

Customized Filtration Solutions  
For Metal Processing



**burkert**  
FLUID CONTROL SYSTEMS

## T-CUT PP Tubular Module



### Advantages

- Operation pH 0-14
- High and stable flow rates
- Backwashable
- 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

Material: PP, Polypropylene

Connecting feed: ANSI/JIS-Flange, Victaulic,  
Clamp, Thread

Connecting Permeat: ANSI/JIS-Flange, Victaulic,  
Clamp, Thread

Membrane area: 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

# Acid and Caustic Recycling with T-CUT PP-Modules

Various mechanical shaping and machining treatment stages such as cutting, milling, turning, drilling or grinding are used during metal processing as well as downstream part cleaning and surface finishing processes. Adhered abrasive dust and swarf must be sluiced away, oil from the coolant emulsions must be removed and the surfaces must be free of any oxide coatings before another treatment (e.g. painting) can be started. Pickling solutions or washing liquids used for cleaning parts contain chemicals that have been especially matched for use with the alloys that have to be treated and the relevant sub-applications.

The recycling of these processing liquids is an essential cost saving stage with regard to the disposal of chemicals, fresh water and waste water and makes a significant contribution to environmental and resource protection. Crossflow micro-filtration has proven effective for this type of application. It removes suspended metal particles and oil droplets from the pickling fluids. The filtrate can be recovered back into the process and this will considerably increase the service lives of the treatment baths.

The demands of the application requires membranes that have excellent resistance to acids, caustics and abrasive metal particles. Our symmetrical polypropylene tubular membranes offer this abrasion resistance, as well as, high mechanical and chemical stability.

\* Test modules on request

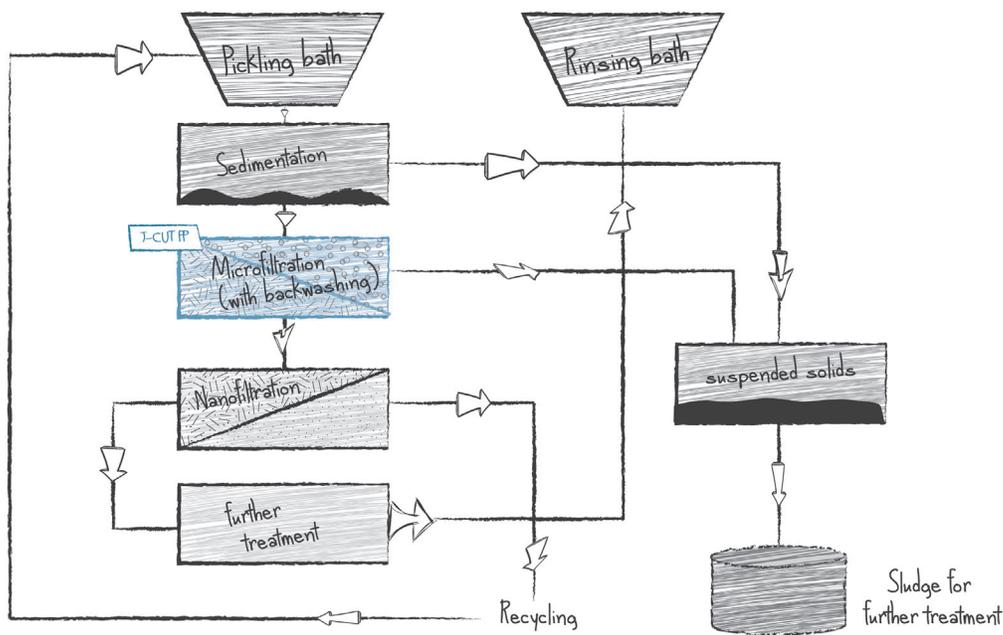


# Recycling of Pickling Acid in a Steel Rolling Mill

## The challenge

A large quantity of pickling acid is accumulated every year in steel rolling mills, and it has to be disposed of after being used, which is both time-consuming and cost intensive. The high disposal costs arise from neutralizing and conditioning the acids prior to transporting to a clarification plant. Other costs arise from disposing of the sludge that is formed as a result of this process.

Depending on the type of treated steels (e.g. alloyed / non-alloyed), hydrochloric or sulphuric acid is used in weight concentrations of 10 - 20% for non-alloyed steels including mixtures with a low percentage weight of nitric acid. The acid treatment is combined with mechanical cleaning methods (e.g. brushes) for an optimum result, whereby a particularly polluted acid mixture is produced as a waste product.



## The solution

Microfiltration using T-CUT PP tubular modules in a crossflow process enables efficient filtration of particular pollutants, which results in the cleaned acid becoming a valuable working material that can be returned to the system. This material may have to undergo other cleaning stages as necessary. This method ensures that not only are resources and costs saved, but the contaminated load (retentate) is concentrated up to 5 times, significantly reducing the quantity of waste water to dispose.

The process produces nominal solid content of up to 35 - 40% from the concentration phase, where the operating temperatures are up to 40°C and some of the critical pH values are less than pH 0.

If T-CUT PP modules are used, then a stable permeate flow of approximately 80 l/m<sup>2</sup>h can be achieved. The backflushing capability of the symmetrical polypropylene membranes ensures a consistently high performance. Despite the demanding chemical and mechanical requirements, the service life of the T-CUT PP module is clearly more than 2 years, providing an economically and ecologically-sound alternative.

**Burkert Fluid Control Systems**

**USA**

US Headquarters  
11425 Mt. Holly-Huntersville Road  
Huntersville, NC 28078

Phone: 1-800-325-1405

Fax: 949-223-3198

[marketing-usa@burkert.com](mailto:marketing-usa@burkert.com)

[www.burkert-usa.com](http://www.burkert-usa.com)

**Canada**

5002 South Service Road  
Burlington, Ontario L7L 5Y7

Phone: 905-632-3033

Fax: 905-632-3833

[sales.ca@burkert.com](mailto:sales.ca@burkert.com)

[www.burkert.ca](http://www.burkert.ca)

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.