

The virtual paper-making machine of the future

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Björn Sjöstrand. Credit: Karlstad University

A virtual paper-making machine makes it possible to test run and optimize operations without costly downtime in the industry. New

research at Karlstad University saves money and spares the environment.

"It is now possible to run the paper-making process virtually, without expensive equipment, to identify the optimal settings for each machine," says Björn Sjöstrand, who recently submitted his doctoral thesis in chemical engineering at Karlstad University. "This virtual paper-making machine offers the chance to spare the environment, which also saves money for the companies. Optimisation involves using a computer to determine how to operate the paper machine."

Virtual test running and optimization saves money and the environment

Paper manufacturing is a major and important industry in Sweden, and also a major consumer of energy. By using models for the various parts of the paper machine together, researchers have managed to find a way to run the whole machine virtually in a computer. They have developed a completely new [model](#) for the first part of the paper machine, and then used it together with models for other parts of the machine. The model of the complete paper machine, which is presented in Björn Sjöstrand's [doctoral thesis](#), gives paper manufacturers the chance to optimize their [machines](#) without production downtime, since this can now be done in a regular computer.

"Any downtime, even one hour, in the [manufacturing process](#) is extremely costly for companies," says Björn Sjöstrand. "It's also both costly and difficult to implement good tests in the laboratory. Now researchers as well as producers can test how every paper machine should be run to achieve the highest possible efficiency without production downtime."

More information: Vacuum Dewatering of Cellulosic Materials: New

insights into transport phenomena in the papermaking process. kau.diva-portal.org/smash/record.jsf?pid=diva2%3A1378560&dswid=-4812

Provided by Karlstad University

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