LIQUID
FILTRATION & SEPARATION
TECHNOLOGY

BVG

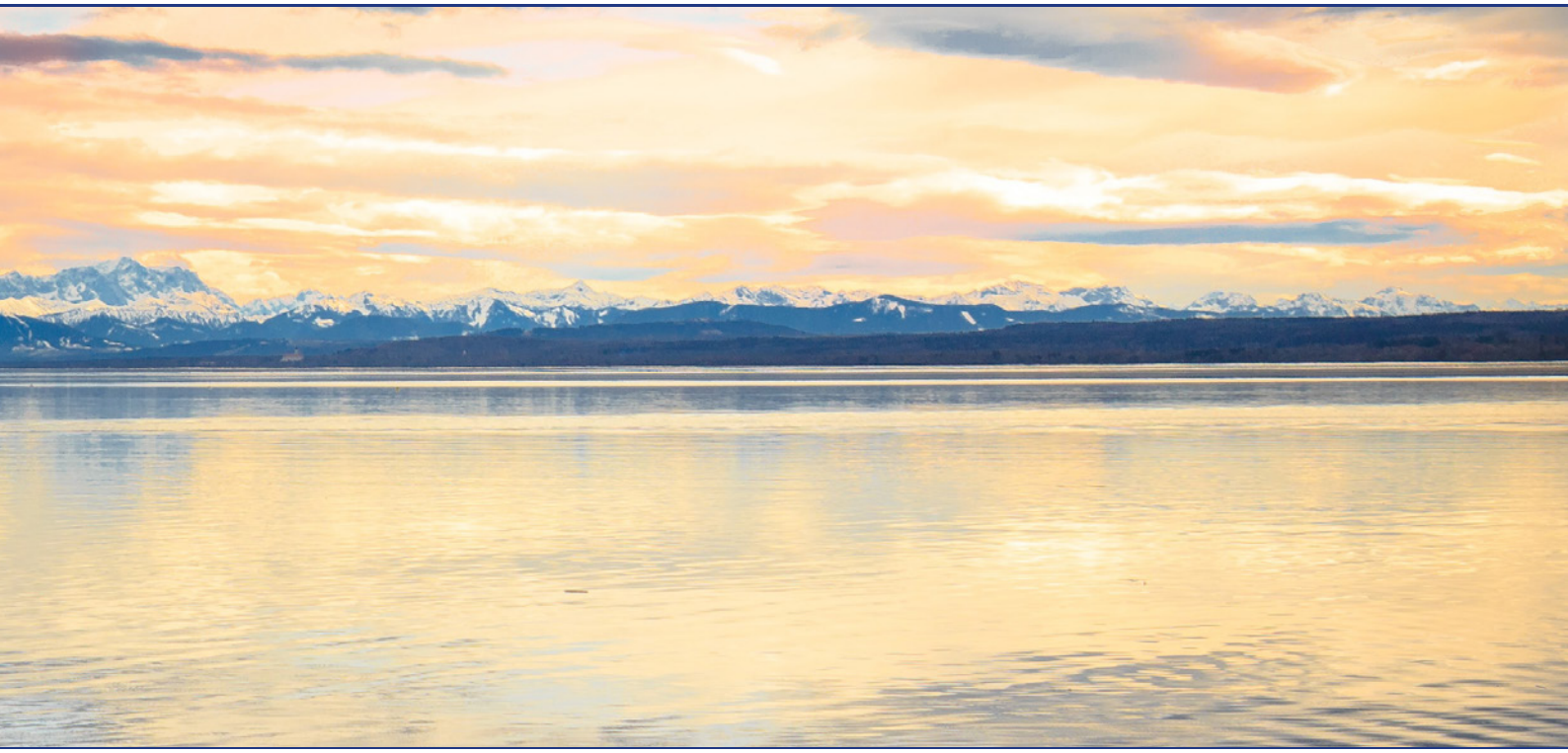
BEST VALUE GUARANTEED

PASSION FOR
PROCESS EQUIPMENT

Based in Greifenberg, Germany, BVG Bauer-Verfahrenstechnik-GmbH is a family owned and operated business with subsidiaries in the United States and People's Republic of China. With an annual revenue of EUR 20 million and a workforce of 70 highly skilled experts, we design and manufacture custom-built turnkey processing plants and individual components for customers in the pulp, paper and cardboard manufacturing industries. Our customers also include those in the paper converting and corrugating industries, and many others.

We comply with all current international standards, norms and regulations and are certified according the Water Resources Act and maintain a continuous quality assurance policy.

Our customers worldwide appreciate our partnership approach to problem solving and consider us a leading supplier in chemical equipment, processing of starch and coating applications. BVG is also known for its highly efficient continuous processing technology.



RESOURCE **EFFICIENCY**

Resource efficiency is a principle task of process engineering with a focus on product quality, process stability, maximum yield, and energy efficiency. Optimizing these four targets also promotes environmental responsibility which has become a top priority in today's world.

