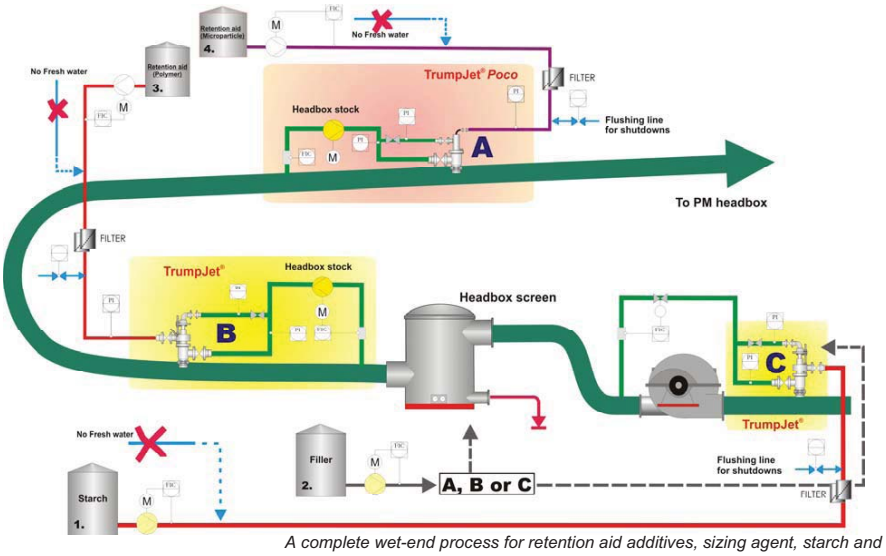
ISSUE 2010 EN

WETENDNEWS
FOR PAPER AND BOARD MANUFACTURERS AND ASSOCIATE ORGANIZATIONS

# A mill profits from mixing starch and filler simultaneously close to the headbox




*A complete wet-end process for retention aid additives, sizing agent, starch and filler.*

**The world's fastest fine paper machine in China is a forerunner also in use of TrumpJet mixing technology. The mill installed two TrumpJet® stations about four years ago for retention aid polymer, ASA sizing agent, bentonite and microparticle.**
**Recently the mill installed a new TrumpJet system also for starch and filler. Results are good as expected**.

Wetend Technologies Ltd has during the past several years consistently studied and developed concepts to bring filler and different chemicals from thick stock area and from early stage wet-end process closer to the headbox feed area.

In combination with fast TrumpJet® Flash Mixing process targeted results are reduction in consumption of additives, improved efficiency and cleanliness of the process due to reduced circulation of additives in the process, much faster response time and reduced energy consumption together with eliminated use of water or filtrate used conventionally in mixing.

The latest outcome of the Wetend development project is simultaneous mixing of starch and filler just before headbox feed pump and just before the stage where retention aid additives are mixed.

The first TrumpJet® Flash Mixing station for the starch & filler concept has been installed on a papermaking line in China. It is now in continuous production with the following excellent results and savings:

- Reduced starch consumption 20%
- Reduced CPAM consumption >30-40%
- Reduced APAM consumption >30-40%
- Total and filler retention unchanged
- Improved operation of centrifugal cleaners with less good filler in rejects of cleaners
- Consumption of optical brightener slightly reduced
- ASA consumption or sizing unchanged
- Quality unchanged
- Formation unchanged
- Tensile MD/CD slightly better or the same
- Bonding strength the same
- CD/MD profiles unchanged
- Dewatering unchanged
- Total net efficiency increased

The paper production line is producing 350.000 tn/a fine paper with a world speed record paper machine running speed 1700 m/min.

### Workhorse for the future: A, B and C of mixing

The new starch and filler dosing system is supported with the retention aid mixing concepts developed by Wetend Technologies Ltd with excellent manner and it makes the complete wet-end process more efficient, simple, and easier to manage.

