



www.bohle-group.com

Process water treatment systems
Save money - Protect the environment

Discover Bohle

The Bohle Group is one of Europe's leading manufacturers and wholesalers of tools, machinery and accessories for glass processing and glass finishing. The family business, founded in 1923,

is now represented by over 300 employees at 14 locations in Germany and abroad. Divided into Handling, Glass Cutting, Glass Bonding, Glazing, Tools, Machinery, Fittings and Surface Protection product divisions,

the total product range is precisely tailored to the respective customer groups from trade, industry and retail.

The Bohle Visitor Centre



In our NEW Bohle showroom and training suite, located in Dukinfield, we present numerous products in a generous exhibition area.

Whether it's fittings, measuring devices or consumables: Many products are available for trying and testing.

Why not visit us – we look forward to welcoming you!

The Bohle Glass Academy



The Bohle Glass Academy offers you an extensive seminar programme on many glass processing topics. Learn new technologies or broaden your knowledge in well-known sectors.

Our Practical Seminars:

- UV Bonding
- Surface Bonding
- Manual Glass Cutting
- Sliding Door Installation
- Each seminar includes:

For current seminar dates, please visit our website www.bohle-group.com.

Seminar materials:

- Use of practice materials and tools
- Fabrication of reference samples
- Customised troubleshooting
- Drinks, snacks and lunch
- Bohle Seminar Certificate

Glass and Glazier



The Bohle Group published the new edition of the "Glass and Glazier" catalogue. Divided into chapters on glass cutting and glass breaking, industrial cutting technology, glass processing machines, grinding, drilling, sawing, glass handling, glazing, surface protection, glass bonding and glass fastening, the Bohle general catalogue provides glass specialists and processors with more than 4,000 products on 450 pages. Along with many tried and tested items, the catalogue

also includes numerous new products in nearly all nine areas.

The new Bohle general catalogue is published in nine language versions and has a print run of over 30,000 copies. It comes with a sturdy hard cover and practical register punching.

The Bohle machine service

For Bohle, service does not stop after the sale of a glass processing machine – our service team and Technical Sales Representatives make sure of that. If any problems or questions arise that can only be solved onsite, our technicians are always ready with advice and assistance.

Regularly scheduled service trips are also available. During these, customers who have Bohle machines are visited and if desired are provided with a standard service which includes work like lubrication and adjustment of the machine and belt correction on abrasive belt machines, along with inspection and replacement of worn parts.

If you are interested in machine servicing please contact:

Lisa Tooth via telephone on 0800 616151, or email lisa.tooth@bohle.ltd.uk



Why use a Sedimentor

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:
0800 616151

Fast pay-off

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

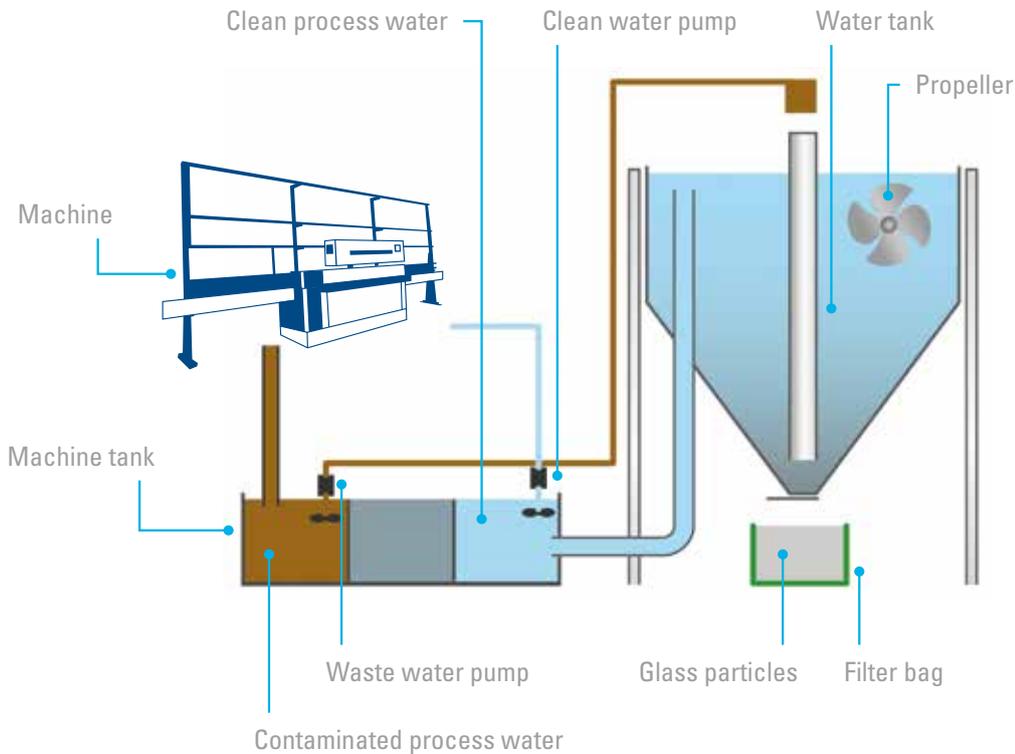
- Cost reduction of subsequent processes (e. g. washing)
- Compact system for one or more machines
- Low maintenance costs
- Automatic operation
- Compatible with coolants
- Low operating expenses (costs for sedimentation granules, energy)

The operating principle

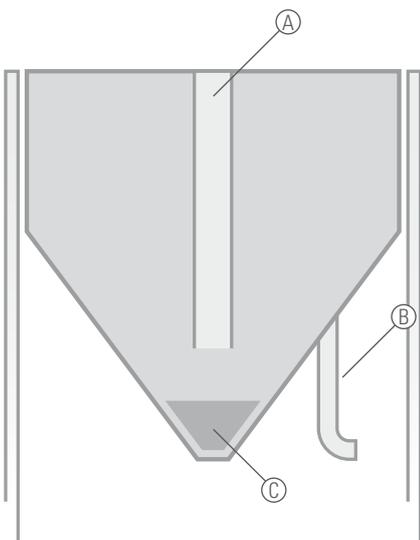


You can find more information here. Just scan this code!