From the beginning BVG has been known for developing sustainable technologies and promoting processing of renewable raw materials with innovative continuous processes where minimum energy demand and product loss have driven the design.

Located in Bavaria on the shores of "Lake Ammer", the northernmost sub-alpine lake, our BVG team is constantly mindful of the beauty of nature and is dedicated to its protection.

Transferring these principles to a filtration process of **aqueous solutions** requires intensive knowledge of technology and equipment solutions. Building on this knowledge and experience, BVG has developed and implemented a variety of filtration techniques to serve this end. These techniques are described in the following pages.

It is our goal to provide the ideal filtration technology for your application. Please contact us so we work with you to develop an optimal solution!

BVG
SUPER STRAINER ST

The ***Super Strainer ST*** is our standard self-cleaning process filter. Introduced in 1999, this filter has been applied to many applications in the pulp & paper industry (as well as others). By design, it is the ideal pressure screen for the filtration for **non-Newtonian** (solid containing) **fluids**, such a pigment slurry, starch glue, and coating color.
A typical application is in dosing lines and service stations (final stations) to supply every type of applicator for coating color or surface size (size press, film press, film coater, roll coater, jet coater, curtain coater).
The extent of filtration quality can be adjusted by utilized broad selection of interchangeable filter baskets that utilize a variety of designs (wedge wire, drilled or perforated surface types) to meet quality requirements. Slot and hole finenesses can range from 50 to 5.000 microns as required.

In our design, the filter basket is continuously cleaned by **spring loaded doctor blades** (scraper). This ensures a fully automatic filtration process that maintains very low pressure differences, **typically below 1.0 bar.**

This slowly rotating scraper system is equipped with carbon fiber blades that ensure high endurance thanks to pivoted joints for continuously optimized alignment.
Together with the ***Super Seal*** system, the ***Super Strainer ST*** is known for its reliable operation over several months between blade maintenance intervals. The type of seal used in our filter works perfectly even for adhesive media, where none of the formerly known types of sealing systems (mechanical seal or stuffing box) are applicable.

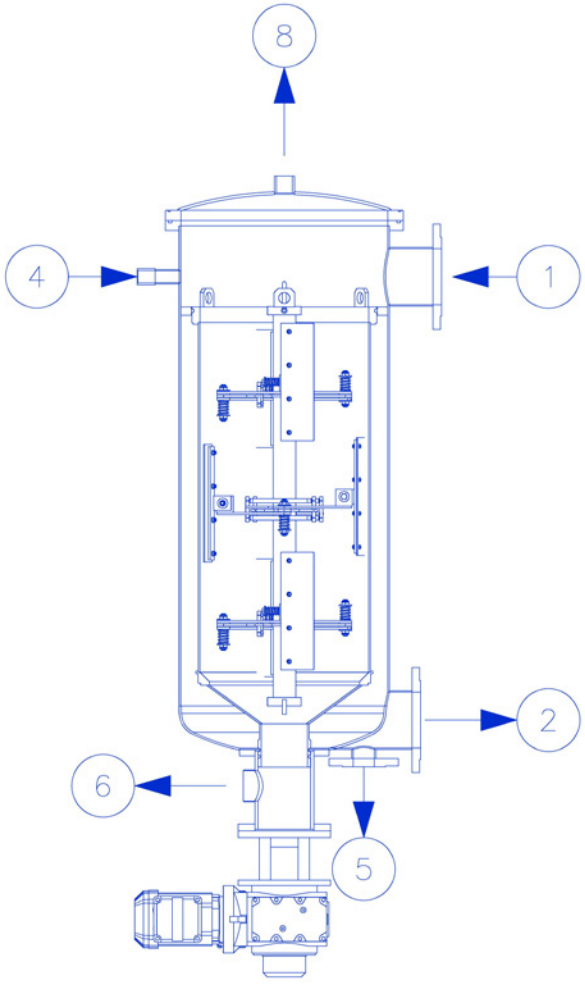
As there are no wearing or replacement parts except periodic blade replacement, maintaining a ***Super Strainer ST*** means simply restoring the ***Super Seal*** material at a routine interval of several weeks with a manual pump.

The filter basket and scraper system are easily accessed, since the filter housing can be opened at the top of the filter, without any manipulation or dismantling since the scraper drive is mounted at the bottom side.

There are several design sizes available; one ***Super Strainer ST*** can be utilized for **volume flows** ranging from **5.000 – 120.000 l/h** (22 - 530 gal/min).

Depending on the desired application the ***Super Strainer ST*** can be equipped with several accessories, such as stainless-steel base frame, automatic reject sluice with flushing sequence, automatic by-pass changeover with differential pressure measurement, scraper and filter basket lifting device, as well as pressure control for the breather pipe.

