

Customized Filtration Solutions for Glass and Ceramics Industries



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FLUID CONTROL SYSTEMS

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Safe Operation Using T-CUT PP Tubular Modules

Advantages

- Operation pH 0-14
- High and stable flow rates
- Unrestricted backwashing
- Highly suitable for abrasive media

Customizing options

Module lengths (mm):	500; 750; 1000; 1360; 1500; 1650; 2710; 3000; 3100; custom-made
OD Housing (mm):	75; 110; 200; 250; custom-made
Module material:	Polypropylene (PP)
Connecting feed:	ANSI/JIS-Flange, Victaulic, Clamp, Thread
Connecting permeate:	ANSI/JIS-Flange, Victaulic, Clamp, Thread
Membrane area (m ²):	1; 4; 5; 8; 9; 16; 20; *

Technical data

Membrane material:	Polypropylene (PP)
Pore size (µm):	0.2
Membrane diameter (mm):	5.5
Temperature range (°C):	5 – 75
Pressure range (bar):	1 – 10
pH range:	0 – 14

Cutting, grinding and polishing are important processing stages in the glass and ceramics industries with regard to the further machining of shaped workpieces. The complex geometrical shapes are manufactured using CNC machines. The workpiece and the machining tool are cooled using water or a liquid coolant in these processes.

Furthermore, so-called slurries are used in the manufacture of silicon wafer in the areas of photovoltaics and microelectronics. The abrasive water that is produced during the mechanical machining processes also contains chemicals/tensides that are used to improve the removal of released heat or for cleaning the surface of the material as well as material abrasions (abrasive grinding particles).

These processing liquids have to be treated so that recovery of the cutting or cooling liquids can be carried out on a qualitative and economical basis. A crossflow microfiltration process is required to remove such abrasive particles.

Our symmetric polypropylene tubular membranes are distinguished by both their extraordinary abrasion resistance as well as their high mechanical and chemical stabilities.

* Test module available upon request.



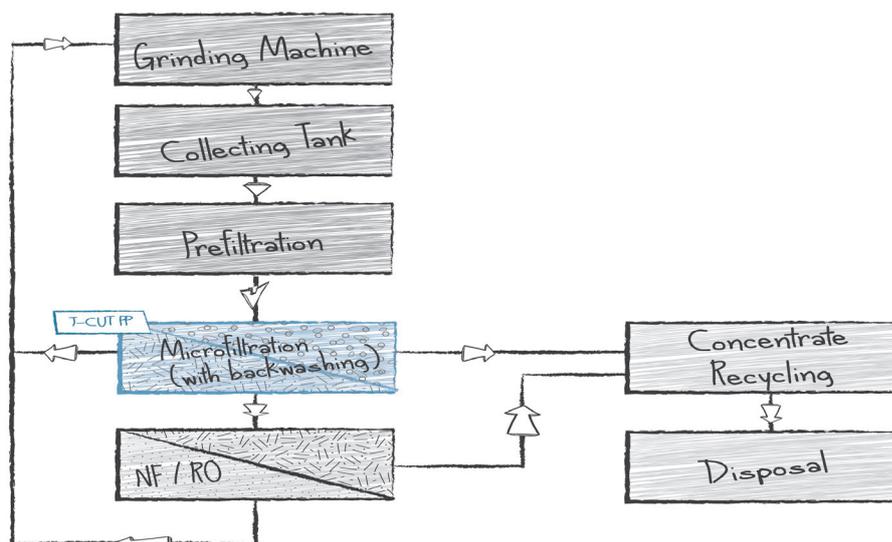
Recycling of Grinding Waste Water

The challenge

In order to be able to optimize the industrial machining processes used for glass and ceramic materials both from an economical as well as an ecological viewpoint, the reuse or treatment of the abrasive water that is produced represents an important aspect with regard to reducing the manufacturing or disposal costs. In order for the liquid coolant used in the machining process to be recycled, both the particulate abrasions and the dissolved ingredients must be removed in accordance

with the application and the legal discharge restrictions.

It is often difficult to use classical separation methods such as centrifuging and sedimentation as the particle abrasions are very finely dispersed in the abrasive water. In addition to this a suitable treatment process must be used to ensure that the chemical composition of the liquid coolant that was used is not significantly altered, especially when adding cleaning additives or other coolants.



The solution

Crossflow microfiltration enables T-CUT PP tubular modules to be used to continuously separate the particulate ingredients from the abrasive water. Whereas components can be recovered on the filtrate side, such as water and the chemicals used, it might also be necessary to implement further cleaning stages so that 90% can be recycled from the machining process and the resulting concentrate can undergo further post-treatment. Moreover, their suitability to act as sterile filters reduces the bacterial load during circulation.

A huge quantity of fresh water can be saved in this way and the cost-intensive chemicals that are used

only have to be dosed as needed.

The T-CUT PP tubular module is fitted with symmetrical polypropylene membranes that have a nominal pore size of 0.2 μm and are distinguished by a high resistance to abrasion when compared to other membrane materials.

The polypropylene membranes have proven their selves in virtually all relevant solid / liquid separation applications.

Due to the unrestricted periodic backflushing with filtrate, flux rates of 60 to 120 $\text{l}/(\text{m}^2\cdot\text{h})$ and a service life of two or more years can be ensured despite the massive chemical and mechanical stresses.

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CUT Membrane Technology, a subsidiary of the Bürkert-Group, produces a variety of innovative tubular and hollow fiber micro- and ultra filtration membrane modules at their facility in Erkrath, near Düsseldorf, Germany.

Bürkert is one of the world's leading providers of fluid control systems with more than 2600 employees and 36 representative offices throughout the world.