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Two steps for a clean solution



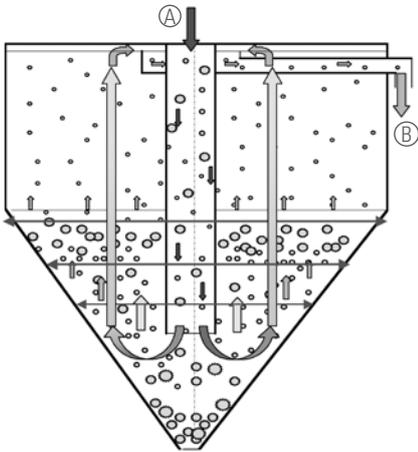
1. An optimal tank design with special features causes coarse glass particles to be continuously separated from the coolant during circulation (effective sedimentation).

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

At the cutting edge Wholesale Glass

First featured in 'Glass News'

It's the range of stock that is instantly striking. Lines of Lacobel and Lacobel T back painted glass, create an explosion of colour running almost along the full length of Wholesale Glass' Ossett warehouse. Stillages full of float and mirrored glass sitting neatly alongside them.

This 'neatness' creates an overriding sense of order. Machinery is new and the operation is slick. Adjoining, but separated from, the main storage area are two Bottero straight-line edgers. The set up again evidences the same focus on order and process and as part of this system-driven operation, two Bohle sedimentors. "Waste coolant was simply going down the drain", says Tony Garrett, Managing Director, Wholesale Glass. "We used to spend every Friday afternoon cleaning down the system, so around 10 per cent of our potential production time was lost every week." The UK's largest stockist of Lacobel and Lacobel T, Wholesale Glass holds more than 50,000 tonnes of glass in stock, working with glass processors and furniture manufacturers nationwide. "We stock 29 different colours of Lacobel and 15 different colours of Lacobel T", continues Tony. "We do float glass in 4 to 15mm, silvered glass, Matelac and Matelux, Opti Clear and Low iron in 4mm to 12mm – we're active in a whole range of different markets and time is important as is quality and the service life of machinery and tooling." Clean cooling water increases the performance of machinery by up to 20 per cent and the service life of tools by up to 30 per cent - but it can all too easily become contaminated with



The small footprint of the Sedimentor 1.0 means positioning and installing the equipment is simplicity itself

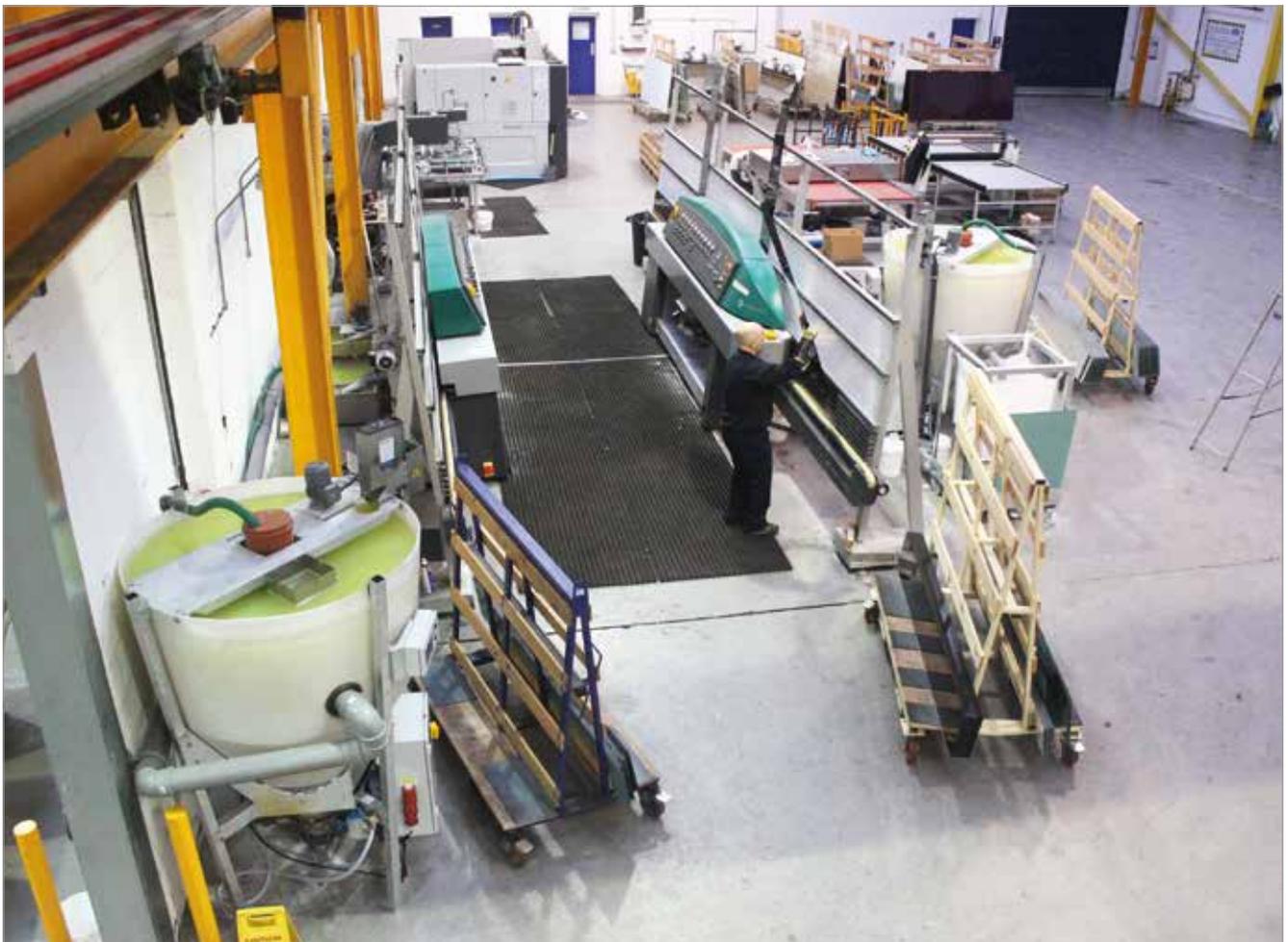
glass finings from drilling, polishing and grinding. The cost of replacing contaminated water or coolant also quickly adds up. Using just 400 litres of water as part of your weekly cleaning cycle equates to a yearly water consumption of approx. 20,000 litres as well as high cost for its disposal. Tony continues: "The volumes of edging that we do are quite staggering – 4,000 linear metres per day. The finished quality of the product and tooling can deteriorate very quickly if coolant isn't clean. In straight edge working, you're looking for a really high quality finish." This makes replacing water and coolants used in glass processing a high but sometimes unseen cost. Irregular cleaning of water and machinery properly also carries a potentially far higher price tag in lost man hours, falling product quality, and reduced service life of equipment. Although the industry has traditionally relied on centrifugal water cleaning systems these can't filter glass particles < 5 µm. This is something which, can over time, contribute to lower product quality