The Super Strainer ST is the ideal solution for highly efficient fluid filtration where automatic rejecting or flow separation (accept/reject flow) is required and where easy access to the filter media is desired.



1. *Inlet connection*

2. *Outlet connection*

4. *Manual Flush water connection*

5. *Drain connection*

6. *Reject connection*

8. *Breather connection*

BVG
SUPER STRAINER SPS

The ***Super Strainer SPS*** is an advanced self-cleaning process filter that we introduced in 2010 for challenging applications in the pulp & paper industry (and others).

By design it is the ideal pressure screen for the **filtration for non-Newtonian** (solids containing) **fluids with high impurity contents**, such a pigment slurries, starch glue, and coating color. A typical application is in preparation lines and service stations (final stations) to supply every type of applicator for coating color or surfacesize (size press, film press, film coater, roll coater, jet coater, curtain coater) with demanding screening purposes (e.g. recycles paper furnish).

The filtration quality can be adjusted in two ways:

- **Separation by specific particle size**
  By selection of the utilized filter basket, where different designs such as slot and hole (wedge wire, drilled or perforated surface types) at finenesses ranging from 50 to 5.000 µm are available.

- **Separation by specific weight**
  By the frequency of automatic reject discharge while gravimetric sedimentation into the reject chamber takes place. Since specific heaver particles become thixotropic inside the reject chamber, the reject removal is very selective.

The ***Super Strainer*** filter basket is constantly cleaned by **spring loaded doctor blades** (scraper) and ensures a fully automatic filtration process taking place at very low pressure differences, **typically below 1.0 bar.**

This rotating scraper system is equipped with carbon blades that ensure high endurance due to pivoted joints that maintain perfect alignment. Together with the ***Super Seal*** system the S**uper Strainer SPS** is known for its reliable operation and maintenance intervals of several months, after which the consumable doctor blades are easily and inexpensively replaced.

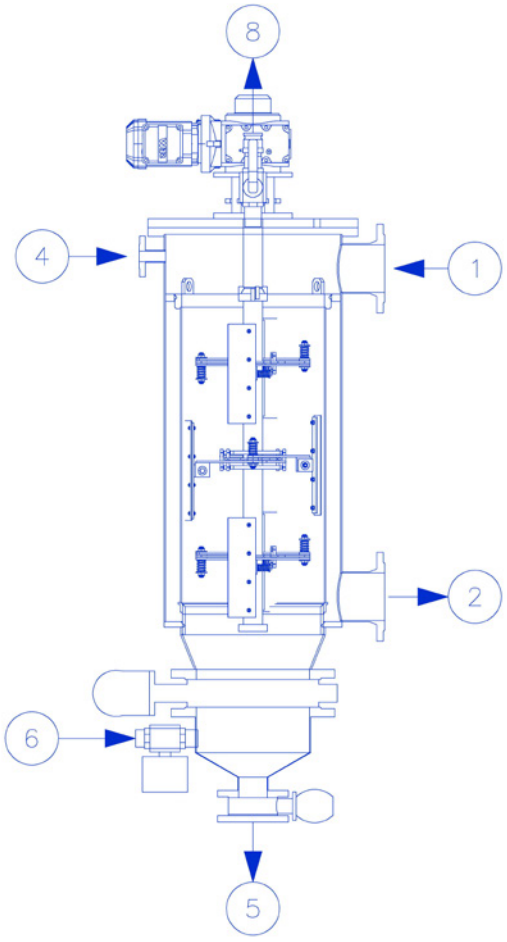
The ***Super Strainer SPS*** is designed for the extraction of fiber, pigment or high impurities containing media that usually cannot be removed with common filters.

The filter basket is easily accessed by removing the filter lid and lifting the basket with the included hoist. The scraper drive is mounted at the top side.

There are several design sizes available. One ***Super Strainer SPS*** can be utilized for **volume flows** ranging **from 5.000 to 120.000 l/h** (22 - 530 gal/min).

Depending on the desired application, the ***Super Strainer SPS*** can be equipped with several accessories such as stainless-steel base frame, automatic reject sluice with adjustable flushing sequence, automatic by-pass changeover with differential pressure measurement, scraper and filter basket lifting hoist, as well as pressure control for the breather pipe.

The ***Super Strainer SPS*** is the perfect device when highly efficient fluid filtration with **high impurity contents** and automatic rejecting is required.



1. *Inlet connection*
2. *Outlet connection*
4. *Manual Flush water connection*
5. *Drain connection*
6. *Reject connection*
8. *Breather connection*

BVG
STRAINER C

The ***Strainer C*** is a heavy-duty **cage (basket) filter type** for a wide range of applications in the pulp & paper industry (and others) where the filtration fineness is high, the reject fraction is specifically lower, and the filtration residue should be **backwashed** or cleaned manually from time to time.

