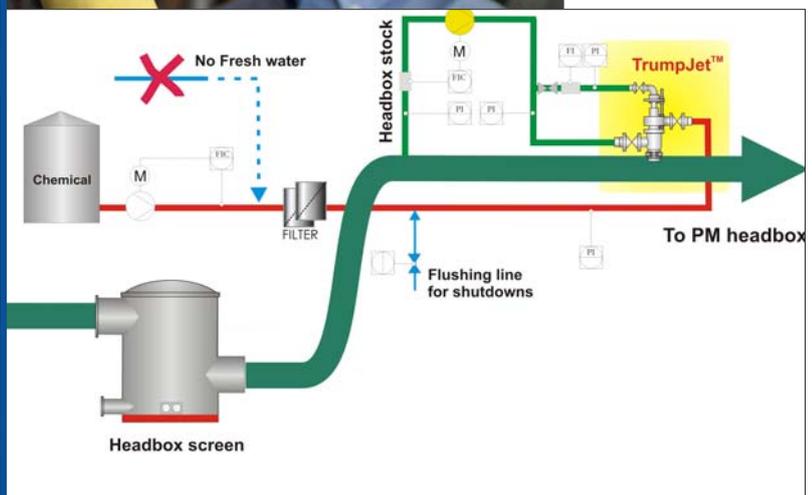


TrumpJet® Chemical Flash Mixing Station

A system for effective mixing of papermaking chemicals and additives



TrumpJet® Chemical Flash Mixing

TrumpJet® Flash Mixing is an advanced system to mix papermaking chemicals into the main process with an effective and uniform manner. It improves paper, board or tissue quality, improves economy by cutting chemical consumption 20...60% and eliminates completely use of fresh water or clean filtrate for post dilution.

The TrumpJet Flash Mixing system located just before paper, tissue or board machine headbox leads a way to more efficient operation. In a TrumpJet mixer, the chemicals are injected into the main flow with a high speed hollow injection jet. Injection liquid is circulated headbox feed stock.

Recent development of Wetend Technologies has shown that with Flash Mixing technology, mixing process is significantly improved giving high efficiency and very short impact time. This result is exploited in development of a mixing process that can question conventional wet end process chemistry and develops additive concepts where hydraulic mixing process and chemical reactions can be combined in a novel manner with efficient results.



Wetend has developed a new concept where opposite charge chemicals or pairs of chemicals can be mixed in a single reactor zone with good results. The technology provides an opportunity to i.e. maintain generated filler-fiber composite and flock structures intact before forming and dewatering. It also enables the use of aggressive additives as well as develop composite structures for the web. This is

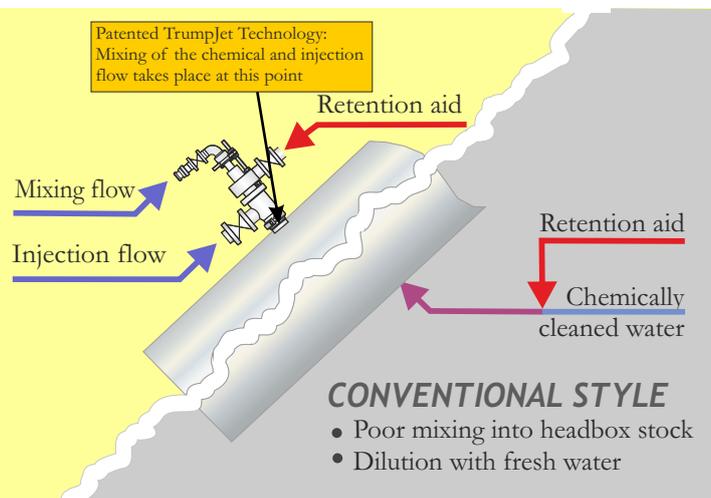
also a novel way to add new type of additives and materials e.g. nano- and microfibers into process stream. The smart resource effective concept improves economics of production or changes and develops sheet characteristics. The new *TrumpJet Injection Pump* and compact mixing stations make it possible to run the production in very clean and stable conditions.