and a build-up of concretion in the machine and its tanks. Sedimentors not only filter glass particles of < 5 µm or less but do so using far less energy. Wholesale Glass added its two Bohle Sedimentors to its Bottero straight-edge processing lines last year. "There are lots of reasons why if you haven't done so already, as a glass processor, it's worth looking at your management of coolant. "It can have a very real impact on quality and the service life of your operation but the downtime lost to cleaning has the potential to really add up. Sedimentors eliminate all of that." Bohle's range of Sedimentors are suitable for a wide assortment of grinding, drilling and sawing glass equipment, using a sophisticated multi-stage process to remove contaminants from coolants and water. First, water is pumped into a specially contoured settling tank allowing coarse, higher density glass particles to be separated from the coolant and settle to the bottom. Simple, low energy but highly effective, the settling process removes more than 70 per cent

of contaminants. Then fine particles are separated out in the flocculant dosing process. Aided by optimised dispensing of granulated flocculant and controlled agitation of the coolant, the system then captures and binds even the finest glass particles. The particles then sink to the bottom of the Sedimentor in an automated cycle producing virtually clear process water. Importantly, any coolant products used with the water are retained. At the end of the cleaning process, a timed valve at the floor of the tank opens and the accumulated sludge of glass finings and flocculant is flushed into a filter

bag by the water pressure. This leaves the cleaned cooling water ready to be returned back into the cooling circuit. Bohle MD Dave Broxton explains: "A key feature of the Sedimentor range is that it uses a 'bypass system' for batch cleansing. This isolates water, coolant and flocculant, from the line during the cleaning process, preserving coolant whilst completely eliminating the potential risk from flocculant contamination and tool damage." Bohle manufactures and supplies three different sedimentors, the 2.4, which has a filling quantity of 2100 litres, the 1.0, (1,000 litres) and the 0.3, which

has a filling capacity of 320 litres. Its technical team working closely with its customers to identify the right model to meet their requirements, also offers training and through-life support. "The Sedimentors are saving us around 10 per cent a year in lost down time, lower running costs and the extension of the service life of component tooling and diamond cutters", adds Tony. He concludes: "What it also does is to help us sustain product quality and put us ahead of regulatory change. It helps us to future proof our business."



Wholesale Glass have installed a dedicated Sedimentor 1.0 on each of their Bottero straight line edgers which has increased productivity by more than 10%.

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."

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.



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 glass edges every year." The fact that

"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.

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. And the cleaning takes only 1 hour instead of 5 hours, due to the cleaner water. And 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