By design the ***Strainer C*** and the installed filter cages are very easy and safe to operate.
The filter residue (reject) gradually distributes uniformly on the filter element which leads to an increase in pressure (operating pressure typically 1.5 bar at maximum 3.0 bar).
At the specific pressure delta an automatic changeover and backflushing (or manual flushing) is accomplished. When cleaned carefully by hand with the aid of a pressure washer, the lifetime of the filter cages can be many years before they have to be replaced.

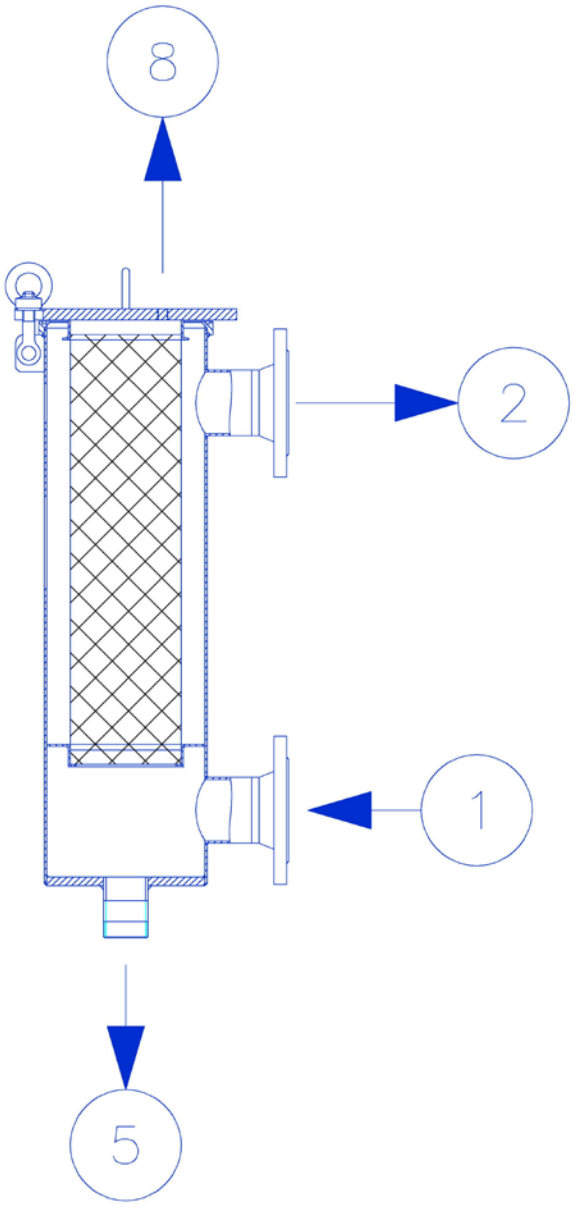
The Strainer C is ideal for **filtration of non-Newtonian** (solids containing) **fluids** such a pigment slurries, dispersions, starch glue, and coating color. A typical set-up is the function of a **police filter** in product dosing lines.

The degree of filtration can be adjusted by selection of the utilized filter basket, where different **designs** such as **perforated surface or wire netting** at **finenesses** between **5 to 10.000 µm (with single or double supporting cage)** are available.

As there are several design capacities available, a ***Strainer C*** can be utilized for **volume flows** of **1.000 – 30.000 l/h** (4 - 130 gal/min). Because several units can be connected in parallel (also in series), the filtration capacity can be increased to whatever degree is required by your application.

When more than one ***Strainer C*** is installed, an automated changeover to a fresh filter, followed by a back-flushing sequence of the dirty filter with reject elimination can be programmed based on the desired maximum pressure differential.

Depending on the desired application the ***Strainer C*** can be equipped with several accessories, such as stainless-steel base frame, automatic by-pass changeover with differential pressure measurement, or recycling of the filter residue.



1. *Inlet connection*

2. *Outlet connection*

5. *Drain connection*

8. *Breather connection*

BVG
STRAINER B

The ***Strainer B*** is a heavy-duty **bag type filter designed a broad range** of applications in the pulp & paper industry (and others) where filtration fineness is high and the reject fraction is low or the **impurities** need to be collected for **further analysis or objection.**

Apart from the solid housing (with a nominal pressure rating of up to PN10), the main element of the bag filter system is a filter bag that is typically made of textile (needle-felt, melt-blown, woven, mono & multi-filament fibers).
It is supported by a cage that operates at pressures typically ranging from 1.5 bar to a maximum of 3.0 bar.

Reject or dirt is trapped inside the filter bag, which is one of the significant characteristics of the bag filter principle.

The ***Strainer B*** is a simple, and operator friendly system. Increase of differential pressure determines the required change of the filter bag. A mechanical hoist is used by the operator to remove the used filter bag. Suitable for the **filtration of Newtonian fluids**, a typical application is in **chemical dosing** lines for solutions. The filtration degree can be adjusted by selection of the utilized filter bag, where different materials and finenesses between **1 to 500 µm** are available.

