2 811	-3 024	-52	-736	39	989	27
Customer receivables	83 384	13 651	519	277	6 313	5 115	109 259
Accounts payable	-10 305	-1 651		-210	-218	524	-11 861
Income 2009-2013	254 625	18 493	23	1 177	4 628	1 474	280 418
Futures contracts	-232 014	-27 087		-963	-5 413	-179	-265 657
<b>Net exposure</b>	<b>98 500</b>	<b>381</b>	<b>490</b>	<b>-455</b>	<b>5 348</b>	<b>7 922</b>	<b>112 187</b>

SINTEF Foundation							
Currencies	EUR	USD	GBP	DKK	SEK	Other	SUM
Bank deposits*	1 834	-601	-52	-20	39	977	2 177
Customer receivables	81 665	13 471	519	138	6 313	5 115	107 221
Accounts payable	-10 095	-1 417		-210	-86	524	-11 285
Income 2009-2013	243 134	17 328	23	1 177	4 628	1 474	267 763
Futures contracts	-220 523	-25 923		-963	-5 413	-179	-253 001
<b>Net exposure</b>	<b>96 014</b>	<b>2 859</b>	<b>490</b>	<b>122</b>	<b>5 480</b>	<b>7 910</b>	<b>112 875</b>

\*"Bank deposits" are exclusive of EU coordinator projects.

### 14. Other long-term debt

Figures in NOK 1000

SINTEF	2009	2008
Mortgages	6 375	2 257
Other long-term debts owed to credit institutions	884	1 581
Other long-term debt	14 281	3 688
<b>Total long-term debt</b>	<b>21 540</b>	<b>7 526</b>
None of the debt has a due date longer than five years		
Book value of assets posted as collateral for reported debt:		
Machinery etc.	2 492	8 400
Customer receivables	32 094	23 292
Other debts	15 501	6 671
<b>Sum book value of assets posted as collateral for reported debt</b>	<b>50 088</b>	<b>38 362</b>

### 15. Mortgages and guarantees etc.

The SINTEF Group has signed a contract with Fokus Bank regarding the operation of a multiuser system of accounts for the legal units of the Group. Fokus Bank only has the right to make offsets in accounts held by individual legal units in the Bank, irrespective of the type of account involved and the currency in which it is held.

Grants from the EU and funds for payment of taxes are maintained in separate accounts outwith the multiuser system.

The SINTEF Foundation has placed security in the form of fixed assets for investing funds from its capital account in joint active management operations, lines of credit, and as security for currency and interest insurance instruments.

SINTEF Energy Research has deposited a guarantee requirement of MNOK 5.9 in connection with two EU projects. MARINTEK has deposited guarantee requirements of MNOK 2.4 for projects for the EU and others. SINTEF Fisheries and Aquaculture Research has placed self-assured deposits with DnB NOR for a maximum of MNOK 0.7 in connection with a loan to AVS Chile SA.

In 2008, SINTEF Fisheries and Aquaculture Research was allocated three experimental licences for the production of a total of 2380 tonnes of maximum permitted biomass (MTB) of salmon for research purposes. Under the terms of the licence from the Directorate of Fisheries of 28.05.2008, the company has scientific responsibility for all R & D activity related to the use of the permit, as well as the actual and commercial responsibility for the fish covered by the aquaculture licence.

The SINTEF Foundation is a party to a number of minor legal cases resulting from its normal activities. SINTEF believes that any liabilities in this connection will be of little importance for SINTEF's results, liquidity or financial position.

### 16. Offsets between companies within the Group

Internal transactions within the Group amounted to MNOK 163 ex. VAT.

Intra-Group receivables and debts are shown as a line on the Balance Sheet.



## 17. Equity capital

Figures in NOK 1000

SINTEF	Paid-up equity	Earned equity	Total equity
Equity capital as of 01.01.	69 300	1 327 345	1 396 644
Annual result of Group		130 619	130 619
Items entered directly against EC		-1 280	-1 280
<b>Equity capital as of 31.12.</b>	<b>69 300</b>	<b>1 456 684</b>	<b>1 525 982</b>
SINTEF Foundation	Paid-up equity	Earned equity	Total equity
Equity capital as of 01.01.	69 300	1 162 098	1 231 398
Annual result of Foundation		110 618	110 618
Items entered directly against EC		-2 907	-2 907
<b>Equity capital as of 31.12.</b>	<b>69 300</b>	<b>1 269 809</b>	<b>1 339 109</b>

## 18. Other current liabilities

The item "Other current liabilities" in the accounts for the SINTEF Group includes provisions for accrued vacations, holiday pay and overtime, provisions for early retirement, bonuses and restructuring, investments in IT systems, obligations regarding invoices entered but unpaid, and transiting EU funds.

## 19. Taxes

Figures in NOK 1000

SINTEF	2009	2008
<b>The annual tax expenditure is presented as follows:</b>		
Tax due	6 238	2 847
Changes in deferred tax	1 967	5 996
<b>Tax cost of ordinary result</b>	<b>8 205</b>	<b>8 843</b>
<b>Current tax obligations in the balance sheet are presented as follows:</b>	<b>2009</b>	<b>2008</b>
Tax payable for the year	6 691	2 043
<b>Tax payable on Balance Sheet</b>	<b>6 691</b>	<b>2 043</b>
<b>Adjustment from nominal to actual tax rate:</b>	<b>2009</b>	<b>2008</b>
Ordinary result before tax	138 824	145 344
Annual result before tax	138 824	145 344
Anticipated income tax according to nominal tax rate (28%)	38 870	40 696
Tax effect of following items:		
Non-deductible costs	4 421	3 162
Non-taxable income	-7 529	-1 095
Financial gains/losses within the exemption method	-1 204	-242
Changes in the valuation of deferred tax benefit	-25 354	-36 118
Changes in non-balanced deferred tax advantage		280
Insufficient tax provision from previous years		781
Other items		379
Calculated wealth tax	-1 000	1 000
<b>Tax costs</b>	<b>8 205</b>	<b>8 843</b>
Effective tax rate	6%	6%

### Specification of the tax effect of temporary differences and losses to be carried forward:

	2009		2008	
	Advantage	Obligation	Advantage	Obligation
Operating assets	1 370 728		1 368 615	
Goods	728			364
Receivables	89 714		77 539	
Gains and losses account		2 442		3 053
Financial allocations	60 273		60 363	
Pension commitments	56 618		44 251	
Pension funds		83 651		48 801
Unutilised allowances	3 365		3 365	
Loss to be carried forward	244 493		214 301	
<b>Total</b>	<b>1 825 919</b>	<b>86 093</b>	<b>1 768 434</b>	<b>52 218</b>
Deferred tax benefit	487 151		480 541	
Non-balanced deferred tax advantage	450 160		442 032	
<b>Net advantage/obligations on deferred tax in Balance Sheet</b>	<b>36 991</b>		<b>38 509</b>	

Deferred tax advantage is entered on the basis of future revenue.

**SINTEF Foundation**

<b>The annual tax expenditure is presented as follows:</b>		
	<b>2009</b>	<b>2008</b>
Wealth tax payable	-1 000	1 781
Changes in deferred tax		4 090
<b>Tax cost of ordinary result</b>	<b>-1 000</b>	<b>5 871</b>
<b>Current tax obligations in the balance sheet are presented as follows:</b>		
	<b>2009</b>	<b>2008</b>
Annual payable wealth tax		1 000
<b>Tax payable on Balance Sheet</b>		<b>1 000</b>
<b>Adjustment from nominal to actual tax rate:</b>		
	<b>2009</b>	<b>2008</b>
Ordinary result before tax	109 618	126 553
Annual result before tax	109 618	126 553
Anticipated income tax according to nominal tax rate (28%)	30 693	35 435
Tax effect of following items:		
Non-deductible costs	1 699	1 341
Non-taxable income	-3 012	-140
Share of result derived from subsidiary companies	-11 960	-10 762
Re-evaluation of deferred tax benefit	-17 420	-21 784
Insufficient tax provision from previous years		781
Calculated wealth tax	-1 000	1 000
<b>Tax costs</b>	<b>-1 000</b>	<b>5 871</b>
Effective tax rate	-1%	5%

**Specification of the tax effect of temporary differences and losses to be carried forward:**

	<b>2009</b>		<b>2008</b>	
	<b>Advantage</b>	<b>Obligation</b>	<b>Advantage</b>	<b>Obligation</b>
Operating assets	967 231		936 014	
Goods	376			
Receivables	62 225		52 509	
Gains and losses account		567		709
Financial allocations	42 594		48 783	
Pension commitments	19 678		9 331	
Pension funds		47 273		21 979
Unutilised allowances	386		386	
Loss to be carried forward	64 208		30 038	
<b>Total</b>	<b>1 156 698</b>	<b>47 840</b>	<b>1 077 061</b>	<b>22 688</b>
Deferred tax benefit*	310 480		295 224	
Non-balanced deferred tax advantage	295 480		280 224	
<b>Net advantage/obligations on deferred tax in Balance Sheet</b>	<b>15 000</b>		<b>15 000</b>	

Deferred tax advantage is entered on the basis of future revenue.

\*On the basis of figures on 31.12.2009, the deferred tax advantage could theoretically be worth about MNOK 310.

# Auditor's report



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Translation from the original Norwegian version

To the Board of Directors of SINTEF Foundation

## AUDITOR'S REPORT FOR 2009

We have audited the annual financial statements of SINTEF Foundation as of 31.12.2009, showing a profit of NOK 110.618.000,- for the Foundation and a profit of NOK 130.619.000,- for the group. We have also audited the information in the Board of Directors' report concerning the financial statements, the going concern assumption and the proposal for the allocation of the profit. The annual financial statements comprise the Foundation's financial statements and the group accounts. The Foundation's financial statements comprise the balance sheet, the statements of income and cash flows, and the accompanying notes. The group accounts comprise the balance sheet, the statements of income and cash flows, and the accompanying notes. The rules of the Norwegian Accounting Act and generally accepted accounting practice in Norway have been applied to prepare the financial statements. These financial statements are the responsibility of the Foundation's Board of Directors and Managing Director. Our responsibility is to express an opinion on these financial statements and on other information according to the requirements of the Norwegian Act on Auditing and Auditors and the Norwegian Act on Foundations.

We have conducted our audit in accordance with the Norwegian Act on Auditing and Auditors and generally accepted auditing practice in Norway, including standards on auditing adopted by Den norske Revisorforening. These auditing standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. To the extent required by law and generally accepted auditing practice an audit also comprises a review of the management of the Foundation's financial affairs and its accounting and internal control systems. We believe that our audit provides a reasonable basis for our opinion.

In our opinion,

- the financial statements are prepared in accordance with law and regulations and give a true and fair view of the financial position of the Foundation and of the Group as of 31.12.2009, and the results of its operations and its cash flows for the year then ended, in accordance with generally accepted accounting practice in Norway
- the Foundation's management has fulfilled its duty to see to proper and well arranged recording and documentation of accounting information in accordance with law and generally accepted bookkeeping practice in Norway
- the information in the Board of Directors' report concerning the financial statements, the going concern assumption and the proposal for the allocation of the profit is consistent with the financial statements and complies with law and regulations
- the Foundation's management of affairs and distributions have been undertaken in accordance with law, the object of the Foundation and other respect of the articles of the Foundation.

Trondheim, 23 March, 2010  
Deloitte AS

Mette Estenstad (signed)  
State Authorised Public Accountant (Norway)

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*The United Nations' climate change panel and the International Energy Agency both say that improving energy efficiency in buildings will produce the largest and most rapid reductions in global greenhouse gas emissions.*

## Houses dressed for winter

Curious architects, researchers, politicians and developers come in droves to Løvåshagen Housing Association in Fyllingsdalen near Bergen.

Ever since Løvåshagen Housing Association opened in 2008, its houses have attracted a great deal of attention both in Norway and abroad. A steady stream of experts has travelled to Bergen to study the remarkably low energy consumption of the apartments that were built to the "passive house" low-energy standard.

"We can recognise them from far off, because they tend to turn up carrying professional camera equipment," says Pål T. Myklebust, chairman of the housing association board and himself an occupant of one of the houses.

It is an ice-cold January evening, with a full moon that casts a poetic light on this dormitory suburb on the outskirts of Bergen. Past the high-rise housing blocks, behind a supermarket and at the edge of a wood, lie four low-rise blocks of three to five storeys.

This is where the Myklebust family, one of the first to move into the low-energy houses, now lives. It is Friday, and the weekend mood has invaded the living room. Six-month-old Ruben lies half-dressed and gurgling happily on a blanket on the floor, close to his big brother Oskar, who at three years of age is watching children's television.

"We have only had the heating on twice so far in the course of this winter," say Annlaug and Pål.

Extra wall insulation, superinsulated windows and a ventilation system with heat recovery are the main causes of the low heating costs. The couple used to live in an draughty old house in the centre of Bergen. Since they moved, their heating bills have been drastically reduced, which pleases them a great deal.

"These are the houses of the future," says Tor Helge Dokka by telephone from his home office in Kongsberg. Dokka is a senior scientist in SINTEF Building Research and a leading expert in the design of passive energy-efficient housing.

Dokka has played a central role in the pilot project, and describes Løvåshagen as an example to be followed by the building industry.

SINTEF Building Research has done a great deal of work on low-energy and passive housing during the past few years. Zero-emissions housing is the next item on the research agenda, i.e. buildings that make no net contribution to any form of climate load in the course of their life cycle.

"The development of zero-emission buildings is a vital climate-protection measure that can help to deal with many of the environmental challenges that we face today," says Dokka.

According to a SINTEF Building Research report, it would be perfectly feasible to halve buildings' current energy consumption by 2040. The report documents that buildings are responsible for 40 percent of Norway's total energy use, and SINTEF challenges the construction industry to focus more on energy-saving in the future.

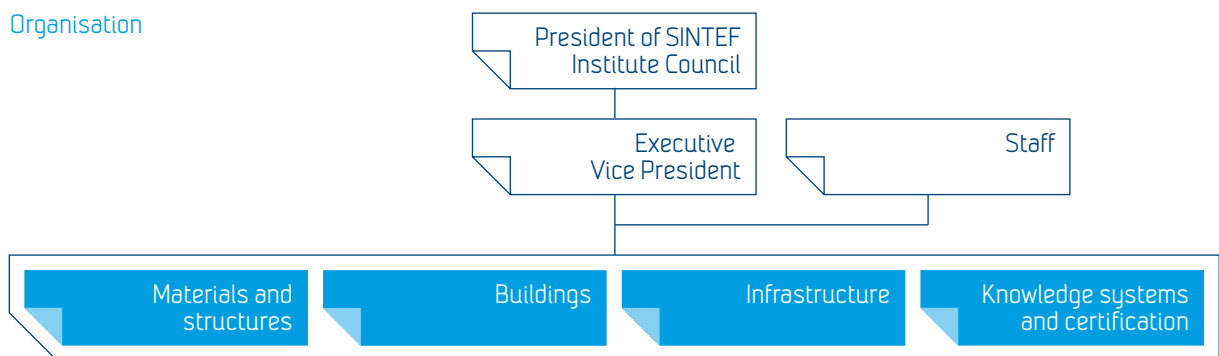
Seen from outside, roof-mounted solar panels are all that distinguish the Løvåshagen houses from their neighbours. In his apartment, Myklebust shows us the extra thick walls with their generous 40 cm of insulation, compared to the current 15 – 20 cm norm. This is one of the few visible signs that we find ourselves in a low-energy house.

"Løvåshagen is an important step on the way to the house of the future, which will supply its own energy," says Dokka. If we can believe him, such houses are not so far off either.

In the meantime, the Myklebust family say that they are more than happy with their energy-efficient house in the capital of Western Norway. They are one of the few Norwegian families who don't need to dread their next electricity bill, even after a winter that has been breaking records for cold weather.

# SINTEF Building and Infrastructure

## Organisation



## This is SINTEF Building and Infrastructure

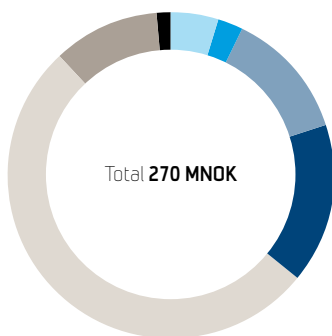
SINTEF Building Research is at the international leading edge of research. We solve problems related to the entire building process, and offer top-level expertise in disciplines ranging from architecture and building physics to management, operation and maintenance of buildings, geotechnology, roads, water and other types of infrastructure. We create value for our clients and for society through research and development, research-based specialist consulting activities, certification and knowledge transfer. An important goal for us is to contribute to sustainable development in the construction industry.

SINTEF Building Research is the leading Norwegian publisher of research-based knowledge. Via our knowledge systems, our own publishing company and SINTEF Certification, we have established a unique platform for disseminating knowledge to much of the construction industry. Close dialogue with industry has left us with a good understanding of our clients' current and future needs. Extensive cooperation with NTNU, leading industrial companies and other national and international research partners, in addition

to efficient utilisation of our laboratories, are fundamental to our range of activities.

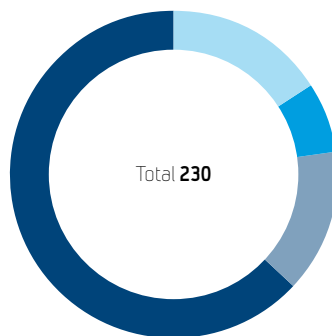
Our knowledge can make important contributions to meeting the global challenges that face us all. The construction industry is responsible for more than 40 percent of Europe's total greenhouse gas emissions. According to the UN's climate change panel, this is also the sector in which emission-reduction measures would bring the greatest pay-offs. The development of zero-emission buildings – i.e. buildings that make no net lifetime contribution to climate loads, are therefore an extremely important climate control measure. Through the Zero Emission Buildings research centre for environmentally friendly energy and the Concrete Innovation Centre, a centre for research-led innovation, we are developing new solutions for the built environment of the future. Through close collaboration with industry, we are developing methods and technical solutions for energy-efficient buildings and for buildings and infrastructure that are adapted to meet future climate challenges.

### Sources of finance (% of gross operating revenue)



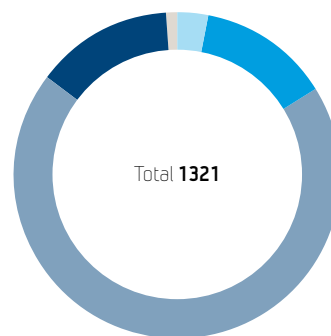
- RCN basic grant 5%
- RCN strategic programmes 3%
- RCN project support 13%
- Public sector 16%
- Industry and commerce 52%
- International contracts 10%
- Other sources of income 1%

### Employees



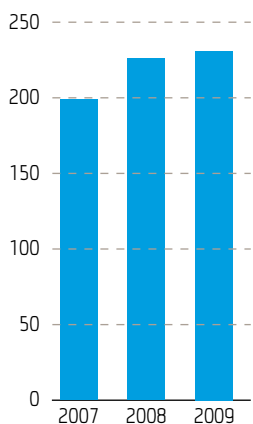
- Administration 36
  - Technical personnel 17
  - Engineers 33
  - Researchers 144\*
- \*Of whom 43 hold doctorates

### Publications (incl. communication)

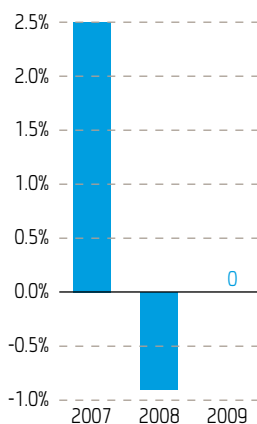


- Scientific articles in journals, series or anthologies 3.3%
- Scientific talks and posters 12.9%
- Reports 69.2%
- Popular science articles and talks 13.7%
- Academic books, textbooks, etc. 0.9%

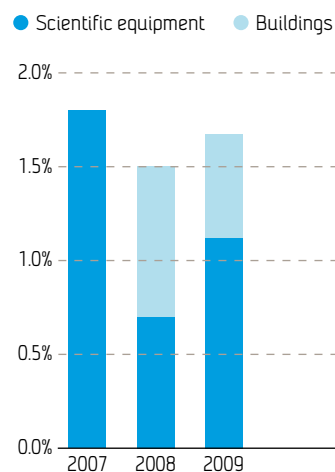
### Net operating revenue (MNOK)



### Net operating margin (%)



### Investments (% of net operating revenues)



5

PublicMe.com



Alexandra says: *weekend! Party!*

Page info Pictures

Contact info

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7000 Trondheim  
Norway  
Phone: +47 73 59 30 58  
Email: [ahboytoy27@gmail.com](mailto:ahboytoy27@gmail.com)

Bio

Sex: Female  
Date of birth: 1 April 1996  
Relationship Status: Single :)  
Statistics: 173 cm  
52 kg  
Blonde

Looking for:  
About

Sex, drugs & rock 'n' roll!  
Sporty girl (BMI 19,2) likes shopping and hanging out with friends. Looking for my dreamboy... toy 3' xox

VF 81456



SINTEF ICT Marika Hanne Lüders, Scientist and Petter Bae Brandtzæg, Scientist/PhD student



*The use of social media has exploded and may be threatening our personal privacy.*

## On the Web – without a safety belt

*"We cannot expect a 13-year-old to learn complicated US legal terminology, or to understand that our control of our own personal data disappears when we use Facebook."*

These are the words of Petter Bae Brandtzæg of SINTEF ICT. He and his colleague Marika Lüders are studying how we behave when we use new social media like Facebook, LinkedIn or Twitter.

