



# PULP AND PAPER INDUSTRY

## Detailed Overview

Systems and Components for the Pulp and Paper Industry

For any further questions, please feel free to contact our competent sales team.  
Our inside and outside sales team are always at your service!

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## Flowtec - About Us

We are general agent and partner of leading international manufacturers and specialists in the fields of systems and components for the pulp and paper industry and industrial valves.

We have already been offering an extensive product range to our international customers for many years.

Our expertise is based on many years of experience, in-depth know-how and the possibility to offer solution-oriented concepts at a good price-service ratio.



## Flowtec - Systems and Components

Our product range covers investment, replacement and wear and tear components for the pulp and paper production.

We work together with renowned and leading manufacturers within the pulp and paper industry.

Next to our wide product range, we will be pleased to support you further by conducting on-site audits of your systems and subsequently presenting you improvement possibilities and methods to increase your efficiency.

Let us be the strong and reliable partner on your side.



## Flowtec - Industrial Valves

Our wide product range covers industrial valves manufactured by internationally leading companies for almost all applications and requests. We will be pleased to advise you and act as your competent partner from the planning phase through product selection to the initial operation. Our employees have more than 30 years of experience within the pulp and paper industry, as well as the general industry.







With Flowtec you have an experienced partner by your side. We are specialized on handling projects of any size professionally and reliably for our customers.



## Contact Details

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## Overview Product Portfolio - Systems and Components

	<b>AFT - AIKAWA GROUP</b> Screening, Refining, POM Approach Flow Technology		<b>FLOOTECH</b> Raw water, process water and waste water treatment, boiler plant water treatment
	<b>ALU-RELECO</b> Teflon® and fluoroplastic coatings for rolls, cylinders and other components in the paper industry		<b>KAPOTEK</b> KTF self-cleaning police filters
	<b>BELLMER KUFFERATH</b> Fiber, reject and sludge dewatering systems; dandy roll for formation improvement		<b>KEMPULP</b> Systems and components for pulp mills
	<b>BELLMER LANG-HAFNER</b> Hoods, air systems as well as steam and condensate systems for paper machines and industry buildings		<b>PROCEMEX</b> Paper break analyses, paper web defect monitoring, formation measurement
	<b>BELLMER</b> <u>Paper Technology:</u> Customer oriented new built and upgrades of paper machine plants <u>Separation Technology:</u> Various technologies for thickening or separation issues		<b>RUNTECH SYSTEMS</b> Professional solutions for vacuum systems, dewatering, tail threading, on-line cleaning, sheet stabilizing systems, dryer section optimizations
	<b>CERAMANT</b> Specialist for wear parts or refurbishment with adapted wear protection		<b>SPA FILTERTECHNIK</b> Self-cleaning gravity strainer for water with fiber content
	<b>DANGO &amp; DIENENTHAL</b> Filters for various applications and liquids		<b>VALMET</b> Systems and components for virgin pulp and recycled fiber stock preparation
	<b>FINCOAT</b> Coating solutions for rolls, cylinders and other components		<b>WETEND</b> Effective injection system for chemicals by using TrumpJet® technology

## Sales Areas

Flowtec operates mainly in Europe. The regions include Austria, with Flowtec's head office, and the Eastern European region.

Apart from Slovakia and the Czech Republic, Flowtec serves customers in Poland, Hungary, Romania, Slovenia, Croatia, Bosnia Herzegovina, Serbia, Bulgaria, etc. You can always count on our competent sales team in the respective country.

We would be glad to assist you! Please contact us.





## **AIKAWA FIBER TECHNOLOGIES (AFT) is specialist in improving the performance of existing equipment**

Aikawa Fiber Technologies (AFT) is a global supplier with own manufacturing centers all over the world.

The company offers performance components and new equipment

to optimize screening, refining, stock prep, and machine approach operations.

AFT was found through acquisitions of Advanced Fiber Technologies, AFT Finebar and

POM Technology in 2006.

All Aikawa Group companies share a strong commitment to research & development, and to provide an ever-improving level of customer service.

## **Improve the performance of existing equipment**

AFT identifies areas for performance and cost improvement with your existing equipment and subsequently recommends the right components to deliver the best results.

### **Cylinders**

Screen cylinders represent AFT's core business. AFT offers the widest selection in the industry and provides cylinders for all brands, models and sizes of screens. Whatever the application, they have the right product. Today, AFT is the world's largest supplier of screen cylinders.

AFT MacroFlow™ is the most widely used wedgewire screen cylinder in the pulp and paper industry.

MacroFlow2 has the world's most accurate and precise slot tolerances. Slot width variation is so tight that it improves screening efficiency by 5% and boosts capacity by 10%.



### **Rotors**

AFT is the world's premier supplier of pulp screen rotors, offering replacement rotors for virtually all screen makes and models. The GHC™ and EP™ rotors incorporate a state-of-the-art design with the latest advances in manufacturing methods to meet a wide range of mill priorities.

AFT offers three types of rotors: The GHC™ rotor, certified EnergySmart™, is a closed-rotor design that is ideally suited for OCC and kraft applications. The EP™ foil-type rotor, which combines an ideal pulse form with minimum power consumption, offers high performance, especially in Deink and TMP applications. AFT RP™ rotors are replacement rotors built to provide a seamless substitute for originally-installed equipment.



### **FINEBAR® Refiner Plates**

AFT FINEBAR® refiner plates and segments are made for virtually all LC disc refiners – and a range of conical refiners. The benefits have been confirmed: higher quality fiber at less energy consumption.

The patented manufacturing technology utilizes precision laser-cutting to create ultra-fine bar patterns with exceptional strength and throughput. In addition to full cones for conicals, FINEBAR® offers full, reduced-diameter and mini-segment designs for disc refiners.

FINEBAR® delivers improved pulp strength, lower specific energy consumption and improved plate life.



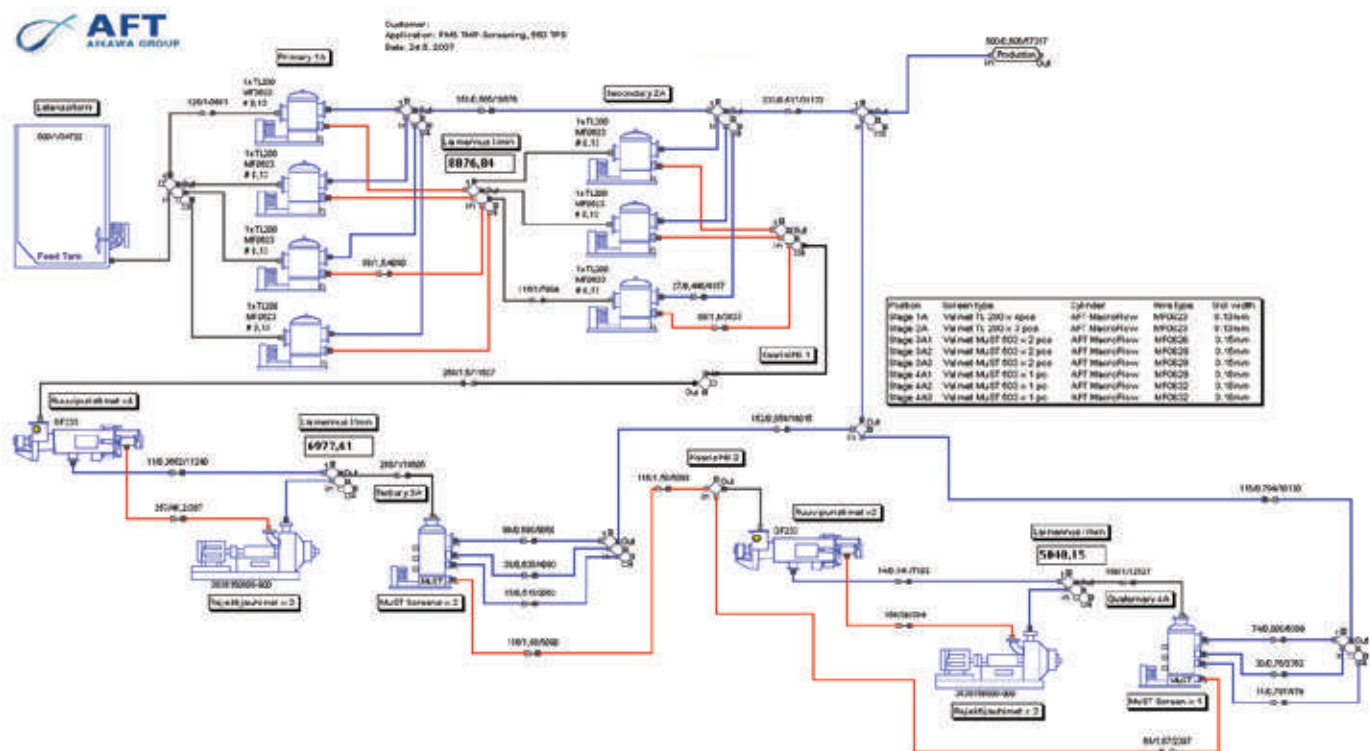
## Services

### SimAudit™ - Optimizing the performance of screen systems

AFT's process optimization services combine the expertise of AFT's application engineers with AFT's proprietary SimAudit™ simulation program and mill-based process audits.

AFT's team of highly experienced application engineers have backgrounds ranging from pulp and paper mill operations to working with equipment suppliers and research organizations.

The insights and efforts of these individuals are embodied in AFT's established and rigorous procedures for assessing and auditing pulp screening and refining systems. The process data obtained is analyzed with SimAudit™, a unique tool designed to assess the current status of a screening or refining operation and to reveal its potential for optimization.



### Mechanical Equipment Audit

AFT evaluates the mechanical condition of mill screening equipment and provides a detailed assessment. The evaluation includes the inspection of screen bodies, cylinders and rotors, as well as the determination of wear rates through imprint analysis.

### Rechroming

The life of a cylinder can be extended by rechroming it – a process that entails the removal of the old chrome prior to the application of the new. This can be done several times depending on the condition of the cylinder.

An AFT mechanical audit is an easy way to determine the best time to rechrome, as candidate screen cylinders must be taken out of service before the wear reaches the base metal.





## Improve your process with new equipment

Sometimes you need more than an engineered component to achieve results. AFT offers a range of equipment for stock preparation and pulp handling, including recycled fiber.

With its POM technology, AFT has been a pioneer in compact wet end systems. Through its parent company Aikawa Group, AFT also supplies machines and complete lines for fiber processing and pulping.

### POM Technology

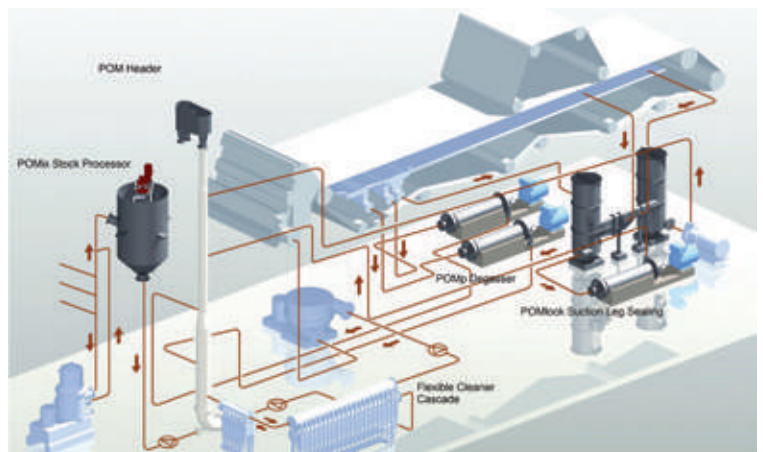
POM's compact wet end technology is based on a novel approach: simply less.

An important part of AFT's technology is what they leave out - tanks, silos, wire pits, etc. A much smaller footprint and a simpler solution for retrofit upgrades and new machines.

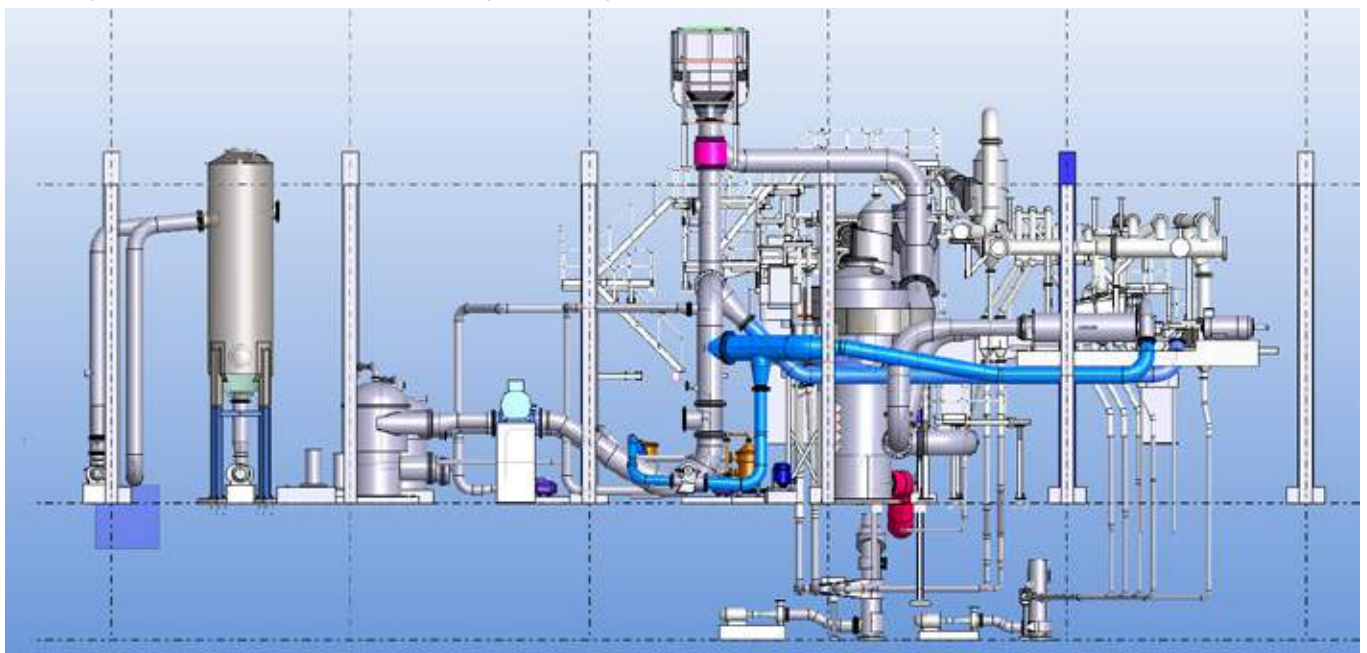
Air is removed early in the process, reducing the volume significantly – typically three times less than conventional “Big Box” equipment.

An airless system, without wire pits, silos and tanks gives you at least **four important benefits**: stable paper production, a clean sheet, fast start-ups and grade changes, and less energy consumption.

- POMix™
- Flexible Cascade™
- POMp™ Entgaser
- POMlock™
- CycloPipe™



POM system of a modern 480,000 t/year 2-layer testliner machine



## Machines

AFT is a full-scope supplier of recycled fiber systems, including OCC and deinked plants and their process units.

The company can provide complete recycled fiber lines, or the equipment can be used to upgrade existing fiber lines. High emphasis is put on technologies which promote energy savings and end quality properties of the pulp.

With AFT machines you will reach:

- Better efficiency
- Improved cleanliness
- Higher capacity
- Reduced fiber loss
- Better reliability
- Lower energy consumption

### Coarse and Fine Screening Equipment

- **MaxFlow™**: features two stock inlets, thereby promoting even distribution of pulp in the screening zone
- **MaxFlow™ Headbox**: inflow screens, do not produce pressure pulsations that carry over to the paper machine
- **ADS-Separation**: „Compound Function Screen“; with a single machine, both coarse and fine screening is accomplished. The accepts can be sent to the final chest with no further screening requirements.



Last stage screens:

- **AlphaScreen™**: „Compound Function Screen“, which defibers paper flakes and continuously removes foreign materials from the stock.
- **MaxSaver™**: outflow type screen, which is specifically intended to minimize fiber loss in the screening process.



**ALU-RELECO is specialized in Teflon® and other fluoroplastic coatings, with decades of know-how and experience.**

Alu-Releco Oy, which was founded in 1992 in Finland, is operating in the surface treatment industry.

