SINTEF
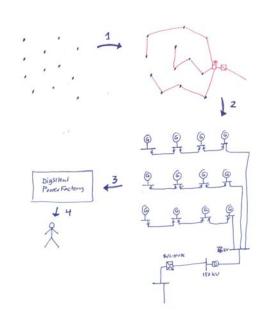
Wind farm collection grid optimisation
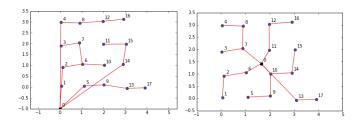
Innovation description

Collection grid optimization is about determining the best electrical grid layout, cable routing, cable type, protection scheme etc.
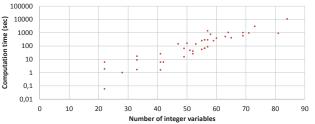
The early stage concept presented here includes

- **Cable routing optimization via mixed integer linear programming**
- **Automatic generation of a set of candidate layout designs, and comparison of alternatives based on levelised cost of energy**
- **Facilitate fast implementation in electrical analysis tool (PowerFactory) for more detailed analysis**

Minimisation of total cable length in small wind farm using mixed integer linear programming (MILP)

Impact

- **Fast assessment of wind farm grid designs in early phase of project development**
- **This tool could be coupled with tools for optimising wind turbine placement (e.g. NOWITECH Viper), allowing global optimisation.**

Further development

The need for such a tool is unclear, as wind farm developers often have good in-house tools or use professional software. Development of the concept depends on industrial interest.