*Small picture: Mr. Jari Mäkinen , Application Manager of Wetend, stresses importance to bring chemicals close to the headbox.*
*Big picture: TrumpJet Polymer and ASA Flash mixing station, the smaller diameter horizontal pipe in the middle is injection stock feed pipe for starch and filler mixing*

## News from CEO's desk

## Energy, fresh water, carbondioxide and chemical savings are driving forces for new investments

**Wetend Technologies approaches the milestone of 300 TrumpJet mixing stations and 1000 TrumpJet mixers supplied with the new fresh deliveries**

***Funding support from US Department of Energy (DOE) for TrumpJet Flash Mixing Technology for paper mills in USA at 2010:*** *Wetend Technologies Ltd will supply a set of TrumpJet® Flash Mixing systems for four (4) paper making lines on US East Coast. Objective is to radically reduce environmental load including energy, fresh water, carbon dioxide release and chemical consumption*

***China***
*Two brand new fine paper machines at Guangxi Yongkai in China have installed TrumpJet® Flash Mixing Technology for quality and environmental improvements as well. Also Sun Paper at Yanzhou mill will run six different wet end chemicals through TrumpJet mixing systems. In addition Zhumadian Baiyun Paper will install the TrumpJets for seven wet end additives.*

***Germany***
*A German top modern newsprint line with record speed is in process to install the TrumpJet® Flash Mixing system to also reduce fresh water and energy and to optimize use of chemicals.*

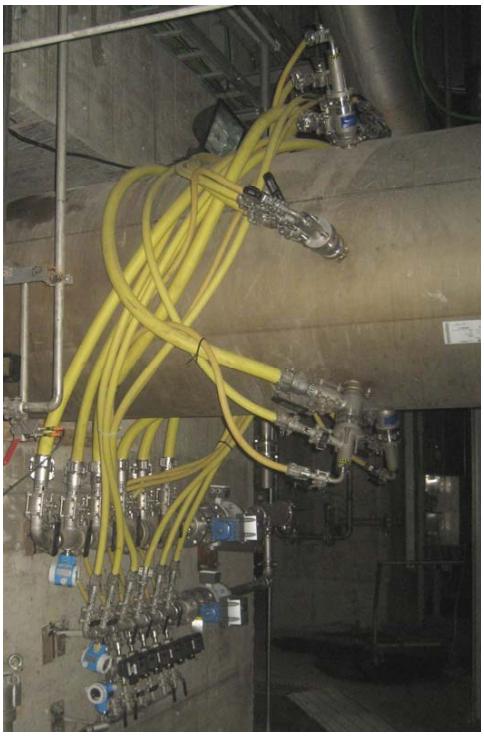
***Japan***
*Numerous sets of individual TrumpJet® mixing installations will be built for two liner board lines. The machines are running four and three ply sheet.*

***New technology***
*The first new starch and filler TrumpJet® Flash Mixing system close to the headbox has been started up with excellent results on a large world record speed fine paper line.*

*Jouni Matula*
*CEO*

*Professional teams of Wetend together with company's local representing network are in a continuous process to bring practical tools for the industry to cut costs and improve efficiency.*

# The world largest paper machine APP Jinhai, China is starting up with five TrumpJet mixing stations



APP China Jinhai mill has entered into the start up process on the world's largest coated fine paper machine at its mill in the Yangpu Economic Development Zone, on the Chinese island of Hainan.

PM 2 has a wire width of 11.8 m and a design speed of 2,000 m/min, length of machine is 430 m and its output will cover a range of 128-250 g/m² coated fine paper.

Wetend Technologies Ltd has supplied five independent chemical mixing stations for the wet end and stock preparation area of the mill. The stations are for retention aid additives, starch, sizing agent and defoaming agent.

Annual potential in energy and water savings with the TrumpJet stations:

- Fresh water savings: 2,3 mill m3 or 0,6 billion gallons/a
- Energy savings: 77 000 MWh or 260 000 mm Btu
- $CO_2$ reduction: 44 000 tn

The carbon dioxide saving is estimated to be 10% of the total $CO_2$ release of paper production.In addition to environmental savings the TrumpJet plants will help to optimize sheet quality, runnability and additive consumption.

*Above: One from the five mixing stations, TrumpJet Poco for retention aid agent*
*Right: Ms Zhang Min, Director of Wetend Technologies in China, Beijing and Mr. Pekka Kotila, Wetend Technologies Ltd., expect the five TrumpJet systems to bring considerable environmental and economical results for APP Jinhai mill.*

# Why is it possible to mix chemicals with help of circulated papermaking stock?

The first TrumpJet Flash Mixing systems were installed during 1999. Injection media was white water from the machine's white water silo. Very soon —year 2001— Wetend specialists also tested the TrumpJet innovation with circulated papermaking stock as injection and mixing liquid. Results were excellent. No fresh water, filtrate or white water was needed anymore.