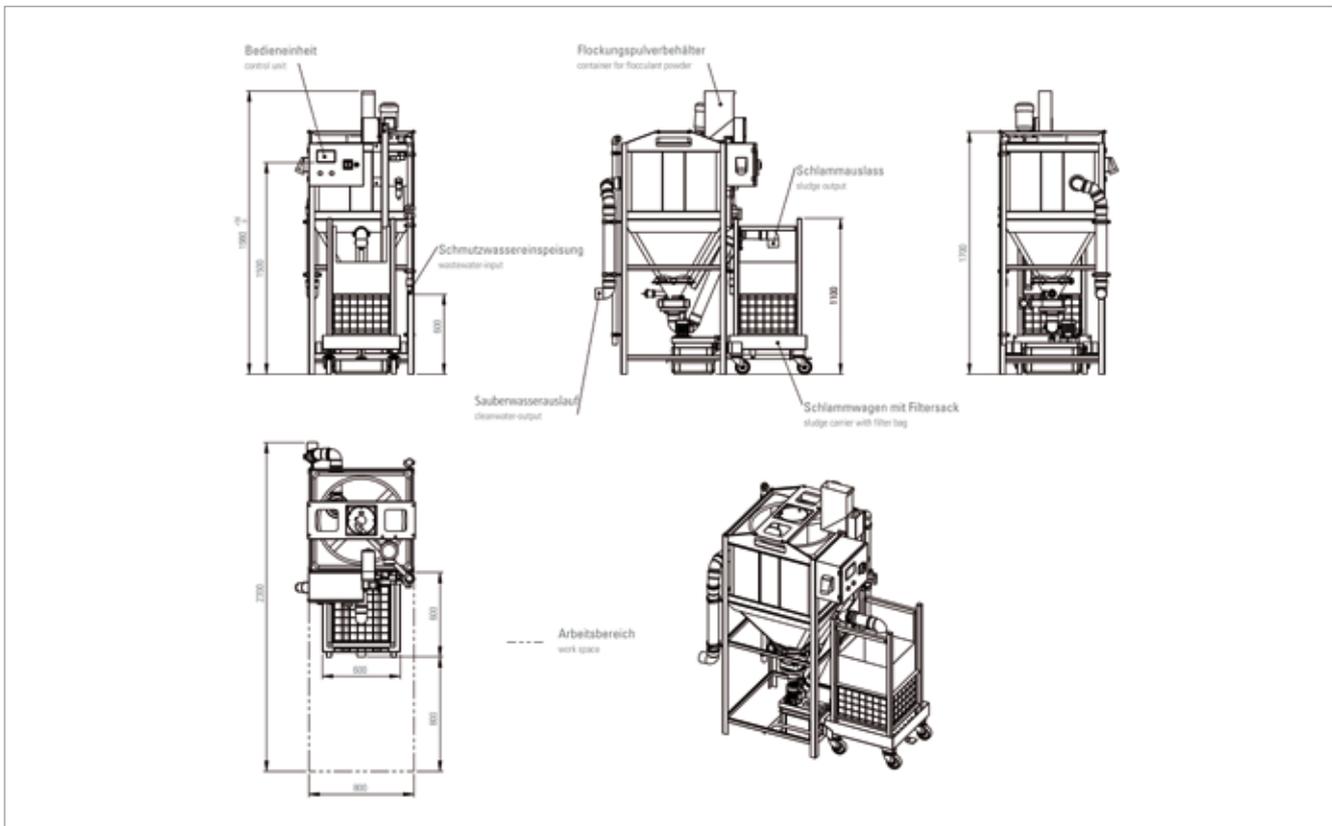
BLUECOMPETENCE

Alliance Member

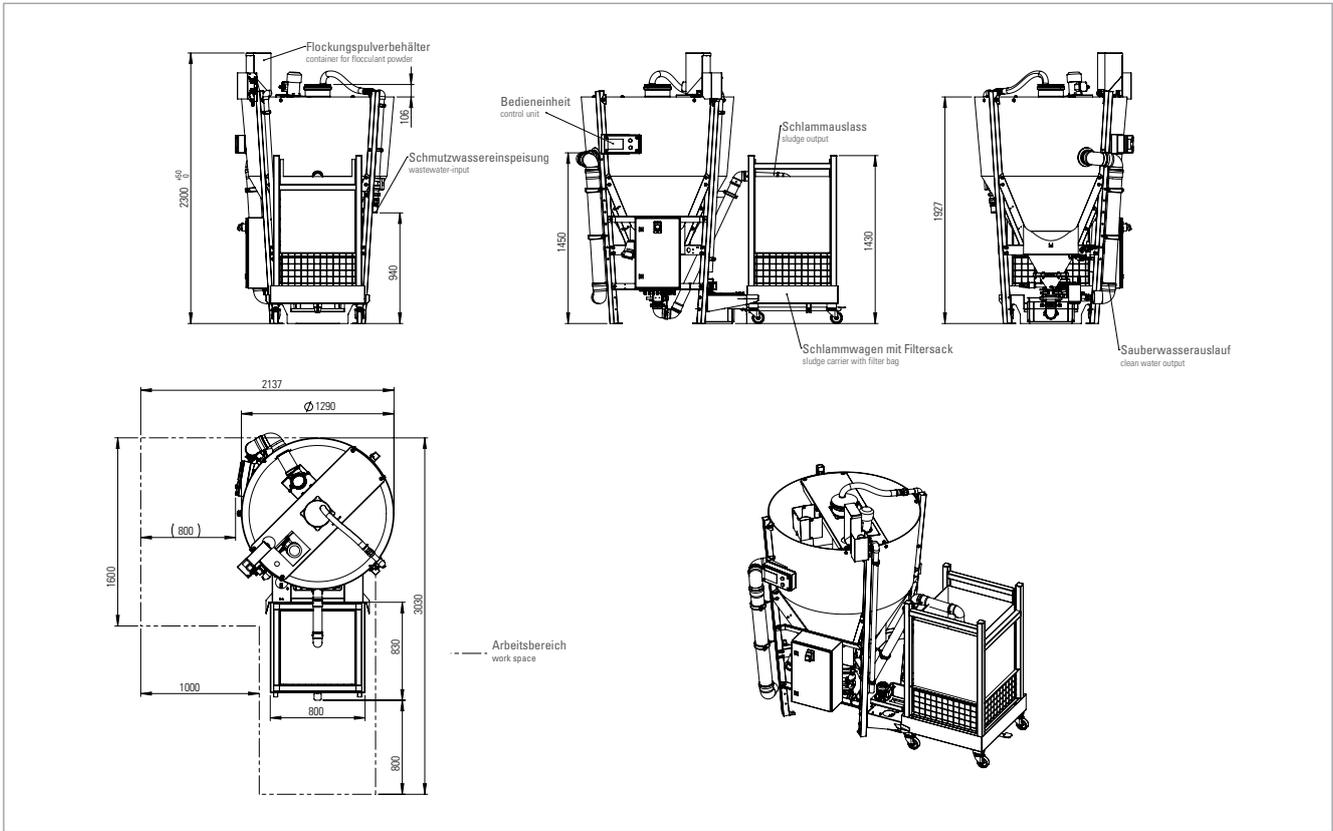
Partner of the Engineering Industry Sustainability Initiative