NEW ADDITIVE MIXING SYSTEM

Features and benefits

Flash mixing with large volume injection flow makes it possible to locate the mixing stations into optimal close positions just prior to headbox with costs savings and improvements in operation:

- No fresh water or filtrate is needed resulting to considerable savings in fresh water, energy and carbon dioxide emission
- Considerable savings in chemical consumption
- Good quality and more uniform sheet structure



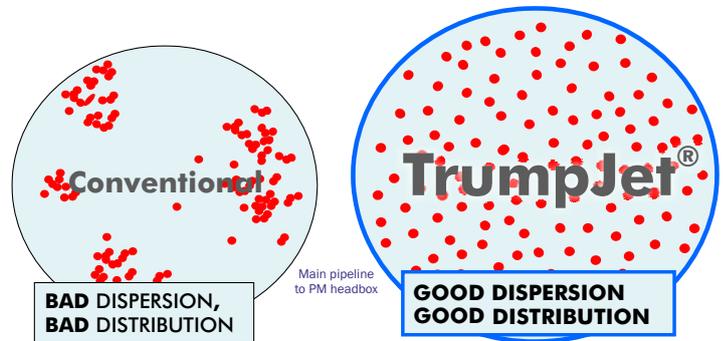
Fast and thorough chemical mixing with TrumpJet® Flash Mixing Reactor



TrumpJet Flash Mixing Reactor mixes numerous additives in a chaos type of pattern efficiently very close to the machine. The system will maximize efficiency of the used additives.

Customer Benefits

- Reduction of chemical consumption 20...60% (even 100%)
- Improvement of ie. paper or board quality, formation and profiles
- Improvement of net efficiency of production
- Eliminated use of fresh water
- Considerable energy saving
- Reduction of CO₂ emission
- Opportunity to develop composite-type characteristics of paper or board

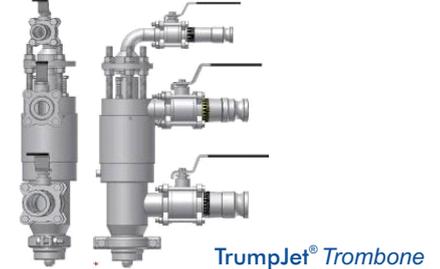
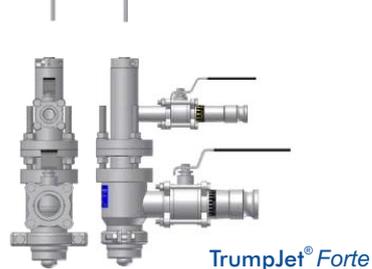
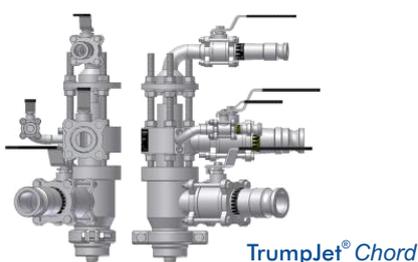
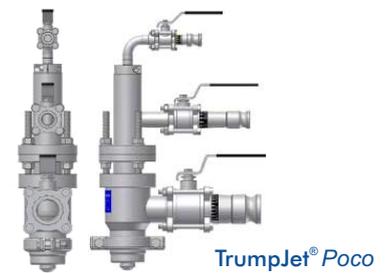
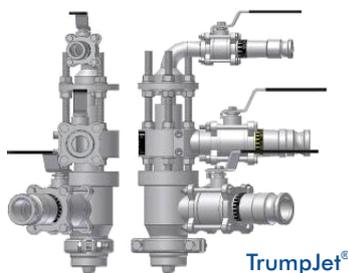


