

 Bohle



Save money - Protect the environment

# Process water treatment systems



# The Bohle machine service

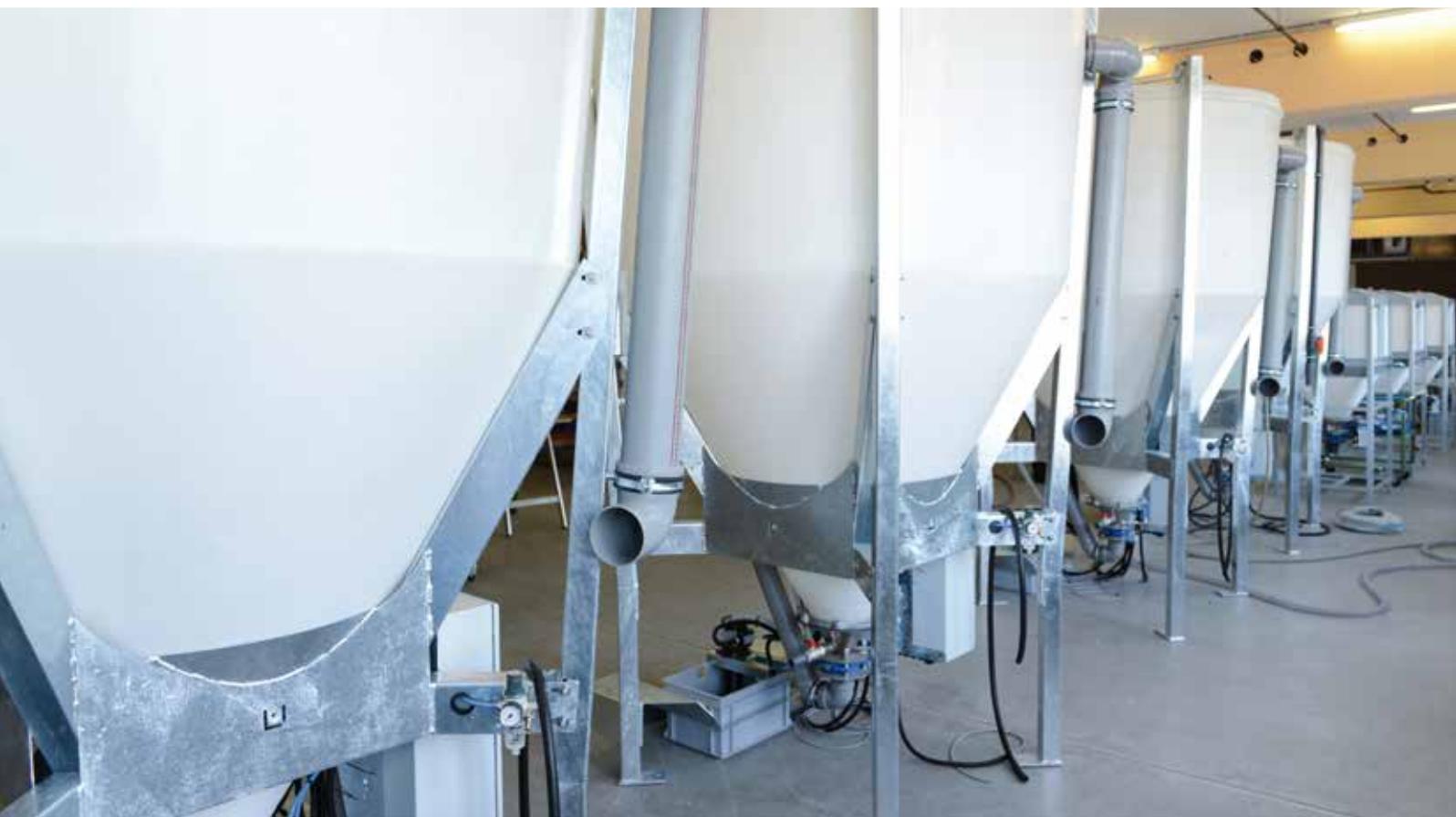
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For Bohle service does not stop after the sale of a glass processing machine - the service team with service technicians, Michael Mocker and Stefan Jaster, take care of this. The technicians are ready to offer advice and support should any problems or questions arise that can only be solved on site.

Regular service trips are also available. For example, Bohle Austria conducts 2-week service trips twice a year. They visit customers with Bohle machines and provide a standard service, if required, which includes lubricating and setting the machine, adjusting the belt run on belt grinding machines as well as checking and replacing worn parts. Bohle's service team also conducts the annual inspection of lifting equipment in accordance with statutory requirements.

Please contact the following people if you are interested in a machine service:

Michael Mocker  
T +49 2129 5568 262  
[service@bohle.de](mailto:service@bohle.de)



# Why use a Sedimentor

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The machining of glass creates glass finings that contaminate the process water and makes regular cleaning necessary. It is not permitted to dispose of the waste water in the sewage system. Extended utilisation of the process water from glass processing machines not only protects the environment but also saves money. Bohle's Sedimentor process water treatment systems help, thus greatly reducing the time-consuming cleaning of the machine's waste water treatment system. Other advantages of clean process water: a longer tool life, a significant improvement in the quality of the glass processing and a higher throughput per hour as well as a stable pH value in the process water if cooling lubricant is used.

The Bohle Sedimentors excel due to their versatile application possibilities. The following applications have already been achieved:

- Connection of a Sedimentor to one or several glass processing machines for cleaning the water tank
- Connection of several Sedimentors to a production line for cleaning the water tanks
- Connection of a Sedimentor to a CNC machine with integrated cooling water supply to main spindle for cleaning of water tanks and fine filtering of the main spindle cooling water
- Cleaning of the process water of a scraper conveyor
- Cleaning of contaminated waste water from coloured ceramic screen printing procedures

Each application has to be suited to individual requirements. We look forward to assisting you. Please do not hesitate to contact us:

+49 2129 5568-0

## Fast pay-off

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Due to an increase in productivity and considerable cost savings, a Bohle water treatment system usually pays off after a short time:

### Increase in Productivity:

- Extended operating times as the machine does not have to be cleaned regularly  
*Example: 2.5 h/week x 40 weeks = 100 h/year*
- Higher output due to an increased grinding speed with edge quality remaining the same  
*= approx. 10 - 20% higher hourly output of the machine when using cooling lubricant*
- Less subsequent cleaning effort of the polished glass panes

### Cost savings:

- Considerable reduction of fresh and waste water costs  
*Example: 2,000 l/week, 96,000 l/year*
- Reduced tool wear  
*Example: tool costs for 8-spindle straight line edger reduced by 20%*
- Significantly reduced energy costs (compared to centrifuges)  
*Example: typical energy costs for centrifuge approx. 10 x higher than Sedimentor*
- Greatly reduced maintenance costs (compared to centrifuges)  
*Example: Centrifuges with a comparable performance to Sedimentor 2.4, typically generate approx. € 6,000 of maintenance costs/year. The Sedimentor has virtually no maintenance costs.*

A Sedimentor system usually amortises in less than a year!