As there are several design sizes available, the ***Strainer B*** can be utilized for **volume flows** ranging from **1.000 – to 30.000 l/h** (4 - 130 gal/min). Several units can be connected in parallel (also in series) enabling the filtration capacity to be increased to meet your application needs.

Depending on the desired application the ***Strainer B*** can be equipped with several accessories, such as stainless steel base frame or automatic by-pass changeover with differential pressure measurement.

BVG
SEPERATOR D

The ***Separator D*** is a **self-cleaning coarse particle separator** for applications in the pulp & paper industry (and others), where coarse particles have to be removed, such as in return lines from applicators for coating color or surface size (mainly size press, but also film press, film coater, roll coater, jet coater, curtain coater).

Designed for pressure less online coarse filtration in pipelines such as the return line from a size press, the **Separator D** is able to eliminate scraps of paper and coarse contaminants from entering to the working station (run tank) where they could cause issues by blocking lines.
This filter box is a simple and fully automated system where manual operation is not required.

During sheet breaks the system completes an automatic flushing sequence with flushing nozzles, where the scraps of paper are flushed to the size press pulper.

The Separation quality can be adjusted by selection of the utilized separator blade hole size, with **finenesses ranging** from **1.000 to 10.000 µm** available.

There are several design sizes available. A ***Separator D*** can be utilized for **volume flows** ranging from **5.000 – 120.000 l/h** (22 - 530 gal/min).

Depending on the desired application the ***Separator D*** can be equipped with several accessories, such as stainless-steel base frame, automatic bypass line, position switch or overfill protection.

BVG
SEPARATOR V

The ***Separator V*** is a **vibrating screen** for applications in the pulp & paper industry (and others) where coarse particles have to be removed while they are considered as out of specification while specific smaller particles must be retained. Typical applications are grinding or dispersing system for pigments and minerals.

Designed for pressureless filtration, the ***Separator V*** is able to eliminate a broad range of particle sizes.

The separation quality can be adjusted by selection of the utilized screen, where different **fineness** between **40 to 4.000 µm** are available, as well as by adjusting the vibration intensity.

As there are several screen diameters available, one ***Separator V*** can be utilized for different **volume flows** depending on the processed media and its impurity content.

Depending on the desired application, the ***Separator V*** is delivered in different sizes and can be equipped with several accessories, such as stainless-steel base frame, overfill protection, spraying nozzles, cover plate, and video control.

BVG
SEPARATOR GS

The ***Separator GS*** is an innovative vortex separation tank for applications in the pulp & paper industry (and others) where specific heavier particles (like sand, minerals, agglomerates) can be removed by gravity.

Due to the design of the tank interior, large and heavy particles settle into the collection reservoir before they are able to enter the exit flow connection. This reservoir is periodically flushed to sewer.

Typical applications are service stations for size presses and metering size presses in packaging paper grades, as well as reject separation in stock preparation and wastewater treatment plants.

The separation quality can be adjusted by the frequency of the automatic reject discharge where gravimetric sedimentation into the reject chamber takes place. Also the selected tank design and size (retention time) has an impact on the degree of separation.

One major advantage of the ***Separator GS*** is its efficiency, as no additional drive force is required beside the vibrating motor.

The system works by design without additional energy demand and is able to remove up to 75% of specific heavier particles during a single throughput.

Depending on the desired application the ***Separator GS*** can be equipped with several accessories, such as stainless-steel base frame, rake screening device, overfill protection, and automatic cleaning nozzles.