The new media services have become an important tool for keeping up with our friends in the social environment of which we are all members. It has also become an important arena for professional networks. At the same time, the social media are issuing us with new challenges, such as maintaining control of our own personal information, according to the researchers. On behalf of the Norwegian Consumer Council, they have been adding to our knowledge of this field through a project called "Privat 2.0".

"We have talked with Norwegian Internet users, analysed media trends and interviewed Facebook users. What we see is that the more we use social media, the weaker becomes personal information and consumer protection," says Brandtzæg.

*"How does this happen?"*

"The problem lies in the design of the service, and in the fact that users do not know enough about how to use the Internet. Most of us have little understanding of how information flows and is stored on the Net, and we don't know how to protect ourselves and to be aware of the potential consequences," says Marika Lüders.

"For example that Facebook can use personal information for commercial purposes."

*"Such as?"*

"Advertisers and the advertising industry can profit from gathering personal information about the sort of music we like and about our other interests. If you have supported radical action groups, publis-

hed indiscreet photos or criticised public-sector organisations, such information can be used against you – for example, when you are applying for a job. Your zone of privacy shrinks, while the danger of identity theft and the number of unwanted contacts both increase."

Brandtzæg has been studying media trends, the Internet community and digital competence for several years, and is now working on a doctorate on these topics. Marika Lüders has adopted personal media and social technology as her field of research. Both of them believe that the use of social media will increase even more in the years to come. The rate of flow of information will be greater, and it will become quite impenetrable and chaotic for the individual user.

"The scope of Internet media such as Google Wave and mobile smartphones is increasing at a great rate, and people and objects are becoming ever more interconnected. Personal data protection is therefore likely to become even weaker in the future," claim the two researchers.

The interesting thing is that while Privat 2.0 interviewees actually do wish to keep control of their data, the fact that so many of their friends are already participating gives them a feeling of security. In any case, few people have actually heard of negative episodes, and no-one can be bothered to read complicated terms and conditions that may be as much as ten A4 pages in length.

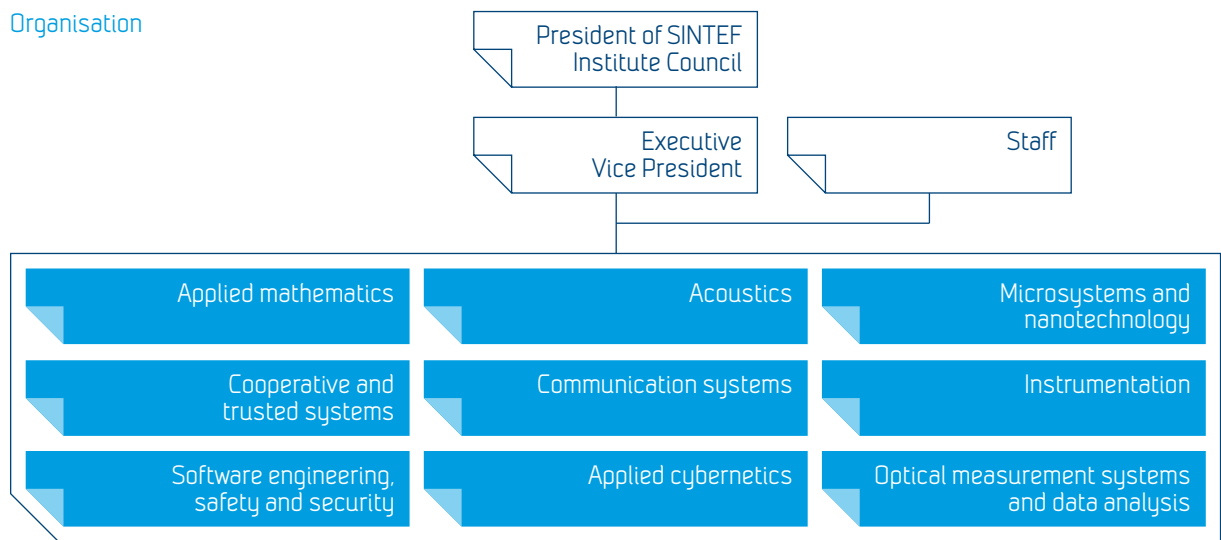
The SINTEF ICT researchers believe that Facebook must be accused of "system failure" as it operates at present.

"We think that the systems must be better designed to enable users to act more sensibly. We need a clear message about what types of personal information are stored – and the opportunity to change our settings," is the unambiguous advice of the researchers.



# SINTEF ICT

## Organisation



## This is SINTEF ICT

SINTEF ICT delivers research-based expertise and technology in the following three areas of technology: Micro- and sensor systems; Monitoring and information systems; and Calculation-oriented software.

In close cooperation with our partners and customers, we develop integrated solutions, products and services for a wide range of applications in a number of different national and international market segments.

SINTEF ICT collaborates at strategic level with several departments of NTNU and with the University of Oslo.

SINTEF ICT operates an ultra-modern micro/nano laboratory (MiNaLab), which is a world leader in the development and small-scale manufacture of radiation sensors. MiNaLab was established with the particular aim of carrying out research and development on complex products and processes, while offering its customers the possibility of small-scale production. MiNaLab is ISO certified.

In the field of safety-critical systems, SINTEF ICT has been appointed as technical control body for railway certification, and its certification programmes are carried out in accordance with the relevant EU directives.

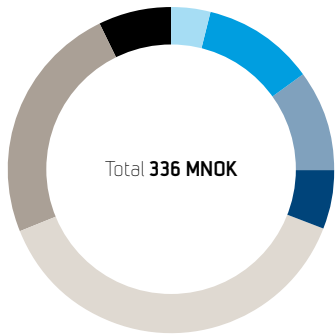
In SINTEF ICT, we focus on creating value for our customers and for SINTEF by delivering innovative solutions and results within agreed deadlines and budgets. We do this by putting conscious efforts into developing competence and technology that are capable of forming the basis of value creation in existing industry, and the establishment of new companies.

Technology, patents and intellectual property from SINTEF ICT have formed the basis of a number of Norwegian innovations and spin-off companies during the past few years; these include Nacre AS and Ocas AS. It is worth mentioning, for example, that advanced optical solutions from SINTEF ICT have played a decisive role in the development of AS Tområ's packaging recycling products, while our efforts in micro-optics are currently offering similar possibilities.

SINTEF ICT is a major participant in the EU's Framework Programme. We have gained this position by making conscious efforts vis-à-vis the EU in the course of several years.

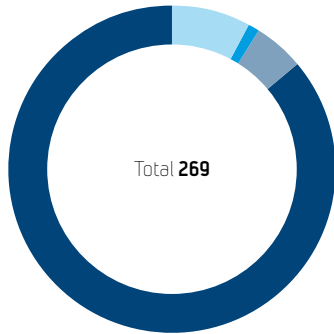
Participation in EU Technology Platforms (ETP) in the field of ICT means that we are playing an active role in the design of the Strategic Research Agenda (SRA) which is used as a baseline for the design of a wide range of working programmes.

### Sources of finance (% of gross operating revenue)



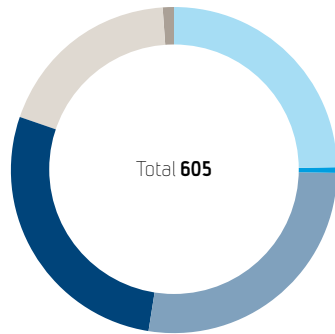
- RCN basic grant 4%
- RCN strategic programmes 11%
- RCN project support 10%
- Public sector 5%
- Industry and commerce 38%
- International contracts 24%
- Other sources of income 8%

### Employees



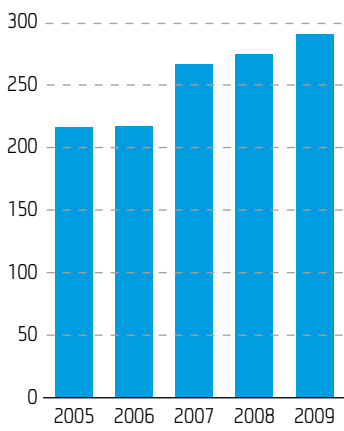
- Administration 21
  - Technical personnel 4
  - Engineers 14
  - Researchers 230\*
- \*Of whom 96 hold doctorates

### Publications (incl. communication)

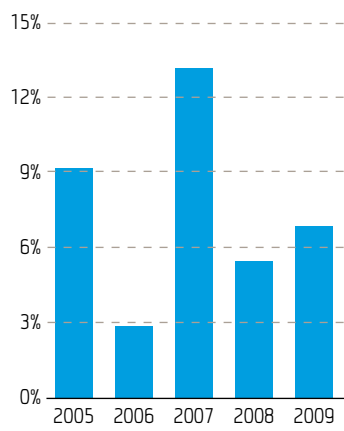


- Scientific articles in journals, series or anthologies 24.8%
- Academic monographs 0.5%
- Scientific talks and posters 27.3%
- Reports 27.8%
- Popular science articles and talks 18.6%
- Academic books, textbooks etc. 1.0%

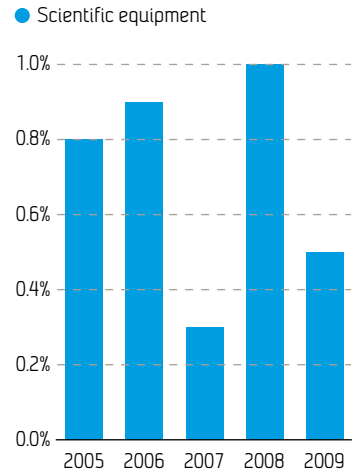
### Net operating income (MNOK)



### Net operating margin (%)



### Investments (% of net operating revenues)





## SINTEF Materials and Chemistry Christian Rone Simon, Research Manager



*One of the EU's environmental requirements was giving paint manufacturers a headache. Many thought that it would be impossible to satisfy it.*

# Nanomagic

A new type of paint has appeared on the shelves. It protects your wall as well as the environment.

Production of a new type of paint incorporating nanoparticles is in full swing at Jotun, the leading Norwegian manufacturer of powder-based and liquid paints.

Meanwhile, at SINTEF Materials and Chemistry in Oslo, research manager Christian Simon is pleased that industry is capable of utilising research results based on countless hours of hard work.

Simon's group shuffles and processes atoms and molecules as a matter of routine and uses them as the building blocks of functional materials. Four or five years ago, the group created nanoparticles by combining tough, hard inorganic materials with others that were organic, flexible and capable of being shaped. The result was a completely new class of materials with improved properties.

"With these particles, for example, we were able to create non-scratch plastics that did not yellow with age. On a work surface, a stove or a fridge top, these are important properties," says senior scientist Ferdinand Mönne, a central figure in the development of new technology.

Several of the scientists involved thought that the technology could also be of interest to a paint manufacturer, so SINTEF asked for a meeting with Jotun and was given a pilot project in 2005.

"However, to be perfectly honest, it didn't work well," laughs Simon. "The products that we tried to produce that time did not match the technology."

Some time later, the SINTEF researcher bumped into Jotun's director of R & D, Olav Mørstokk, at a professional conference.

The ball was picked up once again, and this time, the strict demands made by a European Union directive were a useful driving force. The directive obliged Norway to reduce emissions of volatile organic chemicals (VOCs) by 37 percent by 2010. This was a headache for Jotun's own chemists: it would be impossible to produce a low-VOC

paint on the basis of current paint technology. Paint application, drying time and durability all offered serious challenges.

"So this time, the technology was implemented in the manufacturer's own products," says Simon. "Since then, collaboration has been excellent, and in fact, we have left all our meetings with smiles on our faces."

*"So everyone is pleased now?"*

"This is the best oil-based paint that Jotun has ever produced, and the product would not have been as good without the use of nanotechnology," agrees Olav Mørstokk over the telephone.

"It certainly involves an enormous gain for the environment, not to mention the fact that the paint will be easier to apply and will be more weatherproof than ordinary paint," adds Christian Simon.

*"But many people are doubtful about the use of nanoparticles in products?"*

"Yes, but in Jotun's paint the nanoparticles have certain flow properties and they have been made in such a way that they bind themselves to the other components of the paint. When the paint is fully cured, the particles no longer exist as such; they have become an integral part of the polymer matrix," explains Simon.

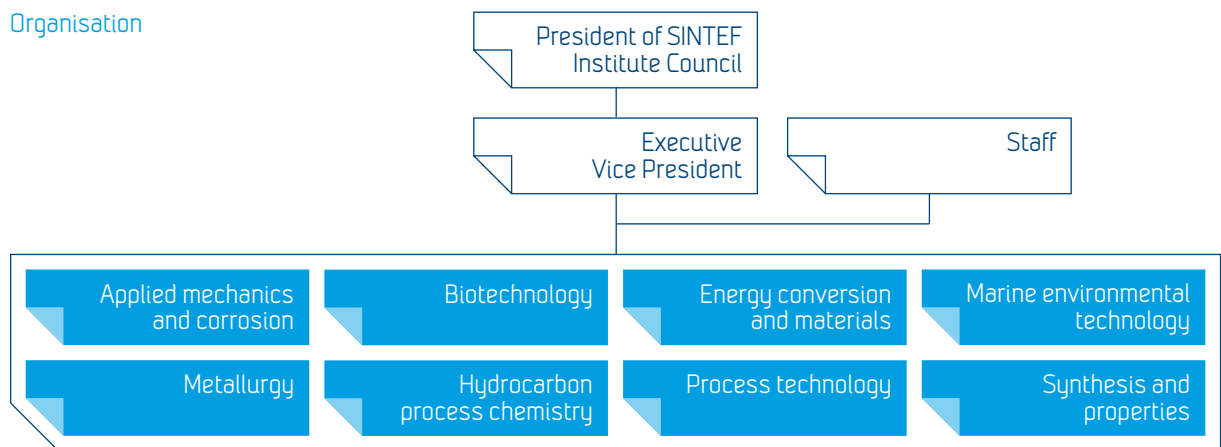
Now the tins of paint are ready for use, with SINTEF's logo clearly visible on their side.

Olav Mørstokk says that Jotun carried out a survey to find what associations the SINTEF name had for its customers, and since these were exclusively positive, the company decided to utilise the SINTEF reference.

"So now Jotun can manufacture and sell its new paint, within the strict limits set by the VOC directive, and with every pride in its product," concludes Christian Simon.

# SINTEF Materials and Chemistry

## Organisation



## This is SINTEF Materials and Chemistry

SINTEF Materials and Chemistry is a contract research institute offering a high level of expert knowledge in materials technology, applied chemistry and applied biology. Our most important clients come from the process industry sector, including the petroleum sector and the wood-pulp industry, in addition to the Research Council of Norway, the EU and international industrial companies. We focus on the following main areas of research: Materials and energy, Oil and gas, Biotechnology and bioscience.

We work closely with industry in the development of advanced materials, products, processes and tools. New renewable energy sources, focusing on silicon-based solar power, offshore wind-power and biorefineries, gas power with carbon capture and storage, biotechnology marine environmental technology and hydrogen technology are among the future-oriented topics that we are pursuing, and that make sustainable development a central aspect of the everyday working life of our colleagues.

In the course of the past few years, the Institute has grown considerably, and we currently employ more than 400 staff, of whom 100

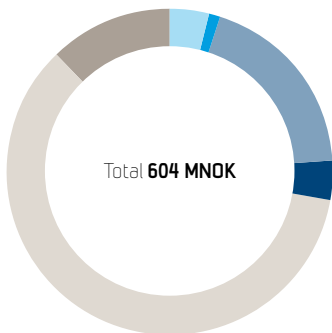
come from non-Norwegian backgrounds; in fact we have colleagues from forty different nations. Two-thirds of our research staff have doctoral degrees.

The Institute has eight scientific departments, which together cover the following areas:

- Advanced characterisation and analysis
- Biotechnology
- Chemical technology and process chemistry
- Renewable energy and energy conversion
- Environmental technology
- Flow technology
- Functional materials and nanotechnology
- Application properties of materials
- Production and recycling of materials
- Modelling and simulation
- Processing and production
- Synthesis and testing

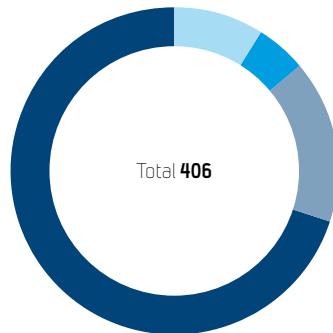


### Sources of finance (% of gross operating revenue)



- RCN basic grant 4%
- RCN strategic programmes 1%
- RCN project support 19%
- Public sector 4%
- Industry and commerce 60%
- International contracts 12%

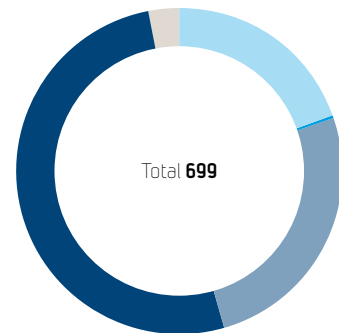
### Employees



- Administration 37
- Technical personnel 19
- Engineers 66
- Researchers 284\*

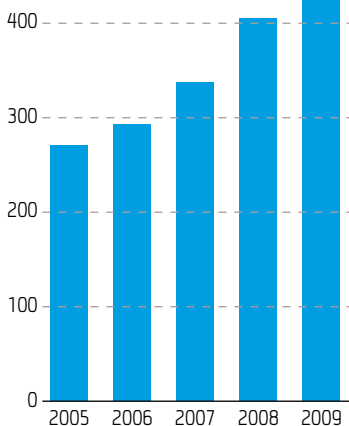
\*Of whom 190 hold doctorates

### Publications (incl. communication)

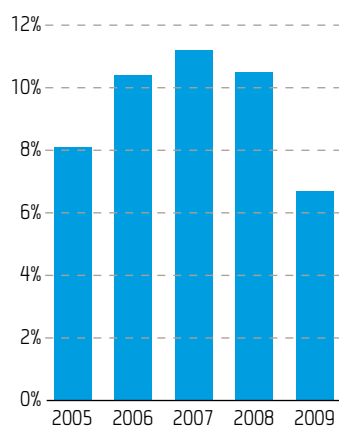


- Scientific articles in journals, series or anthologies 19.5%
- Academic monographs 0.1%
- Scientific talks and posters 26.0%
- Reports 51.4%
- Popular science articles and talks 3.0%

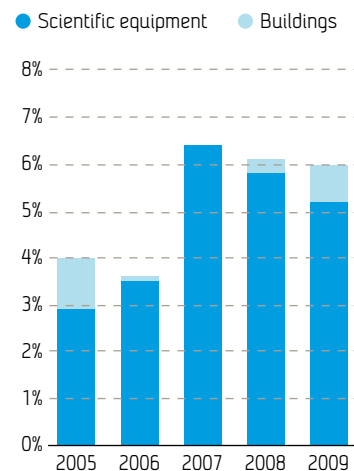
### Net operating revenue (MNOK)



### Net operating margin (%)



### Investments (% of net operating revenues)







*Norway's National Insurance scheme paid out NOK 17.2 billion in sick-leave benefits during the first six months of 2009, four times the cost of the new Opera House in Oslo. The people who look after others take most sick leave themselves.*

## Nurses in need of nursing

Ten thousand auxiliary nursing staff have given researchers the prescription for an alternative cure for the high rate of sick leave in the nursing and care sector.