### Additional advantages:

- Prevents machine corrosion
- Compliance with (future) official requirements
- Simple and low-maintenance systems technology

# Your benefits

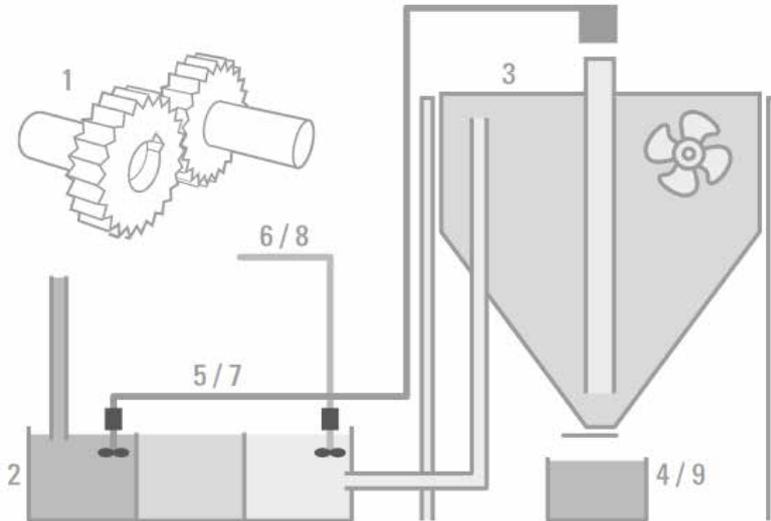


- Less cleaning required for machine and water tank
- Reduced fresh water costs
- Reduced waste water costs
- Environmental protection
- Improved quality of grinding and polishing
- Longer service life of tools
- Prevention of machine corrosion
- Cost reduction of subsequent processes (e. g. washing)
- Compact system for one or more machines
- Low maintenance costs
- Automatic operation
- Compatible with coolants
- Low operating expenses (costs for sedimentation granules, energy)

# The operating principle



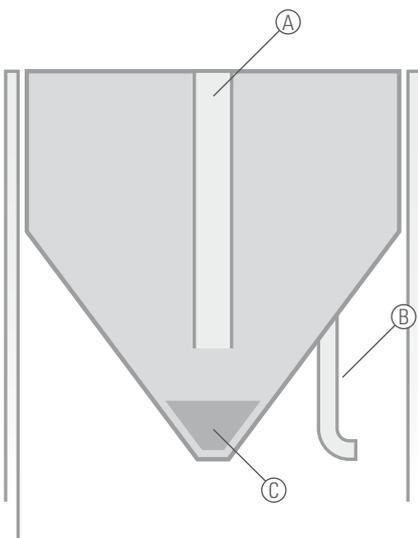
You can find more information here. Just scan this code!



## The operating principle

- 1 Machine
- 2 Machine tank
- 3 Water tank
- 4 Filter bag
- 5 Waste water pump
- 6 Clean water pump
- 7 Contaminated process water
- 8 Clean process water
- 9 Glass particles

## Two steps for a clean solution



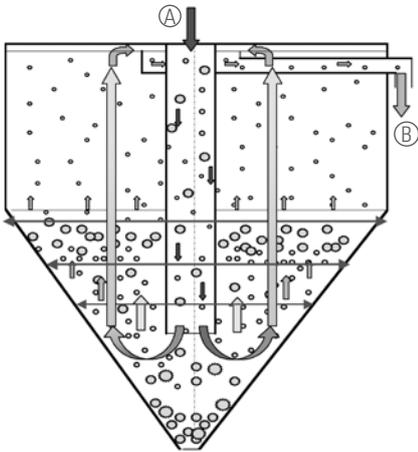
**1.** An optimal tank design with special features causes coarse glass particles to be continuously separated from the coolant during circulation (effective sedimentation).

**2.** Then fine particles are separated out in batch processes. Aided by optimised sedimentation granules, the system binds the finest glass particles in an automated cycle and produces almost clear process water.

- Ⓐ Waste water inlet
- Ⓑ Clear water overflow
- Ⓒ Sludge



# Effective sedimentation in detail



- The waste water is fed down through a central pipe.
- The design of the overflow at the top of the tank forces the water flow upwards.
- Due to the size of the diameter, the speed of the upward flow slows down continuously.
- As particles have a higher density than water, the movement continues in the sedimentation area.
- Thus up to 70% of the glass particles are sedimented.

Ⓐ Waste water inlet

Ⓑ Cleaned water

## Automatic flocculation process

- A short blast of air through the valve releases the grinding sludge from the inner walls of the water tank.
- With rapid rotations the propeller mixes the grinding sludge and the water.
- While the propeller rotates more slowly, sedimentation granules are added to the water and mixed.
- The propeller stops. While the water remains stationary, the sedimentation granules bind larger and smaller glass particles and form larger or smaller flakes. The flakes settle to the bottom of the tank.
- The valve opens and the water pressure forces the flakes into the filter bag.



*Box with sedimentation granules*

# Success stories

## Innovative Coolant Cleaning System for Improved Quality and Cost Reduction Auer Lighting focuses on the Bohle Sedimentor

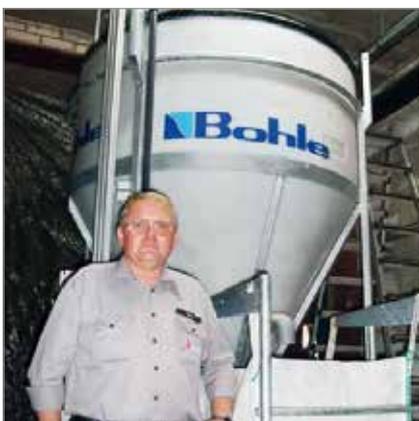
The international company Auer Lighting GmbH has its headquarters in Bad Gandersheim in Germany. Leading companies in the lighting industry often approach them with demanding product enquires due to their combined know-how in the fields of illumination, glass and coatings. Around 450 employees develop and produce innovative solutions for general lighting, digital projection systems, the automotive industry, stage and architectural lighting as well as medical and technical applications. Different glass presses produce special reflectors for customers like Philips and Osram, which later receive their coating in ultra-modern plants. The company has recently started purifying their coolants with the Bohle sedimentor 2.4, bringing obvious cost benefits for Auer Lighting. Surplus molten glass from the press lines is collected in a receptacle containing coolant where it hardens immediately.