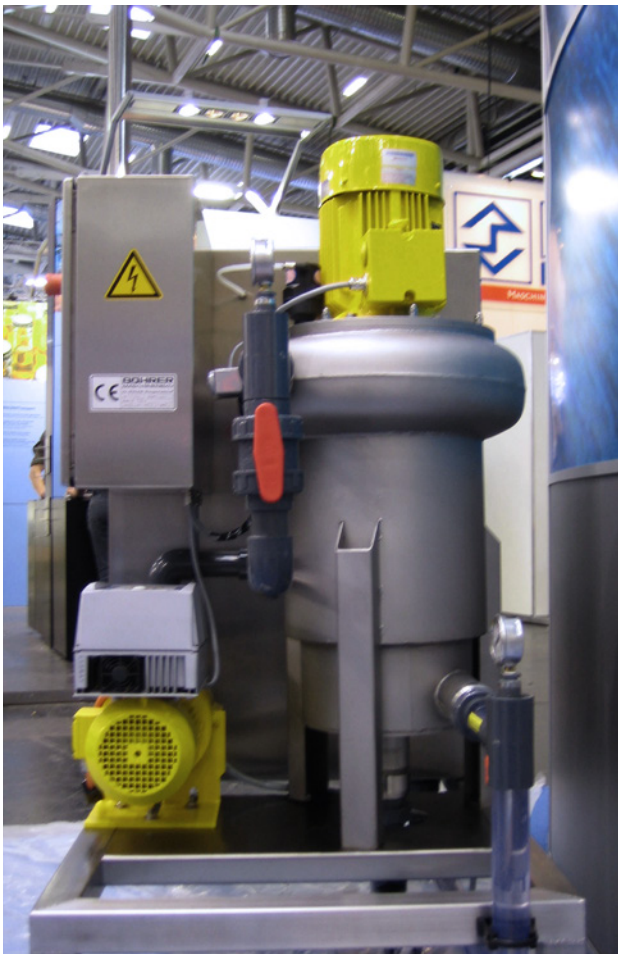
BVG
SEPARATOR UF

The ***Separator UF*** is a system for the recycling of effluents for applications in the pulp & paper industry (and others), where a separation into a concentrate and a permeate takes place by cross-flow ultrafiltration.
The ***Separator UF*** combines both economic and ecologic benefits, that allows coating color (or pigment) containing effluents to be proceed in a way that they can be reused as coating color (pigment slurry) instead of being disposed. By this recycling process, the cost of raw materials is reduced, and the negative impact on the environment by waste production is dramatically reduced.

Besides the generated concentrate, which contains valuable components and is added to the freshly produced coating color (pigment slurry), the permeate can continue to be utilized within the process for flushing or even dilution purposes.

The separation quality can be adjusted by selection of the utilized ultrafiltration modules (nano- to microfiltration), as well as the processing time. The ***Separator UF*** is a modular design that can be configured for any required capacity. Depending on the desired application the ***Separator UF*** can be equipped with several accessories, such as stainless-steel base frame, solid control, on-line viscosity measurement, etc.

BVG
CYCLONE FILTER W



The ***Cyclone Filter W*** is a self-cleaning filter for applications in the pulp & paper industry (and others) where specific larger and heavier impurities can be removed from a process water or waste water source.

The elimination of heavier impurities (like sand, minerals, and agglomerates) takes place by centrifugal force on the fluid flow after entering the ***Cyclone Filter W*** without building up on the filter element.

Impurities of lower weight are retained at the filter element by differential pressure of the exit line. The design utilizes hydrodynamic rotating scrapers that provide continuous cleaning of the filter element by the suction impulse of a foil design.

This scraper design optimizes the filtration efficiency and flow circulation of the ***Cyclone Filter W***. The separation quality can beadjusted by selection of the utilized filter element, where different **finenesses** between **25 to 1.000 µm** are available.

As there are several design sizes available, one ***Cyclone Filter W*** can be utilized for **volume flows ranging from 3.000 – 36.000 l/h** (13 – 158 gal/min). Depending on the desired application, the ***Cyclone Filter W*** can be equipped with several accessories, such as stainless-steel base frame, and flow control valve for the exit flow., etc.