"Give the sector more good managers. That would improve the health of auxiliary nurses more than everything else that has been suggested in the debate on sick leave in Norway."

That, in short, is the main conclusion of work researcher Solveig Osborg Ose and her colleagues in SINTEF Health Research. Their findings are based on the most comprehensive questionnaire study ever carried out among Norway's auxiliary nurses.

The 40,000 women and 3,000 men in this group of professionals make up the main part of the labour force in the nursing and care sector – a growing service supplier in our welfare-oriented society. At the same time, this sector suffers from the highest rate of sick leave in the labour market, which naturally leads to the question: What can we do about the problem?

The government-appointed expert group primarily wants to wield the financial whip on all employees who have chronic illnesses that keep them at home, in the hope of finding ways to make use of people on sick leave.

Ose, on the other hand, has long claimed that it is difficult to identify sensible specially adapted tasks in establishments whose primary aim is to provide nursing and care services. On the background of the questionnaire, she prescribes a quite different type of first-aid for auxiliary nurses, in the shape of measures that will stop them from becoming ill in the first place.

"The questionnaire was sent to 20,000 auxiliary nurses, and more than half of them replied. We have carried out a long series of analyses of their responses, from which we can see that better management on the ward floor is the single measure that would most reduce sick-leave rates among auxiliary nurses.

Solveig Osborg Ose leads SINTEF's specialist Work and Health group. The 37-year-old woman is one of Norway's best-known researchers in the field of sick leave and integration into working life. Her background includes responsibility for the evaluation of the national Integrated Working Life agreement.

*"So what you are saying is that it is management's fault that so many auxiliary nurses fall ill?"*

"Let me first stress that there are plenty of good managers in the nursing and care sector. But there are lots of poor ones too, and they are partly responsible for the sick-leave figures."

*"How do you know that?"*

"Statistical analyses of the responses to the questionnaire show that people's immediate managers are the most important factor in determining whether auxiliary nurses are content with their working situation, and research has consistently shown that lack of contentment at work leads to taking sick leave.

*"How can we get good managers?"*

"By placing more stress on managerial development, and becoming better at appointing managers with the right qualities. Such people look at the individual and her needs. They notice if someone is struggling, and they take early action to change the situation. But the bigger the group for which they are responsible, the more difficult it becomes to act pre-emptively. And many people have to manage fairly large groups."

*"Is it possible to get more good managers when the nursing and care sector is forever facing cuts in its budget?"*

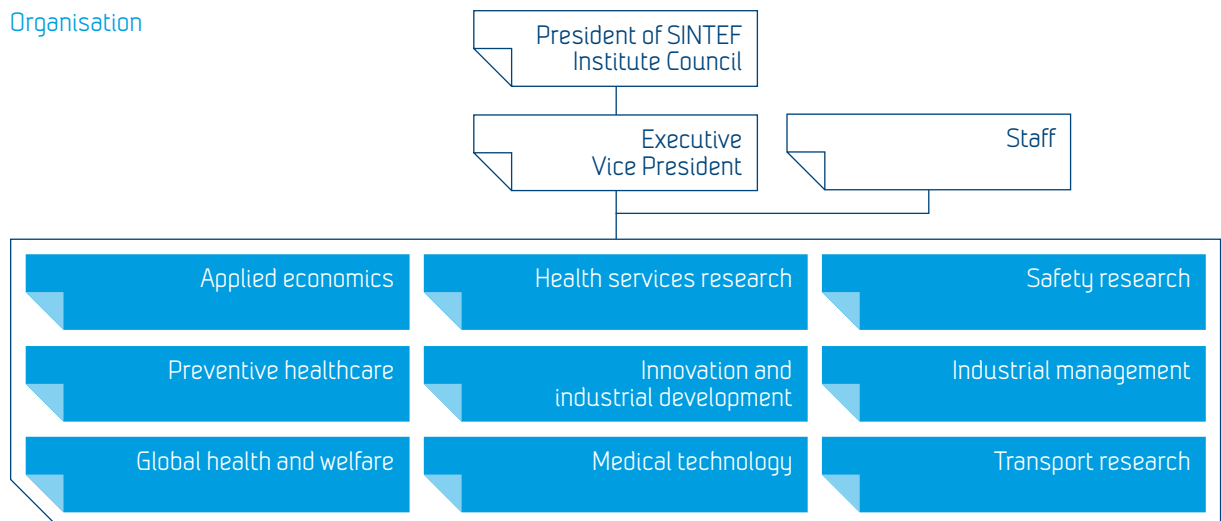
"We are actually doing research on that question too. Funding from Social Security will enable us to find out whether good managers in this sector are good because of their personal qualities or because they lead units that enjoy better basic conditions than others."

Solveig Osborg Ose says that the questionnaire study was financed by the Research Council of Norway's Public Health Programme.

"Our material is unique, because the list of questions was so comprehensive and the target group was so large and homogeneous, which means that the data can be used to analyse a wide range of problems. Research of this sort depends on people taking time to respond, so the auxiliary nurses deserve a lot of thanks. The high response rate also makes it more likely that they will be listened to, which after all is what we hope: that our sick nurses can become more healthy."

# SINTEF Technology and Society

## Organisation



## This is SINTEF Technology and Society

SINTEF Technology and Society is a multidisciplinary research institute that is active in both industrial technology and the social sciences. As well as being an important supplier of technology to business and industry, we also offer solutions to social problems in the fields of health, care services and welfare, dignified working conditions, a sustainable working life, and climate and the environment.

We develop technology and knowledge aimed at the creation of value in society. An integrated understanding of people, technology, organisation, economics and safety means that we have generic competence in all branches of industry and service provision. At the same time, we perform research, development and consultancy for specific sectors such as energy, health and transport.

Our three main areas of health, transport and technology management cover all of our nine research departments. On January 2010, we had a staff of around 300.

In the technology management area, we perform R & D for industry

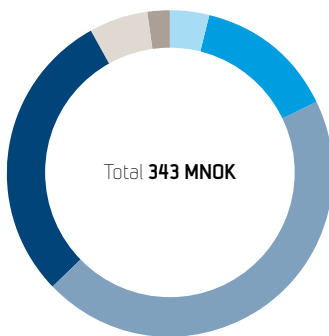
and the public sector, focusing on the interaction of technology, human resources, organisations and society. Our research contributes to the creation of value while paying close attention to safety and the environment. It is basic to our research that technological developments and the implementation of new technology and processes should be economically robust at both industrial and social economic level.

Our transport research focuses on future transport systems. Our multidisciplinary profile helps us to adapt technology to the needs of society. Our research in this sector is technologically oriented, and has the objective of developing safe, efficient and environmentally friendly transportation systems.

Our most important contributions to the health sector are in medical technology, health and care services, hospital planning, preventive healthcare and global health issues. Work and health is another important area of our research. We collaborate with research groups both within SINTEF and elsewhere in the development of new knowledge that will improve everyone's health and quality of life.

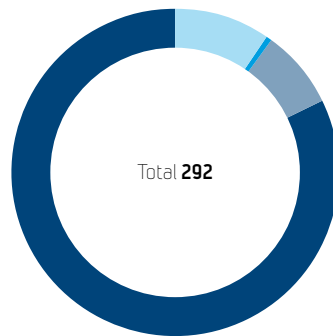


### Sources of finance (% of gross operating revenue)



- RCN basic grant 4%
- RCN project support 14%
- Public sector 45%
- Industry and commerce 29%
- International contracts 6%
- Other sources of income 2%

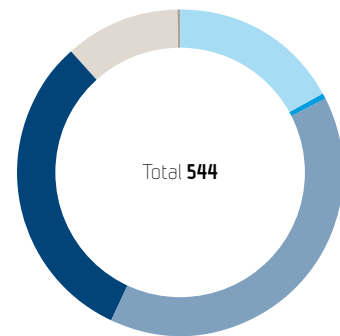
### Employees



- Administration 28
- Technical personnel 1
- Engineers 8
- Researchers 255\*

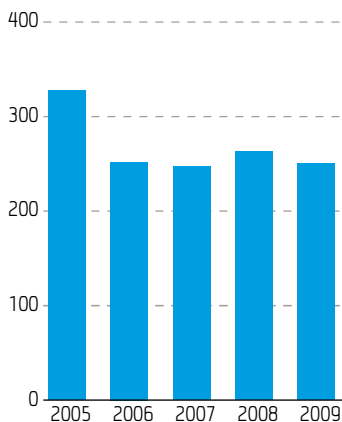
\*Of whom 88 hold doctorates

### Publications (incl. communication)

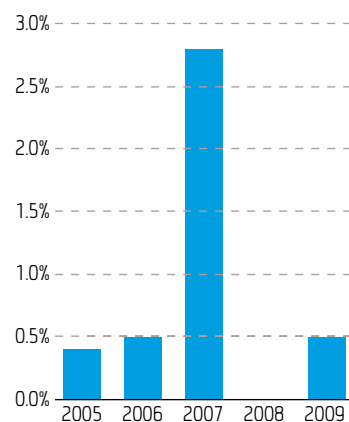


- Scientific articles in journals, series or anthologies 17.1%
- Academic monographs 0.4%
- Scientific talks and posters 39.5%
- Reports 31.6%
- Popular science, articles and talks 11.2%
- Academic books, textbooks, etc. 0.2%

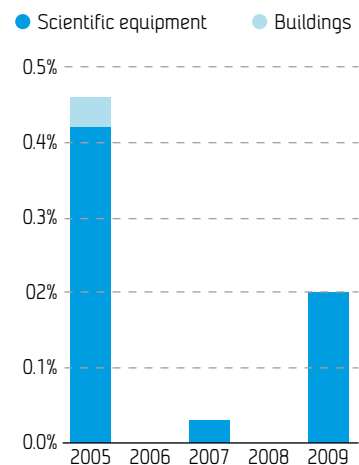
### Net operating revenue (MNOK)



### Net operating income (%)



### Investments (% of net operating revenues)







Are you hoping that our planet's "fever" will be limited to a temperature rise of 2 – 2.4° C? If so, our CO<sub>2</sub> emissions in 2050 will have to be between 50 and 85 percent lower than they were in 2000, says the UN's Climate Change Commission.

## The carbon cure

Energy efficiency and renewable energy will not be sufficient. The International Energy Agency's crystal ball reveals that the fight for our climate will also require CO<sub>2</sub> capture and storage.

The reports from the International Commission on Climate Change and Development have given the world a new insight: "Some alterations in the climate are unavoidable. The threshold of acceptability lies at a rise of two degrees in the annual mean temperature of the planet." The EU has adopted this line, and the Copenhagen conference did the same.

Many people believe that there are only two possible answers to this challenge: more efficient production and consumption of energy, and the use of renewable sources of energy.

*"And then you come along and say that carbon capture and storage (CCS) is also needed. On behalf of SINTEF, you are leading a national research centre in this field. Why do we need CCS, Mona Mølrvik?"*

"Estimates from the International Energy Bureau say that energy efficiency measures and the use of renewable energy will not be enough. According to the IEA, CCS will be responsible for about one fifth of the cheapest cuts in emissions that could keep us within the "two degree limit" by 2050."

*"And what does that figure mean in practice?"*

"What it means is that the world will need to have built 3400 plants for capturing CO<sub>2</sub> from coal- and gas-fired power stations and industrial complexes, and to have stored the captured gas safely in porous rocks under the seabed or the earth's surface."

*"But will we be using fossil fuel in 2050?"*

"Yes. Even with intensive efforts being put into efficient energy consumption and renewable sources of energy, the world will still need coal, oil and gas. Without these resources, it will be impossible to meet the energy requirements of the world's rapidly growing population. Eighty percent of the world's energy consumption is based on fossil sources. CCS offers us the prospect of being able to continue to use fossil fuels with much lower emissions than we release today."

*"In the EU's research programmes, no-one has won as many CCS projects as you at SINTEF and NTNU. What are the aims of the research on CCS that you are doing?"*

"The aim is to help CCS to be implemented safely and to make it significantly cheaper. We also want to ensure that CO<sub>2</sub> can be transported safely and efficiently in pipelines to storage sites, and to find out more about how to identify impermeable geological storage sites for CO<sub>2</sub>, and ensure that these can be monitored responsibly. Capture, transportation and storage are closely linked, so we need to make sure that a good solution to any one of these links in the chain will not create problems for the next one."

*"According to the media, the planned full-scale plant at Mongstad will be expensive. Why is it so dear to capture CO<sub>2</sub> from fossil-fuelled power stations?"*

"Current capture technology, which is in use on the Sleipner field, for example, was originally developed for quite other purposes. Power stations require special solutions. In all technology development, the first results are expensive, which is why research into CCS is important. One of our aims is to cut costs."

*"What are you doing to make CCS cheaper?"*

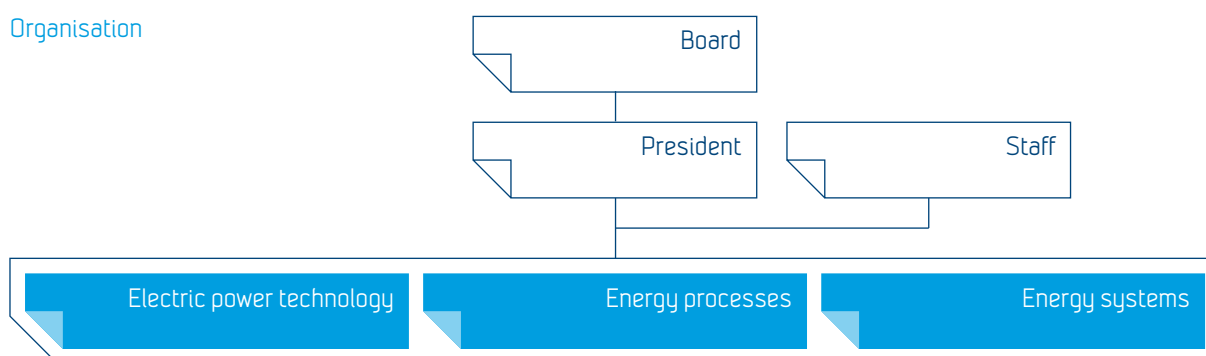
"Chemicals can be used to "scrub" CO<sub>2</sub> out of power station flue gases, and we are in the middle of studies that can make this process cheaper. Membranes are another potential way of doing this. Together with our partners, we have already developed a promising membrane that could reduce the energy needed to capture CO<sub>2</sub>, and we are also looking at how the gas can be used for enhanced oil recovery. These are just some of the things we are doing. And all this will strengthen the potential of CCS as an industrial sector in Norway. If CCS can be implemented on a large scale, the market will be enormous."

*"But will the technology be reasonable enough in price for CCS to take off?"*

"Many countries have huge amounts of fossil fuels that they wish to exploit. If CCS becomes a condition of use of these resources, it will be introduced on a large scale sooner or later. Higher CO<sub>2</sub> quota trading prices or carbon taxes, coupled with technology development, will make CCS competitive. But remember that research takes time. CCS is not going to become dramatically cheaper overnight."

# SINTEF Energy Research

## Organisation



## This is SINTEF Energy Research

SINTEF Energy Research develops solutions related to power generation and conversion, transmission and distribution, and end-use of energy both onshore and offshore/subsea. We deal with everything from indoor climate and energy use in buildings to gas technology, combustion, bio-energy, environmental impacts, refrigeration tech-

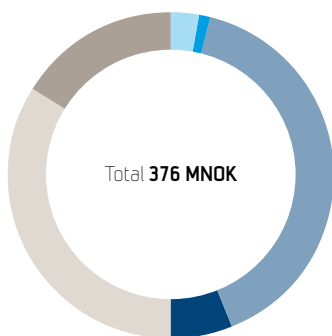
nology and thermal processing of foodstuffs. The institute has three research departments: Electric Power Technology, Energy Processes and Energy Systems. Together with NTNU, the institute has 7000 square metres of laboratory space with advanced equipment for research, teaching and development at its disposition.

## Main financial figures

MNOK	2005	2006	2007	2008	2009
<b>Result</b>					
Gross operating revenue	211	246	262	299	376
Net operating revenue	165	186	195	214	256
<b>Operating result</b>	<b>4</b>	<b>13</b>	<b>15</b>	<b>21</b>	<b>20</b>
<b>Annual result</b>	<b>17</b>	<b>28</b>	<b>27</b>	<b>30</b>	<b>33</b>
<b>Balance</b>					
Fixed assets	56	50	61	70	83
Liquid assets	169	237	255	324	390
<b>Sum assets</b>	<b>225</b>	<b>287</b>	<b>316</b>	<b>394</b>	<b>473</b>
Equity capital	146	174	196	226	258
Debt	79	113	120	169	215
<b>Sum equity capital and debt</b>	<b>225</b>	<b>287</b>	<b>316</b>	<b>394</b>	<b>473</b>
<b>Profitability</b>					
Operating margin %	2.6	7.0	7.5	9.8	7.8
Total profitability %	8.3	11.0	7.8	8.4	7.7
Profit on equity %	12.3	17.5	14.7	14.3	13.2
<b>Liquidity</b>					
Net cash flow from operations	-13	49	21	22	63
Degree of liquidity	2.8	2.5	2.6	2.2	2.0
<b>Solidity</b>					
Equity capital in %	65.0	60.7	62.1	54.3	54.6
Operating working capital	89	122	147	167	190

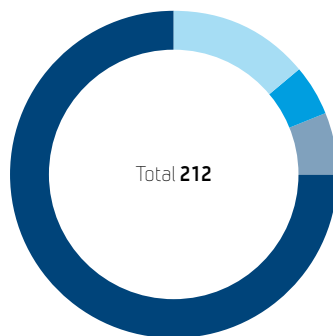


### Sources of finance (% of gross operating revenue)



- RCN basic grant 3%
- RCN strategic programmes 1%
- RCN project support 40%
- Public sector 6%
- Industry and commerce 34%
- International contracts 16%

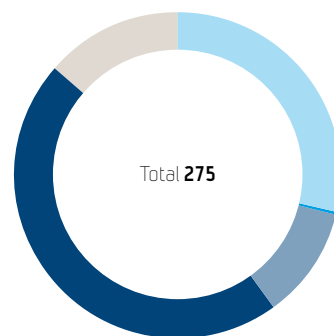
### Employees



- Administration 29
- Technical personnel 10
- Engineers 12
- Researchers 161\*

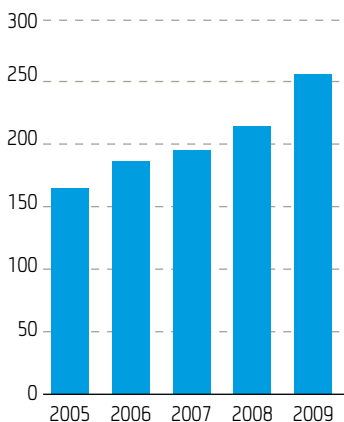
\*Of whom 77 hold doctorates

### Publications (incl. communication)

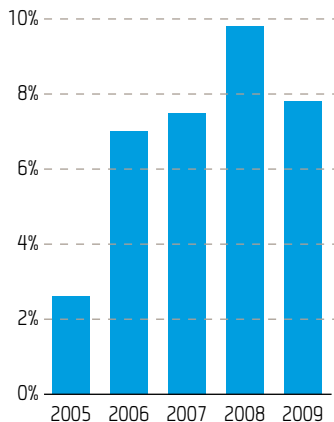


- Scientific articles in journals, series and anthologies 79
- Academic monographs 1
- Scientific talks and posters 30
- Reports 128
- Popular science articles and talks 37

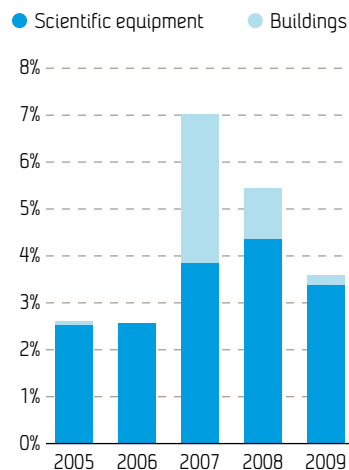
### Net operating revenue (MNOK)



### Net operating margin (%)



### Investments (% of net operating revenues)





Cafeteria

Truck Diesel

95 EMPTY

D diesel EMPTY





*Even under the greenest scenarios for the future, the world will still need oil in 2050. But bringing it ashore will be more difficult than it has been so far.*

## Essential drops

New arteries of supply will keep oil-rich Norway vital far into its old age.