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### Convincing Bohle concept

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"We used to purify the water used for



*"It was important for us to acquire a system that is both simple and cost-effective," Henning Traupe, Supervisor of the Machine Shop, commented.*



*Auer Lighting GmbH, internationally active and based in Bad Gandersheim, Germany, combines creativity and top know-how from the fields of light, glass and coatings to produce sophisticated products for market-leading companies in the lighting industry. Auer Lighting GmbH is part of Advanced Lighting Technologies, Inc. (ADLT), an American manufacturer of light technology based in Ohio, USA. Formed in 1995 to be a vertically integrated corporation, ADLT provides their customers unparalleled innovation and synergy to the worldwide lighting market.*

our system with two centrifuges", says Henning Traupe, head of the machine shop at Auer Lighting. "Those centrifuges operated continuously 24 hours a day, 7 days a week. The costs for upkeep and maintenance were extremely high. Moreover the constant energy requirements of two machines needing four kW each should not be underestimated. When one of the centrifuges broke down, Traupe and his boss, Dieter Wittenberg, agreed that an alternative solution had to be found. They asked different suppliers of coolant cleaning systems to develop better solutions. "Our core priority lay in acquiring a system that was both easy to handle and cost effective: easy to handle as far as the complexity of the system and the related maintenance efforts are concerned and cost-effective in relation to follow-up costs," Development Manager Wittenberg points out. In

the end it was Bohle who presented

the most convincing concept with its top-of-the-line sedimentor model 2.4.

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### Successful 6-week-long test run

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A 6 week test run was agreed in order for Auer Lighting to comprehensively test the Bohle plant. "We had to make sure that the system produces flawless results even during continuous 7-day operation." explains Dieter Wittenberg and adds: "Bohle's courtesy convinced us that we have the right partner on board." After having passed the test successfully and a couple of modifications the sedimentor 2.4 was integrated seamlessly into normal operation. The standard control panel was replaced by an S7 control panel so that the Bohle sedimentor could be connected to Auer Lighting's control network.

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### Clear water in two steps

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Instead of continuously pumping water through the permanently operating centrifuges, the large receptacle of the Bohle sedimentor takes 1.5 hours to fill with water without requiring significant amounts of energy. Due to the optimum construction of the receptacle and various inserts, 70%

of glass particles sink to the bottom of the plant whilst the receptacle is being filled. After this so-called effective sedimentation, a second cleaning step follows. During flocculation and precipitation the automatically dosed amount of flocculant is added to the water. This process takes 30 minutes. Water, glass particles and flocculant are mixed through the program-controlled

flow regulation. Glass particles and flocculant mix and sink to the bottom of the receptacle. When the cleaning process is concluded, the residual sludge is drained through a valve at the bottom of the receptacle into a filter bag. The purified water is then returned to the cooling circuit.



*Products from Auer Lighting for digital projection guarantee fantastic colours and outstanding pictures: a new, unbelievable experience in home entertainment. Thanks to state-of-the-art shaping and unique coatings, Auer Lighting produces components for high quality beamers and rear projection TVs. (Photo: Auer Lighting)*

# Success stories

## Coolant purification with a sedimentor reduces follow-up costs Egger Glas utilises four Bohle treatment plants

The Austrian company Egger Glas, located in Gersdorf, draws on 30 years of experience in producing insulating and safety glass for high specification façades, glass canopies, conservatories and all-glass systems. Egger Glas have long been convinced of the quality of Bohle for glass processing products. When deciding about the most recent investments, Erich Pribek, Managing Director of the company, arranged for three straight line edgers and one large twin belt grinding machine to be equipped with the Bohle coolant cleaning system from the sedimentor series.

### Convincing test run

In the first step a test run was organized for an 8-spindle straight line edger to operate with a 320 litre sedimentor, the smallest Bohle model. After only a few weeks Erich Pribek realized that this investment involved enormous advantages: "Due to the improved water quality in the cooling circuit and the resulting lower contamination of the straight line edger, a considerably longer durability of grinding discs is achieved. The reduced service costs furthermore extend maintenance intervals. This saves huge amounts of time and staff expenses when it comes to cleaning the water tanks."

### Investments that immediately pay off

"During its test run the coolant cleaning system has proven to save man and machine hours and moreover has a positive impact on the durability of grinding discs. The logical consequence was to equip our 14-spindle straight line edger with a large 2,100 litre sedimentor," Managing Director Pribek explains and adds. "This machine alone processes more than 60,000 metres of



*Egger Glas has 200 employees at five locations; its core business lies in the fabrication of safety and insulating glass. The company has its own team for mounting glass installations, they are active predominantly in Eastern Austria.*



*"The particle removal, cooling and service lives of the abrasive belt are significantly improved by clean cooling water and the reduced pollution translates into simplified cleaning for the entire system," reports the Egger Glas machine operator.*

glass edges every year." The fact that the 8-spindle straight line edger at the company located in Ilz was also equipped with a 320 litre sedimentor shows how much Egger Glas have been convinced of the cost efficiency of the Bohle sedimentors. This location also uses a VertiClean glass washing machine in one of its processing units. "Both the company management and the machine

operators have clearly recognized the advantages of the Bohle system," Franz Schreibmaier says. The staff operating the machine have reported that the diamond grinding discs show much more efficient results now and abrasion and durability of the grinding discs have been considerably improved due to the purified coolant. The contamination is significantly lower which eases the cleaning of the complete system.

# Success stories

## White Aluminium Enterprises L.L.C., Abu Dhabi Clean Process Water with Bohle Sedimentor

Increasing productivity by working with clean process water is recognized and realized more and more in modern glass processing companies. This is also confirmed by Mr. Samer Zaineddin, Operations Manager of White Aluminium Enterprises L.L.C. in Abu Dhabi, UAE, where two Bohle "Sedimentor" units for the cleaning of process water were installed in June 2013.

### Outstanding results

"Although I was convinced of the quality of Bohle products due to our long history of cooperation, I would not have thought that the results of this water cleaning system would be so obvious," says Mr. Samer, pointing out that after only 3 months of operation he can't believe how he could ever work without such a system. Two 'Sedi 2.4' systems are connected to two interlinked double edgers, efficiently cleaning the process water of the large quantities of glass sludge being produced. "While we had to clean the water tanks every 5 days previously, we are now cleaning them only once per month. The cleaning takes only 1 hour instead of 5 hours, due to the cleaner water. This is not the end – we are working with a very delicate type of glass at the moment. Once we work with normal glass again, we plan to extend the cleaning cycle even more." Mr. Samer points out. Apart from the higher productivity due to less cleaning time, the advantages of a water cleaning system are manifold: the cleaner water, especially in combination with a coolant, allows an increase of the processing speed of up to 20% without



*One of the sedimentors at White Aluminium Enterprises L.L.C. in Abu Dhabi*

compromising on the polishing quality, combined with an increase of the life time of the diamond tools of up to 30%. Cleaner water prevents machinery corrosion, thus reducing maintenance. The glass itself has considerably less water stains, making it easier to clean after processing.

