

More eco-efficient paper making

Paper manufacturing utilises large amounts of water. Reducing the use of water was the goal when the idea of a completely new chemical mixing system was born. The same innovation led to better quality and saved energy and chemicals.

THE CHALLENGE

Reducing the impacts of the paper-making industry

Paper and board manufacturing is one of the largest industrial consumers of water and energy. In Finland, for example, this industrial sector accounts for nearly one-third of all electricity consumed. At the same time, global paper consumption is continuously increasing despite the growth of electronic communications.

More efficient production and innovative solutions can noticeably reduce the harmful environmental impacts of this industry. The amount of water and chemicals required for the manufacturing process are especially critical in terms of environmental impacts: less water means that less energy is needed for heating, thus resulting in a lower level of emissions that require treatment.

Modern paper or board machines couldn't be used efficiently or produce a high-quality end product without chemicals added to the stock. However, the mixing process for chemicals and additives has

been largely ignored. The mixing event is often slow, incomplete and requires water, which in many cases has to be heated separately.

Finland has a long history of reducing water and energy consumption in the papermaking process. This has been influenced by manufacturers' desire to improve the quality of their production and products and simultaneously cut costs. The steadily rising cost of chemicals and energy put increasing pressure on companies to find more efficiency solutions. Around the world, stricter environmental regulations regarding, for example, water use and emissions also add to this pressure.

Ecoefficiency and quality go hand-in-hand

Wetend Technologies Ltd has launched a unique technical solution based on a completely new way of thinking: the TrumpJet® chemical mixing system. The system proportions papermaking chemicals



PHOTO: ERKKI MÄKIKONEN/KUVALITTI

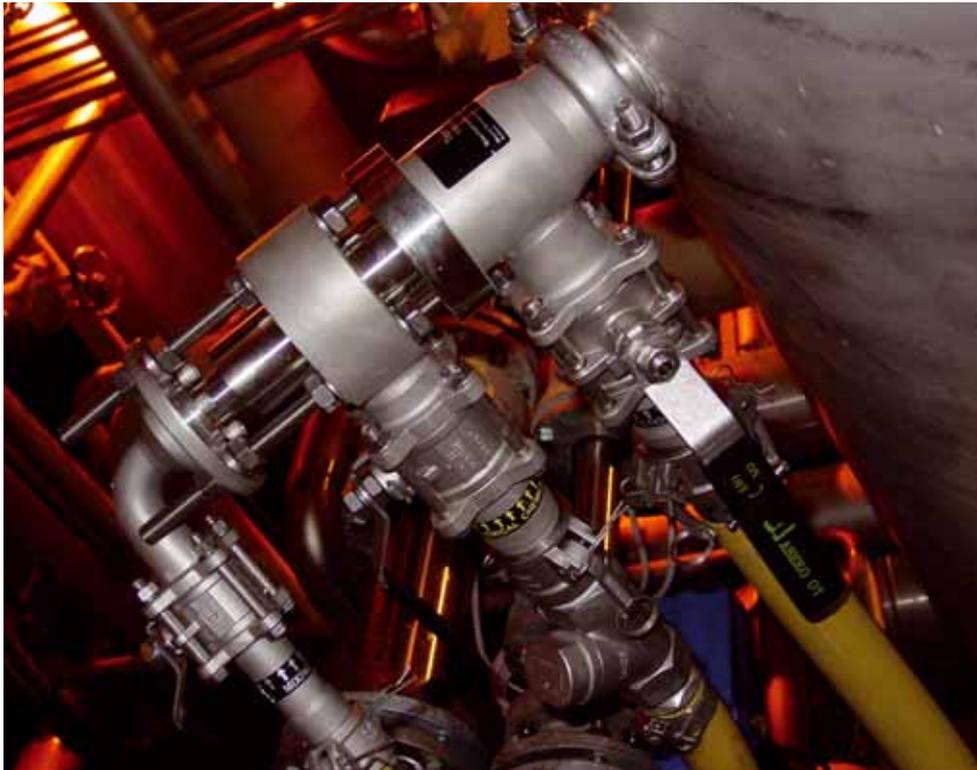
THE SOLUTION

and additives, injects and mixes them quickly and effectively into the stock flow using recirculated liquid from the main process itself.

This invention means a significant reduction in the amount of chemicals and additives needed in the process. Fresh water no longer has to be

added to the process, thus saving the energy that would be required to heat the water. Stock produced using this more-efficient system has a more uniform quality, which in turn improves the quality of manufacturing and the end product itself.

Based on this technology, Wetend Technologies Ltd has



THE COMPANY

Wetend Technologies Ltd, established in 2001, operates in the pulp and paper industry. This strongly export-oriented company develops, markets and delivers **additive mixing systems** for liquid processes, especially in the pulp and paper industry. In addition to Europe, the company has customers in the United States, Canada, Japan, Korea, China, Australia and Indonesia. 90% of production is exported.

Wetend Technologies Ltd strives to continuously develop and expand its product range. Invoicing at this growth-focused company has increased at a rate of 15–50% annually.

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THE SUCCESS FACTORS

developed the Trump-Jet® product line and applications for chemicals, additives and various processes. The technology is generally suitable for all paper and board qualities that utilise additives.

Wetend Technologies has delivered more than 170 systems to nearly 20 countries. Chemical consumption in these facilities has dropped by an average of 15–35%, and by up to 60% at best. The amount of water consumed annually has been reduced by a total of almost 20 million m³. Calculations show that the energy savings resulting from reduced water use at the plants correspond to 200,000–300,000 tons of CO₂ emissions per year.

Close customer contact and a broad cooperation network

The initial impetus for the innovation came from a need to improve the efficiency of the mixing process, something that was identified with the customer. Along with the Finnish paper industry, Ahlstrom Corporation, a multinational pulp and paper company, offered a suitable environment for developing and testing the innovation at the end of the 1990's. The operating environment and the developer's extensive experience in the industry made it possible to find completely new solutions in place of traditional, gradual product improvements.

A new company called Wetend Technologies Ltd was

established to handle technical finishing and commercialisation, and it purchased all rights to the innovation. The developer's extensive cooperation network and close customer contacts have supported development of the technology and helped organise production in

Finland, as well as an efficient move into international markets. Financial aid from the public sector used for research and product development, as well as the establishment and quick start-up of the new company, has been a key factor in the success of Wetend Technologies Ltd.

The benefits of TrumpJet® chemical mixing systems:

- Fresh water is no longer needed for mixing chemicals
- Reduced need for heating energy
- Chemical consumption decreases by 10–40%
- Improved paper or board quality
- Improved process flow
- Decreased costs

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