The company provides professional surface treatment with

Teflon® and other fluoroplastic coatings for various industrial applications.

Alu-Releco serves its customers flexibly and individually. Continuous quality control, high

quality and customer-oriented coating solutions, as well as research & development with skilled and experienced personnel are Alu-Releco's most important success factors.

## Coating solutions for rolls

Alu-Releco provides coating solutions for lead rolls, guide rolls (also in positions which are doctored), spreading rolls, suction rolls, fly rolls, press rolls and other rolls.

Coatings that are used for rolls are Teflon® and other fluoroplastic coatings, such as PFA, FEP, PTFE, PVDF, ETFE, epoxy, combinations coatings (hard coating + fluoroplastic) and Teflon® sleeves.

### Main advantages:

- Provides excellent corrosion and chemical resistance
- Reduces the need for cleaning and allows easier cleaning
- Reduces stickiness
- Increases productivity and quality
- Can be used in temperatures up to 260°C



## Coating solutions for cylinders

Alu-Releco offers AR520 WC-carbide - Teflon® combination coating as a coating solution for drying cylinders. This coating can be manufactured on-site.

### Main advantages:

- Provides excellent corrosion and chemical resistance as well as wear resistance
- Non-stick properties, reduces the need for cleaning and makes it easier
- Reduces the sticking of material to the cylinder surface
- Improves the quality of the final product as well as productivity
- Can be used in temperatures up to 260°C
- Doctor blades can be used



## Coating solutions for wet end

The company Alu-Releco provides MicroCoat® coatings for head boxes, forming areas and plates, feed pipes, inlet headers, sifting drums, wire pits, screens, rubber rolls, stone rolls and press rolls.

### Benefits:

- Non-stick properties
- Reduces stickiness
- Makes cleaning easier and quicker
- Decreases bacterial growth on surfaces
- Prevents the product from sticking on surface
- Improves the quality of the final product as well as the productivity
- Can be applied on-site, the work is carried out during short shutdowns



## Coatings for other applications

Alu-Releco's coating solutions (Teflon® and other fluoroplastic coatings, such as PFA, FEP, PTFE and epoxy) are also available for suction boxes, valves, piping, bearings and other machine parts.

### Benefits:

- Provides excellent corrosion and chemical resistance
- Non-stick properties
- Reduces the need for cleaning and makes it easier
- Reduces the sticking of impurities
- Improves the quality of the final product as well as the productivity



**The BELLMER Group has designed, manufactured and installed products and plants for the paper industry and for solid-liquid separation since 1842.**

Bellmer was founded in 1842 in Germany as a family-run business.

Bellmer is a high performance machine and plant manufacturer who does not only

convince through state-of-the-art products, but offers solutions with a sound know-how for almost any case of application. Customers from the field of pulp and paper

or from the line of industry dealing with thickening or dewatering of all sorts of suspensions have been benefitting from Bellmer's experience and expertise.

## Members of the Bellmer Group

**Bellmer GmbH**



**Bellmer GapCon GmbH**



**Bellmer Kufferath Machinery**



**LANG-HAFNER**



**Bellmer Iberica Machinery S.L.**



**Bellmer Vaahto Paper Machinery Oy**



## Paper Technology

Bellmer advises, plans and designs plants or modernization projects for the pulp and paper industry. From the approach flow via the wire section up to the pope reel, complete paper machines can be supplied ready to use.

Bellmer develops machine building solutions with integrated control technology that are implemented in a turnkey way and commissioned and started up by specialists. In addition to a joint optimization phase, 24-hour service is offered as a standard feature 365 days a year.

Fields of application include fine paper, testliner, cardboard, special papers, decor papers and impregnated papers, move and modernize, fiberboard, safety papers and the nonwoven industry.

## Separation Technology

The paper technology sector is supplemented by the company sector separation technology: Dewatering of various suspensions from the environmental and paper industry. The two company sectors link special expertise in the paper and separation technology for the customer's benefit.



## Headbox

### **TURBOSeries: TURBOVaahtoJetter™, TURBOStreamer™, TURBOflower™, TURBOCircler™**

Bellmer offers high quality headbox systems for each product range. In addition to the modern hydraulic headboxes of the TURBOSeries™ such as the TURBOVaahtoJetter™ for fast paper machines, also headboxes with rectifier rolls, the TURBOFormer™ for particularly high requirements concerning formation are manufactured.

In the field of very high grammages or space-saving multi-ply concepts, the vat former Bellmer TURBOflower™ offers a wide range of use. For optimally equal supply of stock to the headbox, the circular distributor Bellmer TURBOCircler™ is the right tool to achieve ideal CD profiles.



## Breast Roll Shaking

For different cases of application, we are able to support you with two different models:

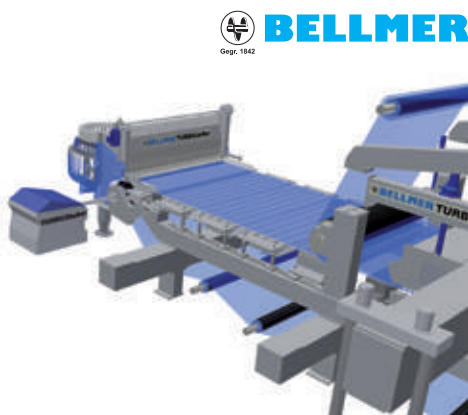
### **EQUALShaker™**

The EQUALShaker™ improves the formation in the paper and board production for speeds of up to 450 m/min. The breast roll is shaken with an acceleration up to the speed of gravity (9.81 m/s²). For higher paper machine speeds, higher shaking forces are required.

### **TURBOShaker™**

The TURBOShaker™ eliminates disturbing mechanical forces by its design principle based on centrifugal masses that balance each other.

Due to its unique drive design, the TURBOShaker™ only requires a small footprint which makes this tool an ideal unit to retrofit to already existing plants.



## Wire Section

For wire sections, highest requirements regarding quality of production and components need to be fulfilled.

With one-layer or multi-layer design, custom-tailored optimum solutions are elaborated. Bellmer exclusively uses solid and proven parts of stainless steel in order to ensure durability. Classical cantilever solutions or clever wire draping equipment, whatever will be needed, accurate design, production and erection of the components according to schedule goes without saying that top performance will be provided.



## White Water Filtration

### TurboDrain™ Recovery TDR

White water filtration with the Bellmer TurboDrain™ Recovery TDR is a new technology for the paper industry.

It relieves water cycles of paper mills and cleans the white water II. The TurboDrain™ Recovery TDR is a belt thickener tool featuring a most compact design which is offered in various sizes and types. After dosage of flocculent, the flocculated suspension reaches the circulating belt of the TurboDrain™. The separated solids are recovered; the recyclable material is fed back to the production and the disturbing matter is removed from the process. Part of the filtrate is used for wire cleaning and is subsequently used as dilution water. Capture rates of > 98% can be achieved. The clear filtrate gained is almost solid-free and available for further use.



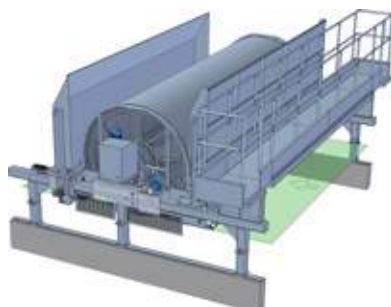
## Dandy Rolls and Open Wire Rolls

Bellmer Kufferath Machinery is market leader with more than 80 references of dandy roll systems up to 2,000 mm diameter or up to 1,100 m/min machine speed in different versions and body lengths.

### Dandy Roll System AKUFORM® R/RX

Improvement of sheet formation and surface quality.

- Improvement of paper quality, especially with decor and cigarette papers
- Compared to double screen formers large and consistent flake structure, no washing out of the surface
- Reduction of pinholes and constantly fine porous sheet
- No drop markings from water splashes (RX)
- No dirtying of cut squirt and press section (RX)



## Hybridformer

### TURBOFormer™

The Bellmer TURBOFormer™ ensures increased production through additional dewatering in the wire section.

Subject to product and basis weight, the Bellmer TURBOFormer™ is able to enhance the performance of endless wire machines up to 30%.



**BELLMER**



## Press Section / Shoe Press

### TURBOPress

Short or no draws at all, mature designs and fast felt changes are the main features of the Bellmer press sections. In order to be able to create ideal press sections, the shoe press TURBOPress was developed. With this wide-nip press, highest dry contents can be achieved, upon simultaneously treating the bulk with care. This tool ensures gentle but nevertheless very efficient press process resulting in best dry contents upon only slightest strain to the raw paper.

The TURBOPress is a shoe press module, which is available in three different module types: XXL & XL, L as well as S. Bellmer GapCon provides the optimum solution for every need, whether the shoe press is needed for a rebuild or for a new machine. The TURBOPress is a modern tool to improve the overall efficiency of a paper machine. It optimizes the required paper properties and reduces energy costs.



## Size Press / Film Press

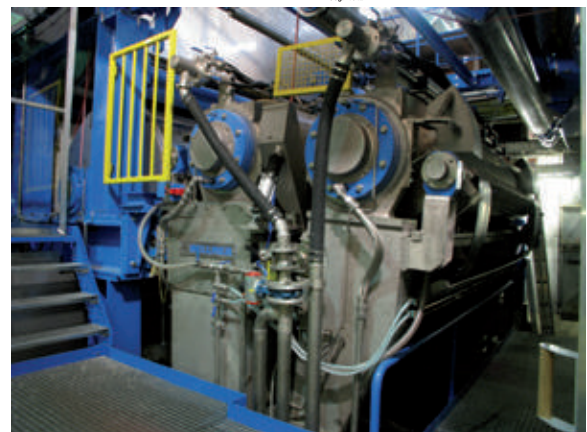
Bellmer size presses captivate because of their perfect functionality and reliability. They supply size presses in standing or hanging execution, optimally adapted to the requirements of your paper web and its sizing. High production speeds entailing high process temperatures are taken into consideration when establishing the design.

### TURBOSizer™ / TURBOFilmSizer™

Due to the advanced construction and design, Bellmer size and film presses TURBOSizer™ and TURBOFilmSizer™ operate with maximum security and cleanliness and thus ensure an even, one- or two-sided glue or pigment application.



**BELLMER**





## Pulper

### TURBOPulper™

Bellmer TURBOPulpers™ always ensure optimum stock disintegration - if beneath the paper machine for the wet broke and the paper web pulping or the disintegration of dry broke.

Bellmer supplies - subject to the location of installation, kind and quantity of stock - the adequate design and size. There is a choice between the standing and suspended type with round vat or the flat pulper carried out in low height.



## Dryer Section

### TURBODryer™

With Bellmer as a partner, customers benefit from their great experience and expertise in this field. Bellmer provides advanced overall solutions with cascade type steam and condensate systems as well as the matching hood technology. Their drive designs either with guide roll drive or direct drive and the individual techniques of ropeless transfer are based on the requirements of faster and faster machines.

The cooperation with the Bellmer subsidiary company Lang-Hafner specializing in air & steam systems ensures adequate and custom-tailored energy saving designs. High-quality steam and condensate systems as well as hall aeration or hood and air technology can be combined from one source to your advantage.

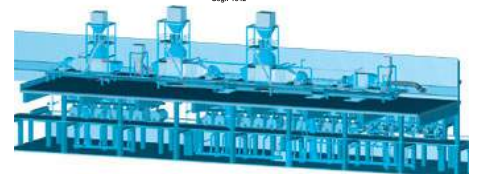


## Threading Systems

### TURBOFeed

Threading systems have an essential influence on the efficiency of paper machines. Products belonging to the TURBOFeed series reach from the classical rope guiding elements, such as rope pulleys, rope drive and rope tensioners, up to pneumatic ropeless transfer systems.

Additionally, Bellmer has developed adequate stabilizers for faster paper and board production.



## Calender

The "hard" or "soft nip" calender is an essential component of the paper machine, influencing factors such as smoothness, gloss and CD thickness. Bellmer GapCon's calenders are custom built to meet each customer's requirements yet using standardized equipment.



## Reeling Technology with the TURBOReeler™ Family

### Reeling:

TURBOReeler™, TURBOCheck™, TURBODur™, TURBOCenterWinder™



With a product of the TURBOReeler™ family, you decide on a reproducible, fully automatic reel change at any time.

The TURBOReeler™ is a conventional reeler in its perfected form. The modular box-type frame allows fast and secure installation. Cables, pneumatics and hydraulics are safely integrated in the stable quality frame.

Due to Bellmer's proven large-roll reeling technique, customers have been able to perfectly reel diameters of up to 4,200 mm with the TURBOReeler™.

Monitoring and setting of any operation parameter is effected through process visualization at the clearly laid out control panel. Just in case some error should slip in, the specially developed diagnosis system TURBOCheck™ will help. A criterion for the reeling quality of a paper roll is the reeling hardness.

For the TURBOReeler™, the proven reeling hardness control TURBODur™ was developed. Thanks to this unit, the press curves of the spool to be reeled can be adjusted according to the requirements of the paper grades used.

Should your paper be particularly sensitive or should its air permeability be low, we can provide you with the TURBOReeler™ Pro featuring a secondary center drive. This will ensure that the secondary reeling build-up can be performed in a sensitive way, equipped with the corresponding drive technology.

There are papers such as thermo papers that are so sensitive that one should not even look at them too closely. One inadequate reeling cycle and the quality paper becomes waste. This absolutely highest demand and most difficult task is perfectly mastered by our TURBOCenterWinder™. Through its unique design, each paper roll is reeled up with just one center drive from the starting core up to the end.







Gegr. 1842

# BELLMER

# FLOWTEC

## Unwinding and Splice:

### **TURBOUnwinder™**



**BELLMER**

The TURBOUnwinder™ is a conventional unwinding station in its perfected form. The modular box-type frame allows fast and secure installation. The TURBOUnwinder™ is a cost-favorable upgrade for existing slitter winders and can be well used when changing the reeling process to large-scale technology. Subject to the specific requirements on site, inclined hoist for crane-free pick-up of the reel spools from the ground, equipment for quick ejection of the empty reel spools, oscillation of the paper web or brake generators can be integrated into the system.

### **TURBOCenterSplicer™**

There are papers such as thermo papers that are so sensitive that one should not even look at them too closely. One inadequate unwinding cycle and the quality paper becomes waste, making the following conversion step unnecessary. This absolutely highest demand and most difficult task is perfectly mastered by our TURBOCenterSplicer™. Through its unique design, each paper roll is completely unreeled with just one center drive. The transfer of the paper web is effected by means of our sensitive feeler roll with shortest rest paper flags.

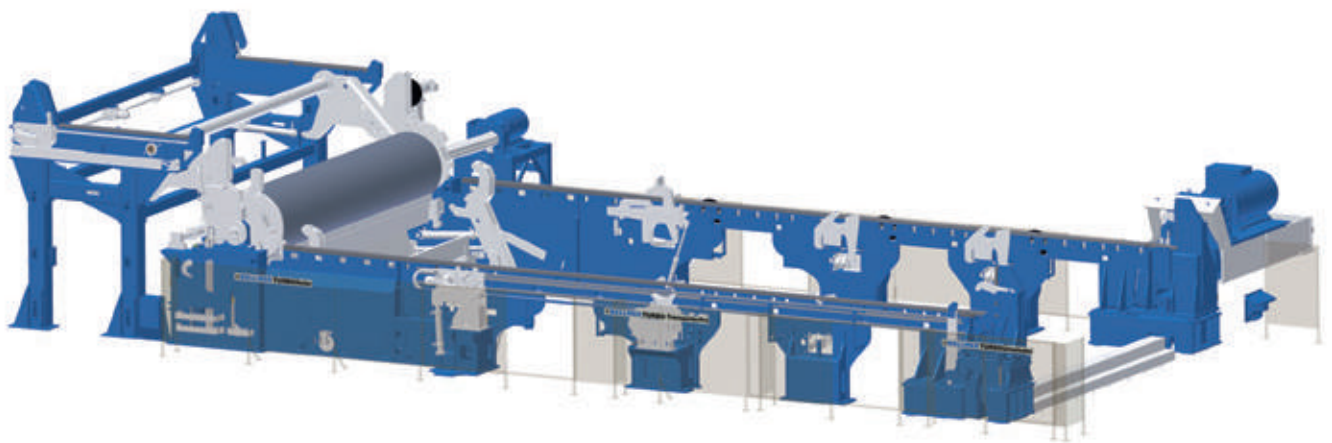
## Transport Systems:

### **TURBOTransporter™**



**BELLMER**

The larger the reel spools get (operating width and reeling diameter), the more important their reproducible movement gets - often to be effected through forced transport. TURBOTransporter™ and reel spool magazines solve these tasks for you without any problems, for each and every reel spool. And when here another working step can be saved either through automation or through extension of the crane when changing the process to large reels, you will certainly appreciate that.