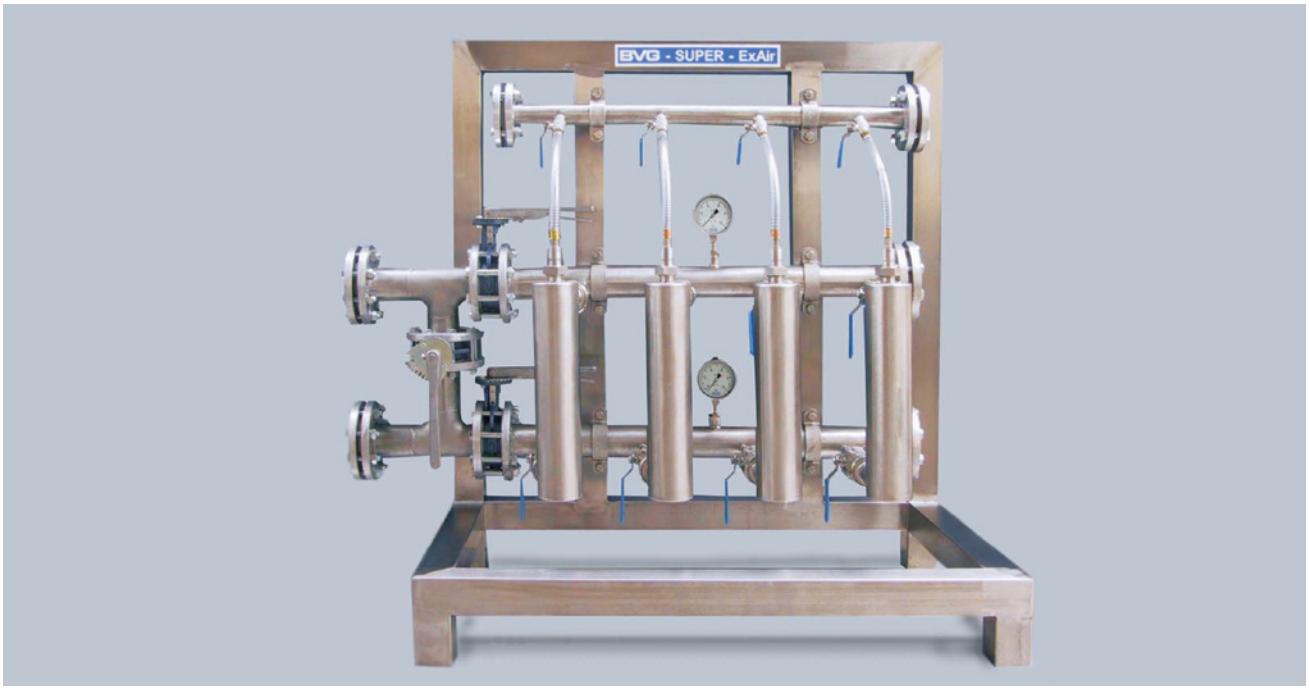
BVG
SPIRAL SEPARATOR D

The ***Spiral Separator D*** is a system for solid-liquid separation applications in the pulp & paper industry (and others) where a separation into a dry substance is required (stock preparation, flotation foam, wastewater treatment). By using a turning spiral inside a filter element, the solid particles are transported continuously and simultaneous dewatered with the aid of a drain pump.
The dewatered solid enter on top the ***Spiral Separator D*** by a slide.

Low energy demand and minimal space requirements are the key benefits of the ***Spiral Separator D*** as compared to other separation systems (band thickener, screw press, belt filter press, etc.)

The separation quality can be adjusted by selection of the utilized filter element, where different **finenesses** between **25 and 1.000 µm** are available. As there are several design sizes available, one ***Spiral Separator D*** can be utilized for **volume flows** ranging from **3.000 – to 36.000 l/h** (13 – 158 gal/min). Depending on the desired application the ***Spiral Separator D*** can be equipped with several accessories, such as stainless-steel base frame, flow control valve for the exit flow, etc.

BVG
SUPER EXAIR HC



The ***Super ExAir HC*** is a deaeration system for coating colors and size/glue applications in the pulp & paper industry (and others). Installed within the service station of any kind of applicator/coater, the Super ExAir HC improves process stability while skip coating is reduced and high runnability is constantly maintained.

The ***Super ExAir HC*** combines both economic and ecologic benefits, as expensive and environmentally costly chemical deaerators can be eliminated. Using the hydrocyclone principle the media is separated into a specific heavier portion (accept). This deaerated fraction exits the ***Super ExAir HC*** tangentially and is directed to the applicator/coater at a pressure difference around 1.5 bar. Driven by centrifugal force the air forms a cone in the center of each ***Super ExAir HC*** cyclone. This air-containing fraction is fed back to the working tank where the air can escape.

The deaeration quality can be adjusted by varying of the immersion pipe size as well as the pressure difference. The ***Super ExAir HC*** is designed modularly and can be configured for any required capacity in a tubular or round design.

Depending on the desired application, the ***Super ExAir HC*** can be equipped with several accessories, like pressure control, solid control, air content measurement, etc.

BVG
SUPER EXAIR SP

The ***Super ExAir SP*** is a system for the complete deaeration of sizing, glue and emulsions used in applications in the pulp & paper industry (and others) by using membrane technology. Installed within the working station of a curtain coater, the ***Super ExAir SP*** provides the required deaeration of this type of coating technology, where a minimum air content is a basic requirement and bubble-freeness is essential.

Even dissolved air in liquids within a broad viscosity range can be removed by the ***Super ExAir SP***.

Equipped withan on-board vacuum generator, negative pressure is applied to the membrane modules to reduce the solubility of the gas, which enables separation from the liquid.

The deaeration process takes placeinside an agitated tank where the optimum distribution of product on the membrane surface can be controlled.

As a consequence, the increase of pressure is very moderate during operation, resulting in a reliable throughput and degree of deaeration. Due to its compact footprint, the ***Super ExAir SP*** can be installed on the same level as the working station (no vertical height required).

The deaeration quality can be varied by adjusting the vacuum level and the number of passes through the system. As there are several design sizes available, one ***Super ExAir SP*** can be utilized for **volume flows** ranging from **200 to 10.000 l/h** (0.9 – 44 gal/min).

All ***Super ExAir SP*** are factory equipped with a collection of process data monitoring, including flow, pressure and vacuum. Online air content measurement can be added as an option.