### One of the most efficient systems on the market

As the Bohle system works with a powder flocculant in a bypass cleaning cycle, no flocculant reaches the process water in the edging machine itself, thus avoiding any chemicals in the process water. The flocculant is inexpensive and non-hazardous, making the Bohle 'Sedimentor' system one of the safest, most efficient and most economical in the market. "The Bohle system is easy to use and practically self-explanatory. We are so satisfied that we are already planning to invest in further systems to connect our other glass processing

machines," says Samer.

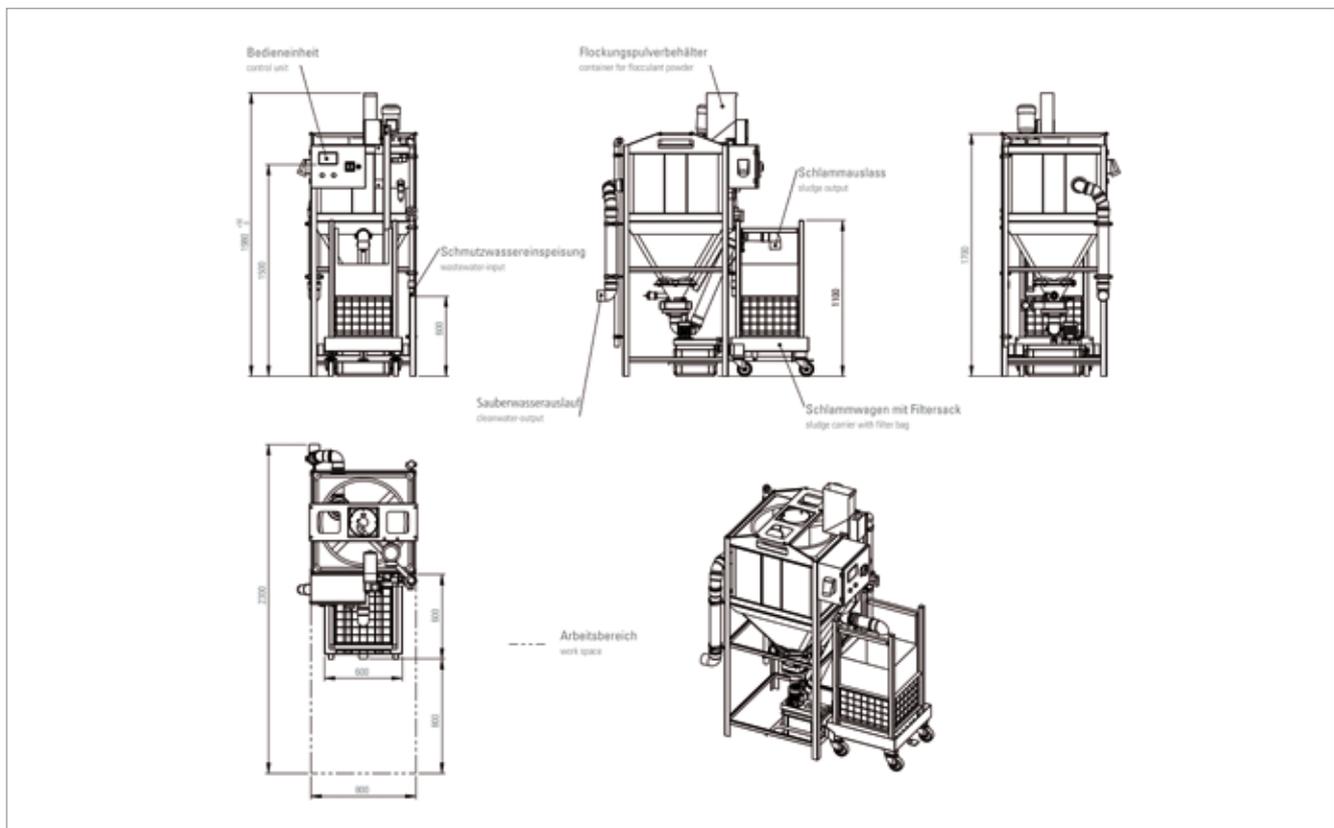
### More than 300 systems were installed in recent years

Bohle UAE agent Gotal is convinced that within a short period of time, more glass processing companies will be investing in Bohle water cleaning systems. "If you consider all combined advantages in addition to the fact that local guidelines on the disposal of waste water are becoming much stricter, there is actually no way around such systems," says Mr. Sandeep Ponnarambil (aka Sam), General Manager of Gotal Trading Est. "We are already in discussion with several companies in the Gulf region about the installation of further systems within the year 2014." So far, Bohle 'Sedimentor' systems are installed at glass processing companies in Abu Dhabi, Sharjah and Qatar – in addition to the more than 150 systems which have been installed in Europe and worldwide in the last few years.