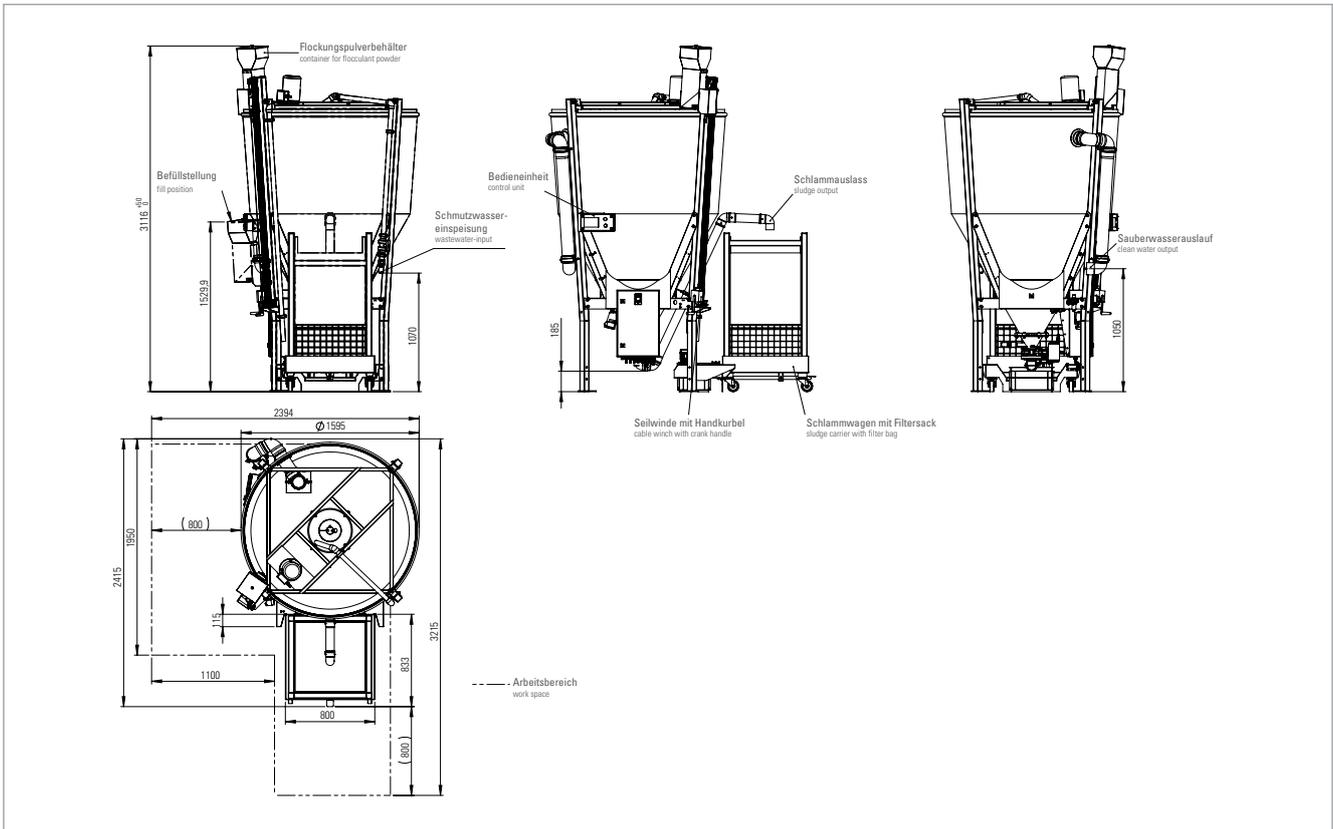
| | Sedimentor 0.3 | Sedimentor 1.0 | Sedimentor 2.4 |
|-----------------------------|---------------------------|---------------------------|---------------------------|
| Flow rate (approx.) | 50 l/min. | 150 l/min. | 280 l/min. |
| Capacity | 320 l | 1000 l | 2100 l |
| Cleaning capacity (approx.) | 1.0 kg/h | 3.6 kg/h | 7.2 kg/h |
| Electrical connection | 2 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