Why does mixing with stock or generally with solids containing media work against all good old principles of papermaking chemistry? The solution lies in the novel patented TrumpJet innovation where the chemical and injection liquid meet each other about at the moment when the combined flow enters the main process pipe.

A powerful, solids containing injection flow is established and immediate transverse flash mixing engine is created. Complete mixing takes place in time of less than two seconds. This gives freedom to a papermaker to locate the mixing stations to optimum location. The closest mixing stations are today typically on the machine floor close to the headbox feed manifold.

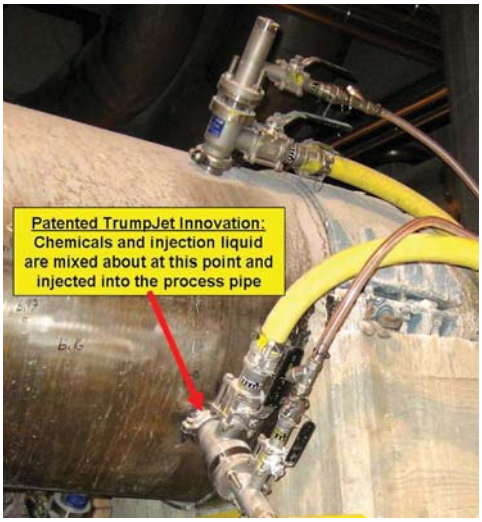
**TrumpJet Flash mixing patents are approved globally**

National patent offices have approved nearly 30 patents applied by Wetend Technologies Ltd for innovations of TrumpJet Flash Mixing technology. Total number of TrumpJet patent applications is about 50 in close to 20 countries. The patents will protect new innovations from copying and unfair competition.

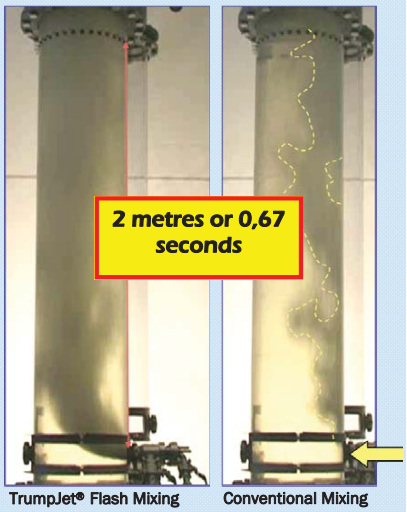
Customers are using the patented technology globally with a good success. The patents also safeguard several results the joint developments Wetend and key account customers.

*A complete TrumpJet Poco Flash mixing station installed on a machine floor of a large fine paper machine with delay time of two seconds to the headbox.*

*Below: Excellent paper with patented technology.*




## Flash mixing of gas into a process —New TrumpJet Forte G




*Comparison between Flash mixing with high volume injection liquid and conventional transverse mixing.*

**Wetend has developed a new TrumpJet® mixer modification: the TrumpJet® Forte G. The unit injects air or gas into process with transverse injection technology.**

The Flash Mixing concept mixes gas into stock or any other liquid efficiently within a few seconds. Due to the very quick mixing of the gas, reactions in the process take place uniformly and instantly, resulting to savings and homogenous end results. Gas mixing applications can vary from micro flotation applications to mixing of novel gases. The gas can be in gaseous format or dissolved into liquid.

## New team members at Wetend Technologies Ltd.

Mr. Esa Nuutinen has been appointed as Sales Manager in April 2010. His main area of responsibility is sales and customer support with all activities in Europe, focusing on the EU region.

Mr. Nuutinen has strong working experience in machinery business internationally for pulp paper and board mills for number of years. His earlier employment was at Saimatec Engineering Ltd in Finland where he operated as global sales director for roll packaging lines for paper and board mills.

Mr. Tapio Rasanen has been appointed as a Project Manager since beginning of May 2010. He is responsible for the project management including purchase and project management. His previous appointment was at Andritz as a Project Manager.

*Mr. Esa Nuutinen (rigth) and Mr. Tapio Rasanen are happy members of Wetend team.*

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