In front of me, a bright liquid mixed with bubbles of gas flows in rolling waves through a sturdy plexiglas pipe. We are out in the countryside, in Tiller just south of Trondheim, in a recently inaugurated laboratory hall. A calm voice tells me what I am seeing in the pipe.

"This is multiphase transport. This is how huge pipelines on the seabed transport oil, gas and water together. The liquid/gas mixture comes right out of the well and in many cases it is brought directly ashore; no platforms are involved. Now pipeline routes and types of oil are on the horizon that will be quite a bit more difficult to deal with."

Jon Harald Kaspersen leads SINTEF's Multiphase Laboratory, which has just been upgraded. In the new hall, the network of arteries that will carry oil across the seabed in the future is being developed via medium-scale experiments.

"The oil and gas that we will be producing in the future is relatively inaccessible," says Kaspersen. "Some multiphase pipelines will have to carry them from water depths of several thousand metres over very long distances and up steep slopes on the seabed. Much of the oil in these pipelines will have different characteristics from today's product. These are not trivial problems. But with the new facilities here, we can help to make it all work."

*In the laboratory, the research director talks of the scenarios for the future that have been set out by the International Energy Agency.*

"Even under the greenest scenario, we will still be using a lot of oil and gas in 2050. The energy requirements of an ever-growing global population cannot be met in any other way. This makes it all the more important to bring our petroleum resources safely and efficiently ashore from the difficult reservoirs that are lying there waiting for us. This is how multiphase research can help to protect both individuals and companies from energy crises."

The forty-five-year-old scientist explains that much of the oil that is still to be exploited lies in small fields, and it would be too expensive to build a platform for each of them. Multiphase transport to a neighbouring platform will therefore become even more common than it is now. These pipelines also carry water from the reservoir. Today, it is brought up to the platform deck for separation. Research in the new

plant at Tiller will help to identify methods of separating it on the seabed instead, before it is re-injected into the reservoir, thus saving a great deal of energy.

"The challenges of multiphase transport and the need to separate the water from the oil and gas on the seabed are the reasons why SINTEF has invested NOK 35 million of its own funds in the new laboratories up here," says Kaspersen.

Outside the lab, I can glimpse the new facility's big brother, the largest laboratory of its kind in the world. The Large-Scale Facility opened in 1983, and the pioneering work of the Institute for Energy Technology (IFE) and SINTEF in the following years made seabed multiphase transport feasible over long distances: one of the important reasons why offshore fields gradually came to be developed without platforms. This has saved the offshore industry huge costs and led to the development of fields that would otherwise have been unprofitable, which in turn has earned enormous sums of money for the Norwegian society.

These large-scale experiments are still being performed. According to Kaspersen, one of the reasons that the new facility is also needed is the high viscosity of the oil that will be produced from many forthcoming developments.

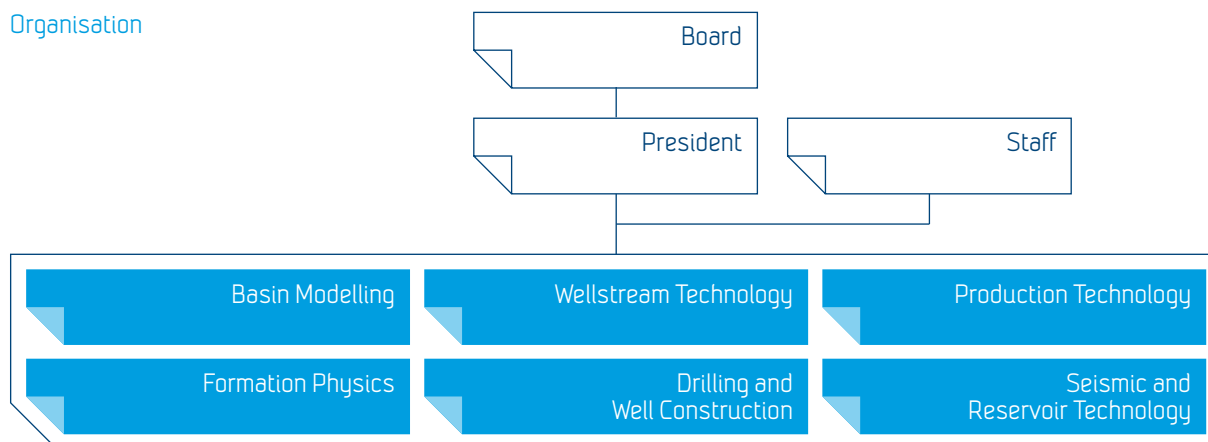
"Oils of this sort increase the risk of wax and ice-like hydrate crystals forming in multiphase pipelines. Our countermeasure is to generate new knowledge of the interactions that take place between flow regimes and the surface chemistry of oil droplets. In the medium-scale flow loop we can study flow with non-explosive fluids, while in new explosion-proof laboratory cells a short distance away we perform experiments on the chemistry of "the real stuff"."

*The petroleum industry is extremely interested in these problems. Statoil's research director Morten Loktu puts it this way:*

"All the barrels of oil and cubic metres of gas that were going to be easy to develop have already been developed. Now we are faced with ever more complex types of oil and gas, in deeper waters, further north and below the ice, which is why we need new knowledge and technology."

## SINTEF Petroleum Research

### Organisation



### This is SINTEF Petroleum Research

SINTEF Petroleum Research concentrates on R & D for economic and environmentally sound exploration and production of national and international petroleum resources. In the course of 40 years of experience in petroleum research, we have made significant contributions to Norwegian exploration and production technology, and today we have clients and partners on every continent. The Institute cooperates with other research institutes and with several universities, and it has a particularly close relationship

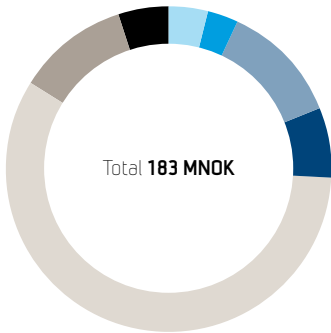
with NTNU. SINTEF Petroleum Research is located in Trondheim, Bergen and Stavanger, and we also operate a sales office in Houston. Our laboratories provide an essential foundation for much of our research and development. One important example of this is the Multiphase Flow Laboratory, whose new facilities were completed in 2009. It is now well-equipped to meet future needs for subsea petroleum processing and transportation.

### Main financial figures

MNOK	2005	2006	2007	2008	2009
<b>Result</b>					
Gross operating revenue	130	144	166	196	183
Net operating revenue	100	108	123	145	140
<b>Operating result</b>	<b>-7</b>	<b>8</b>	<b>13</b>	<b>12</b>	<b>8</b>
<b>Annual result</b>	<b>-4</b>	<b>10</b>	<b>50</b>	<b>17</b>	<b>15</b>
<b>Balance</b>					
Fixed assets	33	33	26	39	60
Liquid assets	114	139	193	210	194
<b>Sum assets</b>	<b>147</b>	<b>171</b>	<b>219</b>	<b>249</b>	<b>254</b>
Equity capital	85	96	146	163	178
Debt	62	76	73	87	76
<b>Sum equity capital and debt</b>	<b>147</b>	<b>171</b>	<b>219</b>	<b>249</b>	<b>253</b>
<b>Profitability</b>					
Operating margin %	-7.3	7.5	10.3	8.4	5.9
Total profitability %	-2.6	7.9	24.4	7.7	6.2
Profit on equity %	-4.5	11.5	41.6	11.11	8.9
<b>Liquidity</b>					
Net cash flow from operations	-1	13	40	30	-32
Degree of liquidity	1.9	1.8	2.6	2.7	2.9
<b>Solidity</b>					
Equity capital in %	58	56	67	65	70
Operating working capital	47	62	118	114	108

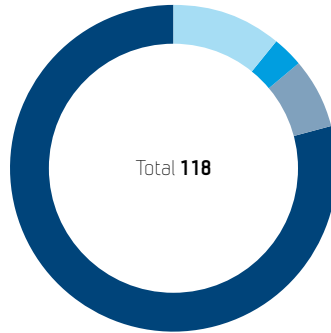


### Sources of finance (% of gross operating revenue)



- RCN basic grant 4%
- RCN strategic programmes 3%
- RCN project support 12%
- Public sector 7%
- Industry and commerce 58%
- International contracts 11%
- Other sources of income 5%

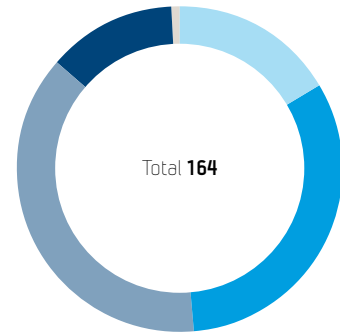
### Employees



- Administration 13
- Technical personnel 4
- Engineers 8
- Researchers 93\*

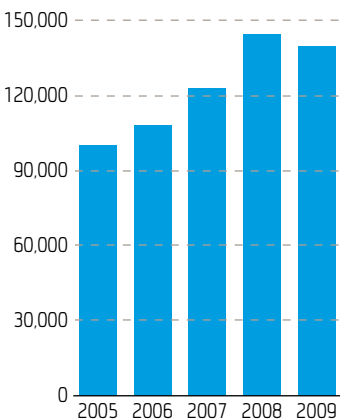
\*Of whom 61 hold doctorates

### Publications (incl. communication)

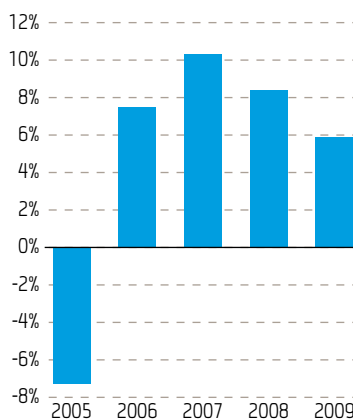


- Scientific articles in journals, series or anthologies 16.5%
- Scientific talks and posters 32.3%
- Reports 37.8%
- Popular science articles and talks 12.8%
- Academic books, textbooks, etc. 0.6%

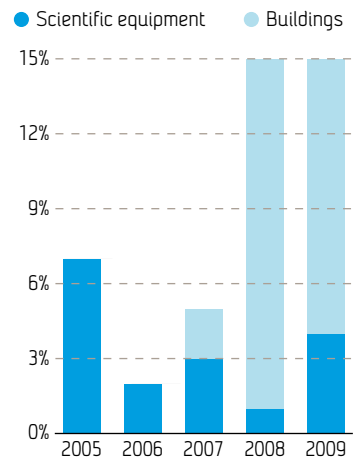
### Net operating revenue (MNOK)



### Net operating margin (%)



### Investments (% of net operating revenues)





## SINTEF Fisheries and Aquaculture Arne Fredheim, Research Manager



*According to Fisheries Directorate figures, 170,000 salmon escaped from fish-farm sea-cages in Norway last year.*

# No trespassing

Escaped farmed salmon, and salmon lice that infect wild stocks, are making trouble for the Norwegian aquaculture industry. What can we do about these problems?

Research Manager Arne Fredheim at SINTEF Fisheries and Aquaculture is trying to minimise the problems caused by salmon that escape from fish farms.

*"Why do salmon escape?"*

"The reasons for this are complex. Overloaded sea-cages, chafing from mooring-chains or wear caused by propellers can all produce holes in the net. In the worst case, the whole sea-cage may come to grief as a result of design faults such as poorly dimensioned components."

*"What is the most serious problem caused by salmon escapes?"*

"Our biggest worry is that farmed salmon may breed with wild salmon and modify their genetic material. In the worst case, this could produce fish that are less well adapted to life in the wild and less capable of reproducing. But farmed salmon can also suffer from other diseases than wild fish, and they can infect them with these. We also know that farmed salmon are often hosts to salmon lice, which can be lethal if there are too many of them."

*"How many escapees are there relative to the number of wild salmon?"*

"According to the Directorate of Fisheries, 170,000 salmon escaped in 2009. This is about one tenth of a percent of the total number of fish in Norwegian sea-cages. The number of wild salmon that swim into the Norwegian coast every year is somewhere between 500,000 and one million. The problem is thus that even a thousandth of the total number of farmed fish is equivalent to a large proportion of the wild stock."

*"What can be done to prevent escapes?"*

"A great deal, and this is something that we have been working on for more than 20 years, not least by improving our understanding of how to design fish farm equipment and make it more secure. When new legal requirements regarding certification and technical standards for fish farms came into force in 2004, SINTEF made important con-

tributions to the new regulations."

"In the course of the past few years, we have done a great deal to improve individual components such as nets, attachment points and moorings. New materials and equipment will make important contributions to reducing and preventing escapes. We are also engaged as independent experts when accidents do happen. One thing that this sort of work has revealed is that chafing of nets on chains is a serious problem that needs to be solved."

*"What is SINTEF doing to deal with the problem of salmon lice?"*

"We have a lot of faith in the cultivation of fish called wrasses, which eat salmon lice. Because the particular species that is used for this purpose is wild-caught, it is in great demand, and we are trying to cultivate it."

"We also looking at how traditional treatments for salmon lice can be made more efficient. This is largely a matter of working out how to use the least possible amount of medicine to the greatest effect."

"Lice can also be spread from one farm to another by the current. Advanced computer models enable us to estimate how currents flow along the coast and in fjords. In turn, this helps us to identify the best sites for fish farms in terms of minimising the spread of salmon lice."

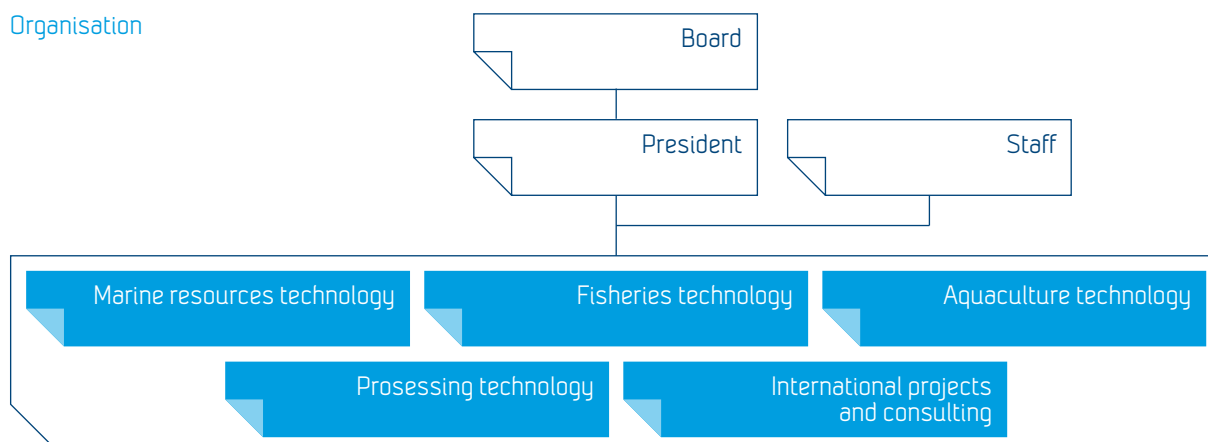
*"Is the aquaculture industry taking these problems seriously?"*

"Yes. The industry itself has set zero escapes as its vision, and it was the driving force behind efforts to draw up regulations for the certification and standardisation of fish farms (NS 9415). In the course of the past few years, the number of escapes from salmon farms has also fallen significantly, in part as a result of these regulations."

"The industry has also contributed to the establishment of the CREATE Research Centre, which is led by SINTEF Fisheries and Aquaculture. The aim of the Centre is to develop the aquaculture technology of the future. Sustainable fish-farming, and in consequence, fewer escapes, are central topics in this connection."

# SINTEF Fisheries and Aquaculture

## Organisation



## This is SINTEF Fisheries and Aquaculture

SINTEF Fisheries and Aquaculture Research AS is a leading European technological research institute for the fishing and aquaculture sector, which is our most important source of clients. Our technological research and development covers the entire marine value chain. The Institute is located together with NTNU at SINTEF Sealab on Brattøra Quay in Trondheim, where the two institutions have gathered together their seawater-based activities. SINTEF Sealab contains a modern process hotel for processing marine raw materials and a process laboratory for the production of marine fry. In 2009, we opened a full-scale research centre for floating aquaculture technology; AquaCulture Engineering, or ACE, in Bjugn Municipality on the Trøndelag coast. The Centre will combine science, technology and practice with the aim of bringing

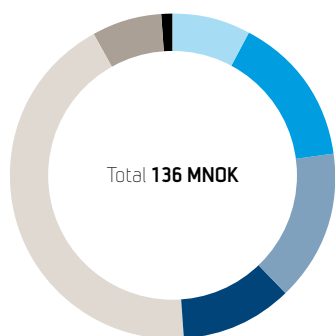
together aquaculture and technology companies and research centres in a common arena for developing solutions to current and future operational and environmental challenges. The Institute also owns and operates a flow tank for testing fishing gear in Hirtshals in Denmark. We have project offices in Ålesund and in Vietnam, and a subsidiary company in Chile. We collaborate with universities and research institutes in Norway and abroad, and with other SINTEF institutes, and we are the host institution for the Centre for Research-based Innovation in Aquaculture Technology (CREATE). SINTEF Fisheries and Aquaculture Research aims to contribute to the sustainable exploitation of renewable marine resources at national and international level.