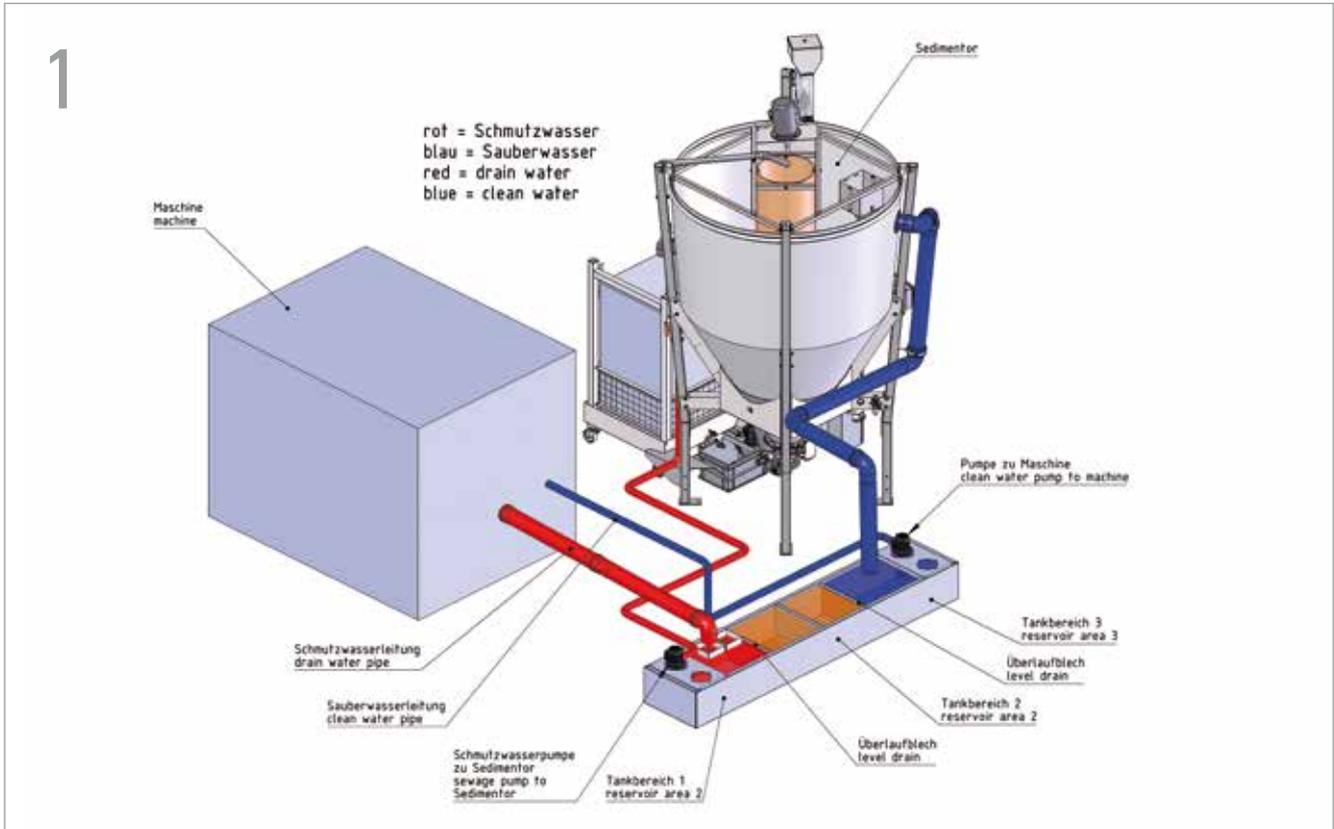


Sedimentor 1.0

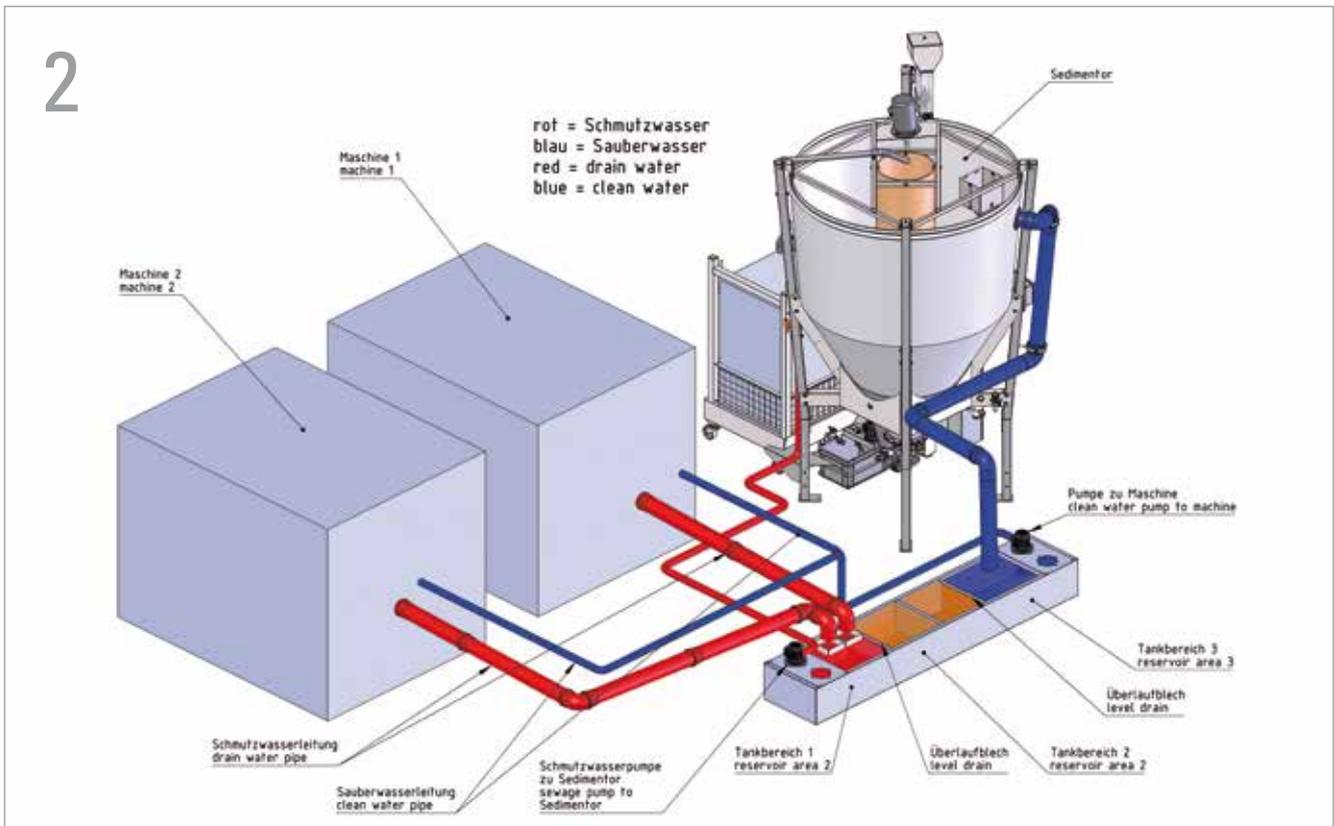


Sedimentor 2.4

Application variants

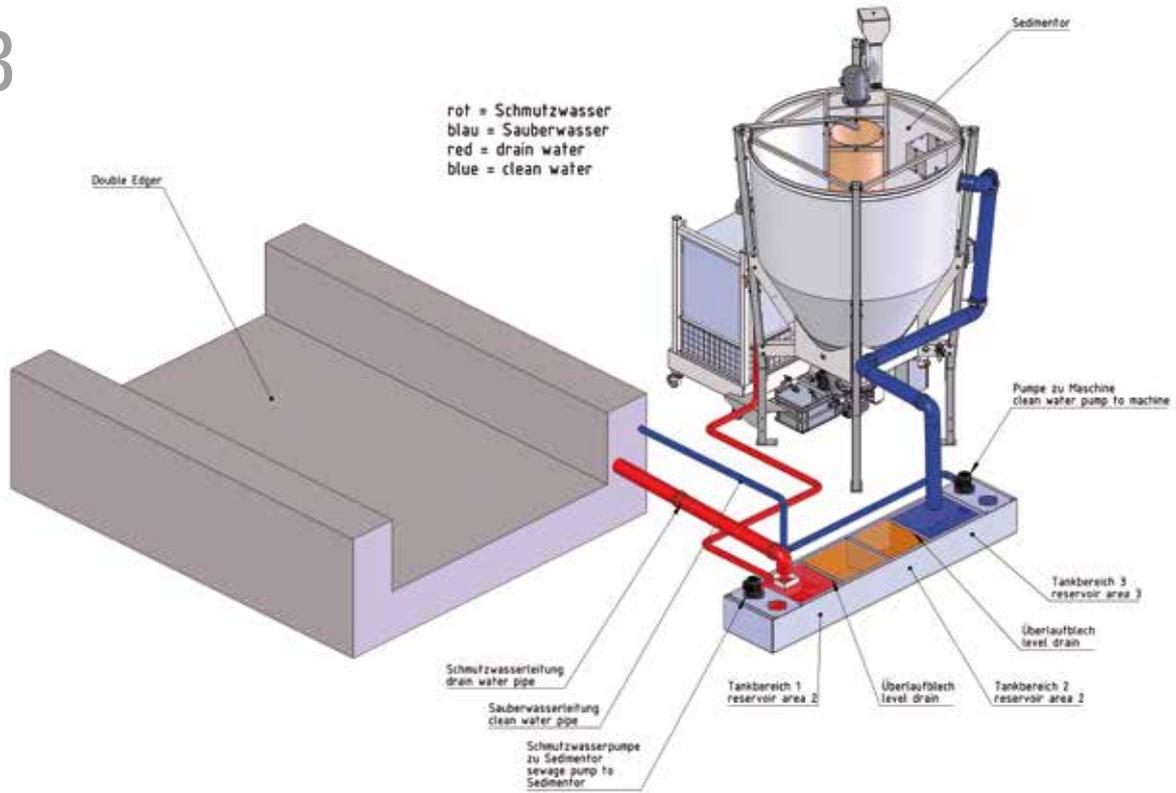


Decentralised version: A sedimenter cleans the tank of a machine