BVG
SUPER EXAIR TL

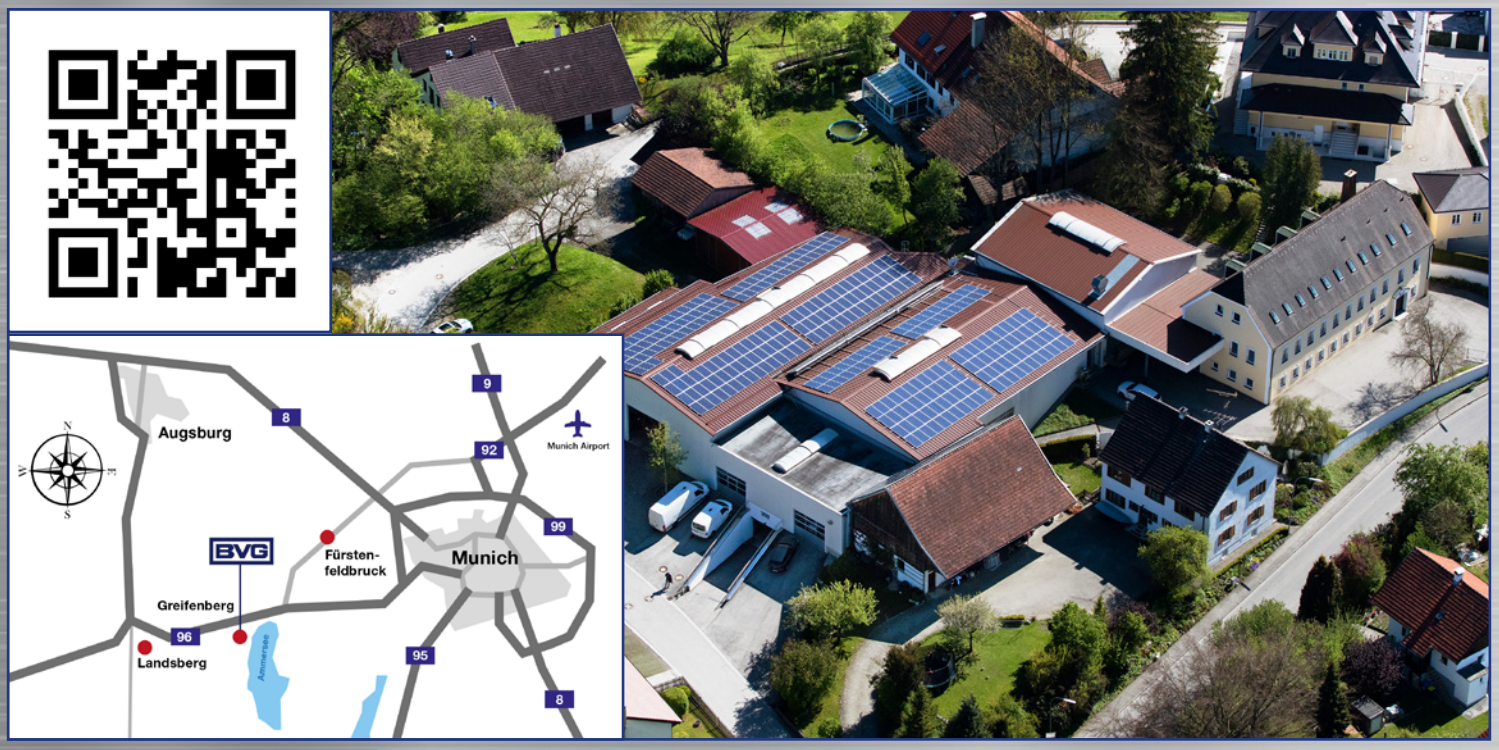
The ***Super ExAir TL*** is a system for complete deaeration of coating colors and size/glue at applications in the pulp & paper industry (and others) using thin film degasification. Installed within the working station of a curtain coater, the ***Super ExAir TL*** provides the degree of deaeration required by coating technologies where a minimum air content is a basic requirement and a bubble-free coating color is essential.

With this innovative design, the ***Super ExAir TL*** is able to continuously deaerate fluid products in the first pass. Even micronized gas and air pockets in liquids within a broad viscosity range can be removed.

The ***Super ExAir TL*** is equipped with an on-board rotary valve vacuum pump that **efficiently provides** the required negative pressure. Using this negative pressure, the coating color is sucked into the ***Super ExAir TL*** and flows into the center of a rotating bowl.

By centrifugal force a thin product layer is formed on the rotating roll and is constantly deaerated. After the deaerated product is deposited on the edge of the rotating bowl, a pick-up pipe discharges the product out of the ***Super ExAir TL***. Due to its compact design, the ***Super ExAir TL*** can be installed on the same level as the working station (no vertical height required).

The deaeration quality can be varied by adjusting the inlet opening diameter, as well as the speed of the rotating bowl. As there are several design sizes available, one ***Super ExAir TL*** can be utilized for **volume flows** ranging from **200 to 10.000 l/h** (0.9 – 44 gal/min). All ***Super ExAir TL*** deaerators are factory-equipped with a collection of process data sensor, including flow, pressure and vacuum. An online air content measurement sensor may be added as an option.



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