## Main financial figures

MNOK	2005	2006	2007	2008	2009
<b>Result</b>					
Gross operating revenue	83	88	102	117	136
Net operating revenue	61	66	81	89	104
<b>Operating result</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>3</b>
<b>Annual result</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>1</b>
<b>Balance</b>					
Fixed assets	11	12	18	23	17
Liquid assets	30	30	41	48	47
<b>Sum assets</b>	<b>41</b>	<b>42</b>	<b>59</b>	<b>71</b>	<b>64</b>
Equity capital	12	15	25	26	24
Debt	29	27	35	44	41
<b>Sum equity capital and debt</b>	<b>41</b>	<b>42</b>	<b>59</b>	<b>71</b>	<b>64</b>
<b>Profitability</b>					
Operating margin %	3.6	4.0	5.5	1.7	2.9
Total profitability %	5.2	6.3	8.8	2.4	1.5
Profit on equity %	21.6	20.8	25.8	5.3	0.0
<b>Liquidity</b>					
Net cash flow from operations	5	1	5	7	2
Degree of liquidity	1.3	1.4	1.4	1.3	1.4
<b>Solidity</b>					
Equity capital in %	30	35	42	37	37
Operating working capital	7	8	12	10	13

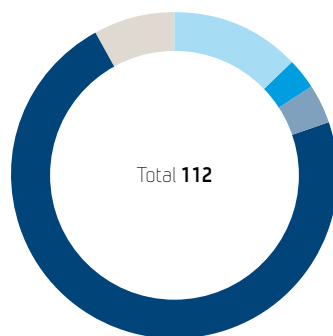


### Sources of finance (% of gross operating revenue)



- RCN basic grant 8%
- RCN strategic programmes 15%
- RCN project support 15%
- Public sector 11%
- Industry and commerce 43%
- International contracts 7%
- Other sources of income 1%

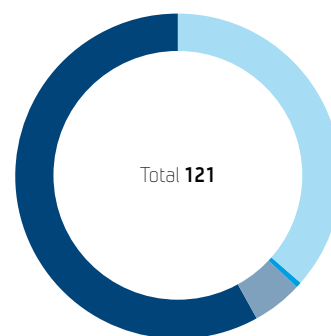
### Employees



- Administration 14
- Technical personnel 3
- Engineers 4
- Researchers 82\*
- PhD students 9

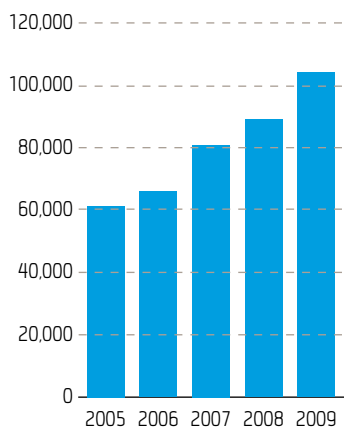
\*Of whom 40 hold doctorates

### Publications (incl. communication)

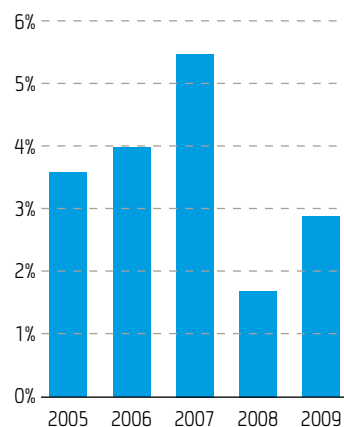


- Scientific articles in journals, series or anthologies 36.4%
- Academic monographs 0.8%
- Scientific talks and posters 5.0%
- Reports 57.8%

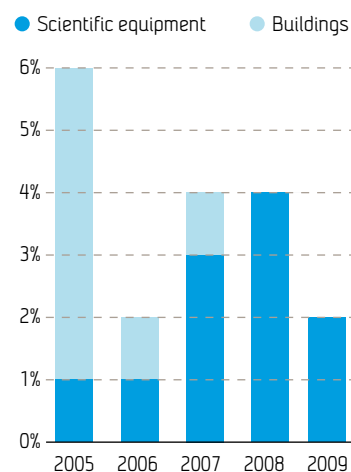
### Net operating income (MNOK)



### Net operating margin (%)



### Investments (% of net operating revenues)





**MARINTEK** Kourosh Koushan, Research Director



*HSE offshore industry requirements are strict. Platforms that lack safe evacuation routes can be closed, costing operators many millions.*

## Newborn life-saver

A newly-developed lifeboat is the baby of the offshore industry – and it's quite a tough character.

"A good lifeboat has to be able to take a great deal of punishment," says chief scientist Kourosh Koushan, as he shows me a yellow model. The metre-long dummy reminds me of a rocket; its roof seems to be as solid as the hull. The little model has black and white crosses painted on its sides and top: these are calibration marks that enable a camera to reveal every little detail when the model is used in tests.

And that is just as well: a lifeboat must be able to withstand a drop of as much as 36 m from the platform into the sea, without the vessel itself or its passengers suffering damage or injury.

But it has not always been thus. Five years ago, the Norwegian Oil Industry Association (OLF) carried out a full-scale test of a lifeboat. The results were alarming: when the almost 14 m-long boat weighing nearly 16 tonnes hit the water, the roof gave away.

"This result had huge implications for the offshore industry, because health and safety are extremely important offshore. If a platform is closed because it is not safe enough, it costs the operator a lot of money," explains the chief scientist.

The trial made OLF search its pockets for research funds, and it decided that all Norwegian rescue equipment would have to be tested.

Ever since, MARINTEK scientists have been working on what is known as the Lifeboat Project, which involves a whole series of ship models, propellers, hulls, and innovative models, not to mention technicians, craftsmen, engineers, divers and researchers. With professional precision they have developed one innovative concept after another with the help of SINTEF's many workshops.

The whole thing is led by ship expert Kourosh Koushan, who grew up in the centre of Iran – miles from the sea. In 1983, the universities of Iran were closed down because of the Cultural Revolution. Young Kourush left his homeland and travelled to India and studied to become a ship's engineer.

"I had only ever seen one ship with my own eyes when I started my education," he chuckles. It must have been love at first sight. Ever since, ships and the sea have been fundamental parts of his existence. Today, in conjunction with SINTEF, his employer is the largest Marine Technology laboratory in Europe, and his most important project deals with lifeboats.

Both the routine tests and the models for the lifeboat project have been developed here in MARINTEK's laboratories. More than 25,000 drop-trials with 16 different lifeboats have already been carried out, all of them strictly calculated, monitored and filmed using a high-speed camera; the data are logged in a huge database.

"The database is used as the starting point for thousands of simulations. It calculates the boat's capacity to escape from the platform under any weather conditions, and has already contributed to the development of new lifeboats," says the chief scientist.

On top of this, MARINTEK has carried out more than 250 full-scale tests of lifeboats.

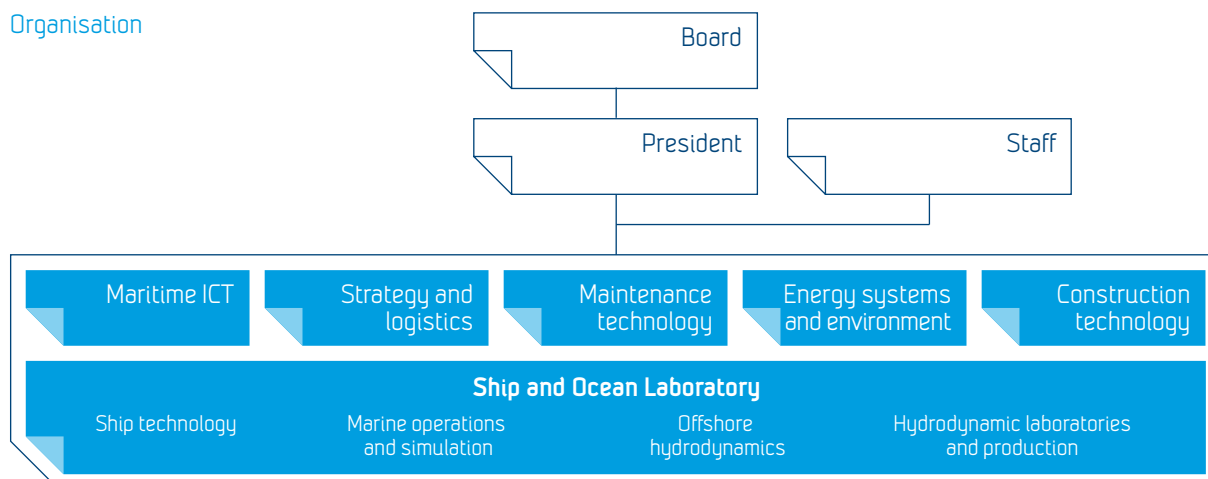
"Our aim is that all evacuation boats should be so safe that they can handle a hundred-year wave," says Koushan. Such a wave would have a height of around 16 metres, and would be capable of crushing houses and overturning trucks. Although Koushan and his team have already been responsible for more than 25,000 trials, he is still not content.

"So far, our work has meant that all lifeboats installed on platforms on the Norwegian continental shelf must observe new requirements regarding structural strength and must have approved seats and seatbelt systems installed."

"All this will make platform evacuations in Norwegian waters safer. It is just a matter of time before the rest of the world catches up. We are proud that this project can actually result in saving people's lives; in fact, this is 'Technology for a better society' in practice."

# MARINTEK

## Organisation



## This is MARINTEK

MARINTEK performs research and development projects for industry and public-sector bodies involved in marine activities. The company operates in an international market, developing new technologies in the fields of floating petroleum production, subsea pipelines for oil and gas transportation, renewable energy from the oceans, vessel development, the shipbuilding and maritime equipment industries, shipping and logistics.

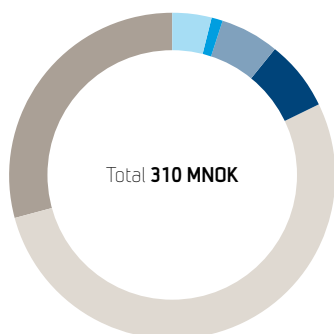
MARINTEK is one of the world's most widely recognised high-profile maritime research institutes, and is the preferred maritime technology partner of many of the most demanding clients in the global petroleum and shipping markets. Among the important reasons for this are MARINTEK's many years of experience, our unique range of laboratory facilities, our world-class research staff and our collaboration with NTNU and our clients.

## Main financial figures

MNOK	2005	2006	2007	2008	2009
<b>Result</b>					
Gross operating revenue	199	232	271	292	310
Net operating revenue	165	194	228	246	255
<b>Operating result</b>	<b>7</b>	<b>12</b>	<b>15</b>	<b>4</b>	<b>20</b>
<b>Annual result</b>	<b>8</b>	<b>12</b>	<b>18</b>	<b>8</b>	<b>21</b>
<b>Balance</b>					
Fixed assets	28	36	38	46	41
Liquid assets	173	169	219	223	256
<b>Sum assets</b>	<b>201</b>	<b>205</b>	<b>257</b>	<b>269</b>	<b>297</b>
Equity capital	103	116	131	139	154
Debt	98	89	126	130	144
<b>Sum equity capital and debt</b>	<b>201</b>	<b>205</b>	<b>257</b>	<b>269</b>	<b>297</b>
<b>Profitability</b>					
Operating margin %	4.5	6.3	6.6	1.5	7.9
Total profitability %	1.9	3.0	3.2	0.7	3.5
Profit on equity %	3.9	5.6	7.4	3.3	7.2
<b>Liquidity</b>					
Net cash flow from operations	10	16	41	-3	37
Degree of liquidity	1.8	1.9	1.7	1.7	1.8
<b>Solidity</b>					
Equity capital in %	51	56	51	52	52
Operating working capital	80	90	103	109	129

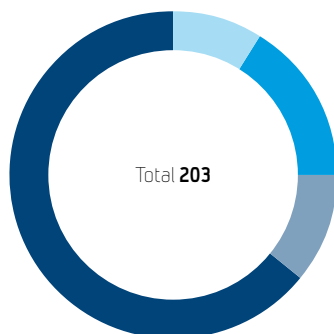


### Sources of finance (% of gross operating revenue)



- RCN basic grant 3%
- RCN strategic programmes 1%
- RCN project support 6%
- Public sector 7%
- Industry and commerce 54%
- International contracts 29%

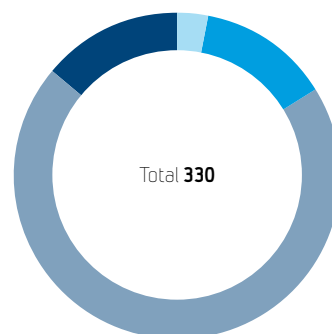
### Employees



- Administration 18
- Technical personnel 33
- Engineers 22
- Researchers 130\*

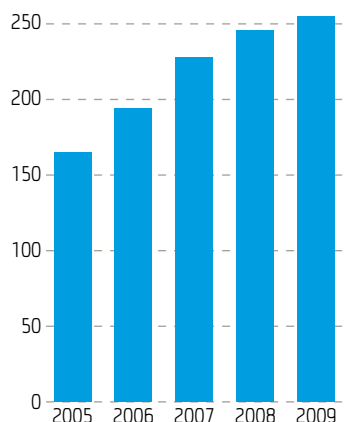
\*Of whom 43 hold doctorates

### Publications (incl. communication)

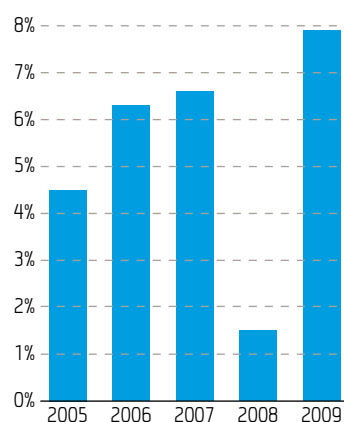


- Scientific articles in journals, series or anthologies 9.4%
- Scientific talks and posters 5.5%
- Reports 80.3%
- Popular science articles and talks 4.8%

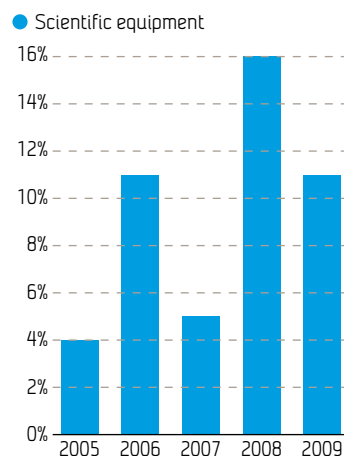
### Net operating income (MNOK)



### Net operating margin (%)



### Investments (% of net operating income)



Breathe







# SINTEF in Society

SINTEF's vision is "Technology for a better society". Every day, we work to solve some of the most important challenges facing society.

SINTEF is a private, independent non-profit research organisation, which is organised in the form of a public-utility research foundation with a number of subsidiary companies. The statutes of the Foundation itself and of its subsidiaries state that the objective of SINTEF is to contribute to the development of society through research, and that we do not aim to make a financial profit.

Our core activity consists of performing contract research for clients in industry and the public sector. None of our owners may take out profits or other financial benefits from SINTEF. Any surplus resulting from our activities is reinvested in laboratories, scientific equipment, competence develop-

ment and internally financed research.

SINTEF's activities benefit society through the generation of new knowledge and concrete solutions to problems. Our aim is to produce solutions to important social problems in such fields as climate, energy, clean water, food, and the efficient organisation of a health-care sector whose requirements are growing rapidly. We also work towards concrete improvements for industry that will contribute to greater value-adding and more efficient and environmentally friendly production.

The commercialisation of technology devel-

oped by SINTEF's research groups is another important facet of our role in society. We actively encourage the emergence of viable new companies capable of developing an independent existence.

## **Investments in research equipment**

Our ability to invest in new knowledge and improved laboratories is an important aspect of our role in society. For this reason, it is important for us to make profits that can be invested in new research. Doing so brings value to society as a whole, because SINTEF's laboratories and research are a central part of the Norwegian research system.

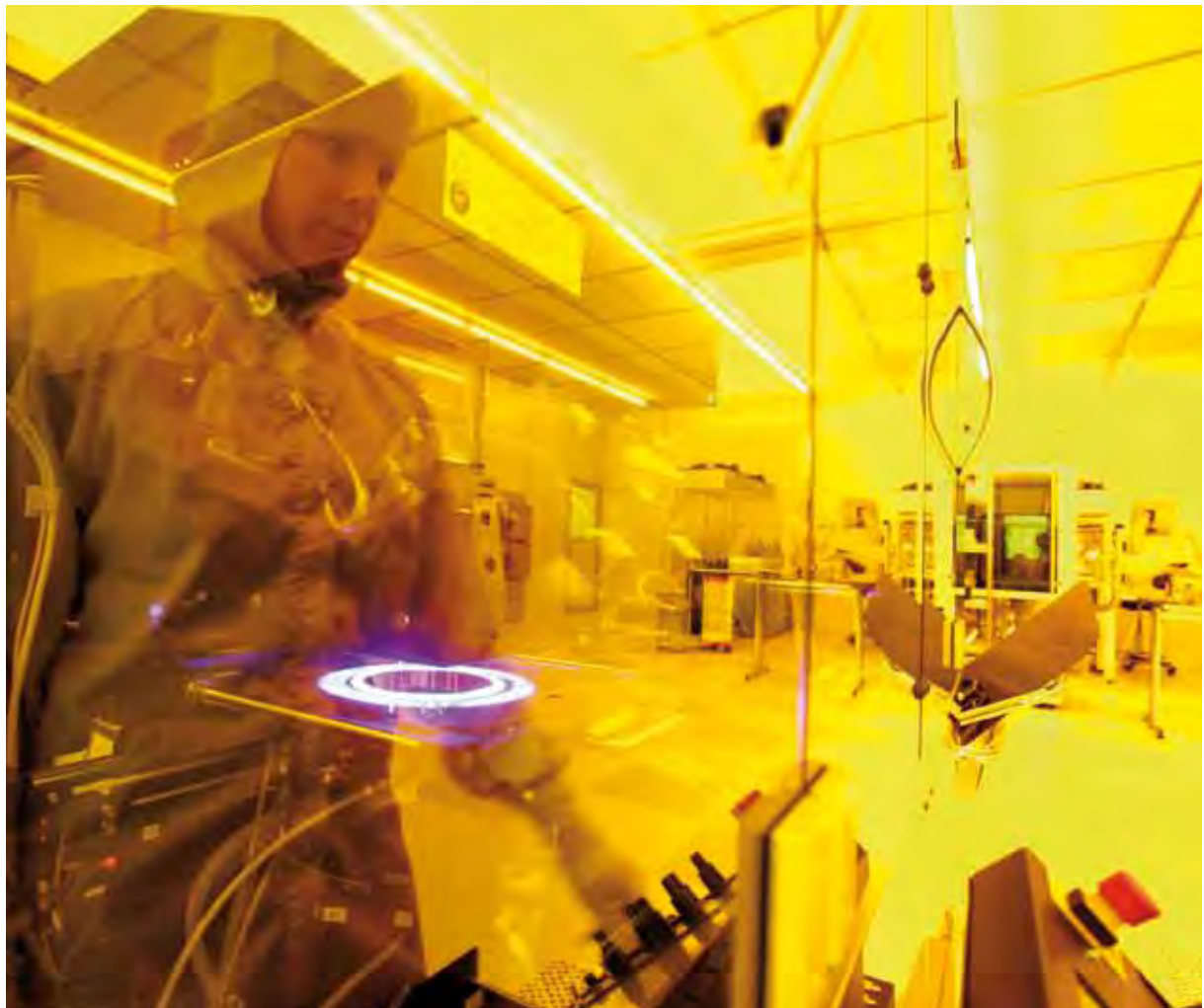
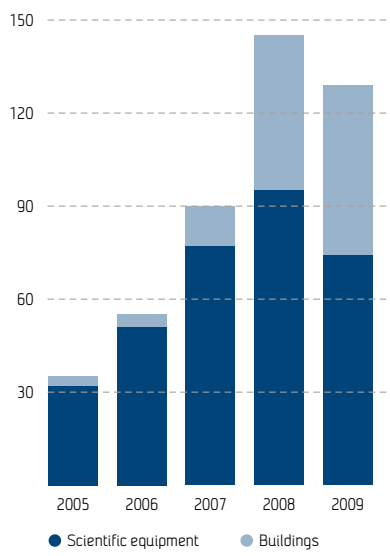


Photo: Thor Nielsen

In the course of the past five years, SINTEF has invested NOK 454 million in laboratories and scientific equipment.



## Investments (MNOK)



**In 2009, SINTEF put NOK 129.2 million of its own funds into scientific equipment and laboratories, mostly laboratories.**

This is around 5.8 percent of our net operating revenue. In the course of the past five years, SINTEF has invested MNOK 454 in laboratories, buildings and scientific equipment. In the last couple of years, the biggest investments have been made at Tiller in Trondheim, in the course of upgrading our Multiphase Laboratory and building a new laboratory for CO<sub>2</sub> capture and storage. These investments have given us international leading-edge laboratories in these fields.

### Internally financed research

SINTEF carries out internally financed projects in chosen fields of research. High-priority multidisciplinary efforts financed by SINTEF itself are known as Group Ventures. In 2009, SINTEF invested MNOK 15.5 in such research projects; we also perform internally financed research projects within individual divisions.