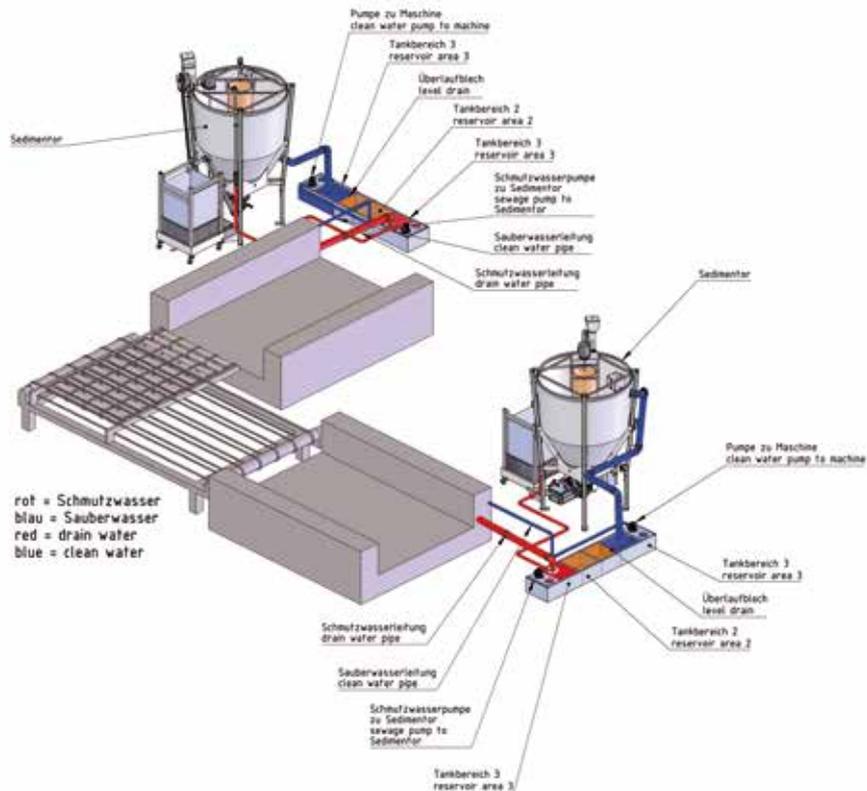
Decentralised version: A sedimenter cleans the tanks of several machines

3



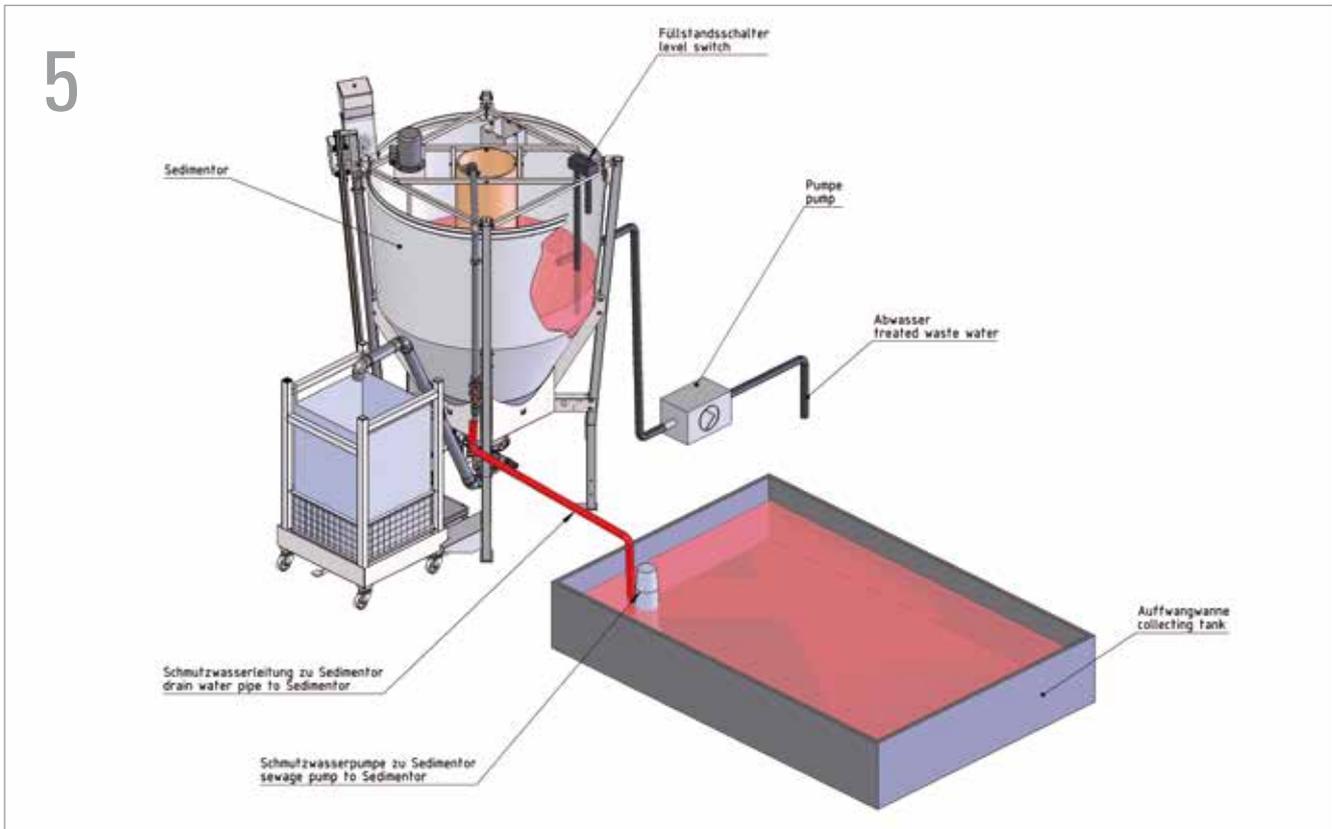
Decentralised version: A sedimenter cleans the tank of a double-sided edge grinding machine