TrumpJet® Family of Mixers

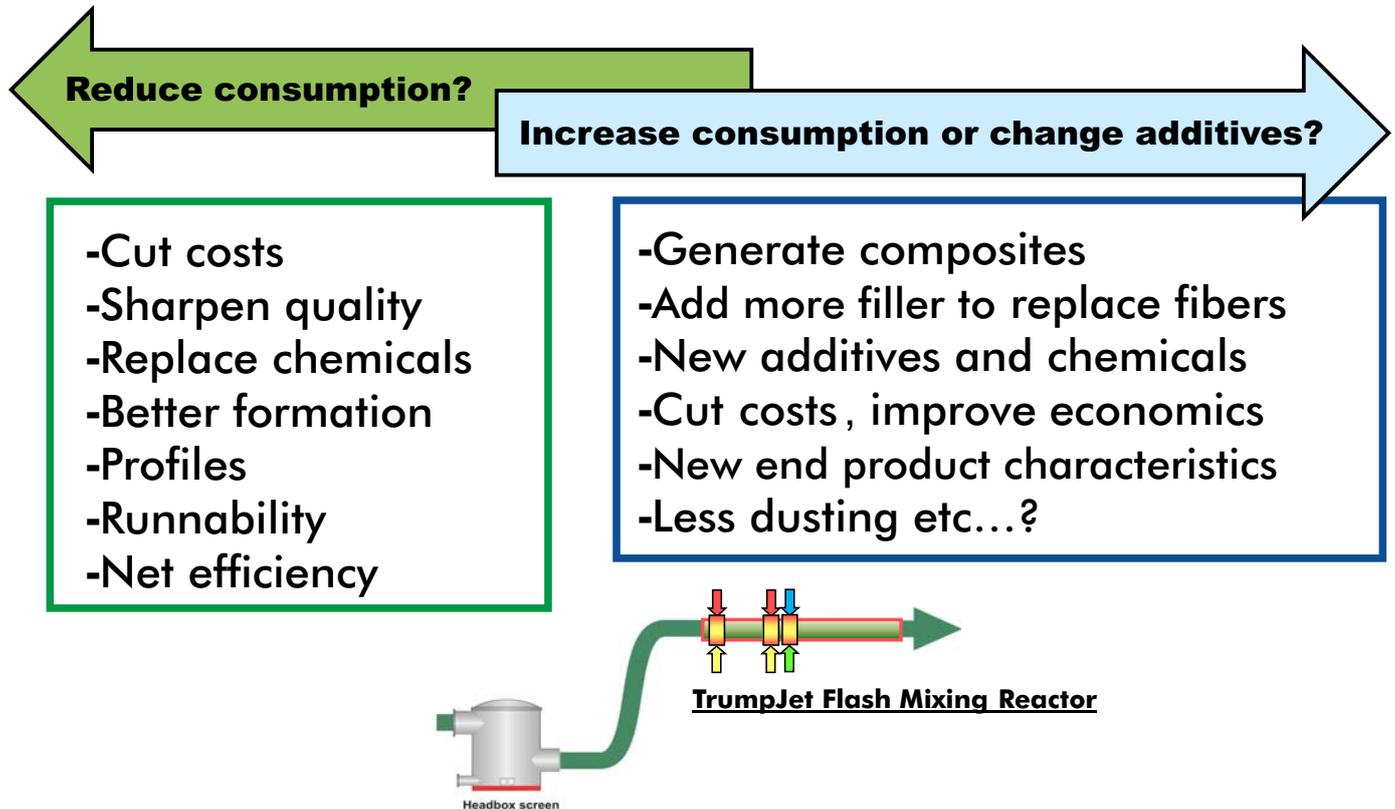
The TrumpJet® mixing systems comprise a full family of mixers to fulfill needs of various applications and suit to be used in effective manner with different papermaking chemicals and additives.

The series covers:

- Mixing of hydraulic liquids from very tiny flows to high volume capacities in various pressures and temperatures
- Mixing of gases like air, O₂, CO₂, etc.
- Mixer to mix gently shear sensitive additives and a model for aggressive mixing for shear tolerant additives
- Chemicals mixed in groups premixed together just 0,1 seconds before initial mixing or mixing of additives simultaneously but through separate, isolated channels
- Chemicals mixed in groups with the same charge or chemicals mixed separately with opposite charge
- A special mixer for injection media that may have accidental large size impurities.



TrumpJet® Flash Mixing Reactor for multiple additives opens new opportunities and improves resource efficiency and sustainability



Wetend Technologies Ltd

Wetend Technologies Ltd is a Finland based corporation, established in 2001. The company serves paper, board and pulp producing customers globally. Based on innovative solutions, R&D investments and close cooperation with end users Wetend has generated a unique, patented mixing technology that injects and flash mixes additives and chemicals into high volume process flows efficiently and with significant economical benefits.

Patented TrumpJet Flash Mixing technology for excellent paper

The singular TrumpJet mixing technology process prevents advantageously unnecessary use of fresh water and cuts completely heating energy in mixing of papermaking chemicals into the papermaking processes with reduced CO₂ emission. The most important thing –paper quality– develops positively increasing quality and production efficiency.

530 TrumpJet® mixing stations have been supplied to over 20 countries in North-America, Europe and Asia.

Environmental benefits: The TrumpJet installations supplied are today saving approximately 70 million m³ of fresh water per annum. The energy saving at the mills is total more than 3 million MWh and there is an annual reduction potential more than 2 million tons of CO₂ emission.

Wetend Technologies offers developed services for papermills to analyze and optimize injection and use of additives in the papermaking process. We provide also mechanical and process field service for our equipment and processes to ensure optimum performance.

Wetend Technologies Ltd

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Wetend Technologies Ltd has protected TrumpJet® Technology processes and products with several patents and patent applications in numerous countries.

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