Data-driven maintenance in the industry leads to cost savings

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Smarter strategies for maintenance in the industry, using data from components, can reduce costs by 20-40 percent and make new forms of business possible, according to new research from Linnaeus University, Chalmers and SICS.

The fact that [maintenance](#) is vital for the infrastructure of our society to function has become painfully clear in recent years. The same applies in industry, of course. It's all about planning maintenance and refraining from unnecessary maintenance, while avoiding components to fail and cause downtime and rejects. A complex problem, since the systems are made up of many different components with different properties and with varying relationships between the costs of repairing and replacing.

This is where so-called data-driven maintenance comes into play – to create strategies for maintenance that are as optimal as possible by means of information from components, analyzes and simulations. The technology has been around for 20 years but hasn't made a breakthrough yet. This is something the researchers behind the project Future Industrial Services Management, from SICS, Chalmers and Linnaeus University, hope to change.

"We have combined our research with practical work in two case studies and have concluded that you could save 20-40 percent of the costs for maintenance," says Mirka Kans, associate professor at the Department of Mechanical Engineering and project manager at Linnaeus University.

The newly-finished project has involved both industry and IT companies. The united efforts have shown that it is possible to describe maintenance problems in a general way. The researchers have then developed a tool that uses computer simulation to compare different maintenance strategies.

In one of the case studies, based on actual train data from the company EuroMaint, the tool shows a cost reduction by nearly 40 percent for maintenance of doors and compressors. The calculations compare "classic" maintenance based on how many kilometers a cart has rolled with maintenance based on the so-called operation counters, such as the number of openings of each individual door.

"In the project, we have also studied the process of developing business models to provide maintenance services, with very good results. We have developed a framework for how to make the transition from maintenance with a product focus to creating benefits and values on a higher level," says Anders Ingwald, senior lecturer at the Department of Physics and Electrical Engineering.

During the three years that the project has lasted, the field of industrial maintenance has developed fast, driven by the development of the internet of things, cloud computing and big data. Many obstacles remain, however. The biggest ones are the lack of knowledge about the possibilities, and difficulties in assessing the possibilities.

"This is where our tool for evaluation of maintenance strategies has a great potential. We'd love to have the opportunity to verify the results with more case studies, and more detailed ones, and to develop the tool further from a user perspective and to create understanding. In a planned continuation of the project we will involve more partners to gain access to potential customers for the evaluation tool," says Mirka Kans.

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