## Winder

### TURBOWinder

GapCon's TURBOWinder is based on the two-drum principle and is tailor made to meet the capacity and technological requirements of each customer, while complying with all current applicable safety regulations.

The TURBOWinder is the right choice for most grades and can be deployed up to widths of 7.5 meters and production speeds of 2,500 m/min.



**BELLMER**



**BELLMER GapCon**



## Steam and Condensate Systems

### Lang-Regler Lufttechnik-Wärmetechnik GmbH

To assure perfect drainage of the drying cylinders, the paper machine has to be provided with a steam and condensate system, which is able to meet a wide range of requirements.

Based on more than 35 years of expert knowledge in this field, Bellmer is able to offer individually designed systems. Their designed and manufactured steam and condensate systems are constantly updated and adapted to the latest requirements of the paper industry.

Bellmer systems guarantee highest economic efficiency, ease of use, as well as long-term commitment.

The installation of their steam and condensate systems is supervised by experienced technicians, controlled, and put into operation.

In case of disturbances, qualified technicians are available to resolve the problem via telephone hotline or personally on site.



**LANG-HAFNER**  
Member of Bellmer Group





Gegr. 1842

# BELLMER

# FLOWTEC

## Hoods and Air Systems

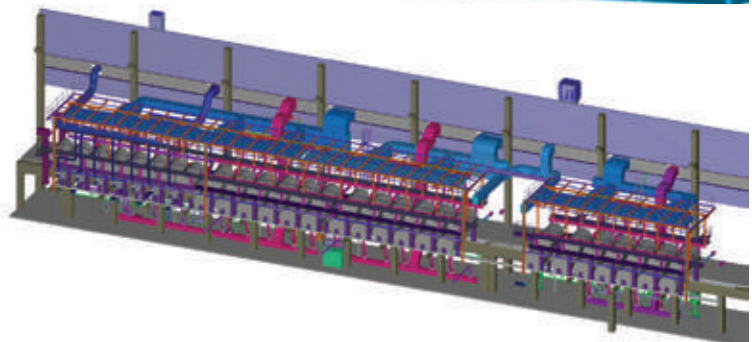
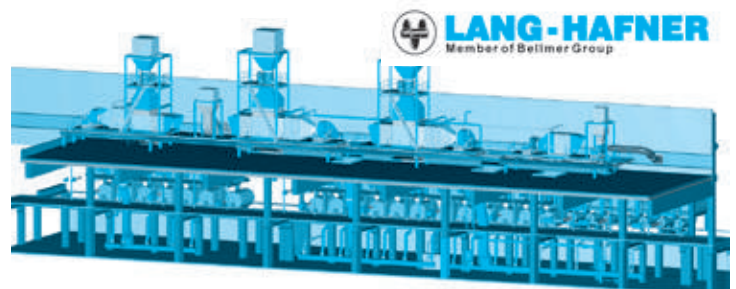
### Hafner Lüftungs- und Klimatechnik GmbH

Comprehensive economic energy strategies do not only require an increase of the drying plant efficiency (steam and condensate systems), but also the installation of an up-to-date air system.

Saving of primary energy by reducing the energy consumption or the energy transfer to the atmosphere enhances the efficiency of all production machines and pays off in a minimum of time.

Hafner GmbH manufactures custom-tailored individually designed exhaust and fog suction hoods up to high-performance hoods.

Special lifting and rolling gate systems and mobile designs allow an easy access to the machine, also for changing cylinders, rolls, fabrics etc.



By means of the heat recovery system, the outlet air from the dryer section is recovered in air/air or air/water exchangers for its recycling into the energy balance.

The heat recovery plant allows to make substantial energy savings and the amortization of your investment can therefore be guaranteed within a minimum of time.

All systems are monitored and operated by ultramodern micro-processor controlled control loops.





## Treatment of White Water, Waste Water and Sludge

Each and every hour of standstill of a machine is money, thus we only provide you with highest quality ensuring smooth operation. There is a good reason why Bellmer is the market leader in this field. Thanks to more than 800 reference tools in the paper industry, you can benefit from a rich experience and expertise. Here, they offer the most ample solutions in order to relieve water cycles, to lower production costs or just to reduce the cost for the disposal of sludges. Bellmer innovations here have set the standard again and again.

Learn more about Bellmer solutions:



**BELLMER**



**BELLMER KUFFERATH**

### TurboDrain™ TDR for

- SW-II-cleaning
- recovery of valuable substances
- separation of stickies in waste paper preparation

### WinklePress™ WPN for

- dewatering of paper sludges
- dewatering of deinking sludges

### Cascade for

- thickening and dewatering of any sludge occurring in the paper industry

### TurboDrain™ TDC for

- thickening of paper sludges

### WinklePress™ WPH for

- high-pressure dewatering

### Bellmer Poly Stations for

- effective solution of flocculent

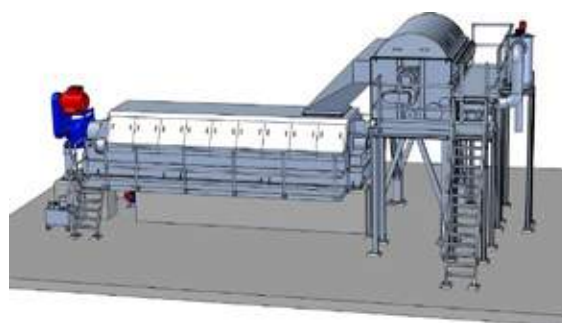
### Bellmer System Control BSC for

- automation of your plants
- reduction of use of chemicals



## AKSE® S Disc Thickener and AKUPRESS® BX Screw Press

- Highest dry contents up to 70% through patented, automatic control system
- Inlet stock consistencies of 0.5 - 25%
- Optimized machines for 2 - 160 t/d throughput per line
- High bio sludge content possible
- Closed design with little space requirements



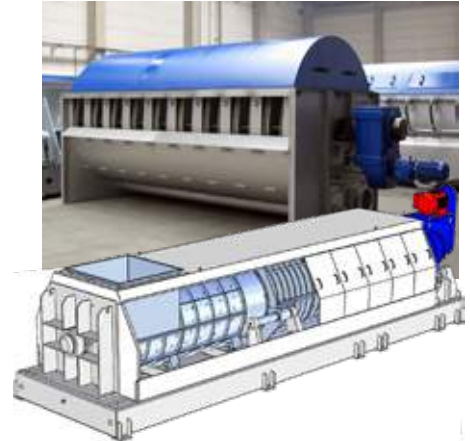
## Fiber Thickening / Dewatering

### Disc Thickener AKSE® F

- Hydrostatic thickener without down pipes
- Sturdy against inlet fluctuations
- Completely closed design
- Automatic control and easiest handling and maintenance.

### Screw Press AKUPRESS® CX

- Inlet stock consistencies of 3 - 20%
- Highest dry contents up to 55% dry content
- Machine sizes for quantities of around 10 - 500 BD available in 5 sizes from 250 - 1,400 mm screw diameter
- Patented control system



## Rejects Dewatering

Bellmer Kufferath Machinery has more than 150 reference systems, comprising 5 sizes from 250 up to 1,000 mm screw diameter with capacities of up to 200 BD.

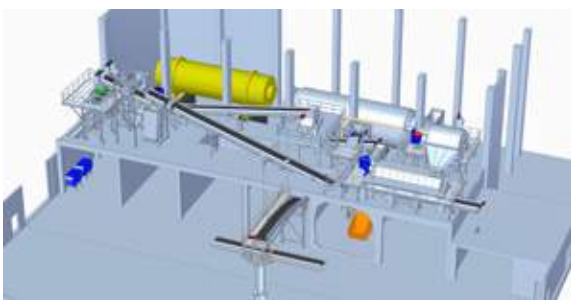
Turn-key rejects treatment systems consist of hereafter mentioned parts:



### Screw Press AKUPRESS® A/AS/AX

as well as additional systems engineering (such as, e.g. shredders, metal separators, conveyors etc.)

- Dewatering of coarse and fine rejects from waste paper stock preparation plants from 55 - 75% dry content
- Dewatering of pulp rejects from 45 - 55% dry content
- Bilaterally bedded screw for highest stability and low wear



## Engineering

To acquire an engineering through Bellmer means that we show you ways and solutions how to improve the quantity, quality and runnability of your paper machine and also how to utilize so far undiscovered potentials within your production process. The possible starting points of an engineering job include among other things stock preparation, approach flow, fiber recovering in white water cleaning and paper machine.

An engineering project is the best way of solving a problem as this job is carried out with a definite and concrete aim.





## **CERAMANT® is specialised in wear protection of machine parts for the pulp and paper industry**

Ceramant focuses on wear protection of machine parts for the pulp production and waste paper preparation.

Parts that are produced, pro-

cessed or repaired by Ceramant are characterized by a long life time and highest effectiveness.

Ceramant®-coatings are always adapted to the customer

requirements.

The thickness of Ceramant®-coatings is always adapted depending on the maximum allowed wear pattern.

## **Pulping and Screening Aggregates**

### **Rotors**

New / retrofit

Ceramant® produces all common types newly according to samples. Regarding efficiency and profitability, these rotors exceed almost all existing products on the market.

Reparation based on original geometry. New or coated parts produced by Ceramant® can be repaired very reliably in later cases of service. Even after several repairs, Ceramant® processed parts always have a comparable quality to new parts.



### **Screen plates**

New / retrofit

New parts, produced according to samples, are retrofitted with massive high performance edges which are attached in robot technology and guarantee highest durability, efficiency and life cycle.

Retrofitted screen plates by Ceramant® achieve at least the performance of new parts. Usually, a reparation of the screen plates is possible. Screen plates are very expensive and are often knocked out in the early stages due to failure of the edges. Even for retrofitted screen plates, Ceramant®-“high performance edges“ assure a considerably longer operating period.



## **Wear Protection - Pressure Screen**

### **Pressure Screen Rotors**

Retrofit

In most of the cases, the rotors are coated with the Ceramant®-Ceramic CD1 or CDH (Ceramant®-Detonation-Hybrid) wear protection. This leads to a higher economic efficiency. Dynamic balancing in two levels is a standard.



### **Screen Baskets**

Wear protection / retrofit

With the special Ceramant®-procedure it is possible to coat new and used screen baskets with a wear protection. Irregularities of the slot width of a used basket can be corrected up to the accuracy of a new one. With this procedure, the retrofit basket will not only have an excellent accuracy, but it will also reach a longer life time.



## Wear Protection - Stock Pumps

### Pump Rotor

#### Retrofit

The used parts are measured and analyzed on possible crack formations. After that, the geometry of the impeller will be repaired with original material close to the nominal dimensions.

A considerable advantage compared to a new impeller is the application of the CS2® at the working edges. The life time of the retrofitted impeller will be correspondingly longer.



before  
retrofit



after  
retrofit

### Pump Housing

#### Retrofit

Based on various technological production possibilities, Ceramant® is able to offer the retrofit of casted stainless-steel pump housing as a very economic and special service.



### PulSint® Technology

#### Wear Protection

Unique and revolutionising technology for retrofitted pump spare parts. A highlight of this technology is the possibility to reprofile worn pump walls with significantly better wear qualities than original spare parts. The coating material is attached to the worn part to the final shape, in a powder metallurgical application. The 100% homogenous compound of the coating material to the basic material is guaranteed by a gas-sinter-process.



## Press Screws

#### New / retrofit

Ceramant® offers wear protection and services for standard reject press screws up to inside steam heated special screws. Complex screw geometries are coated in numerous variations by mathematically programmed robotic systems.



## Wear Protection - in General

### Bed Knives

#### New / retrofit



### General Components

## FINCOAT is providing coating solutions for rolls, cylinders and various types of components

FINCOAT is specialized in hard coatings for rolls and other components using thermal spray coating technology.

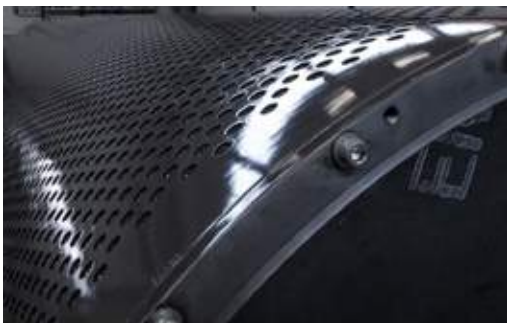
The company uses the latest technology, continuous research, development, and its extensive experience in order

to find the correct and most cost-effective coating solution for the specific application.

The coating solutions that are offered at FINCOAT include friction control coatings for pope reel and winder drums, spreader rolls, sectional rolls

and measuring rolls, self-cleaning coatings for all types of equipment, as well as release coatings for drying and cooling cylinders.

Another service that is offered by FINCOAT are grinding jobs.



### DryOnyx™

DryOnyx™ is a release coating for drying and cooling cylinders.

DryOnyx™ coating keeps cylinder surfaces clean and provides excellent release and doctoring properties.

DryOnyx™ is ideal for on-site coating.

DryOnyx™ is a trademark of Valmet Oyj.



### SlipStop

SlipStop is wear-resistant, high-speed sprayed hard metal coating. It ensures a constant friction level and long life. SlipStop is a gas-thermal coating that solves sliding as well as wear and tear problems for winder reels, reel drums, spreader rolls, tensioning measuring rolls, and sectional rolls.

- Coating hardness: 1,000 - 1,200 HV
- Layer thickness: 60 - 80 microns
- Surface roughness: adjustable in the range of 2 - 13 microns, can be restored 1 - 2 times before applying new coating
- If required, delivery can include sealing treatment
- Coating can be made on the spot with minimal downtime
- Delivery includes cleaning of the coated detail and its surrounding area by vacuuming



## SuperStrong

Fincoat's innovative coating solution SuperStrong is suitable for both traditional coating solutions and new demanding areas. It also provides significant added value to many existing applications.

The SuperStrong product insures excellent coating quality and better mechanical properties than ever before.



## CleanCoat

CleanCoat is the latest product range from Fincoat and is used for applications requiring an excellent self-cleaning ability, combined with wear and corrosion resistance.

CleanCoat coatings are mainly based on a two-part structure. The structure consists of the hard coating base with a combination of nano-tech materials. It is also possible to use the traditional fluoropolymers, such as Teflon. Both layers of coating are selected based on customer requirements.



## Grinding

On-site grindings: Dryer cylinders, reel drums, winder rolls, guide rolls, clupak rolls.

On-site superfinishing: Calender rolls, Yankee and MG-cylinders, soft winder rolls, and reel drums.





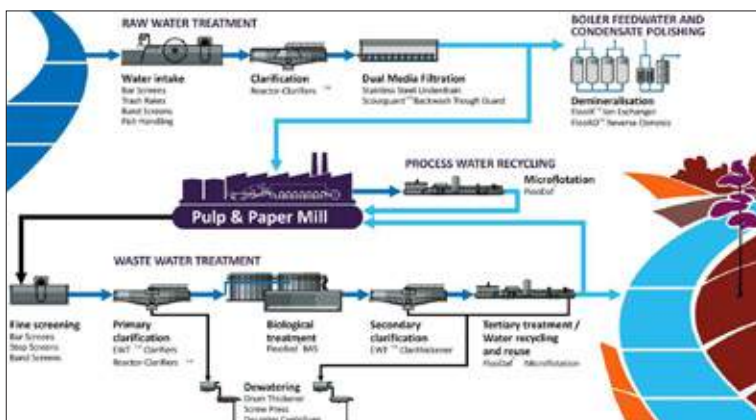
## FLOOTECH is specialised in in the field of water treatment systems

Flootech is the worldwide leading provider in the field of water and waste water treatment. Present in Europe, America, Asia, middle East, Australia and Africa, Flootech offers complete

solutions as well as water purification processes for different industrial fields. Flootech supplies customized systems for the preparation of untreated water, through

process water recovery up to sewage treatment. Flootech is specialized on the pulp and paper industry as well as boiler water treatment and condensate polishing.