A set of criteria for selecting these projects and determining how they are to be performed has been drawn up. The Group Ventures are based on research groups of particularly high scientific quality, and their aim is to create value and commercial spin-offs. They must involve interdisciplinary cooperation among several divisions, and SINTEF's Group management team acts as client for the selected projects.

In the course of the first cycle, SINTEF launched six Group Ventures:

- CO<sub>2</sub> capture and storage,
- micro-optics,

- SmartWear,
- combilab,
- pipelines,
- maritime transport

The Group Ventures for 2005 – 2008 have been evaluated, and the results have shown that they have largely met their goals in terms of market, scientific output and cooperation. The results are led directly back to the Group Venture system, and the investments made are safeguarded through continued activity within the areas that they promoted. Robust interdisciplinary systems for continuing these projects have been established. Several of the projects have raised SINTEF's profile in a number of fora.

The evaluation also identified various aspects that were ripe for improvement: more focus could have been placed on IP and publishing, and the Group Ventures required a more generous financial framework to enable new technology to be developed.

In 2008, a new strategy for Group Ventures was drawn up and a two-stage application round for researcher-initiated Group Ventures was initiated.

Three new ventures were launched in January 2009: SiSaS – SINTEF Software as a Service, X-ray detectors of the future and Ocean Space Surveillance OSS. These efforts have been given a more robust financial framework, and their financial follow-up is more suitable than the form employed in the first round of Group Ventures.

In addition to these defined Group Ventures, SINTEF has launched an internally financed effort in bioscience and is studying the potential of a similar effort in medical technology.

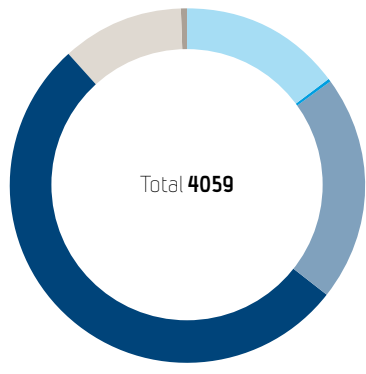
### Academic publishing

It is important that as much as possible of our research should be published. Publishing is a test of research quality, and can raise its level of importance for the development of society.

Much of SINTEF's contract research is confidential, in the sense that the results belong to the client. We frequently agree with the client that all or some of our results may be published. The results of our research find their way into society via a number of different channels, both in academic journals and more popular forms. Both of these are important.

We stress the importance of making our published results easily accessible. Our unclassified results have been brought to-

## Publications (incl. communication)



- 14.9% Scientific articles in journals, series or anthologies
- 0.2% Academic monographs
- 20.7% Scientific talks and posters
- 52.7% Reports
- 11% Popular science articles and talks
- 0.5% Academic books, textbooks, etc.

gether in a database of publications, which became available on the Internet in 2009.

**In 2009, SINTEF published 4,059 articles of various types: 1,471 of these were in recognised peer-refereed academic journals. This is equivalent to 1.2 publications per researcher-year, a figure that has grown well in recent years.**

### Popular science publishing

Besides publications in academic journals, SINTEF believes that one of its duties is to convey information at a popular level to industry, the media, the general public and the authorities. SINTEF scientists are often consulted by the media as experts and as sources of knowledge and research results. In 2009, SINTEF research and academic staff were cited in about 8,800 registered articles in Norwegian media and some 600 registered articles in international media.

The SINTEF Seminars are popular science seminars that cover topics of current interest. The six seminars that we arranged in 2009 attracted large numbers of participants.

We publish the popular science magazine Gemini in collaboration with NTNU. The Norwegian edition of Gemini has a circulation of 90,000, and the English edition, 10,000. In 2009, there were four issues of Gemini in Norwegian and two in English.

SINTEF Building Research's knowledge system is very active in the information dissemination field, particularly vis-à-vis the construction industry. It operates its own publishing company, Internet bookshop and publishes the "Byggforsk" series on the Internet. This

series has more than 5,000 subscribers and is of great importance for the dissemination of information to the building industry.

## Ethics in SINTEF

SINTEF maintains a high standard of ethics throughout its range of activities. Our efforts in this field are based on our vision of "Technology for a Better Society" and our core values of honesty, generosity, courage and solidarity.

### Principles and regulations

We base our ethical values on general moral standards and on four basic moral principles:

- **Principle of respect for human dignity**
- **Principle of precaution**
- **Principle of justice**
- **Principle of utility**

Our attitude to ethics in SINTEF has three facets: research ethics, business ethics and interpersonal relations. SINTEF has adopted a basic set of values and a set of ethical rules that apply to all its employees.

Our research ethics are based on the regulations of the national ethics committee, principles promoted by the European Group on Ethics in Science and New Technologies (EGE) and international conventions such as the Vancouver Convention.

SINTEF is a member of Transparency International and has adopted the UN's Global Compact, which involves certain obligations and the submission of status reports regarding basic principles of human rights, standards of working life, the environment and anti-corruption measures. These principles provide guidelines for SINTEF's ethics measures in the fields of commercial operations and interpersonal relationships.

SINTEF employees are members of national research ethics committees in science and technology, medicine and health sciences, and social science and the humanities.

### Organisation of ethical efforts

In SINTEF, ethics are a management responsibility that also involves all our employees, which means that everyone has a personal responsibility to behave ethically and in line with existing regulations and guidelines. In order to support our efforts in this field, SINTEF has appointed an ethics council and an ethics representative.

The ethics council has been established by the Board of the the SINTEF Group, and provides advice to management and staff in questions of ethics. The council has six

members and includes managers and staff representatives. The council's statutes were modified in 2009, and in the course of the year it held four meetings. The ethics council is chaired by Group Director Karl A. Almås.

The ethics representative supports our staff in ethical questions and functions as an adviser and discussion partner for the whole organisation. The ethics representative is under an obligation to respect the confidentiality of information received. The representative participates in a range of meetings at management level and divisional gatherings, as well as in several external arrangements. The ethics representative also acts as a channel for employees who wish to raise ethical problems or warn of conditions that might be in conflict with the law or ethical standards. This system means that SINTEF complies with the Work Environment Act's requirements regarding an internal notification channel.

### Demands made of suppliers and clients

In 2009, SINTEF introduced an evaluation process for all its suppliers, who are required to provide information regarding their policy and performance in HSE, ethics, the physical environment and quality. The evaluation is performed when new contracts are signed and contracts with current suppliers are revised.

Many of our clients maintain high standards in the fields of HSE, ethics, the environment and quality, and make specific demands of SINTEF. We place a heavy emphasis on being able to meet their requirements, and to document our own standards through good quality systems. Clients who do not make specific demands of us as suppliers are requested to sign up to SINTEF's business ethics standards. SINTEF has adopted a resolution regarding business ethics and social responsibility that applies to all contracts as they are signed.

### UN Global Compact

SINTEF has signed up to the UN's Global Compact, which is the major world-wide initiative to promote social responsibility in industry. This obliges us to operate in accordance with the following ten principles in the fields of human rights, standards of working life, the environment and anti-corruption measures:

- Support and respect the protection of internationally recognised human rights
- Ensure that we do not contribute to breaches of human rights
- Maintain the freedom to organise and ensure that the right to collective bargaining is respected in practice

- Ensure that all forms of forced labour are abolished
- Ensure that child labour is really abolished
- Ensure that discrimination in the workplace is abolished
- Support a precautionary approach to environmental challenges
- Encourage the development and spread of environmentally friendly technology
- Combat all forms of corruption, including blackmail and bribery

Membership of the Global Compact means that we are required to make the above principles an integral part of our everyday operations, that we encourage social responsibility among our clients, suppliers and the general public, and that we submit an annual report regarding our status vis-à-vis the principles.

## Environmental policy

Our research is our most important response to environmental challenges. In many areas, our research groups are at the international leading edge, for example in the fields of renewable energy, carbon capture and storage, energy efficiency, materials science and oil-spill contingency planning.

As far as our own activities are concerned, SINTEF has adopted an environmental policy and an action plan that apply to the whole organisation.

On the background of our vision of "Technology for a better society", SINTEF will take sustainable development into account in all aspects of its activities. The concept involves good corporate governance, social responsibility and respect for the environment.

SINTEF's environmental policy is intended to ensure that both our research and how we operate our own business reflect consideration for the physical environment. It will also ensure that our own environmental performance is continually being improved.

### We make the following commitments:

- that we will strive to establish national and international R & D programmes that have the objective of developing environmentally friendly technology.
- that we will stress environmental problems in our investments in knowledge generation and laboratories.
- that we will reduce our emissions of greenhouse gases and consumption of energy, and as far as possible reduce

hazardous emissions to the soil, the atmosphere and water in the course of our own activities.

- that we will disseminate our knowledge and provide premises for social debate and the design of national and international environmental policy.

**Action Plan for 2008 – 2010:**

We will implement environmental steering in accordance with the ISO 14001 environmental standard.

**This means that we will:**

- set environmental requirements of our suppliers.
- reduce energy consumption in our buildings.
- deal with our waste so as to reduce it in quantity, encourage sorting at source, and ensure that it is recycled and responsibly disposed of.
- critically examine our travel habits in order to make travel more environmentally friendly.
- invest in technology that enables us to travel less.
- profile the CO<sub>2</sub> cost of air travel and invest at least the same amount in the development of new environmental technology.

## Equal opportunity

SINTEF's ethical regulations state that everyone in SINTEF is equally valuable. No discrimination of any sort is tolerated, whether on the grounds of race, gender, religion, sexual orientation or age.

**Gender balance**

One of our aims is to increase the number of women in research and administrative positions. This means that SINTEF strives to recruit women and to develop female managers from our own ranks. Follow-up of equal opportunities is a responsibility of management, and is in the hands of each individual line manager.

Our personnel policy states that we wish to recruit more female researchers and managers in order to increase diversity of experience, approaches and perspectives. Since 1992, it has been an aim of SINTEF that the proportion of female research staff should correspond to the proportion of women in relevant academic institutions, and that the proportion of female managers should correspond to the proportion of women among researchers and engineers.

The proportion of women among our academic staff has risen from 15 percent in 1992 to 31 percent in 2009, while the proportion of female managers has risen from 3 percent to 36 percent during the same period.

**Proportion of women in SINTEF**



As a point of departure, SINTEF does not appoint personnel to part-time positions, but we are open to the possibility of allocating such positions to employees who take the initiative to ask for them. Twenty percent of the Foundation's employees currently work part-time. Forty-eight percent of these employees are women, while 52 percent are men.

SINTEF's 2008 work environment survey revealed no significant differences in how women and men experience their work situation. A new survey will be carried out in 2010.

SINTEF's absenteeism statistics indicated that sick leave among women was 5.97 percent, and 2.84 among men.

The Female Engineers and Researchers in SINTEF (KIFS) forum was established in 1988, and the project reports to group management. In the course of the more than 20 years since then, KIFS has been an important co-player in efforts to attain the goals of our development plan to recruit female colleagues to key positions i SINTEF. During this period, KIFS has studied a number of relevant topics, including salary differentials and the use of leave of absence, and has organised study days and meetings.

KIFS will continue to work on relevant gender-related problems, and it hopes for more lively discussions that go beyond mere figures. One question on which KIFS intends to concentrate in the coming year is that of whether SINTEF makes equal demands and has equal expectations of men and women.

In 2008, KIFS initiated a study of the relationship between gender and salary in SINTEF. The study revealed a salary differential of four percent in favour of men, and that this varied between types of position and departments. Catching up on seniority following leaves of absence was a major causal factor in this connection.

On the background of the study, Group management decided that such inequalities would be eliminated in the forthcoming salary negotiations, that procedures would be established for modifying salaries following leaves of absence in order to ensure that seniority in salary levels would not be permanently lost, and that efforts to recruit more female managers would be intensified.

This has been followed up in the 2008 and 2009 salary negotiations. In 2008 women received a 12 percent higher increase in salary than men, while the corresponding different in 2009 was 5.5 percent.

**Colleagues from other countries**

SINTEF employs a large number of people who come from outside Norway. On 31 December 2009, we had 313 employees from a total of 67 different nations with non-Norwegian language and cultural backgrounds. In 2008, we hired 110 persons from other countries, and 35 in 2009.

This means that we are an international institute that is an attractive workplace for high-quality research staff from all over the world. These colleagues bring with them valuable scientific and cultural competence that is extremely valuable for our organisation.

SINTEF has an obligatory welcome package for new appointees from countries outside Scandinavia, who follow a special welcome and follow-up programme. The programme is aimed at both the new employees themselves and their families, and it offers free Norwegian classes as well as English in the SINTEF School. Five Norwegian courses were held in 2009. The spouses or partners of new members of staff are also entitled to attend these classes.

Diversity management is one of the topics of the SINTEF School's management development programme.

**Staff with special needs**

SINTEF makes serious efforts to meet the requirements of its employees who have special needs for workplace adaptations. The SINTEF Foundation is an Inclusive Working Life (IA) company. Through our IA objectives, we have committed ourselves to adapt workplaces for such of our staff as have or develop disabilities. We cooperate with the Norwegian Labour and Welfare Administration in these efforts, and we utilise all available public-sector support schemes. Another IA aim is that we should focus on competence when recruiting new colleagues, rather than on their limitations due to disabilities.

## Development of new companies

One important facet of our social role is to commercialise concepts from our research groups.

This may involve establishing new companies or licensing technology to existing companies; both processes create both value and new jobs.

In 1987, SINTEF established Sinvent AS, which manages all of SINTEF's intellectual property rights (IPRs) and its investments in spin-off companies. Sinvent has developed a model for the commercialisation of technology that is not used in our contract research. In this operation, Sinvent involves itself in process control, patenting, market evaluation, business plans and contact with industry and investors.

Cooperation among stakeholders with different types of expertise and access to resources is a sine qua non of success. Together, these participants form a commercialisation chain, that ranges from concept to potential industrialisation. The chain may include researchers and inventors, seed-corn capital, venture and other investors, industrial companies and public-sector instruments.

Sinvent's experience is that Norwegian research and education institutions produce many technologies that could be commercialised. Good capital management groups that can bring capital and expertise to individual companies, and improved public-sector innovation instruments, have also gradually been developed. Public seed-corn and venture funds, as well as the Research Council of Norway's FORNY Programme, are examples of this.

The Achilles' heel of the industrial chain is the phase that is often called "pre-seed-corn", i.e. just before a company wins the seed-corn funding or other capital that will enable it to continue to develop its concept.

On 31 December 2009, Sinvent had a portfolio of 14 companies, 25 licence contracts, 696 patent cases, and 42 projects. In 2009, a total of six commercialisations were performed. Income from Sinvent's involvement is returned to SINTEF's research groups and to the inventors who are behind the ideas that have been commercialised.



## A useful "midwife" for a new company

A good idea and a massive potential customer base are far from being sufficient to commercialise a product.

Professional help and a solid financial network are essential, says entrepreneur Knut Sandven of GasSecure. The company is an example of the range of commercialisations from SINTEF's research groups that took place in 2009. Sandven himself is in no doubt that support from SINTEF's industrial "midwife" Sinvent was the key to his success in acquiring investors.

Now, patents and financing are both in place for the former SINTEF ICT researcher. If all goes according to plan, GasSecure will be in full production with its new technology – a wireless gas sensor for monitoring methane leaks during petroleum production – within a couple of years.

"Sinvent has played an extremely helpful role in supporting our development. In the first place, the company acted as a useful discussion partner, and then it also pushed us into concretising and demonstrating our concept, which helped us to clarify what we had to offer to potential investors," says the company founder.

### Investors are the key

However, the most important aspect of Sinvent's intervention may have been that it is backed up by a wide-ranging network of professional investors.

"Being introduced to potential partners via SINTEF's own incubator was quite clearly a door-opener for us," says Sandven. GasSecure acquired all the starting capital the company needed via Sinvent's network of investors. The company has also received very useful support from the Research

Council of Norway, Innovation Norway and several industrial partners.

### Much-needed product

The idea behind the product emerged in 2007 when Knut Sandven worked for SINTEF as a research scientist. In the course of a project that was developing wireless vibration sensors for the petroleum sector, he heard that the industry was also looking for a solution for wireless gas detection. The problem is simply that it is extremely expensive to install gas sensors, and in many cases they are not installed at the most strategic points, because they need to be connected to a power supply.

### Took potential customers at their word

After only three hours of discussion, Sandven and his colleagues made the first draft of a new wireless product: a gas sensor that would first use ultrasound to make a rough classification of possible types of gas before coupling in an optical sensor for the final identification stage. "We can determine the concentration of the gas with the aid of infrared light, whose wavelengths are longer than those of visible light. The hydrocarbon gases we are looking for absorb energy at specific wavelengths in the infrared range, and it is this energy absorption that detects a gas leak," explains Sandven. A solution of this sort can be expected to drastically reduce energy consumption, which in turn will enable the sensors to be battery operated.

GasSecure now holds a patent on the world's first wireless gas detector for petroleum installations, is well on the way to developing its system into a final product, and has definite plans to produce it in Norway.



## Knowledge and determination

Good people are attracted to great tasks. In SINTEF, such people can work on some of the most important questions in society.

As Vice President of Human Resources, Ingeborg Lund is responsible for ensuring that SINTEF is an attractive working place that offers unique possibilities of development to people with knowledge and determination. She is proud of working in an organisation that has recognised that its staff are of decisive importance to its success.

"With all due respect for advanced scientific equipment and important laboratories, SINTEF would be nothing without its personnel. We have taken on board the implications of this, and we set objectives for our own personnel that are as ambitious as those we set for our clients and for obtaining professional results," she says.

The annual Universum survey shows that SINTEF is one of the most popular potential employers among Norwegian students. The survey shows that young people are attracted by a high ethical standard and by meaningful tasks in which they can feel that they are contributing to something bigger.

"We find that good people come to SINTEF from all over the world, attracted to our tasks for society and the way we perform them," says the human resources director.

Today, SINTEF employs staff from 67 countries.

"When I meet new staff I always ask why they want to work in SINTEF. Many of them mention our role in society," says Lund.

"People can make a difference here. They can contribute to technologies that provide cleaner water, more environmentally friendly housing, clean energy, new medical methods, new materials, safer traffic ... The list is really pretty long."

SINTEF's way of working is based on freedom, equality and making room for initiative. Lund believes that her colleagues experience a high level of trust, but also a great deal of responsibility.



Photo: Gry Karin Stimo

**Human Resources Director Ingeborg Lund finds that good colleagues are attracted by SINTEF's role in society.**

"Working in SINTEF is not a solo game; we place a lot of emphasis on developing good teams at every level. Most of SINTEF's employees work in close contact with clients, and many of them regard this as a positive and inspiring challenge.

Every other year, SINTEF carries out a survey that covers all aspects of the work environment. The results show that leadership is of great importance for the pleasure that we take in our work.

"Management is important both for being aware of, recognising and developing the individual, and for maintaining a sense of solidarity with our colleagues. Good management is essential if SINTEF is to be able to perform its tasks for society. We take this seriously and we place great stress on long-term management development, and on our management principles, which are based on our special character as a knowledge-intensive organisation. This is of decisive importance for our ability to succeed," says Ingeborg Lund.



# HSE Accounts for 2009

## 1 HSE policy

HSE is given top priority at SINTEF – the safety of our staff is more important than any other consideration. The HSE policy applies to all SINTEF-related activities in Norway and abroad.

HSE is a management responsibility and forms part of our day-to-day routine. Our employees are obliged to participate in these efforts.

SINTEF has a clear vision that aims for zero rates of accidents, injuries and losses. We will do our utmost to avoid accidents and work-related illnesses among our employees and those with whom we collaborate.

SINTEF intends to maintain a good and healthy work environment. Our management will be clear, inclusive and inspiring. Our staff can expect to enjoy personal development and recognition via coordinated activity and team spirit. Everyone in SINTEF will be treated with respect and dignity.

On the background of our vision of "Technology for a better society", all aspects of SINTEF's activities will be based on the concept of sustainable development; a concept that is based on good management practices, social responsibility and respect for the environment.

SINTEF's environmental policy is intended to ensure that both our research and the manner in which we ourselves operate respect the external environment. It should also ensure that our own environmental performance continues to improve.

