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Cost-effective monitoring for remote environmental friendly O&M of offshore wind turbines

Wind energy is considered to be an important addition to fossil fuels in the future, and offshore wind energy is increasing in popularity because of the large areas available offshore with good wind conditions. Offshore wind turbines are unfortunately expensive to operate and maintain, mainly due to turbine access being expensive, time consuming and weather dependent. This research explores the possibility for performing operation and maintenance tasks remotely to avoid the high cost of access, and to enable work to be done regardless of weather conditions.

During the research a prototype of a remotely controlled maintenance and/or inspection robot will be created, and the capability and usability of the prototype will be tested by a group of users. This robot is intended as a tool for maintenance personnel, so they can perform work in a turbine without leaving their office. Since maintenance personnel are not expected to be experienced in robotics, it is important that the system is intuitive and easy to use, and techniques from human-computer interaction will be applied to ensure this. The goal is that the user feels like he is present in the turbine and can perform his work there, i.e. remote presence.