4



Decentralised version: Two sedimenters each clean the tank of two double-sided edge grinding machines

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

- PLC controllers for integration into control systems
- Special controllers
- Submerged and in-line pumps
- Water-level measurement
- Water-flow measurement
- Water-pressure measurement
- Fine filtration system
- PH measuring instrument
- Additional sludge wagon
- Additional water tanks



Submersible pumps for the tank of a machine



| Art. No. | Description |
|-----------|--|
| BO 85.160 | Submersible pump 160 l/min |
| BO 85.840 | Submersible pump 260 l/min |
| BO 85.320 | Connection set for 2. submersible pump BO 85.160 |
| BO 85.340 | Connection set for 2. submersible pump BO 85.840 |

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 | 230 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 50028310 | Granules · 10 kg |
| BO 50028331 | Liquid · 25 kg |
| BO 50028335 | Liquid · 200 kg |
| BO 50028312 | Paint flocculant for water soluble ceramic colours · 10 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 · The filter bags differ in their fabric structure. Different types of glass and grinding systems result in different drainage properties of the grinding particles in the cooling water. For the first order please choose alternative models to find the best filter bag for your application.

| Art. No. | Description · Contents |
|-------------|--|
| BO 50028400 | Especially sturdy · normal drainage · 70 litre |
| BO 50028403 | Very good drainage properties · washable several times · 70 litre |
| BO 50028401 | Especially sturdy · normal drainage properties · 300 litres |
| BO 50028404 | Good drainage properties · also for coarse grinding · 300 litre |
| BO 50028402 | Normal drainage properties · with 4 additional carrying loops for better handling · 300 litres |

Questionnaire for determining the suitable Sedimentor model

| | | | |
|----------------|--|---------|--|
| Cust. no. | | Telefon | |
| Company | | Fax | |
| Contact person | | E-Mail | |
| Street | | Website | |
| Town/City | | Datum | |

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 (mm³/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

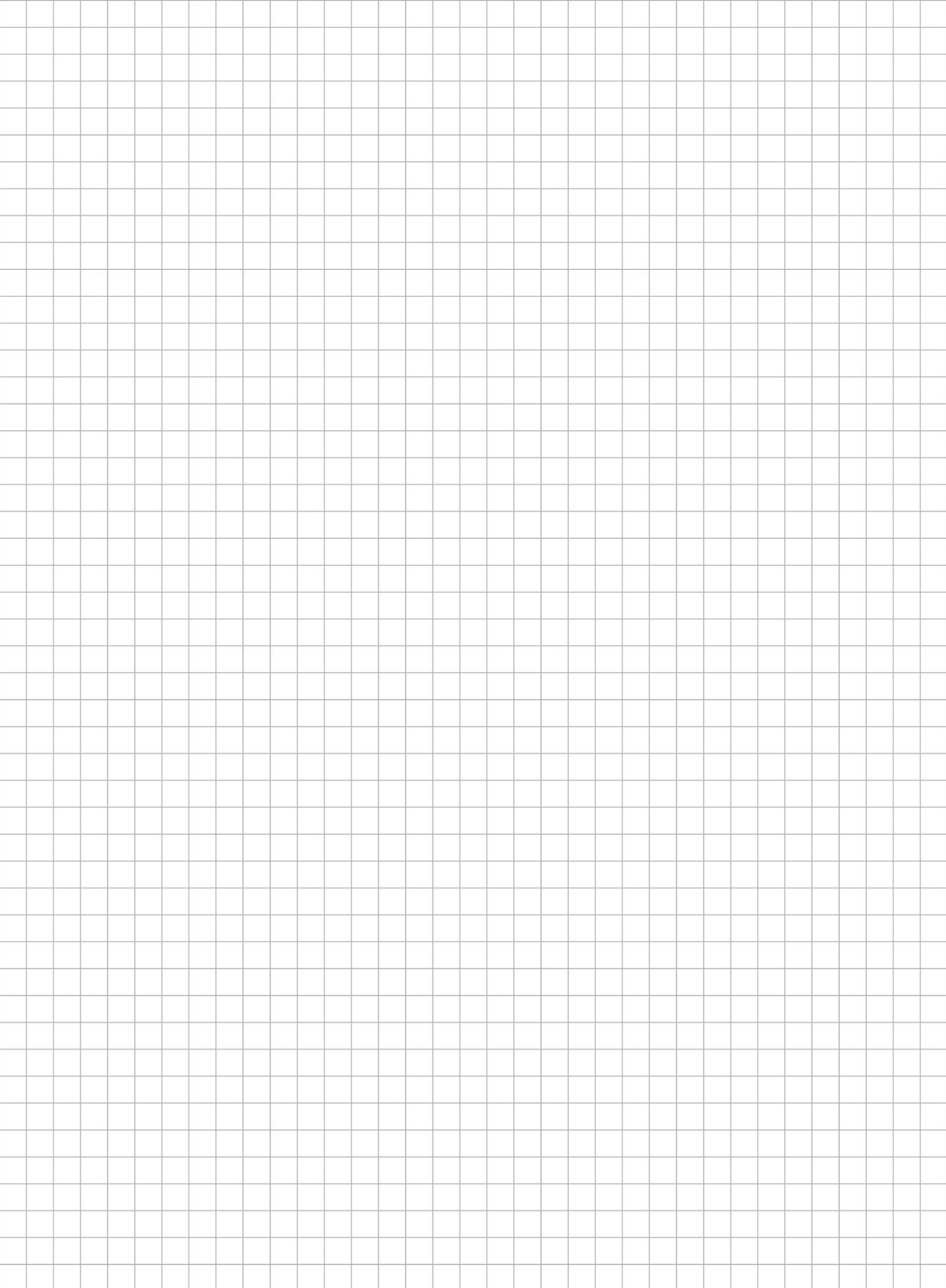
Increase of production capacity

Reduction of disposal costs

Minimisation of the floor space requirement

Other objectives: _____

Notes and sketches



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