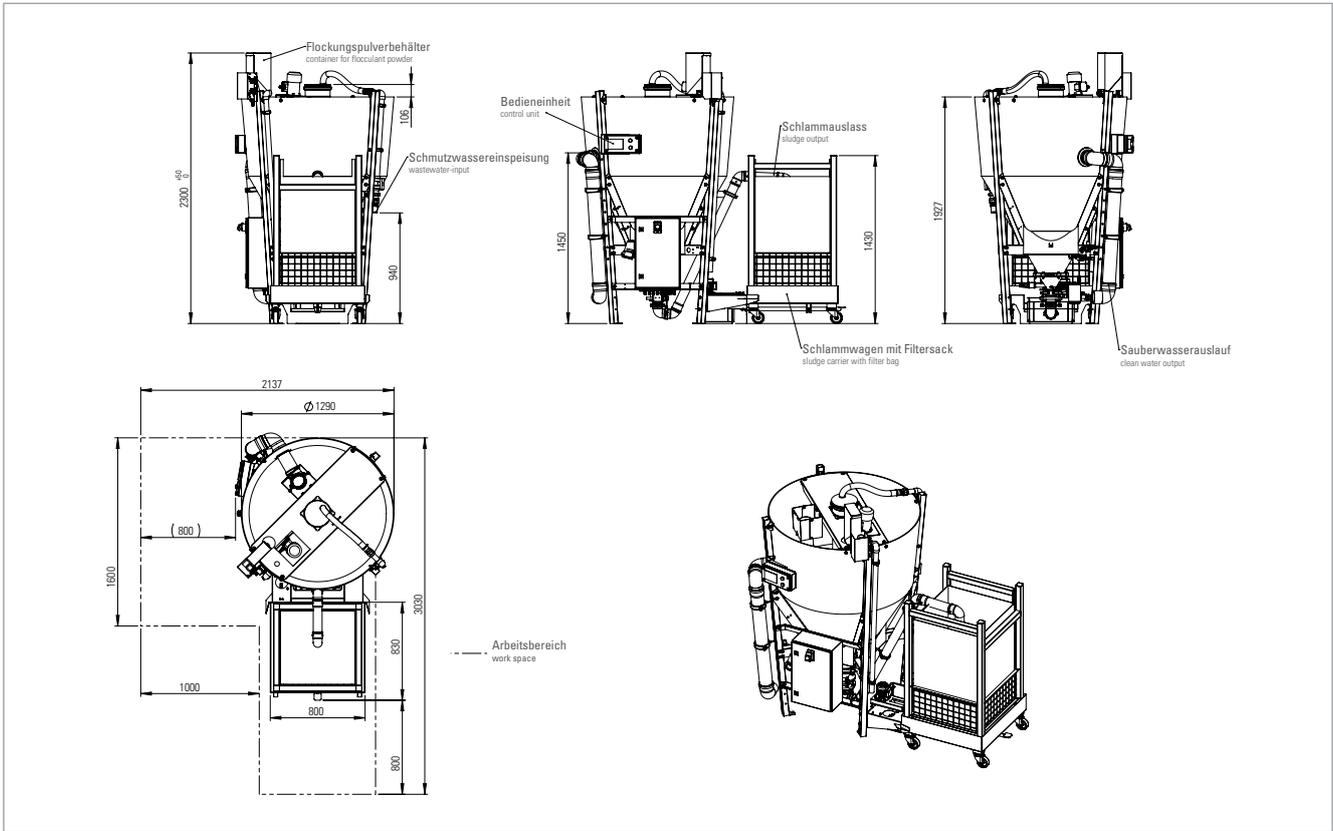
# Product variants



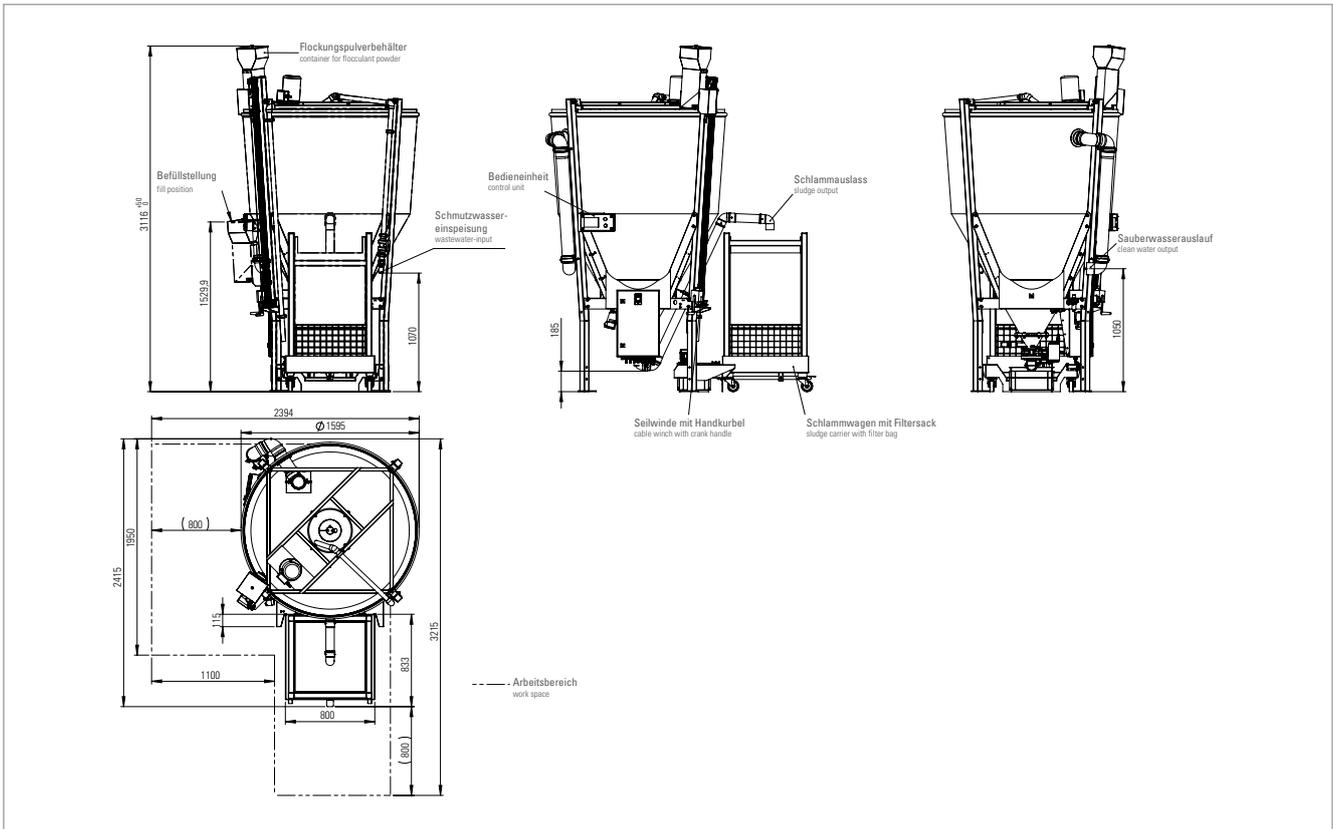
	Sedimentor 0.3	Sedimentor 1.0	Sedimentor 2.4
Capacity	320 l	1000 l	2100 l
Cleaning capacity (approx.)	1.0 kg/h	3.6 kg/h	7.2 kg/h
Electrical connection	0,5 kW, 400 V, 50 Hz, 3 NPE	2 kW, 400 V, 50 Hz, 3 NPE	2 kW, 400 V, 50 Hz, 3 NPE
Filter bag	70 l	300 l	300 l
Art. No.	BO SEDI03	BO SEDI10	BO SEDI24