## Water Treatment Systems



The product range covers everything from sorting to sedimentation, flotation, biological water preparation, up to membrane technology.

Flootech stands for highest quality and reliability at innovative economic complete solutions and conventional water treatment processes with many years of experience in the pulp and paper industry and the energy-generating industry.

### Raw Water Treatment

River, tap or drinking water is treated for solids, undissolved impurities and humic acid removal and softening.

Technologies for raw water treatment:

- Clarification with **FlooCari™** Clarifiers
- Filtration with **FlooUF™** Ultrafiltration
- Organic removal with **FlooCarb™** Activated carbon filter
- Sand filtration (solids removal) with **FlooSand™** Sand filtration
- Softening (hardness removal) with **FlooSoft™** Softener
- Microflotation (Coagulation) with **FlooDaf®** Microflotation
- Chemical handling with **FlooChem™**



Raw water treatment plant



FlooDaf®



## Boiler Water Treatment

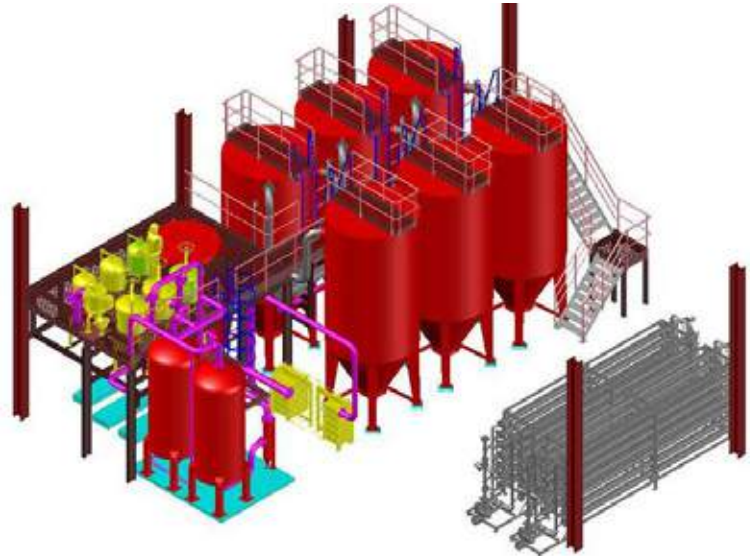
The boiler plant water treatment increases the efficiency of the boiler and extends the boiler's operating life. Treating boiler water also insures safe and reliable operation and prevents high maintenance costs.

Technologies for softening:

- Softening with **FlooSoft™** Softener

Technologies for demineralization:

- **FlooRO™** Reverse Osmosis
- **FlooIX™** Ion exchangers (Cation, Anion)
- **FlooMB™** Mixed Bed
- **FlooDegas™** Membrane degasifiers, CO2 removal



FlooMB™



FlooRO™

## Process Water, Waste Water Treatment and Recycling

Cleaning of process water, waste water for discharge or reuse.

Technologies for solids removal and biological treatment:

- **FlooCari™** Clarifiers
- **FlooDaf®** Microflotation
- **FlooBed®** MBBR
- **FlooAS™** Activated Sludge
- **FlooCarb™** Activated Carbon Filtration
- **FlooUF™** Ultrafiltration
- **FlooRO™** Reverse Osmosis
- **FlooChem™** Chemical handling

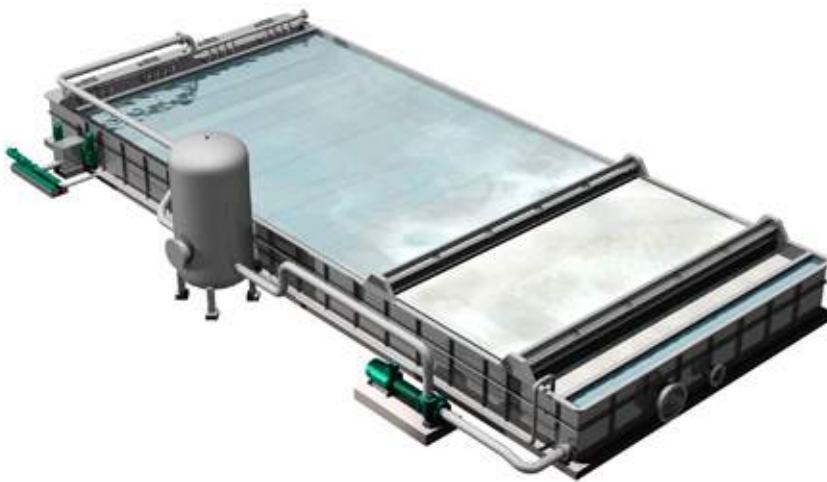


### **FlooDaf® Microflotation**

An established tool for the recovery of process water. Microflotation is also used to reduce the concentration of fine substances and ash.

The smaller units have been designed in a compact construction method, the larger units can be supplied in a building block system.

- Capacity: 5 to > 2,000 m³/h
- In-flow load: 100 to 7,000 mg/l
- Reduction in solids up to 99%
- Sludge consistency up to 5%
- More than 250 references worldwide
- Does not need much space
- Low maintenance costs
- Flexible for fluctuations in the process



### **FlooBed® MBBR**

The FlooBed® biological water cleaning is used in the industrial and community area. FlooBed® is characterized by special elements and an improved mixture of air.

- Simple to operate
- Fast initial and subsequent start
- Insensitive for water quality and fluctuations in quantity
- No repeat flushing necessary



## Kempulp in Karlstad is specialised in products and solutions in the field „Chemical Pulping“

Kempulp is one of the leading manufacturers in this product area. On the strength of their own development department, they are constantly improving their products.

Kempulp's technology is therefore based on the latest state of the art. The product portfolio of Kempulp includes, among others, solutions for screening, washing, MC-pumps, as well

as mixers.

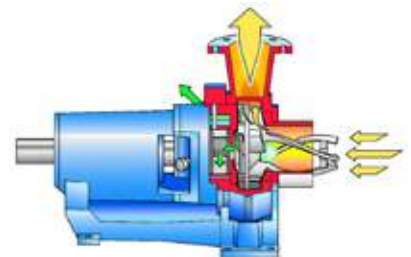
Extensive experience combined with permanent research and development ensures the high specialisation and quality standard in all areas of Kempulp.

## MC-Pumps and Mixers

### DuFlo®-Pump

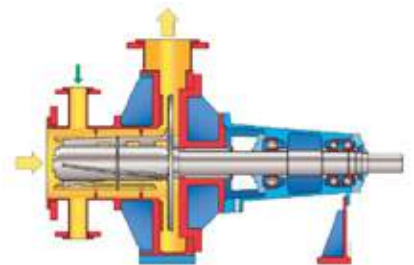
The new generation of the DuFlo® Pump excels in pumping of medium consistency pulp. The clean and robust design with integrated vacuum pump and direct drive arrangement reduces the total installed cost and minimizes the need for maintenance.

- Low power consumption
- Low total installed cost
- Low maintenance cost



### Dual-Mixer

Dual™ Mixer solutions are available for steam, oxygen, chlorine dioxide and ozone. The heavy duty design and the extended mixer house with optimized steam inlet nozzles ensure stable operation. Sufficient retention time for the chemicals at full fluidization of the pulp enables efficient and vibration free mixing at low maintenance costs.



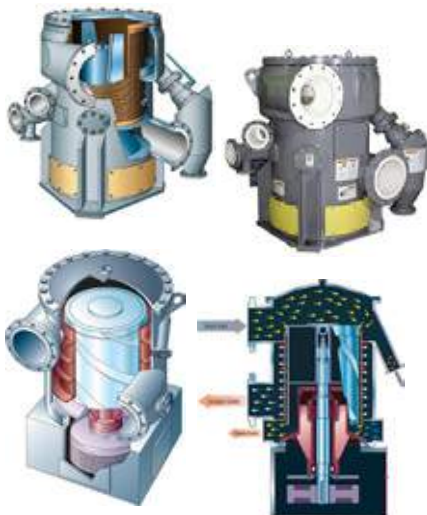
## Screening

### HI-Q® Pressure Knotter

Der HI-Q® rejects separator is very compact and operates with a minimum of fiber loss to the washed and dewatered knots and coarse rejects.

The most important advantages:

- High unit capacity
- Low consistency, low volume rejects
- Efficient knot removal with minimal fiber loss
- Inward flow design protects rotating element and hydrofoils from damage while avoiding break-up of brittle knots
- Exceptional operating stability due to patented high-pulse, low profile hydrofoils
- Designed for continuous, remote, unattended operation



### HI-Q® Fine Screen

High capacity and efficiency pressure screen for brown stock screening. Can be supplied with the Stingray rotor for proven performance or the new Luthi rotor for reduced wear and power. Smallest slots in the industry and minimum good fiber loss. Modular design uses the same bearing assembly as the HI-Q® Knotter and HI-Q® Rejects Separator. Great reputation in the industry with a very large installed base.

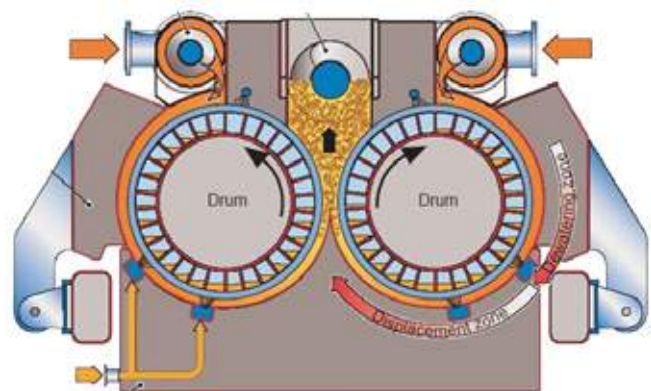


## Wash Presses

### Compact Press®

For higher outgoing consistency and excellent washing efficiency. The Compact Press® combines a new technology with well proven components.

The specially designed inlet feeding screw enables a uniform distribution of pulp lengthwise at the same basic weight independent of inlet feeding consistency. If necessary, the Compact Press® can be opened and closed within 20 minutes.

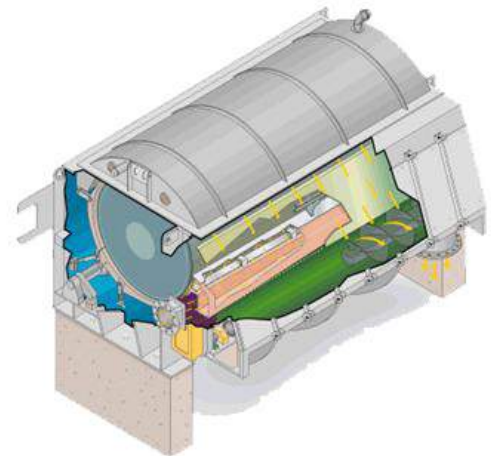


### Compaction Baffle Filter

The Compaction Baffle Filter with its compact design offers low level installation and investment costs compared to conventional washers.

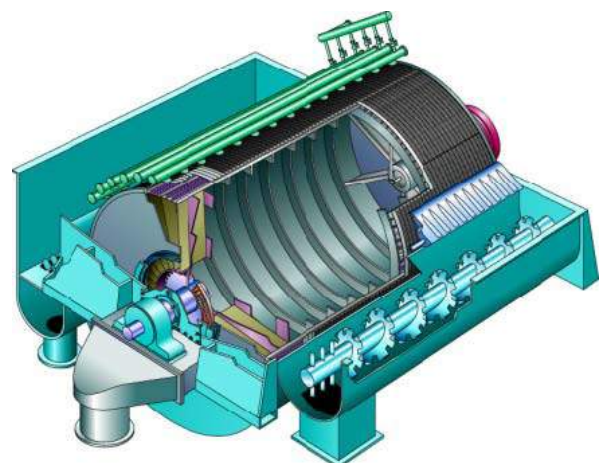
#### Advantages:

- High washing efficiency
- Unique totally enclosed pressurized system
- Designed for brown stock and bleach applications
- High capacity per unit area of cylinder



### Coru-Dek®

The Coru-Dek® incorporates our corrugated deck into a high capacity center drainage cylinder design. Curved drainage tubes and an integral bucket design provide structural integrity. A flat valve allows for maximum hydraulic capacity. Solid shafts and antifriction bearings ensure low maintenance and allow for flexible drive options.





## PROCEMEX leads the machine vision business in pulp and paper with continuous cutting-edge innovations.

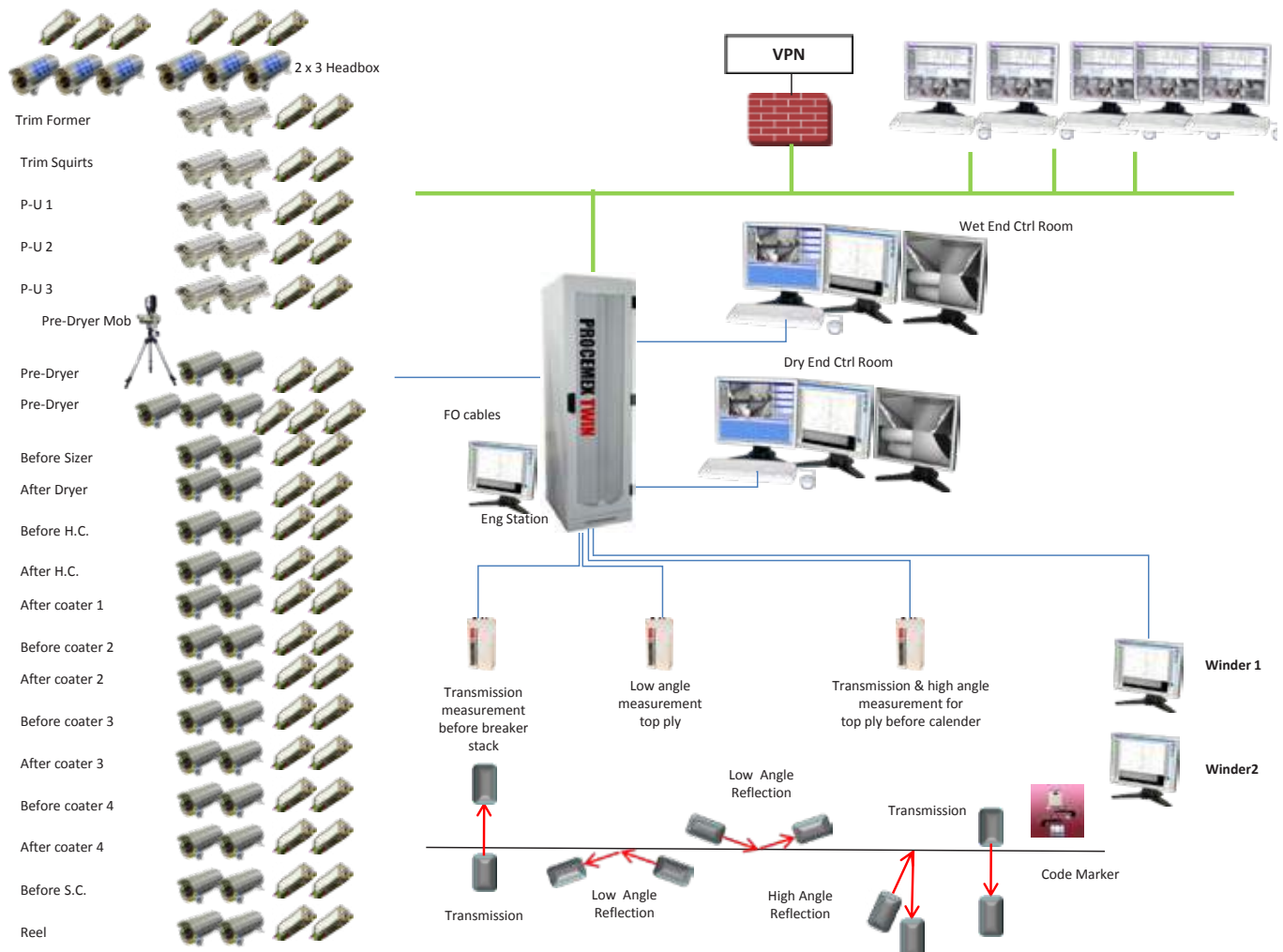
Procemex develops, designs, and delivers the fastest and most accurate smart camera-based solutions for paper manufacturers and printers worldwide. Procemex' core excellence lies in mastering optical imaging

and image processing, starting from the very beginning of the process.