## 2 Summary

We hereby provide a status report on SINTEF's efforts in health, safety and environment. The report demonstrates that good progress has been made towards the goals we set for 2009.

The report describes the results of our overarching HSE goals and the status of the action plan for 2009.

SINTEF's HSE steering system is an integral aspect of the Group's overall steering system.

## 3 Status of action plan 2009

### GOAL: "SINTEF will maintain a good work environment that promotes good health"

Measures	Status
Continue following up the results of the work environment survey.	<ul style="list-style-type: none"> <li>The work environment survey 2010 is revised according to experience from 2008.</li> <li>Follow-up has been carried out according to plan.</li> <li>Units facing work environment challenges have asked for support for their own development.</li> </ul>
Implement common management principles.	<ul style="list-style-type: none"> <li>Included as a topic in the SINTEF School.</li> </ul>
Establish principles specifying what SINTEF regards as a good work environment that promotes good health.	<ul style="list-style-type: none"> <li>The work is initiated and will be continued throughout 2010.</li> </ul>
Prevent bullying by strengthening the management's focus.	<ul style="list-style-type: none"> <li>Focus on bullying and follow-up in the work environment survey 2010.</li> </ul>

### GOAL: "SINTEF will have a zero rate of work-related sick leave"

Measures	Status
Monitor the development of work-related sick leave in various parts of our organisation.	<ul style="list-style-type: none"> <li>Work-related sick leave is routinely followed-up by management and the work environment committee.</li> </ul>
Establish support for managers in charge in the event of proved work-related sick leave.	<ul style="list-style-type: none"> <li>Detailed procedures and guidelines have been drawn up and made easily available through SINTEF's steering system on the intranet.</li> <li>Sick leave caused by injuries are routinely followed up and reported through the deviation system Synergi.</li> <li>All HSE reporting has a uniform structure throughout the Group.</li> </ul>
Continue the work with Good Leadership in SINTEF as part of the preventive effort.	<ul style="list-style-type: none"> <li>There is agreement on the fact that good managerial practices should support SINTEF's efforts to be a workplace promoting good health.</li> <li>Managers assumed responsibility for implementing preventive measures during the 2009 pandemic, resulting in few instances of infection at work and on travels.</li> <li>Increased registering of hazardous circumstances/observations has led to improved focus and preventive measures.</li> </ul>

## GOAL: "SINTEF will have zero injuries, accidents or losses"

Measures	Status
Carry out phase I of the Risk and Vulnerability Analysis (ROS), an overall risk assessment tool for SINTEF.	• An overall risk and vulnerability analysis has been carried out in MARINTEK.
Field work as a topic for HSE revisions.	• Two field work revisions have been performed.
Continued focus on the reporting of HSE issues and increasing the organisation's experiential learning.	• An increase of the number of HSE issue reports made through the deviation system Synergi has been in focus.
Establish the Safe Job Analysis as a method throughout the Group.	• Risk assessment course has been updated and carried out.
Continue collaboration with universities.	• Common training regarding safety has been carried out in cooperation with NTNU. • Regular joint meetings were held with NTNU and UiO.

## GOAL: "SINTEF will be a company with a clear environmental profile"

Measures	Status
• Complete and document the implementation of environmental steering in accordance with ISO 14001.	• Environmental aspects have been mapped and priorities made. • SINTEF's environmental policy has been approved by the Board.

### 4 Results

#### 4.1 Goal: «SINTEF will maintain a good work environment that inspires development»

SINTEF's organisation continuously work to improve its work environment. This effort is supported by a good management culture, and every other year, a work environment survey is carried out where important work environment factors are measured and assessed. *The work environment survey is an important tool in the development of the SINTEF organisation.*

SINTEF's strategy on the focus area People, clearly signals that employees should perceive their workplace as attractive and having unique development opportunities. The work environment survey at the start of 2010 reveals very good results for SINTEF as a whole. The item Motivation and pleasure in work receives a high score. This item measures the perceived balance between demands and opportunities to perform work tasks as well as influence on personal work day. Team spirit also rates a high score. This item measures satisfaction, cooperation and communication on difficult matters. Some units have problems solving their work environment challenges.

The results for the item Management in the work environment survey were very good in 2008. SINTEF has strengthened its management by introducing good management principles. SINTEF is very pleased to see that the results from the survey indicate that higher expectations to managers still produce high scores in 2010. The survey reveals that managers at all levels need to improve their efforts in giving feedback.

#### HSE indicators for perceived work environment

(Scale from 0 to 100 points, 100 = strongly agree, positive score. 0 = strongly disagree, negative score. Figures in parenthesis are from 2008.)

Motivation and pleasure in work	75	(76)
Team spirit	76	(75)
Competence development	71	(70)
Chief scientist	74	(74)
Immediate manager	77	(76)

Within Competence development, we have potential for higher scores within guidance and training, and within goals and ambitions aimed at developing common competence. We also need to develop a stronger culture for project evaluation and be able to ask critical questions about the way we work.

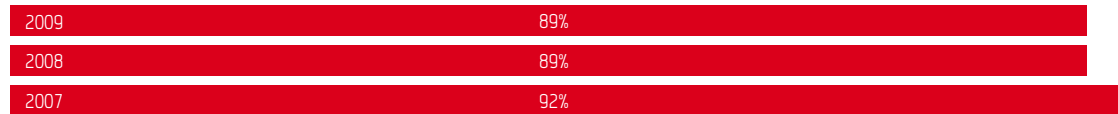
We know that bullying and harassment<sup>1</sup> are serious social problems in working life. For this reason, SINTEF has mapped these issues in the work environment surveys in 2008 and 2010. In 2008, 3.7 percent of our employees felt that they were being bullied, as against 3.4 percent in 2010. SINTEF has a zero incidence vision here too, and as part of the survey follow-up process, managers will be given advice and help through new routines for the follow-up of bullying and harassment.

<sup>1</sup> Definition: Negative actions such as pestering or insulting someone, excluding them socially or influencing someone's work duties in a negative way. The action must have taken place repeatedly and regularly over a certain period of time. (ref. Ståle Einarsen)

#### 4.1.2 Staff conversations

Staff conversations are planned annual conversations between managers and staff. Topics that are discussed include tasks and aims, work environment and development. Each conversation should conclude by drawing up a personal action plan. SINTEF has a good degree of implementation of staff conversations, and annual staff conversations are one of SINTEF's quality indicators.

##### Staff conversations in the SINTEF Group

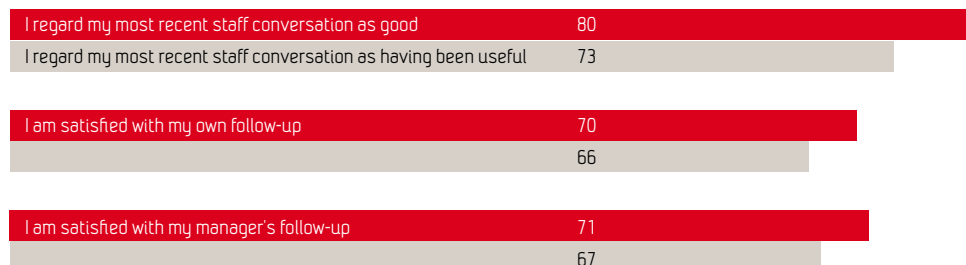


##### Benefits and follow-up

SINTEF's work environment survey asks employees how they perceive the usefulness of staff conversations. In addition, the employees' satisfaction with their own and their managers' follow-up is measured. We see an improvement from 2008 regarding follow-up.

Scale from 0 to 100 points. 100 = strongly agree, 0 = strongly disagree

● 2010 ● 2008



The survey shows that foreign employees who have lived in Norway for less than three years appear to benefit less from staff conversations. This is an aspect of which we must be particularly conscious.

## 4.2 GOAL: "SINTEF will have a zero rate of work-related sick leave"

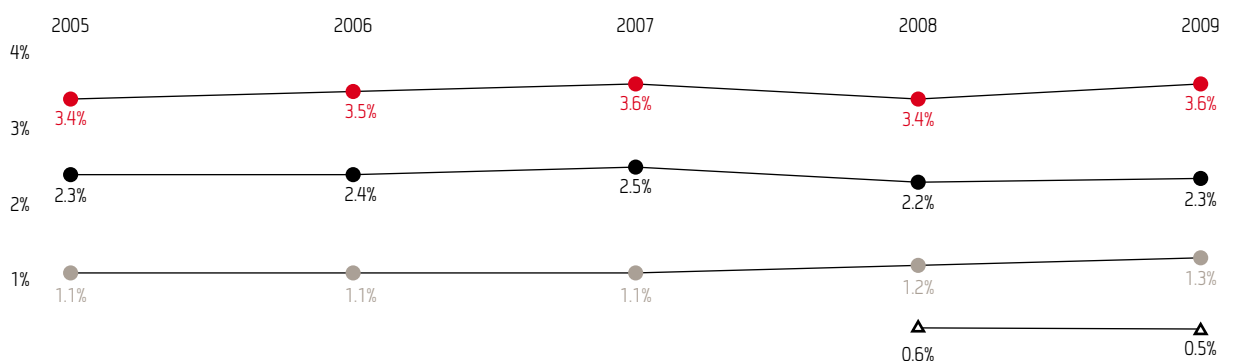
### 4.2.1 Sick leave

In 2009, sick leave at SINTEF continued to remain low. In total, the sick leave was 3.6 percent, as against 3.4 percent in 2008. There was a slight increase in both self-reported sick leave and sick leave accompanied by a doctor's certificate. Work-related sick leave, however, fell slightly from 2008. Some units had a slightly higher sick-leave percentage than others. Short-term sick leave constitutes a minor part of the total sick leave, and measures were mostly targeting long-term sick leave. A major part of the sick leave taken was related to a smaller number of employees, and it is important for us to follow up these persons in particular.

Occasionally, management need to cooperate with HR and HSE representatives in order to find good solutions for employees on long-term sick leave. This cooperation has proved beneficial to SINTEF's work environment and rate of sick leave. We strive to enable employees on long-term sick leave to maintain good contact with their workplace in order to facilitate a smooth return process. At the same time, possibilities for adaptation must be carefully evaluated in relation to the individual employee's functional abilities. The psychosocial work environment is strengthened by measures promoting health that engage management and the ability to influence one's own workplace. Over time, these measures are expected to produce positive effects on work-related sick leave as well.

(percent of total time excluding vacation and overtime)

● Total ● With doctor's certificate ● Self-reported ▲ Work-related sick leave





#### 4.2.2 Work-related health problems

One of SINTEF's aims is that our employees should not find that their work reduces their pleasure, quality of life or performance. Nevertheless, many of our employees suffer from health problems caused by circumstances at their workplace which do not necessarily result in sick leave. The work environment survey provides knowledge about these issues. Enquiries to the HSE section from employees also outline the extent and nature of these health problems. The underlying causes are both physical, chemical, biological and psychosocial. Often, the problems are solved locally, some times supported by the HSE section. In 2009, following a longer period of poor indoor climate, one academic environment was moved to better facilities. In order to prevent work-related health problems, training, individual guidance and follow-up are carried out. In some cases, it is necessary to involve external experts to gain control over the situation.

SINTEF lives of contract research and projects. This involves both performance demands and competition. Many people are happy with this situation, but some develop stress-related problems. Due to market changes, SINTEF is required to change its operation. This may cause weariness among the affected employees, resignations and a feeling of insecurity. In this area, managers, HR and the HSE section have important tasks to solve, independently and jointly. Performance demands, academic autonomy and expectations which are not met may give rise to conflicts. Most conflicts are solved locally and at an early stage, but in some cases the situation becomes deadlocked and difficult, and some of the persons involved experience various health problems occasionally leading to sick leave. SINTEF has arrangements with experienced psychologists who provide individual follow-up whenever necessary.

\* Including SINTEF Health 2008

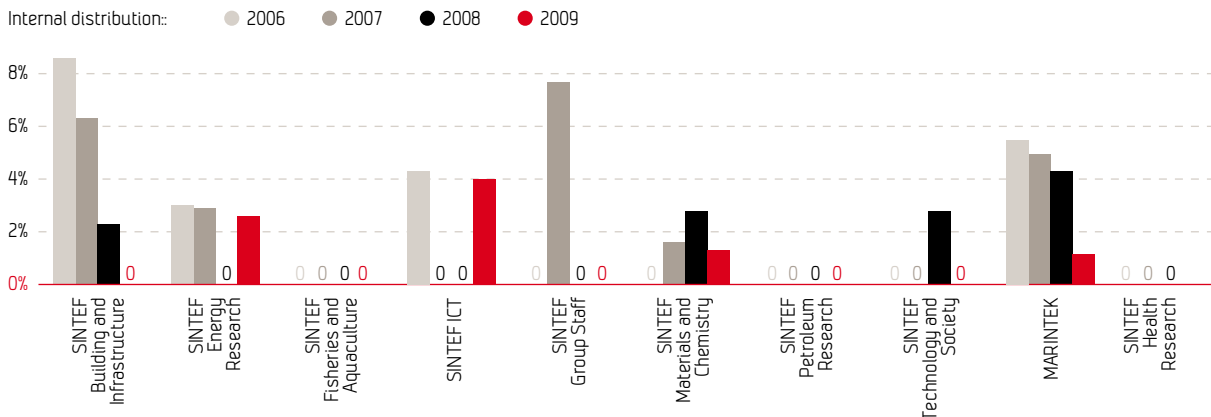
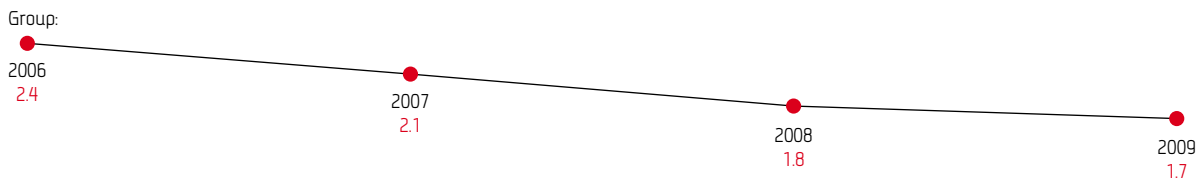
### 4.3 GOAL: "SINTEF will have zero injuries, accidents or losses"

#### 4.3.1 Personal injuries

One of SINTEF's aims is that our activities should not lead to injury. A total of six injuries resulted in sick leave being taken in 2009.

SINTEF has not reached a satisfactory level in the prevention of personal injuries, but we are making progress. SINTEF has a strong conviction that a long-term focus on strengthening our HSE culture will bring results in the course of time.

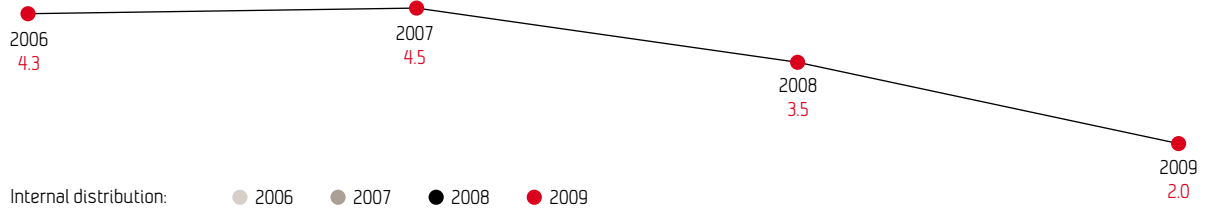
Frequency of injury leading to sick leave (H1 value) (number of injuries per million working hours)



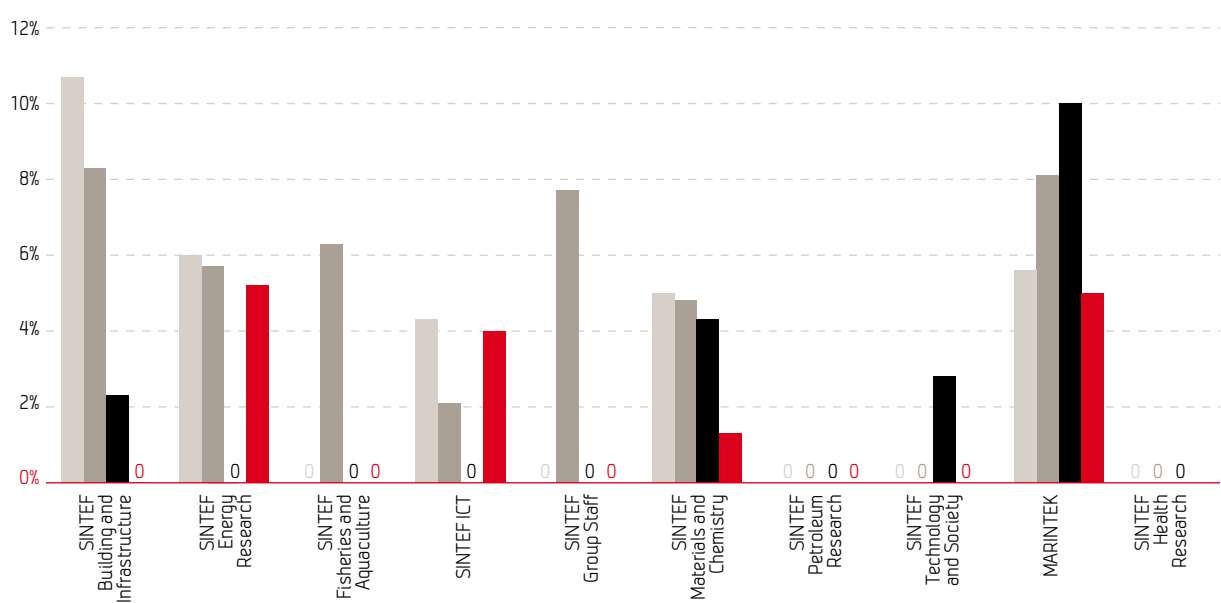
### Frequency of personal injuries (H2 value)

(Sum of number of injuries leading to sick leave and other personal injuries, excluding injuries requiring first aid, per million working hours)

Group:



Internal distribution:



### Frequency of sick leave (F value)

(The F value measures sick leave taken due to workplace injuries per million working hours. This value tells us something about the seriousness of the sick leave taken.)



#### 4.3.2 HSE reports

If SINTEF is to achieve its goal of zero injuries, it is essential that we identify potential hazards and implement preventive measures before a near-accident occurs. The introduction of Synergi as our new deviation handling system and a conscious focus on this topic on the part of management have contributed to a positive trend in the number of accidents and near-accidents in SINTEF. Nevertheless, we believe that we still have a long way to go where reporting hazardous conditions and observations to carry out optimal preventive efforts are concerned.

The following definitions are employed in reporting HSE events:

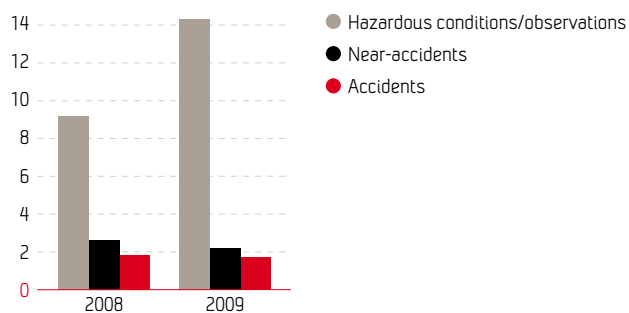
**Accidents:** Occurrences that have led to personal injury (including first-aid injuries), illness and/or damage to or loss of property, damage to the environment or injury to a third party.

**Near-accidents:** Occurrences that under slightly different circumstances could have led to personal injury, illness and/or damage to or loss of property, damage to the environment or injury to a third party.