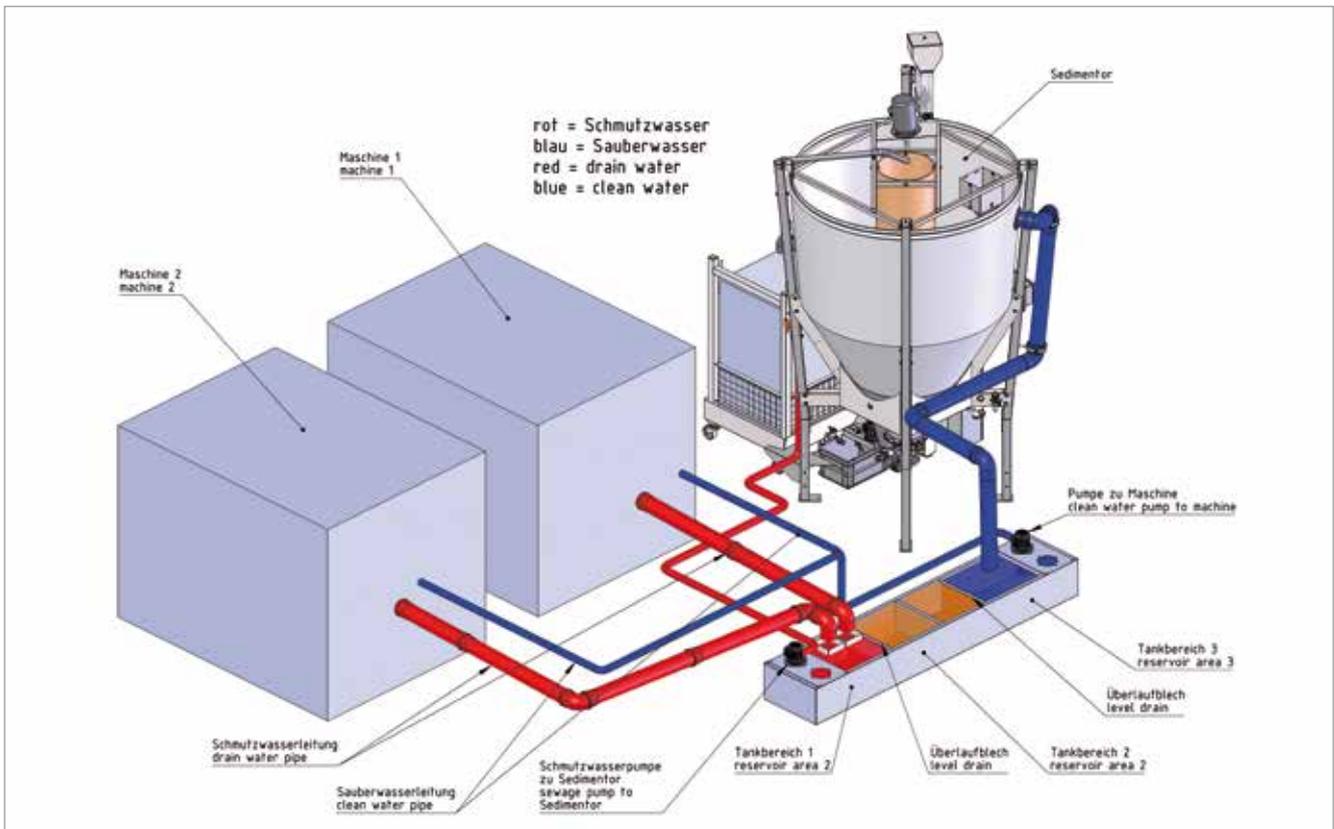
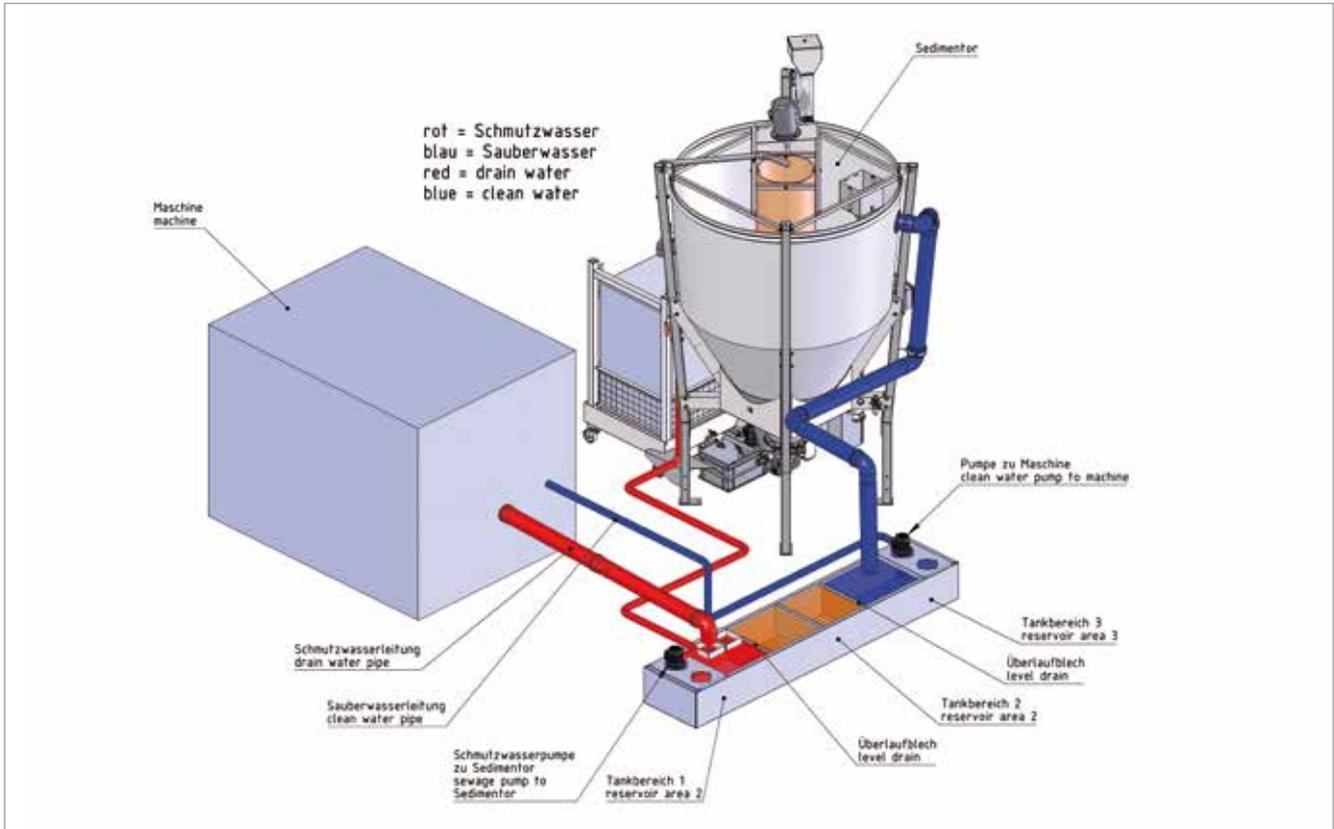
Sedimentor 0.3