Procemex offers solutions for web inspection, web monitoring, winder control, and formation management.

With 25 years of experience and more than 500 systems worldwide - the largest system with more than 250 cameras - Procemex is the best partner in quality monitoring and efficiency optimization.

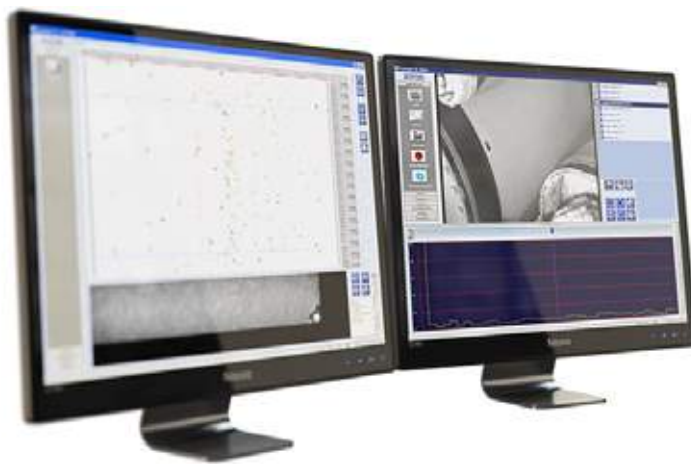
Example - Board machine with more than 200 cameras:



## WIS-Web Inspection / WMS-Web Monitoring

The Procemex TWIN (combination of WIS and WMS) is an optimization tool that is tailored to the machine operators. It assists operators in handling all production quality and production efficiency items with the aid of a set of computer supported analysis tools.

Under normal running conditions, the left hand monitor is used for displaying live images and a machine efficiency time chart. The right hand display continuously updates a defect map that identifies different defects with respective symbols. Should a machine disturbance occur, e.g. web break or paper defect, the monitors change modus and form a unified user interface that displays a complete story of the event with its original root cause.



For the operator, analysis is easy, as the system classifies paper defects and displays its evolution through the process. It is wholly beneficial for the operator that web breaks, defects, and their root causes are analyzed and displayed in such a clear way.

Following components are essential for a well-functioning system that is easy to maintain:

### Camera:

Smart HD up to Ultra HD high speed cameras for all relevant, partly difficult positions



### Camera and light beams:

Space-saving and low-vibration carbon frames are applied. Cameras can be added without great effort, e.g. for higher resolutions in the future.



### Power zoned strobe LED light:

Latest LED technology, zone controlled for optimal even illumination, guarantees best picture quality for long periods of time.



### WIS systems:

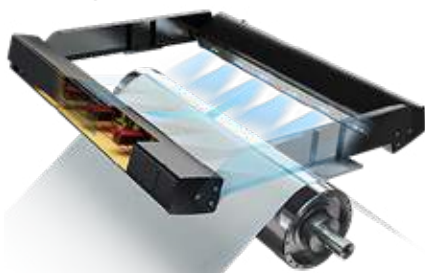
- Pick-up web inspection:



- High angle reflection web inspection:



- Low angle web inspection:



- Combined reflection and transmission system with multisequential illumination:



- Transmission web inspection:



## Automatic Winder Target Control

### For broke management

Procemex Target Control System (TCS) enables the operators to remove or repair off-quality production on a re-winder or on a slitter winder.

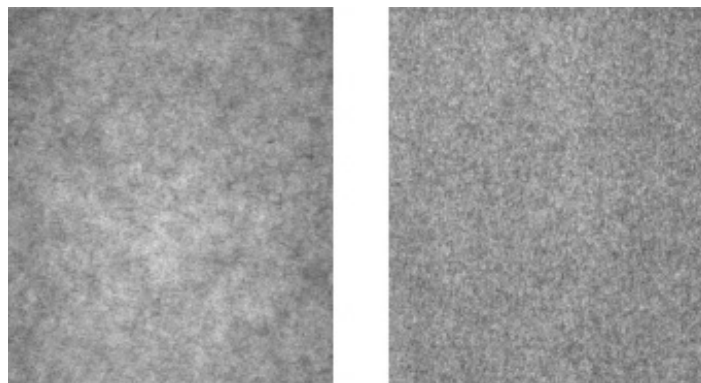
The encoded machine directional position is marked on the edge of sheet on the paper machine. The TCS decodes the length marks and synchronizes the winder automatically to the selected defects.



## Formation Measurement

Paper formation measurement takes place in real-time inside the Procemex Flex camera indicating paper contrast, cloudiness, and fiber orientation. The operator can view CD formation profile in full width and also view MD videos constructed from single formation images.

The formation values calculated with the PTS method are comparable between different grades and different paper machines thus giving the paper maker real tools to tune the formation of the various products.



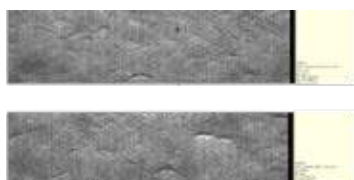
## Dirt Count Analyzer

The Procemex Dirt Count Analyzer detects and classifies dirt and shives according to ISO and TAPPI standards and thus helps to improve the pulp production process. Unlike conventional systems, the inspected web area is up to 100% of total production.

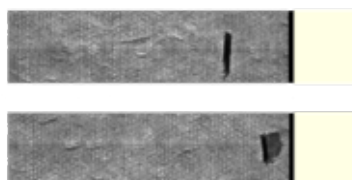
With the Dirt Count Analyzer, Procemex can execute 0.1x0.1mm resolutions to catch even smallest dirt accurately under all conditions.



Dirt



Shives





## **Runtech Systems offers high quality availability and energy saving components and improves your paper machine productivity.**

Runtech Systems Oy, a highly innovative company, was founded in 1997.

The company's products and services aim to significantly improve the production,

quality and efficiency of pulp and paper machines.

Up to now, the company Runtech Systems Oy has conducted more than 200 studies within the field of the

pulp and paper industry.

As a result, the company has created high technology products that are able to improve the production results, but also to reduce the operating costs.

Runtech's product portfolio consists of vacuum systems (**RunEco**), ropeless tail threading products (**RunPro**) and doctoring products (**RunDry**). In combination with their innovative products, the Runtech consulting service has achieved energy savings by six-digit sums per year for a large number of customers.

### **RunEco Vacuum Systems**

Numerous references show significant savings in energy and / or water due to installed Runtech products.

#### **Ecopump Turbo™ Vacuum Blower**

Compact high-speed electric drive and high efficiency turbo blower for energy and water savings. This innovative system is driven completely without the use of any water. Compared to standard water ring pump systems, this system reaches an energy saving level of up to 60%.

The Turbo Blower with titanium or carbon impellers does not need a gear box and clutches, what ends up in higher efficiency and less number of components. The installation can be done on comparatively very simple foundations.



#### **Ecoflow™ On-line Dewatering Measurement**

On-line dewatering rate measurements in vacuum systems. For a better understanding and traceability of dewatering processes in the wire and press section, Runtech has already installed thousands of Ecoflows ("on-line" dewatering measurements) at technology leading pulp and paper mills. Due to the installation of these products, the companies have an additional analysis tool for data recording and production-monitoring up to the evaluation of the function of a press section and felts.



#### **EcoSep™ Water Separator**

The EcoSep™ water separator with integrated EcoFlow™ meter is ideal for installations with limited space or limited drop leg height. The flow speed of the media entering the water separator diminishes due to the cross sectional flow expansion. EcoSep™ is available in vertical and horizontal versions.



## **EcoDrop™ Drop Separator**

The EcoDrop™ drop water separator with an integrated drop separator unit is ideal for all blower positions. The units are robust and easy to maintain and clean due to complete stainless steel construction.



## **Vacuum System Engineering And Audits**

- The vacuum levels are studied to identify the real vacuum connections
- The paper machine vacuum levels are measured at the vacuum pumps and blowers to identify problem areas
- Pressure and bleed losses are studied to analyze the energy consumption and evaluate if the vacuum levels are too high
- Energy savings are calculated and recommendations and proposals for energy saving are made
- New pipeline connection diagrams can be designed and engineering drawings provided
- Specifications of new vacuum pumps if necessary
- Dewatering analysis
- ROI calculations and reporting



## **RunPro Ropeless Tail Threading**

Runtech Systems Oy has developed a tail threading technology and devices for the most efficient machines in the world. Runtech's tail threading equipment is used at numerous pulp and paper mills worldwide. The abolition of feeding ropes significantly improves the occupational safety.



### **Press RunShooter™**

The Runtech Press RunShooter™ is designed for center roll and separate press tail threading. Quick installation and start-up is possible. Manual, semi-automatic as well as automatic models are available.



### **Single Blow™**

Runtech SingleBlow™ is an easy and trouble free solution for ropeless tail threading for the slalom area. The stainless steel construction of the SingleBlow™ tail threading pipes can be fitted to all types of doctor holders, are easily adjustable and use only the necessary amount of air.



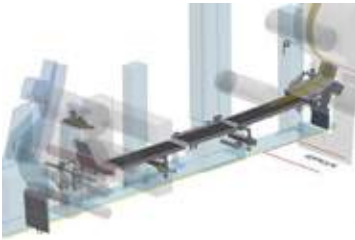
### **TailBlade M™**

TailBlade is a fast and reliable solution for ropeless tail threading. Release from the cylinder surface is guaranteed due to mechanical contact and efficient release blow. The minimal compressed air consumption and the light composite construction are two of the key features of Runtech TailBlade.



#### **RunShooter D™**

The Runtech RunShooter D™ is a tail threading mini doctor for double tier dryer groups with full machine doctors. The "Release Blow" technology enables very efficient release from the dryer cylinder surface.



#### **RunShooter F™**

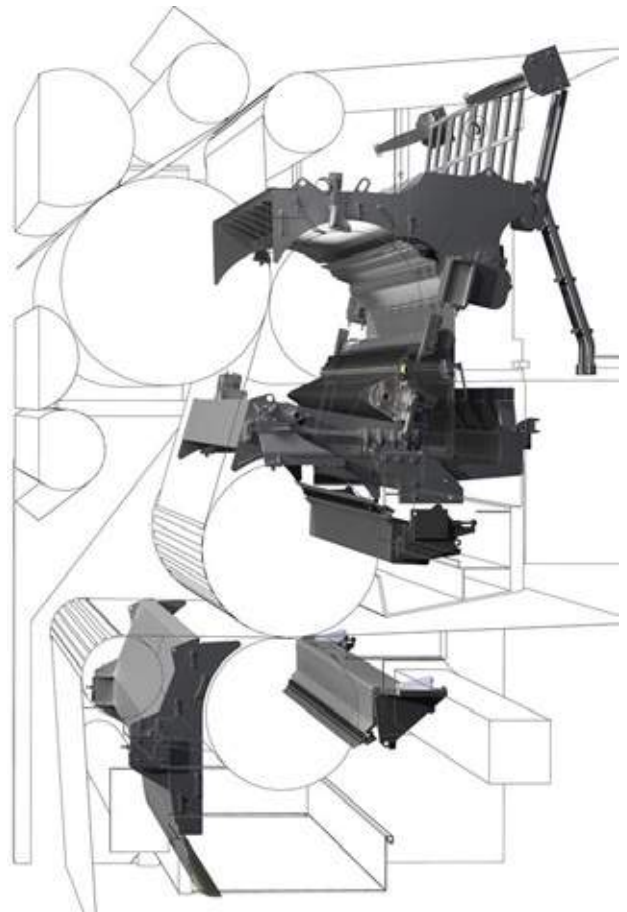
The Runtech RunShooter F™ is a cost efficient tail threading system for long open draws. The system is characterized by minimized compressed air consumption and the minimized break time and amount of broke. It is easy and safe to use.

## **RunDry Doctoring Systems**

High performance doctoring products for demanding customers and challenging positions. Improvements through state of the art equipment and consulting by well experienced specialists.

#### **RunDry products:**

- **AirBlade™** doctors for grooved and suction rolls
- **CompoAdapt™** retractable blade holder
- **CompoFit™** blade holder
- **CompoDoc™** doctor beams made of Carbon
- Double doctors
- **Ecoflow™** family
- Save-alls
- **WingBlade™** shaped doctor blades for suction rolls

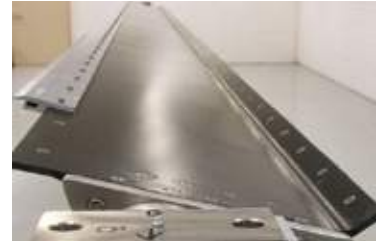


#### **Air Blade™ - Advanced Doctoring**

AirBlade™ is an optimal solution for doctoring on the grooved and suction rolls. The technology improves runnability, sheet dryness and sheet profiles. Energy savings can be achieved as well.

## **CompoDoc™ - Composite Doctor Beam**

Runtech CompoDoc™ doctor beams are applicable for particularly challenging doctoring positions. The doctor beam is available in carbon and glass fiber construction and convinces with minimal space requirements, due to its small size and light-weight construction. Excellent doctoring up to 12 m is possible.



## **CompoAdapt™ - Retractable Blade Holder**

The tube loaded carbon composite blade holder is also suitable for sheet knock down positions, due to its robust design. The blade holder has been specially designed for composite doctor beams, but can also be used with conventional steel doctors.



## **CompoFit™ - Carbon-/Glass Fiber Composite Blade Holder**

The cost effective CompoFit™ blade holder is easier, more flexible and light-weight compared to conventional systems.

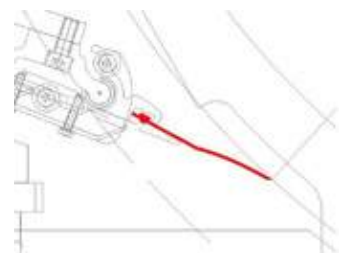


## **Double Doctors**

Double doctors are solutions for optimal doctoring for suction couch and press rolls and can be used with Air Blades, WingBlade or conventional doctors. The robust AISI316 construction is maintenance friendly and easy to clean.

## **WingBlade**

The patented curved shape generated maximum vacuum behind the blade without air. It is specially designed for high speed machines with very efficient water removal due to the foil effect and good mechanical contact to the roll surface.



## **Save-Alls**

The Runtech Save-alls are specially designed to be used with the AirBlade™ and the EcoFlow™. The 316L stainless steel construction has low maintenance requirements and enables easy roll changes.





## Sheet Stability Systems

### Air Curtain™

The Air Curtain™ neutralizes the pressure difference between the top and bottom surfaces of the paper sheet after the center roll by creating an air curtain under the sheet. This relieves sheet tension at the center roll, and allows potential for speed increases.

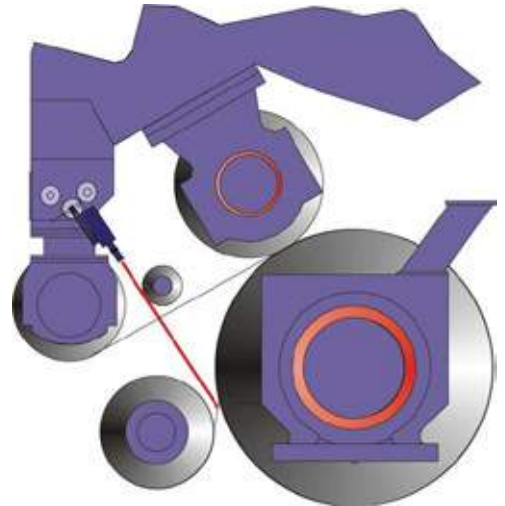
#### Benefits:

- Less draw
- Less breaks
- Less porosity
- Wider sheet
- Better bonding strength
- Better tensile strength



### Laser

For better control of the press section speed differences. The laser is a release point measuring device that uses a laser beam to locate the paper web release from the center roll in the press section. With this information, the number of breaks in the press section can be reduced by adjusting the release point to the correct position.