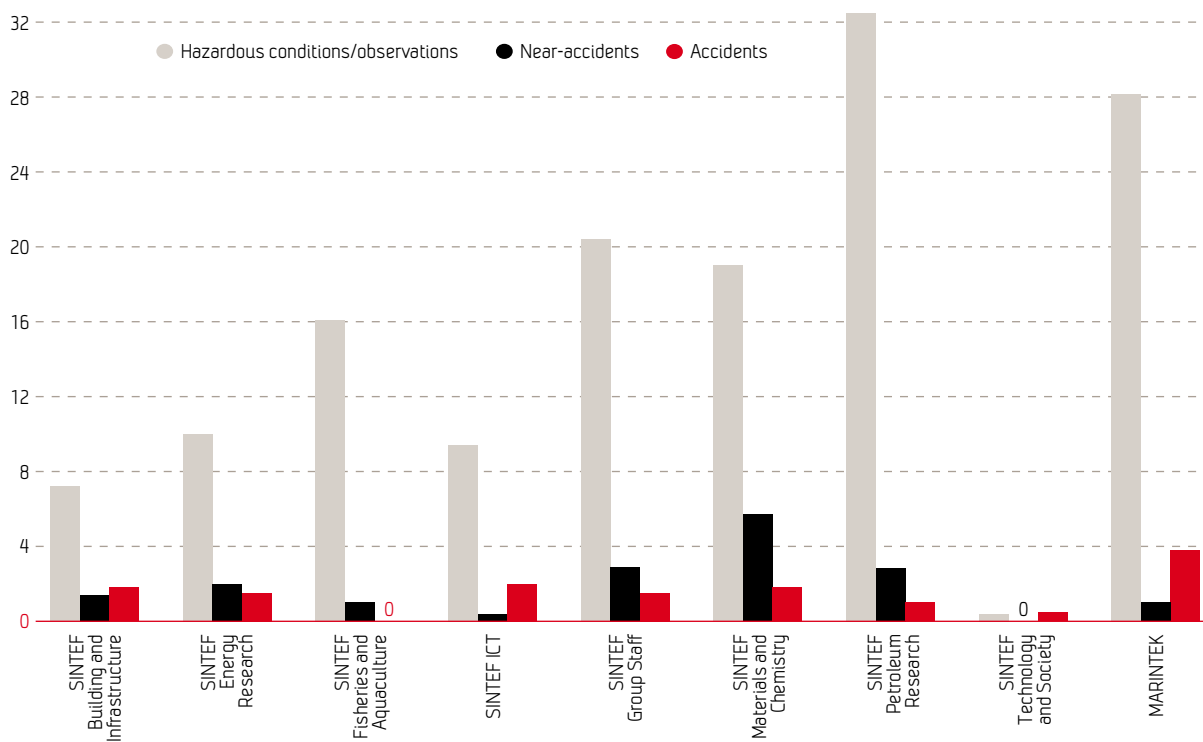
**Hazardous conditions:** Circumstances or conditions that could potentially lead to personal injury, illness and/or damage to or loss of property, damage to the environment or injury to a third party.



HSE reports per 100 person-years of work in 2008 and 2009



HSE reports – distribution per institute per 100 person-years of work in 2009



Degree of seriousness of accidents and near-accidents

All accidents and near-accidents in SINTEF are evaluated in terms of the risk of potential consequences for persons, the environment and material values. Risk assessments are performed and followed-up by responsible units within the Group.

		Probability				
		Very low	Low	Medium	High	Very high
Consequences	Very critical	3	2	2		
	Critical	5	2	2		
	Moderate	10	6	8	2	
	Low	13	16	2	3	
	Very low	15	27	7	2	
	SUM	46	49	21	7	0

Risk range	2008	2009
Critical range	3	6
Serious range	25	39
Less serious range	52	78
<b>SUM</b>	<b>80</b>	<b>123</b>

In the risk evaluation, the following six undesirable incidents were classified as having potentially serious consequences:

- Sprained fingers after a fall on an icy road.
- Knee injury after a fall on a patch of ice.
- Hand injured after a sledging accident.
- Hydrofluoric acid 1% on eye.
- Laboratory/workshop worker hit his head – concussion.
- Cut injury to forehead caused by a sheet tipping over.

## 4.4 GOAL: "SINTEF will be a company with a clear environmental profile"

### 4.4.1 External environment

SINTEF performs and is involved with activities having environmental impact. This impact is related to travels, energy consumption, operation of laboratories and participation in projects with clients. SINTEF's environmental policy has been approved by the Board and ensures that our own research and the manner in which we operate respect the external environment. We are obliged to work systematically to reduce our emission of greenhouse gases and our energy consumption as well as avoid harmful emissions and discharges to air, water and soil through our own activities.

We are working to establish national and international R & D programmes aimed at developing environmentally-friendly technology, and we actively contribute with leading competence.

SINTEF had no accidents that led to contamination of the external environment in 2009. The potential impact on the external environment is carefully considered when projects are planned.

For the Group as a whole, we have mapped all environmental aspects, prioritised the most important ones and established environmental programmes for 2010.

We perform systematic supplier evaluations related to the external environment before entering into any contracts or re-negotiating contracts with suppliers. The requirements are implemented into SINTEF's standard contracts.

SINTEF's environmental profile is communicated externally through our research and expertise within environmental aspects. SINTEF has established a portal for its research within climate and the environment on its web site.

In 2009, we implemented measures to reduce the energy consumption in our buildings.

## 5 Other companies

SINTEF has strategic shareholdings in five Norwegian companies: SINTEF Raufoss Manufacturing, Molab, SINTEF NBL, SINTEF MRB and SINTEF North.

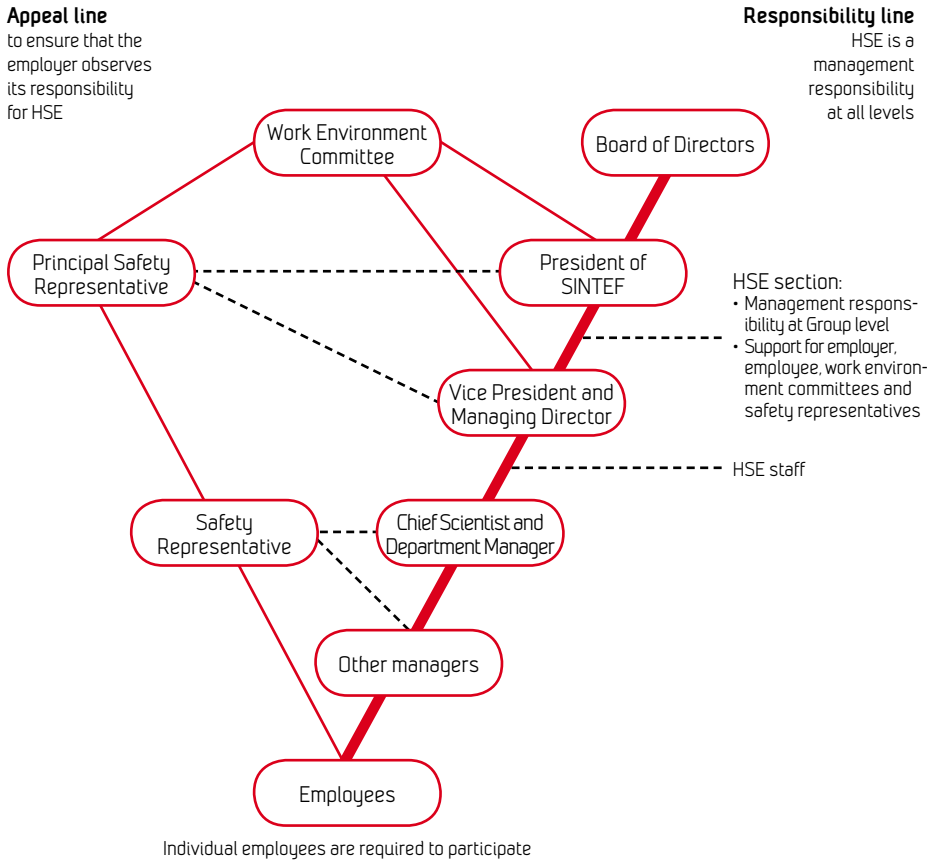
SINTEF requires its associated companies to maintain at least the same level of systematic HSE as SINTEF. Responsibility for follow-up remains within the boards of the individual companies concerned.

Company	Number of personal injuries leading to sick leave	Number of personal injuries not leading to sick leave	Near-accidents	Hazardous situations/ observations	Sick leave	Staff conversations held
SINTEF NBL	0	1	2	1	3.0%	61%
SINTEF Raufoss Manufacturing	1	8	0	5	5.2%	89%
Molab	0	5	0	11	5.8%	100%
SINTEF MRB	0	0	0	0	5.3%	100%

**6 The SINTEF Group's HSE plan 2010**

Objectives	Measures
SINTEF will maintain a good work environment that promotes good health.	<ul style="list-style-type: none"> <li>Follow up the results of the work environment survey 2010.</li> <li>Implement common management principles.</li> <li>Continue the effort of establishing principles for the implications of the health-promoting work environment ambition.</li> <li>Prevent bullying through increased awareness on the part of management.</li> <li>Renewed improvement of SINTEF's company health services.</li> </ul>
SINTEF will have zero injuries, accidents or losses.	<ul style="list-style-type: none"> <li>Focus on the reporting of hazardous conditions and events.</li> <li>Follow up and eliminate deviations.</li> <li>Implement Synergi as a management tool.</li> <li>Increase the attention to HSE in fieldwork.</li> <li>Strengthen the safety work in cooperation with clients, suppliers and partners.</li> </ul>
SINTEF will have a zero rate of work-related sick leave.	<ul style="list-style-type: none"> <li>Emphasize the follow-up of work-related sick leave in our organisation.</li> <li>Assure the quality of the reporting and follow-up of sick leave, focusing on long-term sick leave.</li> <li>Use the results from the work environment survey to prevent work-related sick leave.</li> </ul>
SINTEF will be a company with a clear environmental profile.	<ul style="list-style-type: none"> <li>Complete the environmental mapping.</li> <li>Implement environmental programmes for all units/research companies.</li> <li>Implement the environmental programme for the Group.</li> <li>Find areas of application for internal CO<sub>2</sub> quotas.</li> </ul>

**7 Responsibilities and roles in SINTEF's HSE efforts**



An underwater photograph of a vibrant coral reef. The scene is dominated by a large, textured, light-colored coral structure in the foreground. Several clownfish with orange and white stripes are visible, swimming near the coral. The background shows a deep blue ocean with sunlight filtering through the water from the top left. The word "Think" is overlaid in white text on the left side of the image.

Think







# 1910



**1910:**  
The Norwegian Institute of Technology (NTH) is inaugurated in Trondheim, and accepts 130 students.

**1912:**  
NTH's Materials Testing Institution is established; it is now part of SINTEF Materials and Chemistry.

# 1950

**1950:**  
SINTEF (Foundation for Scientific and industrial Research at NTH) is established in Trondheim by the Senate of NTH.

**1951:**  
The Ship Research Institute (SFI) is established in Trondheim by the Norwegian Research Council (NTNF) as an industrial sector institute.

**1952:**  
The Norwegian Computing Centre is established in Oslo as part of SI.

**1958:**  
The Building Research series is launched, a publication of great importance for the Norwegian building industry.

# 1960

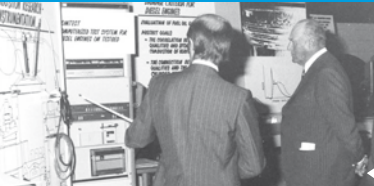


**1961:**  
SI begins research on microelectronics, laying the foundations for an industrial cluster in Vestfold County.

# 1970

**1970:**  
The Norwegian Institute of Hospital Research is established, taking SINTEF for this first time into a field not covered by NTH.

**1971:**  
SINTEF takes its first step in the petroleum era with its membership of NTH's Continental Shelf Committee.



**1979:**  
King Olav opens the Marine Technology Centre in Trondheim.



**1979:**  
Vingmed builds ultrasonic instruments for cardiac diagnosis based on research carried out by NTNU and SINTEF. Vingmed is now part of GE Healthcare.

**1985:**  
SI is made independent of NTNF and is given the name Centre for Industrial Research.

**1985/86:**  
The SINTEF Group is established and is joined by NSFI, IKU and EFI on the initiative of the state. These institutes are now known as MARINTEK, SINTEF Petroleum Research and SINTEF Energy respectively.

**1986:**  
SINTEF and the Norwegian Telecommunications Administration (Televerket) launch technology that will become a core aspect of Europe's first GSM mobile telephone system.



**1990:**  
SINTEF builds an environmentally friendly demonstration car on its 40th anniversary. This is one of the first hybrid cars in the world.



**1993:**  
SI and SINTEF merge on the initiative of SI's management.

**1999:**  
SINTEF Fisheries and Aquaculture Research is established, and in the following year it takes over a test laboratory for fishing gear in Hirtshals in Denmark.

# 2000

**2002:**  
Raufoss ASA sets up its subsidiary company RTIM together with SINTEF, and later becomes SINTEF Raufoss Manufacturing.

**2002:**  
The venture capital fund SINTEF Venture is set up. This new model for the commercialisation of research results is run by Sinvent AS.

**2006:**  
SINTEF is a member of eight out of 14 national Centres for Research-based Innovation (SFIs).



**2006:**  
SINTEF is chosen to lead NextGenBio-Waste, Europe's largest bioenergy research programme, which will develop technology that will make it more attractive to use biofuel for electricity generation.



**2008:**  
The Norwegian Design Council nominates SINTEF and Helly Hansen for an award for the development of helicopter aircrew clothing that incorporates smart materials.



**2008:**  
Gas measurement system based on SINTEF technology monitors the work environment for astronauts in the space station ISS.

© NASA

# 1930

**1934:** Norges Brandkasse (fire insurance company) gives NTH NOK 30,000 to set up and operate a fire technology laboratory, which became part of SINTEF in 1977.

**1939:** The Ship Model Tank is inaugurated at Tyholt in Trondheim. It now forms part of MARINTEK.



**1953:** The Norwegian Building Research (NBR) is formally established. It became part of SINTEF Building and Infrastructure in 2007.

**1954:** NUSSE, the first computer ever built in Norway, is completed at SI after two years of development.



**1955:** The River and Harbour Laboratory is established as a SINTEF institute.

**1961:** The Electronics Laboratory (Elab) is established as a department of SINTEF.



**1962:** NTH obtains its first computer and SINTEF is given responsibility for its management and operation.



**1972:** Raufoss Ammunition Factories begins to collaborate with Volvo on building car bumpers from an alloy developed together with SI.

**1972:** The Institute of Social Research in Industry (IFIM) is incorporated into SINTEF.

**1976:** The first cable laid under the Skagerrak is made at the marine cable plant of what is now Nexans in Halden. EFI is heavily involved in the development of the cable's insulation system.

**1977:** The first vessel to utilise the Albatross dynamic positioning system, which was developed by NTH/SINTEF, is on station in the North Sea. The system is a world leader.

# 1980

**1980:** SINTEF is reorganised from being a company governed by the Senate of NTH to become an independent foundation.

**1981:** The world's largest ocean laboratory is opened at Tyholt in Trondheim. The laboratory is of great importance for the Norwegian and international shipping and offshore sectors.



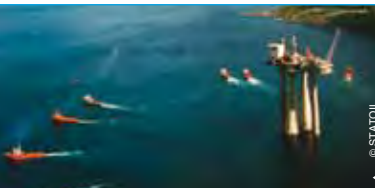
**1986:** In collaboration with Statoil, SINTEF leads the world in developing the concept of capturing and storing carbon dioxide emissions from fossil-fuelled power stations.

**1986:** SINTEF sets up Unimed, its department of medical technology.



**1986:** Crown Prince Harald inaugurates SINTEF's and NTH's supercomputer (a Cray machine), the most powerful in Scandinavia at the time.

**1993:** SensoNor, a close partner of SINTEF, finds success with its vehicle air-bag sensors, selling 33 million of them during the 90s.



**1996:** The giant Troll A platform is inaugurated in the North Sea, incorporating contributions from SINTEF in concrete, design, foundations and multiphase transport system.

**1996:** Powell becomes an independent company; today it is listed on the Stock Exchange and is active in many countries.



**2004:** The Micro- and Nanotechnology Laboratory (MiNaLab) is inaugurated in Oslo.

**2004:** MARINTEK opens an office in Houston, Texas.

**2005:** A model of the Hywind floating wind turbine is tested in MARINTEK's Ocean Basin. In 2009, Hywind is deployed in the sea as the first full-scale floating wind turbine in the world.

**2007:** Snøhvit, Europe's first liquid natural gas (LNG) export facility, opens in Finnmark, utilising technology to which SINTEF has contributed.



**2007:** Gas is brought ashore from seabed installations on the Ormen Lange field. The installation include technology that SINTEF has helped to develop.



**2009:** SINTEF participates in six out of eight national Centres for Environmentally Friendly Energy (FME).

**2009:** SINTEF and NTNU are the biggest participants in the EU's research programmes on CCS.

**2009:** SINTEF signs an MoU with Stellenbosch University in South Africa. SINTEF collaborates in eight Southern African countries on projects on living conditions for people with handicaps, and on HIV/AIDS.

# 1940

**1949:**  
The Royal Norwegian Council for Scientific and Industrial Research (NTNF) sets up the Central Institute for Industrial Research (SI) in Oslo.



**1956:**  
SI inaugurates its new buildings at Gaustad in Oslo.

**1958:**  
The Electricity Supply Industry's Research Institute (EFI) is established by parliamentary decree; today it is called SINTEF Energy Research.

**1963:**  
SI builds Norway's first integrated circuit.

**1969:**  
Norsk Data's first computer is delivered to the vessel Taimyr after a year of testing and software development at SINTEF. This was an important event for the development of control systems for the maritime industry.

**1969:**  
NTNF sets up a continental shelf office. This is the predecessor of the Institute of Continental Shelf Research (IKU), which later becomes SINTEF Petroleum Research.



**1978:**  
The "Ugelstad spheres", tiny round particles, are developed at SINTEF and NTNU, and find applications in the treatment of cancer and in biotechnology.

**1978:**  
SINTEF establishes a biotechnology group. Since the mid-80s, its scientists have played a central national role in industrial biotechnology.

**1983:**  
SINTEF's Multiphase Laboratory is inaugurated. Its research makes important contributions to our ability to develop offshore petroleum fields without the use of platforms.



**1984:**  
Oceanor is "hived off" as an independent company, later (2003) becoming part of the international Fugro Group.

**1988:**  
SINTEF participates in its first EU project. In the EU's current Framework Programme for research, SINTEF is the dominant Norwegian participant, being larger than the country's three largest universities together.

**1988:**  
SINTEF becomes the largest shareholder in the laboratory company Molab in Mo i Rana, which now also operates laboratories in Oslo, Glomfjord and Porsgrunn.

# 1990

**1998:**  
SINTEF's internal IT section becomes the limited company Runit, taking 86 members of staff with it. The company is now a member of ErgoGroup, a leading Scandinavian supplier of IT operation services.



**1999:**  
The launch of the research project called "From sand to solar cells" sees the start of a major effort on silicon for solar cells, which has helped to put Norwegian industry in a leading position in this field.



**2005:**  
SINTEF SeaLab is established, containing laboratories for fisheries, aquaculture and marine environmental technology.



**2007:**  
Following an initiative taken by SINTEF, the Chinese authorities launch a major cement industry project that will lead to large reductions in Chinese carbon dioxide emissions.

**2007:**  
Nacre, a SINTEF spin-off company, is sold to the French Bacou-Dalloz company for NOK 750 million.

**2008:**  
NTNU and SINTEF are given responsibility for coordinating the development of 15 European joint laboratories for carbon capture and storage (CCS).

# 2010

**2010:**  
Crown Prince Haakon opens a new research facility for CCS at Tiller in Trondheim, one of the most advanced of its kind in the world.



## 2010: SINTEF's 60th Anniversary

Here we present a few of the events that have been of most importance for SINTEF's development and for its contributions to society. The time-line reaches from the establishment of the Norwegian Institute of Technology, which in turn set up SINTEF, to the opening by Crown Prince Haakon of our new CO<sub>2</sub> capture research facility.

Many thanks to everyone who has contributed to our efforts to create 'Technology for a better society', decade after decade.



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