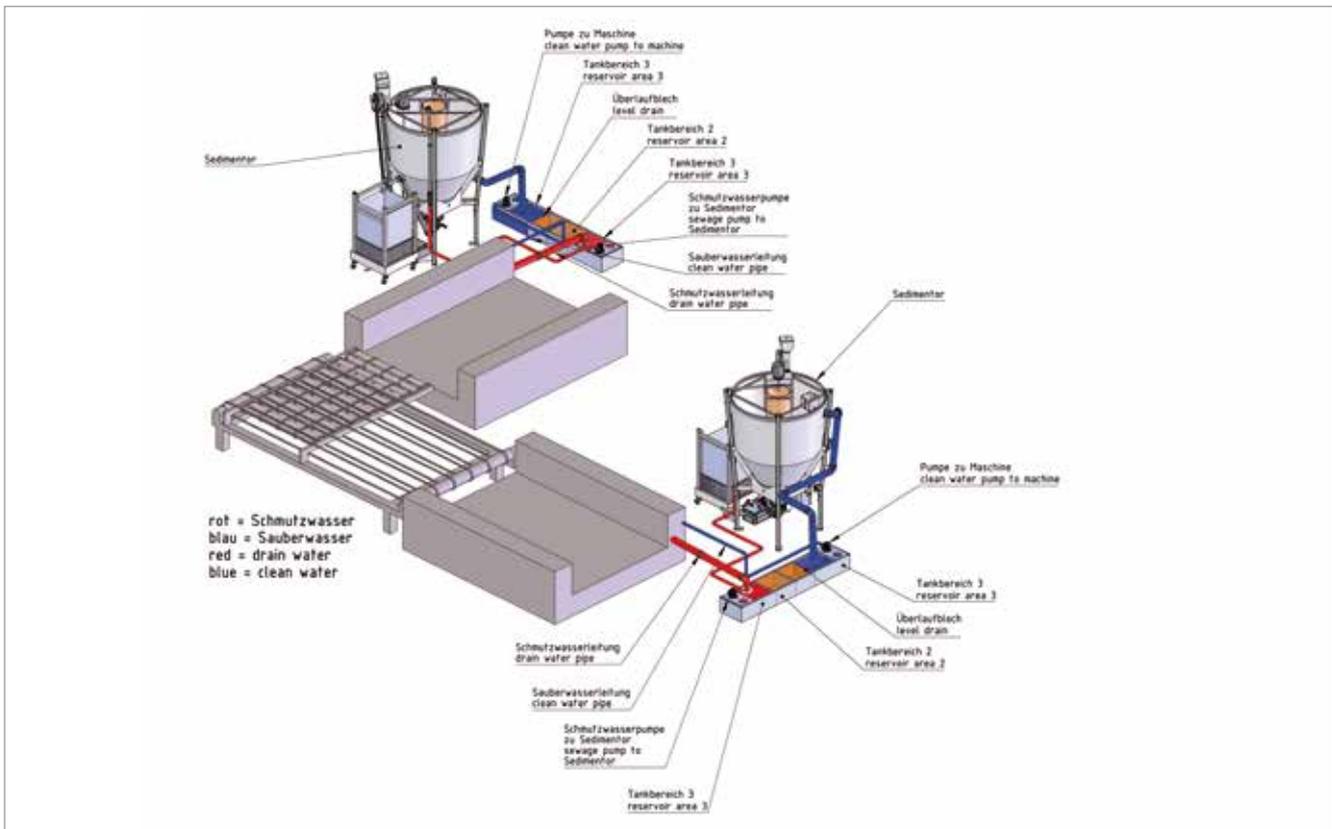
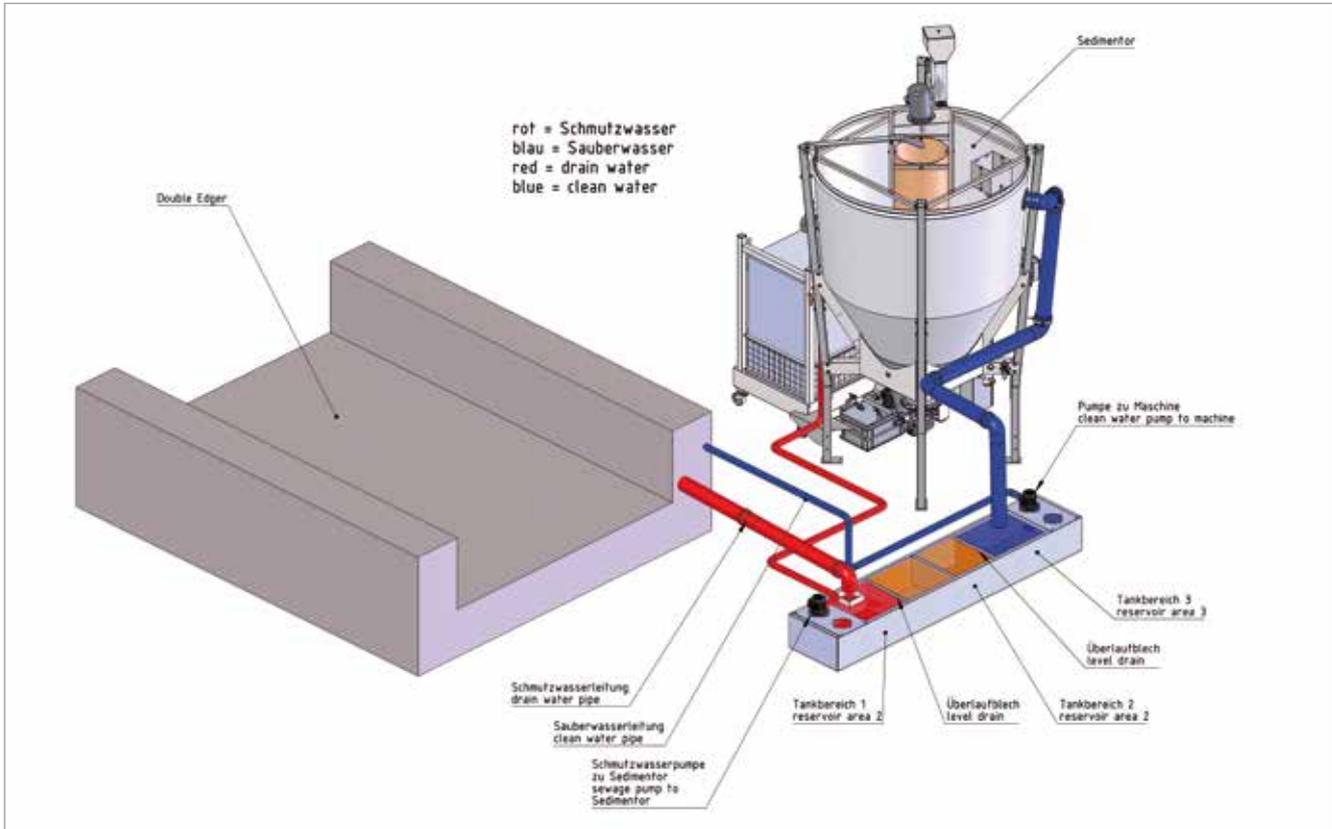