## Service and Consulting

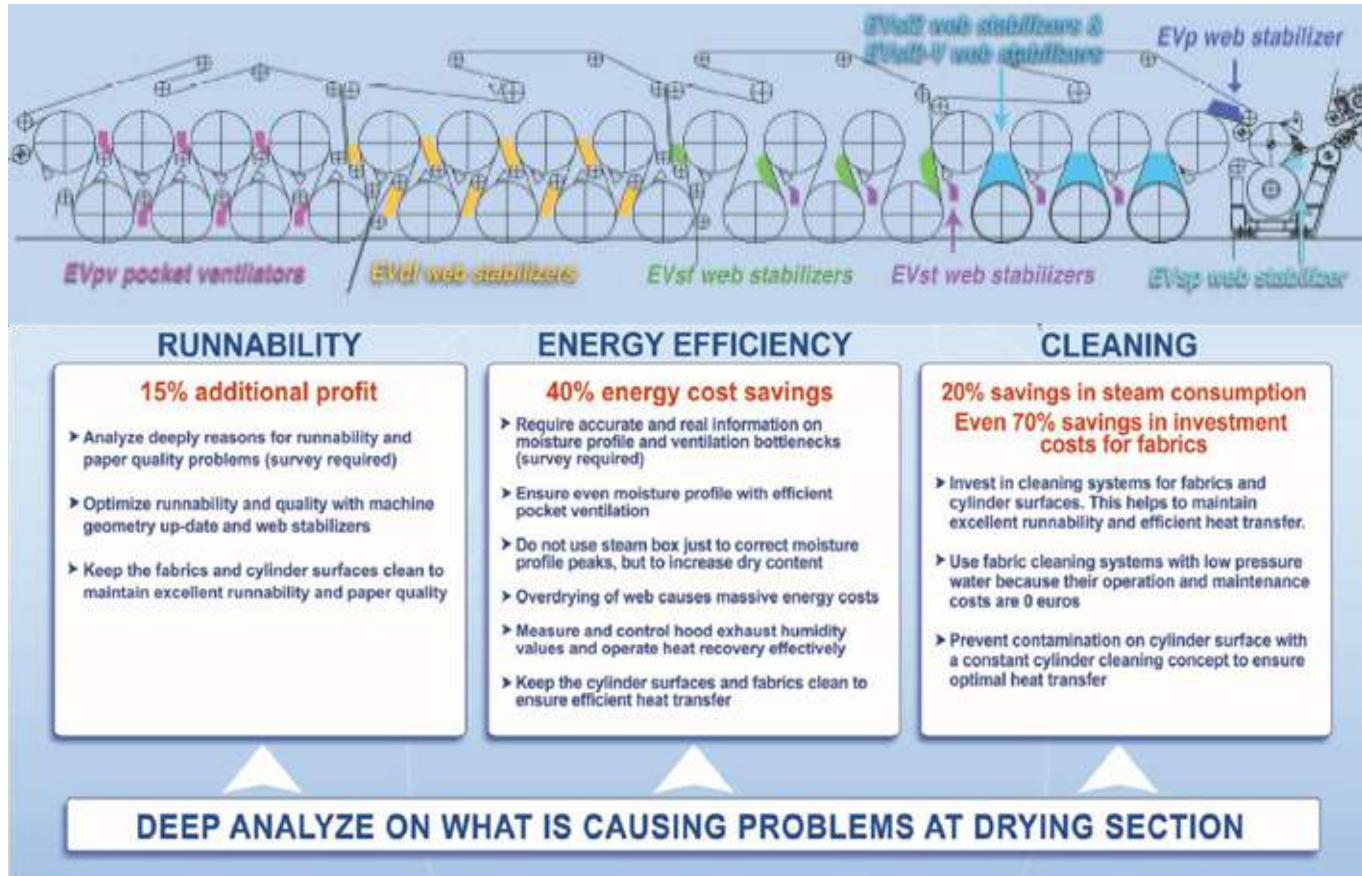
Runtech Systems Oy offers consulting and service in all areas of paper production, in order to realise energy savings and quality improvements.

Runtech is particularly specialized on vacuum systems, doctoring and save-all optimizations in wire, press and dryer sections, as well as tail threading systems of press up to pope reel / winder.

There is also the possibility to significantly contribute to optimizations of entire systems.

## Drying Section Optimization

### PM drying section optimization improves process



### EV Web Stabilizers - for press section

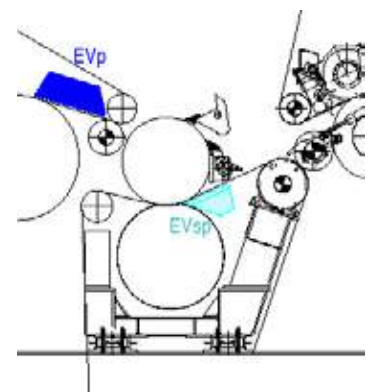
EVp and EVsp web stabilizers ensure fluent runnability at PM press section.

#### EVp web stabilizer

- supports the sheet from the press to the dryer section

#### EVsp web stabilizer

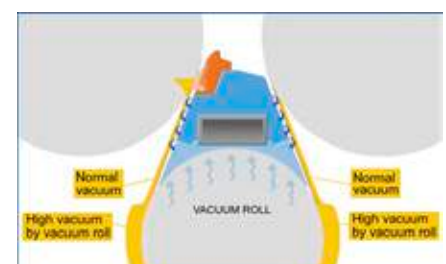
- eliminates blowing problems in free-standing presses



### EV EasyOne™ - supports web release with a high vacuum area at single felted section

EV EasyOne™ optimizes the web release between upper cylinder and vacuum roll. It eliminates runnability problems that are caused when the sensitive wet web tends to follow the upper cylinder surface.

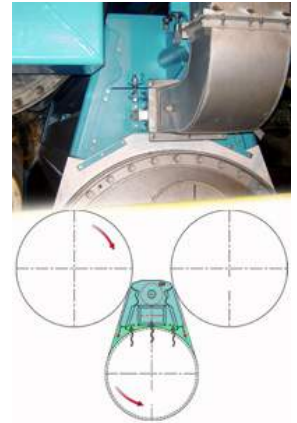
- Excellent runnability of the first single felted drying groups
- Eliminates sheet flutter and paper defects
- Additional PM speed
- More tolerance to process fluctuations
- Reduction of raw material costs



### **EV EasyGo™ - for superior runnability and ropeless tail threading at single felted section**

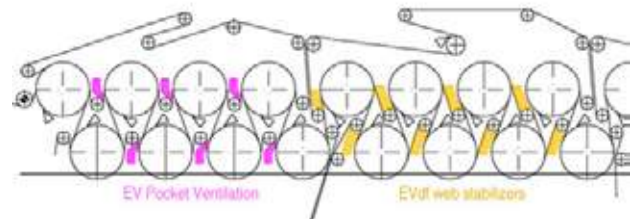
An excellent runnability concept for the PM single felted drying section. It combines the web stabilizing and the vacuum roll technologies to ensure best possible runnability, drying efficiency, and paper quality.

Installed on top of the vacuum rolls to support the sheet and create a vacuum inside of the vacuum roll. EV EasyGo™ concept exhausts air through the holes of the vacuum roll and blows air through the nozzles of the web stabilizer creating vacuum from the opening nip to the closing nip.



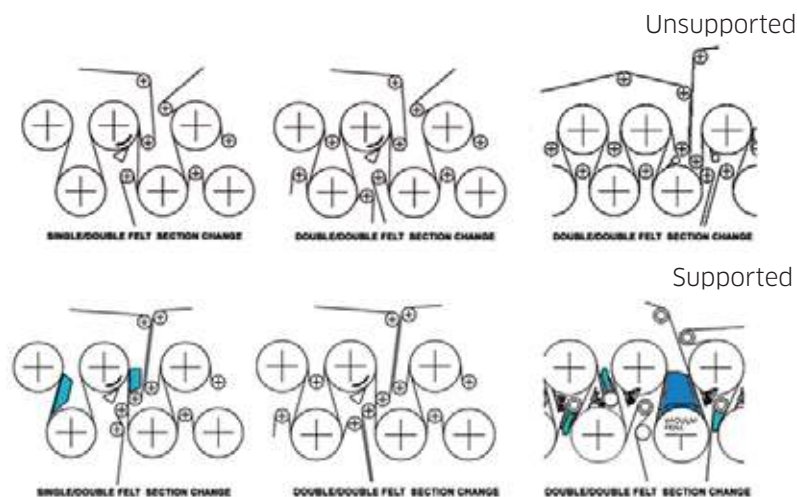
### **EV Web Stabilizers - for double felted drying section**

In double felting, the drying capacity is greater than in single felting. Though, runnability problems are more common. EVdf web stabilizers and EV Pocket Ventilators are the cure for runnability bottlenecks at double felted drying sections.



### **Machine geometry modification**

Machine geometry changes are improving PM runnability and speed. Already a small change can make a big difference on sheet run. Runnability problems at the section change can be a bottleneck also after the single felt has been equipped with web stabilizers. These problems are a result of moving surfaces, and mainly caused by pressure differences and axial air flows caused by pumping effect of dryer fabrics. Runnability problems in the group caps are solved by minimizing the open free draw.



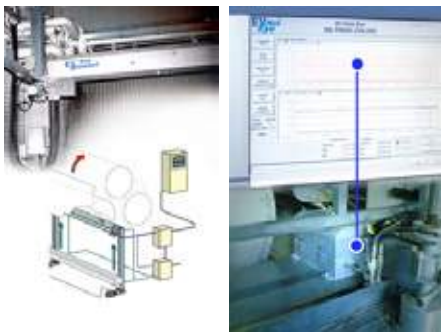
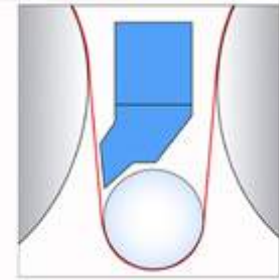


## **EVpv Pocket Ventilation™ - results in even moisture profile and energy savings**

PM drying section is a major steam consumer: 75% of paper machine steam consumption is used in the drying process. Energy waste, uneven sheet moisture profile and runnability problems are the result if cylinder pockets are not well ventilated.

Underpressure in the unventilated cylinder pocket creates dry air flows into the drying pocket causing high pocket humidity in the centre of the pocket and sheet fluttering. Poor pocket ventilation causes uneven final moisture profiles at the reel and over-drying at both edges of the sheet. This means poor paper quality and more paper breaks. Decreased evaporation capacity and uneconomic steam consumption are also results of poor pocket ventilation.

EVpv Pocket Ventilation is installed in the cylinder pockets of dryer sections to blow dry supply air into the pockets. This decreases the pocket humidity level and allows moisture profile correction. In addition, the system decreases steam consumption and it also prevents over-drying and edge flutter.



## **Online Measuring™ - reliable tools that enable accurate process adjustments for economical drying.**

EV Web Eye™ and EV Web Scanner™ provide you with reliable information of sheet moisture and temperature profiles or trends already at the beginning of the drying section. This helps you to control the drying process correctly right from the start.

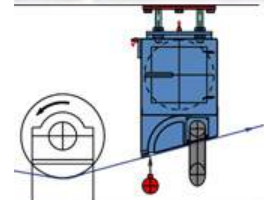
## **Cleaning Systems**

### **EV MRS™ - Forming section optimization**

EV MRS™ technology is a part of an environmentally friendlier, energy saving forming section. It provides effective mist removal in combination with additional aid for fabric cleaning. This results in improved paper quality, process efficiency and energy savings. Machine hall without spreading mist is more comfortable to work at.

EV MRS™ includes a mist suction box, an exhaust duct, a preseparator, and the EV Blower separator fan, which is a special construction combining a centrifugal fan and an efficient water drop separator.

The residual water from the evacuated mist / air is separated with an EV Blower fan. The EV Blower is equipped with a self cleaning system and a teflon cover to prevent clogging.



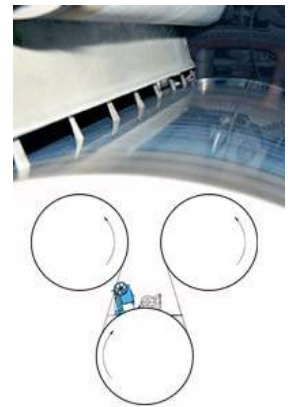


### **EV ReDoc® - For continuous reconditioning for rotating surfaces**

EV ReDoc® is a continuous reconditioning system for paper machine cylinder and roll surfaces.

The EV ReDoc® system eliminates dirt like stickies, fibres and coating colour from cylinder surfaces by using steel brushes. Even old and worn out cylinders can be cleaned effectively with the help of EV ReDoc®. Conventional doctoring systems are not able to keep cylinders clean. The EV ReDoc® system can be used with an existing doctoring system.

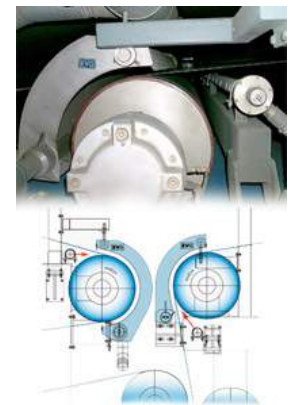
Continuous reconditioning improves the heat transfer from cylinder to paper, which increases the drying capacity. Results can also be seen in better paper quality, as defects in paper are minimal. It is also possible to increase the PM speed as a result of an improved drying process and runnability.



### **EV Cleaner™ - for effective dryer fabric cleaning and longer fabric life**

The EV Cleaner™ technology keeps the fabric clean and open across the entire fabric width. The EV Cleaner™ enables reliable and maintenance-free cleaning: it does not require any moving parts, high pressure water, compressed air, or power supply.

The EV Cleaner™ improves PM runnability and paper quality, as the high permeability of fabric keeps the cylinder pockets well ventilated. Customer experience shows that the EV Cleaner™ can increase the fabric life time to even 300%.



### **EV Online Cleaning System™**

With online cleaning, your mill has remarkably less need for washing stops and chemicals. Constantly high wet end hygiene means better process efficiency and quality.

The EV Online Cleaning System™ keeps all wet end areas clean: Channels, towers, tanks, bow screens, disc filters, water plates, surface of open areas, thickeners.

## **Energy Efficiency Optimization**

### **EV Heat Recovery™**

Significant energy savings for paper machine

Paper industry is a big energy consumer. Energy costs are high, and they will rise as energy will be more and more expensive in the future. To decrease emissions of greenhouse gases, paper industry must limit the use of fossil fuels. For these reasons, paper industry must reduce energy consumption and find new ideas for more efficient energy usage.

EV Heat Recovery™ is a highly effective system to update existing heat recovery systems and to modernize a paper machine, in order to meet the requirements of today. The EV Heat Recovery™ technology reuses heat to replace primary energy sources, therefore savings in energy costs are evident.



EV Heat Recovery™ recovers drying section heat energy and takes it back to production. The exhaust air is processed through air to air or air to water heat exchangers that are durable and always tailor-made to customers' needs.

A typical heat recovery system includes supply air preheating, process water heating and machine hall heating.



## EV Survey™ Services

„EV Group helps you to eliminate  
process bottlenecks and optimize production.“

You may see the PM process bottlenecks and problems, but often it is difficult to know what exactly causes them. The EV Survey team has the know-how, the experience and the modern measuring technology to tell you what is going on with your paper machine.

### Dryer Section Survey Tool

Solutions to decrease energy consumption  
and improve drying capacity and runnability

- Pocket humidity and temperature
- Hood air systems
- Cylinder surface temperature measurements
- Calculation of drying parameters
- Mechanical checking
- Sheet temperature measurements
- Other measurements

### Ventilation Survey Tool

The machine hall ventilation survey tool for better working  
conditions and less energy consumption

- Exhaust and supply air measurements
- Machine hall air balance
- Temperature and humidity measurements
- Airflow direction and air velocity measurements
- Machine ventilation

### Sheet Moisture Profile Survey Tool

A sheet moisture profile survey tool to find out where the  
moisture profile problems are generated

Common measurement places:

- Against the pick-up felt
- After the press section
- End of the slalom section
- Before / After the sizer
- Before / After the coater
- At the reel



The EV Survey entails extensive research. We analyze the reasons for your PM problems and after measurements, we provide you with detailed information on how to eliminate them.

**Valmet Technology and Service AB is specialised in solutions for the areas pulping and screening, stock preparation and approach flow of paper machines.**

Valmet Technology and Service AB, which is based in Finland, offers smart solutions and services for stock preparation in the paper industry. They offer products and services for stock preparation processes, which are based on innovative thinking and new product solutions. With

new technology and technical solutions, the pulp production economy can be improved and new, more economical raw materials can be utilised. The product portfolio further covers all kinds of cleaner plants, for heavy as well as light weight reject, deaeration systems, disc

filters for fibre recovering and thickening, as well as refiners, drum thickeners, bow screens, etc. The company aims to find process solutions that have the best pay-back for the investment. All team members have more than 20 years of experience regarding different paper mill processes.

## Pulping Systems

### TamPulper™ R

Pulping and coarse screening for waste paper in one step.

- Process for difficult recycled waste paper grades
- Low energy consumption and high pulp quality
- Low total investment as the system is simple and has less equipment/auxiliaries than a conventional system.
- Continuous and compact system
- Low maintenance costs of equipment because heavy rejects will be removed in early stage of the process => not recirculated in the system. This essentially reduces the wearing of equipment.



### TamPulper™ R und B

Modification of existing machines / systems

A replacement or supplementation with TamPulping products helps you to reach a better pulping result, lower loss of fibers and lower wearing.

### TamPulper™ B

Advanced new bale and broke pulping

- New pulper techniques with an effective special rotor for bale and broke pulping
- Power consumption of the TamPulper rotor is the same or lower than with a conventional rotor. In spite of that, stronger agitation than with a traditional rotor will be reached.
- Compact hutch due to a better mix intensity
- Existing pulper can be rebuilt by a new TamPulper rotor and a stronger agitation and higher production can be reached.



## Fine Screening

A complete selection of new fine screens has been developed. They are applicable in fine screening e.g. for recycled fibres, mechanical pulp, broke screening and machine screen applications. The rotor design allows more flexible process and the screen hardware can be more compact.

A new generation of multi stage screening in addition to single stage screens is available. Together both screen types offer a complementary series, which gives a high flexibility to build different screen rooms with lower energy consumption and with lower investment.



## Cleaner Plants

### Twister®

Cleaning performance at a new level and at the same time less energy consumption! The Twister® is the latest development in separation technology and the only cleaner on the market that achieves such a high efficiency at 2% feed consistency.

Due to its innovative design and state-of-the-art technology it is a high-performance cleaner with high consistency results and low energy consumption.

#### Characteristics:

- Up to 2% feed consistency operation with comparable cleaning performance as conventional cleaners at 1%.
- Superior cleaning performance over entire operating consistency range
- Up to 50% lower applied energy
- Considerably lower reject rates than with conventional cleaners
- Celleco Twin Wall design



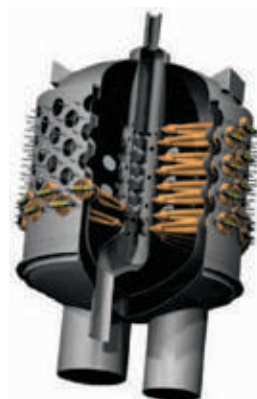
### Cleanpac® 700, 700 HQ, 700 LD, 700 HQLD

This is the most modern cleaner of this product line. It provides an exceptional high level of separation efficiency not only for heavy reject, but also for light weight reject and air.

The cleaners, which are arranged in a satellite assembly, can be adapted easily to the respective throughput.

### Tripac™ 90 / Cleanpac® 270 - for fine dirt particles

The Tripac™ 90 / Cleanpac® 270 units are used very effectively for cleaning bleached pulp, in recycled fiber stock preparation plants and - with minor modifications - also as fractionator of TMP.





### **Fibermizer®**

The Fibermizer® is the final stage of a cleaner plant and is used for the recovery of fibres and fillers.



### **CRC - Continuous Reject Control for Centrifugal Cleaners**

The CRC system eliminates plugging problems and recovers valuable fibre at Cleanpac®- and Albia®-cleaners.

### **Albia®**

The Albia® FRB is used as a thick stock cleaner or as a final stage cleaner. The FRB enables fibre losses to be minimized.



### **Slidepac®**

The SlidePac® represents the latest generation of cleaners for efficient separation of light weight contaminants, such as hot melts, wax, as well as stickies and plastic particles.

The accepts are thickened, which can lead to savings at downstream dewatering units.



## **Reject Treatment**

### **ATREX® Technology for Pigment Dispersing, Reject Treatment and Disintegration**

The ATREX® grinding and mixing system has already been applied to numerous processes. By regulating the parameters of these processes, a new environmentally sound process to treat the reject flow from the centrifugal cleaners and screens has been developed.

This reject flow, which contains valuable minerals and fibres, can amount from 1 up to even 4% of the total tonnage of the paper production line, and is in many cases hauled to the land-fill. With the ATREX® system, most of the valuable minerals and fibers can be recovered and reused in the process.

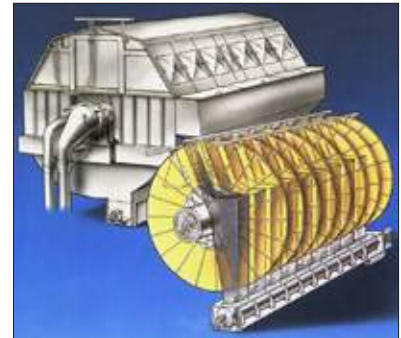


## Disc Filters and Thickeners

### Hedemora® VDF™

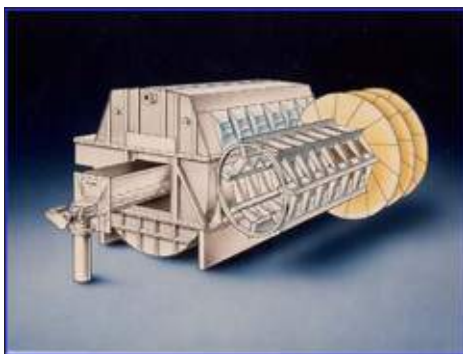
The Hedemora® VDF™ filter is designed for processing paper machine white water into high quality filtrate, while at the same time recovering the fibres. It is also designed for thickening low to medium freeness pulp, especially where high discharge consistency is required.

The Hedemora® VDF™ filter is available in three different diameters: 3.66, 5.2 and 6.2 m.



### Centerdisc® CDP & Centerdisc® CDI

The Centerdisc® CDP and CDI filters are primarily designed for fiber recovery from white water and broke thickening at low to medium grinding degree as well as high stock consistencies.



### WellDrain® / WellBag™

„Simple but efficient increased capacity“

The new WellDrain® disc filter sectors feature a unique corrugated stainless steel mesh. As a result of the corrugation, the surface area is increased by approx. 30% and enables a capacity increase of up to 25%.

WellBag™ presents a new design of sectors for vacuum disc filters. The unique corrugation of the mesh of the filter surface creates an increase of 29% in the surface area of the sector, which enables capacity increases of 10 to 25%. The corrugation also facilitates removal of the filter cake.



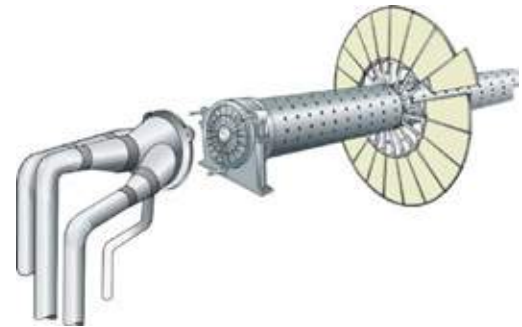
### **Disc Filter Rebuild**

Valmet offers an extensive portfolio with products and services for rebuild, which increases the performance of your existing disc filters significantly.

The perfect interaction between product, construction and assembling guarantees minimal downtime during the installation.

Your advantages are:

- Higher capacity
- Better filtrate quality
- Higher outlet consistency
- Lower maintenance costs
- Short payback time due to low investment costs

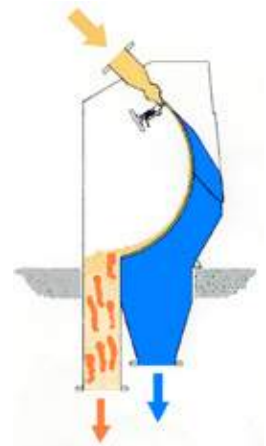


## **Bow Screens and Gravity Deckery**

### **Bow Screens TS and S**

The Hedemora® TS Bow Screen is a simple and effective unit capable of separating fiber as small as 100 microns in length from a water suspension. Police filter, thickener, felt hair remover, ash remover.

The Hedemora® S Bow Screen is a simple and effective unit capable of recovering fibers and other particles as small as 250 microns in length from a water suspension. Police filter, thickener, felt hair remover, ash remover.

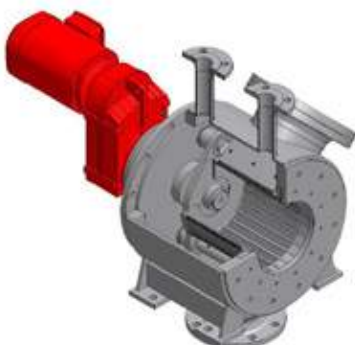
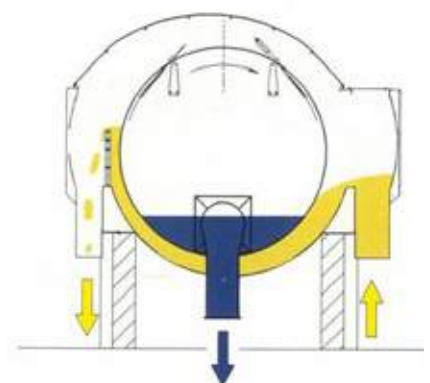


### **GDX™**

Valmet open cylinder gravity deckers are used in dewatering pulp, for example, in broke thickening or recycle pulp thickening. The GDX™ is a slusher type thickener based on co-current flow, with the drum rotating in the direction of pulp flow.

The most important advantages:

- Reliable operating
- No down pipes
- Minor maintenance
- Manage high inlet feed consistency



## **Protection Screens**

### **DualXcluder® Tramp Material Separator**

Heavy debris (i.e. wires, nuts, bolts, etc.) can cause damage to equipment in a mill. A DualXcluder® Tramp Material Separator in the pulp feed line gives efficient protection against damage caused by heavy debris in pulp suspensions at consistencies up to 6%. The incoming pulp passes through a slotted screen, with 1.5 - 6 mm slots, that separates the heavy debris. The debris is removed through the outlet opening in the lower part of the separator.



## Refiners and Refiner Plates

### DD® 6000 Refiner



The DD® 6000 is the latest refiner series on the market with the best performing results and lowest operating costs.

The mechanical load decreases up to 15%, due to a lower no load power. The improved rotor centering causes a longer plate life as well as up to 60% more splined teeth lowers, the mechanical wear.

The splined hub and rotor are both reversible.



### DD® 4600 / 4500 / 4000 Refiner

The DD® 4500/3500 upgrade package offered only by Valmet (OEM for all Beloit-Jones products) for your Beloit-Jones DD® 4000 and DD® 3000 refiners will improve the refining performance and the plate life, which causes lower energy consumption, less seal water consumption as well as lower maintenance cost and lower downtime by improving the controllability.

### Refiner Rebuilds

Valmet is the original equipment manufacturer for the DD® refiners. You reach an improvement of the performance and the life-time, a reduction of the energy consumption and lower maintenance and operating costs.



### Refiner Plates

Valmet has more than 160 years of refining experience and supplies refiner plates to all major low consistency refiner manufacturers (Beloit Jones, Twin Flo, Conflo, etc). Working with the Rebuild and Refiner Groups we are able to supply complete refining solutions, not just refiner plates.



## Deflakers

### DF-6000TM Deflaker

The deflaker is used for deflaking of remaining flakes. The DF-6000TM convinces by its simple and robust construction.



## Deculator Deaeration Systems

### Cleanvac® - Deaeration System

The Celleco® Cleanvac® deaeration system provides efficient pulp deaeration, which leads to improved formation and wire drainage and to lower pressure fluctuations and less foaming.





## WETEND Technologies Ltd - Effective mixing for chemicals with the TrumpJet®-Technology

Wetend Technologies Ltd operates globally serving the paper industry worldwide through own resources and locally together with agents and representatives. The technology is based in the

headquarter in Finland.

Wetend Technologies Ltd is located in the city of Savonlinna in the eastern part of Finland where the company holds office, research & development facilities and assembly shop

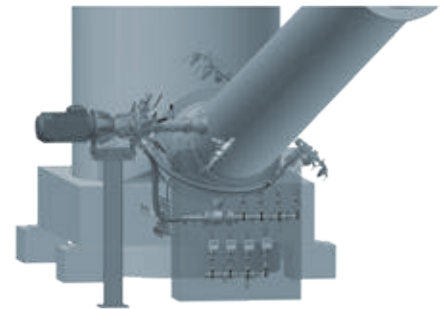
premises.

A new Fiber Laboratory for process and development has recently been opened to support their technology and product development operations.

### TrumpJet®

Patented, highly effective chemical injection systems.

- Improved chemical function
- Less chemical consumption
- Less (no) water consumption
- Better formation
- Improved PM cleanliness
- Better PM runnability
- Compact system without any long cables or hoses

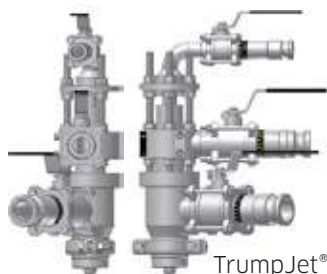


### TrumpJet® Family of Mixers

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, O<sub>2</sub>, CO<sub>2</sub>, 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®



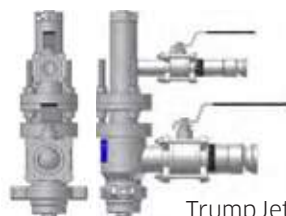
TrumpJet® Fuga



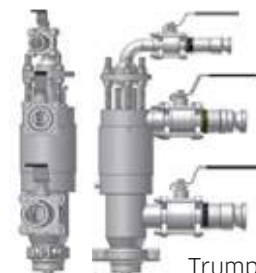
TrumpJet® Poco



TrumpJet® Chord



TrumpJet® Forte



TrumpJet® Trombone

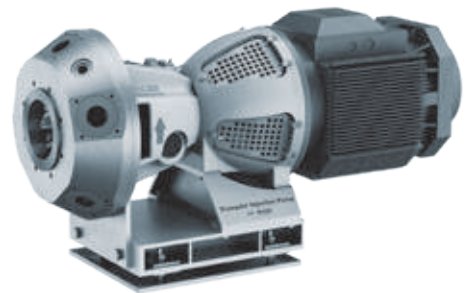
## TrumpJet® Injection Pump

SHS Hygienic Injection Pumps for TrumpJet® Flash Mixing Reactor.

The SHS Hygienic Injection Pumps are designed for industrial applications to pump liquids requiring high-process cleanliness and system reliability: Both clean and slightly contaminated liquids, viscous liquids, fibrous slurries, non-fibrous slurries.

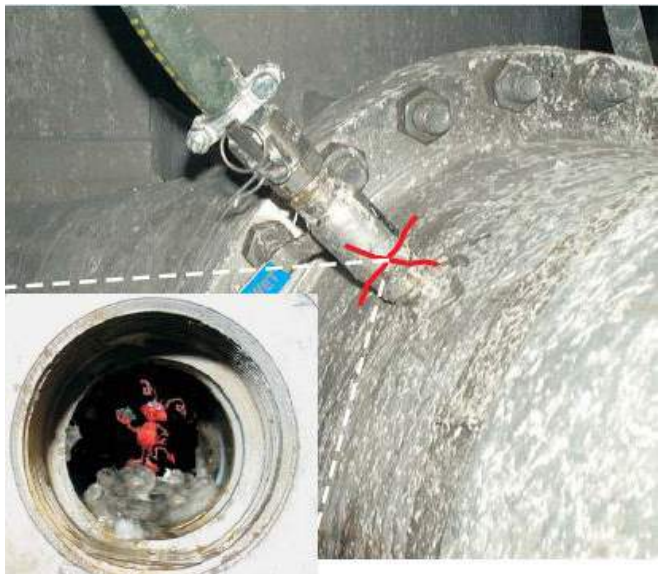
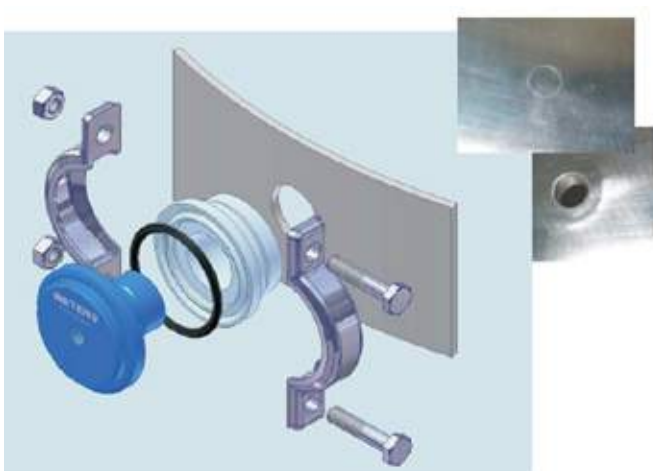
### Features and benefits:

- Hygienic, smooth, step-free and polished hydraulic design
- Fully open hygienic impeller
- Heavy duty multi-discharge case
- Hygienic, reliable, fully integrated single and double mechanical seals
- Innovative, fully integrated, high efficiency permanent magnet motor
- Easy installation, easy and quick disassembly and maintenance



## WebBreakEliminator

A new, simple and effective system to prevent web breaks and improve cleanliness.