Sedimentor 1.0

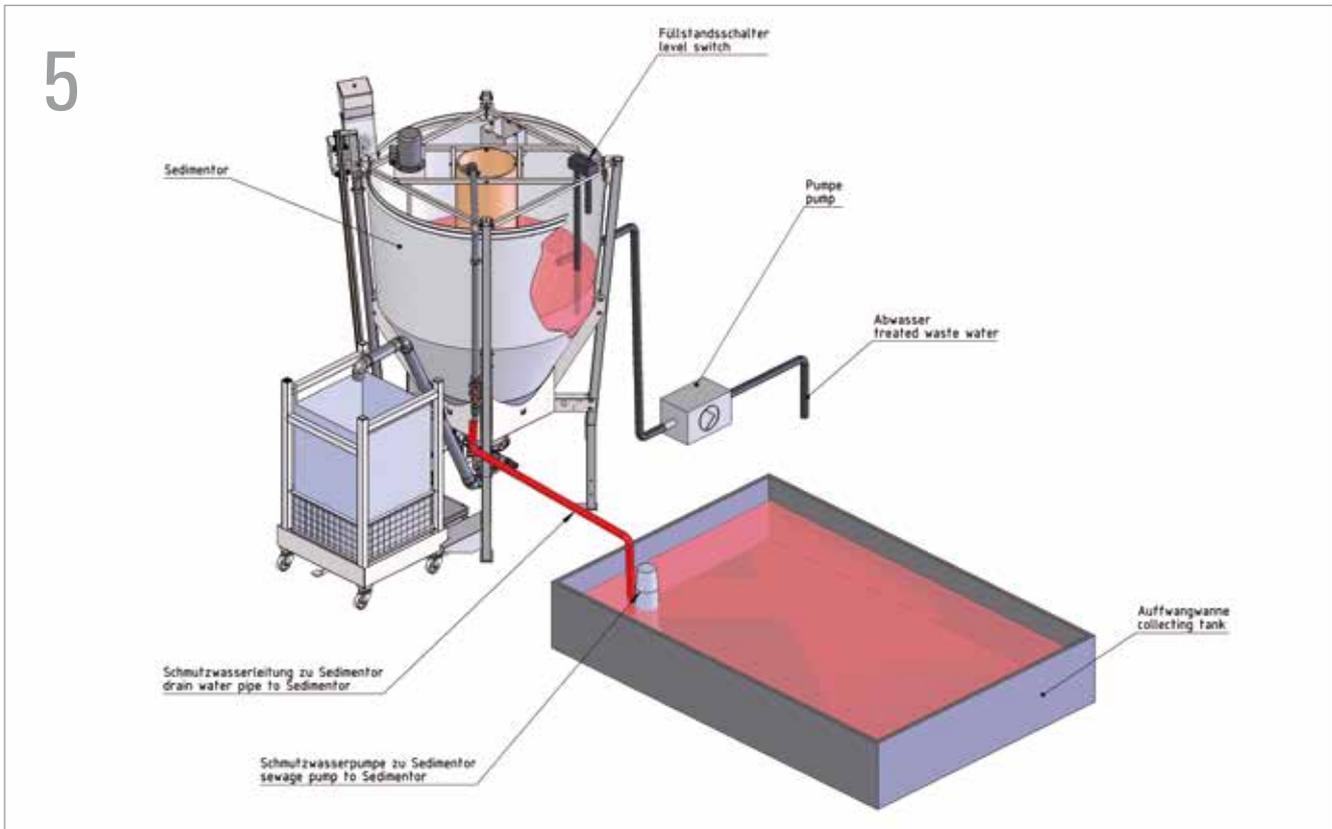


Sedimentor 2.4





# Application variants



Decentralised version: A sedimentor automatically cleans a water catch basin. The purified water is then pumped off into the sewer.

## Accessories and consumables

- Submerged pumps
- Fine filtration system
- PH measuring instrument
- Additional sludge wagon
- Additional water tanks
- Refractometer

### Submersible pumps for the tank of a machine



Art. No.	Description
BO 85.161	Submersible pump 160 l/min
BO 85.841	Submersible pump 260 l/min
BO 85.320	Connection set for 2. submersible pump BO 85.161
BO 85.340	Connection set for 2. submersible pump BO 85.841

# Accessories and consumables

## Vetrocool Coolant Concentrate



High-performance lubricants · for instance to improve tool cooling (longer service lives) · Higher feed rates which facilitate higher productivity · saves coagulants · limits the pH-value when coolants stay in the system for a long time

**i** Mixing ratio 100 : 3

Art. No.	Description · Contents
BO 5002816	20 kg
BO 5002819	9230 kg
BO 5002817	low-foaming · 20 kg
BO 5002818	low-foaming · 220 kg

## Flocculant



Binds the fine suspended particles in the coolant of glass processing machines, allowing sedimentation. Hence it is possible to achieve virtually clear water in the system. Also suitable for manual purification of grinding water! Add approx. 200g of flocculant after finishing grinding, thoroughly mix for about 3 min. Keeps grinding sludge soft and easy to remove from the tank.

### Practical Tip:

Can also be used manually for cleaning grinding water.

Art. No.	Description · Contents
BO 50028316	Granules · 10 kg
BO 50028317	Granules · 25 kg
BO 50028331	Liquid · 25 kg
BO 50028335	Liquid · 200 kg

## Filtering Bag for Sludge Drainage



Especially strong filter fabric with 4 carrying loops · for drainage of glass sludge · suitable for Bohle Sedimentor water cleaning systems

Art. No.	Description · Contents
BO 5028407P	Especially sturdy · 70 litre
BO 5028430P	Especially sturdy · 300 litres

Cust. no.		Telephone	
Company		Fax	
Contact person		E-mail	
Street		Website	
Town/City		Date	

### 1. Type and model of the machine equipment

Number of connected machines: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Type of processing:

Edge

C-edge

Mitre

Bevel

Miscellaneous: \_\_\_\_\_

Average glass thickness (mm): \_\_\_\_\_

Average feed rate (m/min): \_\_\_\_\_

Average grind dimension (mm): \_\_\_\_\_

Abrasion (mm<sup>3</sup>/min): \_\_\_\_\_

Glass for processing: \_\_\_\_\_

LSG

Float glass

Fire-protection glass

Miscellaneous: \_\_\_\_\_

Production time/usage time (hours/day): \_\_\_\_\_

### 2. Specifications on the cooling water system

Volume of the machine tank (ltr.): \_\_\_\_\_

Number: \_\_\_\_\_

Cooling water flow (ltr./min.): \_\_\_\_\_

Sludge accrual (kg/h): \_\_\_\_\_

Frequency of machine tank cleaning:

Daily

Weekly

Per month, How many times: \_\_\_\_\_

### 3. Use of cooling lubricant

No - only water

Yes

Grinding water:

Tap water

Rainwater

Hardness: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Type: \_\_\_\_\_

Concentration: \_\_\_\_\_

Automat. dosing

Yes

No

Consumption (ltr./month): \_\_\_\_\_

Current disposal: \_\_\_\_\_

### 4. Aim of using a Bohle treatment system

Reduction of the cleaning expenditure - container

Improvement of the cooling water quality

Increase of production

Reduction of down time

Improvement of the processing quality

Reduction of the cleaning expenditure - machine

Reduction of cooling lubricant material costs

Increase of production capacity

Reduction of disposal costs

Minimisation of the floor space requirement

Other objectives: \_\_\_\_\_





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 Bohle