## Filter Systems

### KTF Filter Systems (Kapotek Oy)

KTF filter systems are fully automated mechanical self-cleaning filter systems that are equipped with slotted, sintered mesh or perforated elements.

Type	Capacity*	Separation size	Connections	Max. Pressure	Dimensions
	[m³/h]	[µm]	[mm]	[bar]	[cm]
KTF04-SP	30	25 - 1500	50	40	51 x 53 x 100
KTF09-TP	90	25 - 1500	50, 80	10	49 x 56 x 154
KTF16-TP	125	25 - 1500	80, 100	10	49 x 56 x 221
KTF32-TP	260	25 - 1500	150	10	49 x 56 x 339

\*depending on medium / viscosity

KTF filters are designed for the filtration of a wide variety of different media, including high- and low-viscosity liquids, as well as abrasive or sticky media (e.g. coating colors, size, starch, paints, inks, adhesives, pigments and water).

KTF filter systems are successful in the market for years. They are suitable for new installations as well as for the conversion of existing filters.



### Dango & Dienenthal Filter Systems

The Dango & Dienenthal filter range includes fully automatic, self-cleaning backwash filter systems as well as separation systems for liquid filtration. The systems that are built in Germany are based on a carefully developed design.

Type	Capacity	Separation size	Connections	Max. Pressure
	[m³/h]	[µm]	[mm]	[bar]
DDF	5 - 10,500	≥ 5	50 - 10,000	63
RTF	80 - 4,000	≥ 5	100 - 1,000	63
RTF-S	3 - 100	≥ 5	40 - 100	63
JET-S	1 - 25	≥ 50	R 2"	10
JET	1 - 25,000	≥ 50	50 - 3,000	63
SPR	2 - 250	≥ 5	50 - 200	63
EF	5 - 10,000	≥ 10	15 - 1,000	63
DF	5 - 10,000	≥ 10	15 - 500	63

The main applications include power plants, building installations, the steel industry, paper industry, chemical industry, foodstuff industry, sewage plants and snow-making systems.

Dango & Dienenthal filter systems convince through a reliable filtration of solids, trouble-free operation and minimal cost of operation and maintenance.



## **BSW Filtersysteme (SPA Filtertechnik)**

The BSW gravity strainer is a self-cleaning system, which works under atmospheric conditions for water flows up to 12,000 l/min. Typical applications are the mill's spray water supply, purification of sealing water from vacuum pumps, polishing of water from flocculation plants and cooling towers. The filter is also used for purification of intake water from lakes and rivers.

Type	Capacity	Separation size	Dimensions
	[m³/h]	[µm]	[cm]
BSW10	36 - 96	63	64 x 108 x 120
BSW14	48 - 132	80	89 x 142 x 154
BSW17	90 - 210	100	110 x 172 x 184
BSW22	120 - 360	140	135 x 221 x 232
BSW25	180 - 450	180	145 x 252 x 265
BSW30	240 - 700	250	175 x 298 x 311

Due to the bottom-up cleaning technique, the BSW gravity strainer achieves an exceptionally high operational reliability and is more effective and efficient in retaining solids and fibers, which results in an improved final filtrate. Large differences in contamination as well as fibrous contaminants are easily handled by the BSW gravity strainer.

BSW filter solutions are available in a variety of sizes and a wide range of media options.





## Valves for the Pulp & Paper Industry

### Butterfly Valves

#### Wafer / Lug Butterfly Valves (TTV Valves)

DN (mm):	32 - 600 (up to 1400 on request)	<ul style="list-style-type: none"> <li>▪ Replaceable seat</li> <li>▪ Coating Rilsan 250-300 µm (C5M on request)</li> <li>▪ Extended body neck</li> <li>▪ Full crossing stem</li> </ul>
PN (bar) / ANSI:	10 - 16 / CL 150	
Body materials:	GGG-50, G-SC 25, 1.4301 (AISI 304), 1.4408 (AISI 316), bronze C352, aluminium bronze C415, 1.4462	
Seat materials:	EPDM, NBR, Viton®, silicone (food, steam), EPDM-HT, EPDM white, NBR gas, NR (natural rubber), Hypalon	
Disc:	GGG-50, 1.4301 (AISI 304), 1.4408 (AISI 316), bronze C352, aluminium bronze C415, 1.4462, 1.4408 + Halar®, Hastelloy® C, Uranus® B6	
Connections:	Lug type, wafer	
Face-to-face:	EN 558-R20, API 609 Table 1	
Options:	Vulcanized, vacuum, special coatings, stainless steel lever, IP68 gearbox, polished disc, gear with locking device	
Applications:	Water, seawater, waste water with low concentration of chemicals, process water with low fiber consistency, air, gas, oil, bulk material, vacuum	
Approvals:	ATEX, WRAS (on request), ACS (on request), CERTI GAS (on request), FDA (on request), SIL, AD2000 W0/A4	



## Shut-off and Control Butterfly Valves

### Triple Eccentric High Performance Butterfly Valves, Type MTV (Somas)

DN (mm):	80 - 500	<ul style="list-style-type: none"> <li>▪ Solid stainless steel seat due to special geometry</li> <li>▪ Suitable for high flow rates and media containing solids</li> <li>▪ Ideal shut-off and control valve</li> <li>▪ Bi-directional tightness</li> <li>▪ Friction and torque minimized design</li> </ul>
PN (bar) / ANSI:	10 - 25 / CL 150	
Temperature (°C):	up to +500	
Body materials:	1.4408, special materials	
Seat materials:	Solid stainless steel, R-PTFE reinforced	
Connections:	Wafer, double flanged, lug type	
Options:	Oil and gas applications	
Applications:	Hot water and pulp stock up to min. 1%, pulp liquor applications, solids, steam, oil, gas	
Approvals:	ATEX, TA Luft (on request), Fire-safe (on request), FDA (on request), SIL	



SOMAS®



## Ball Valves

### 3-Piece Ball Valves (ICP Valves)

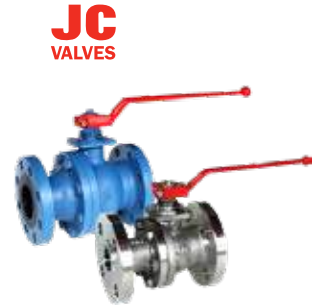
DN (mm):	8 - 100 / 1/4" - 4"	<ul style="list-style-type: none"><li>▪ 3-piece design</li><li>▪ Full bore</li><li>▪ Locking device as standard</li></ul>
PN (bar):	63 (to DN50) / 25 (DN65-100)	
Body materials:	1.4408	
Seat materials:	PTFE	
Connections:	BSP threads, NPT threads, socket weld ends, butt weld ends, long butt weld ends	
Designs:	BSP: Fig. 140/140 ISO NPT: Fig. 141/141 ISO SW: Fig. 142/142 ISO BW: Fig. 143/143 ISO, acc. ASME B16.25 & DIN3239 part 1 Long BW: Fig. 143L-ISO, acc. ASME B16.25 & DIN3239 part 1	
Applications:	Water, oil, gas, chemicals	
Approvals:	ATEX	

ICP VALVES



### DIN Flanged Ball Valves, Short Pattern/Floating, Series 516/540 (JC Valves)

DN (mm):	15 - 200	<ul style="list-style-type: none"><li>▪ 2-piece design</li><li>▪ Full bore</li><li>▪ Floating ball</li><li>▪ Face to face dimensions: EN 558 Series 27</li><li>▪ Cavity balancing hole</li></ul>
PN (bar):	16 (to DN200) / 40 (to DN150)	
Body materials:	1.0619, 1.4408, other materials on request	
Seat materials:	PTFE, R-PTFE, PTFE glass, DEVLON, STANSIT (PTFE-SS), PEEK, nylon	
Connections:	Flanged	
Options:	V-port regulation ball, cryogenic construction to -196°C, oil- and grease-free, cavity fillers, cavity relief seats, double packing, oval handwheel (up to 2"), vacuum design up to 10 <sup>-4</sup> bar	
Applications:	Water, seawater, oil, gas, chemicals, low pressure steam	
Approvals:	ATEX, SIL, TA Luft, Fire-safe, AD2000 W0/A4, FDA (on request)	



### DIN Metal Seated Flanged Ball Valves, Floating, Short Pattern Series 3516/3540 / Long Pattern Series 3316/3340 (JC Valves)

DN (mm):	15 - 150	<ul style="list-style-type: none"><li>▪ 2-piece design</li><li>▪ Full bore</li><li>▪ Floating ball</li><li>▪ Face to face dimensions: EN 558 Series 1 / EN 558 Series 27</li><li>▪ Cavity balancing hole</li></ul>
PN (bar):	16 (up to DN150) / 40 (up to DN100)	
Body materials:	1.0619, 1.4408, LCC and other materials on request	
Ball materials:	316 + TCC coating, other treatments on request	
Seat materials:	316 + TCC coating, other treatments on request	
O-rings:	FKM, Aflas (up to 250°C), FFKM-Kalrez (up to 327°C), Graphite above 327°C	
Temperature (°C):	up to +500 (depending on material and treatment!)	
Connections:	Flanged	
Leakage rate:	Class A with Aflas, FKM, FFKM; Class D (B on request) with Graphite	
Options:	Ball in slurry design, special seats, double packing, oval handwheel (up to 2")	
Applications:	Oil, gas, chemicals, steam, mining	
Approvals:	ATEX, SIL, TA Luft, Fire-safe, AD2000 W0/A4	



## Knife Gate Valves

### Pulp Knife Gate Valves, Type HK/EX (Orbinox)

DN (mm):	50 - 1200 (higher on request)	<ul style="list-style-type: none"><li>▪ One-piece body</li><li>▪ Type HK: Seal ring flange-mounted from the outside</li><li>▪ Type EX: Seal ring integrated into the body</li><li>▪ Uni-directional sealing</li></ul>
PN (bar) / ANSI:	up to 10 / CL 150	
Body materials:	GG25, GGG40, 1.4408, special materials	
Seat materials:	PTFE, EPDM, NBR, Viton®, metal	
Connections:	Wafer	
Options:	Bonnet design, V-port for regulation, flush connections, type EX with FDA approval available (on request)	
Applications:	Pulp < 5%, recycled paper pulp, water, waste water, bulk material, sludge	
Approvals:	ATEX (on request)	



### Pulp Knife Gate Valves, Types TK/TH/TL (Orbinox)

DN (mm):	50 - 1600	<ul style="list-style-type: none"><li>▪ Through-going valve plate</li><li>▪ Bi-directional sealing</li><li>▪ TK: Seal ring flange-mounted from the outside</li><li>▪ TL: Seal ring integrated into body</li><li>▪ TH: reinforced construction up to 25 bar</li></ul>
PN (bar) / ANSI:	up to 25 / CL 300	
Body materials:	GG25, 1.4408, special materials	
Seat materials:	Metal, PTFE, EPDM, NBR, Viton®, special materials	
Connections:	Wafer	
Options:	V-port for regulation, flush connections	
Applications:	Pulp < 18%, liquids containing solids, recycled paper pulp, waste water, bulk material, sludge, rejects, syrup (seed magma)	
Approvals:	ATEX (on request)	





## Ball Segment Valves

Ball Segment Valves, Wafer Design, Centric / Eccentric, Type KVTW-A (Somas)

DN (mm):	25/2 - 250	<ul style="list-style-type: none"><li>▪ Somas standard face-to-face dimensions</li><li>▪ Centric (type KVTW) or eccentric (type KVBW) design</li><li>▪ Low-Noise: noise reduction for high differential pressures</li><li>▪ V-groove (type KVMW) for high consistency pulp</li><li>▪ Particularly high Kv-values</li></ul>
PN (bar) / ANSI:	10 - 100 / CL 150 - 300	
Temperature (°C):	-196 up to +550	
Body materials:	1.4408, Hastelloy® C, titanium, special materials	
Seat materials:	PTFE (10% carbon), PTFE 53 (50% 1.4435), HiCo, PEEK (high temperature resistant plastic), without seat (hard chromed cover plate)	
Connections:	Wafer	
Options:	Manual override, safety interlock at the actuator	
Applications:	Pulp stock up to 10%, steam, water, solid-containing gases, rejects	
Approvals:	ATEX, FDA (on request), SIL, TA Luft (on request)	



Ball Segment Valves, Wafer Design, Short Face-to-Face Dimension, Centric / Eccentric, Type KVTW-D (Somas)

DN (mm):	25/2 - 250	<ul style="list-style-type: none"><li>▪ Short face-to-face dimension</li><li>▪ Centric (Type KVTW) or eccentric (Type KVVW) design</li><li>▪ Low-Noise: noise reduction for high differential pressures</li><li>▪ V-groove (type KVMW) for high consistency pulp</li><li>▪ Particularly high Kv-values</li></ul>
PN (bar) / ANSI:	up to 25 / CL 150	
Temperature (°C):	-196 up to +550	
Body materials:	1.4408, Hastelloy® C, titanium, special materials	
Seat materials:	PTFE (10% carbon), PTFE 53 (50% 1.4435), HiCo, PEEK (high temperature resistant plastic), without seat (hard chromed cover plate)	
Connections:	Wafer	
Options:	Manual override, safety interlock at the actuator	
Applications:	Pulp stock up to 10%, steam, water, solid-containing gases, rejects	
Approvals:	ATEX, FDA (on request), SIL, TA Luft (on request)	



## Check Valves

### Tilting Disc Check Valves, Type RM (Orbinox)

DN (mm):	40 - 900	<ul style="list-style-type: none"> <li>▪ Robust design</li> <li>▪ Metal sealing</li> <li>▪ Eccentric design</li> <li>▪ Quick closing reaction due to oblique sealing</li> <li>▪ Short face-to-face dimension</li> <li>▪ Also suitable for low differential pressures</li> </ul>
PN (bar):	10 - 40	
Temperature (°C):	up to +400	
Body materials:	1.4408, special materials	
Seat materials:	Metal	
Connections:	Wafer	
Options:	Auxiliary spring, counterweight, hydraulic damping device	
Applications:	White water, pulp < 5%, sludge, wastewater treatment plants, food and beverage, water, steam, gas, air	
Approvals:	ATEX (on request)	



## Positioners

### Digital Positioners

Design:	Digital	<ul style="list-style-type: none"> <li>▪ Auto-calibration (digital)</li> <li>▪ Modular construction</li> <li>▪ Compact, well-proven, and flexible design</li> <li>▪ Exhaust opening with thread connection</li> </ul>
Supply air pressure:	up to 10 bar High air capacity at minimum air consumption	
Software:	Diagnosis solutions for maintenance, integration into existing diagnostic systems via DTM device	
Options:	HART, profibus, foundation field bus, partial stroke, contactless sensor	
Approvals:	ATEX, SIL2	



### Analog Positioners, Type V200 (VAC)

Design:	Analog	<ul style="list-style-type: none"> <li>▪ Optimized pilot valves for reduced air consumption and better air capacity</li> <li>▪ Feedback units or option modules can be installed easily, even later, in the standard housing</li> <li>▪ Simple calibration, external zero and span adjustment</li> <li>▪ High gain pilot valve and super high gain pilot valve</li> <li>▪ Built in gauge ports</li> <li>▪ Bright visible indicator, flat or Dome style</li> <li>▪ Stainless steel cam</li> </ul>
Supply air pressure:	up to 8 bar	
Options:	Feedback 4-20 mA, mechanical and inductive limit switches, intrinsically safe, potentiometer, nickel coated, TUFRAM® coated	
Approvals:	Nema 4X	

