# PULP & PAPER:

## BLEACHING

MICROPUMP®

# PULP & PAPE

In the paper manufacturing process, wood pulp leaving the digester wash unit often must be bleached to attain the desired level of paper whiteness. Bleach plants whiten pulp through three to five stages of bleaching and water washing.

Pumps used in this environment need to be able to withstand the chemicals and wear. It is also important for the pumps utilized to deliver a smooth, controlled flow of the appropriate amount of fluid for the correct solution based on intended paper brightness.

## MICROPUMP SOLUTION

Micropump pumps are used in these applications to deliver the appropriate bleaching agent and to maintain the proper chemical balance in the bleaching towers.

Micropump can provide pumping solutions for several areas of the pulp and paper manufacturing process from the bleaching to also supporting the drying and water treatment steps.

### Process Stages Where Micropump has offered solutions:

- Bleaching
- Optical Brighteners
- Dye Additions
- Creping and Release Aids

### Flow Rate

- 0.050 to 18.9 L/min (0.79 to 300 USG/hr) flow rates
- Variable speed pumps with flows from 0.158 to 42.9L/min (2.5 to 680 USG/hr)

### Chemical Resistant Pump Materials

- Pump construction materials stand up to most pulp bleaching chemicals

### Precise Flow Control

- Positive displacement gear pumps for precise metering of bleaching agents

# ER: BLEACHING

### Leak-Free Operation

- Pumps have magnetic drives, so no shafts penetrate the pump cavity, eliminating leak-prone dynamic shaft seals

### Maintainability

- Service Kits for easy field serviceability and rotary gear design means no check valves to clog

## MICROPUMP PRODUCTS OPTIMIZED FOR THIS APPLICATION

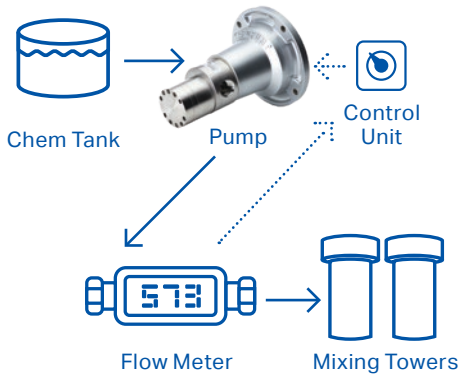
Micropump cavity style pumps are commonly used for this application. Series GJ for lower flow and Series GLH for higher flows. All pump base materials are 316 SS with PTFE wetted materials.

### GJ Specifications

- Displacement: 0.316 ml/rev (N21) | 0.64 ml/rev (N23) | 0.91 ml/rev(N25) | 1.23 ml/rev (N27)
- Min Flow Rate: 158 mL/min (0.041 US pm)
- Max Flow Rate: 6.8 L/min (1.8 US gpm)
- Max Differential Pressure: 5.5 Bar (80 psi)
- Max System Pressure: 21 Bar (300 psi)
- Temp range: -46 to 121 °C (-50 to 250 °F)

### GLH Specifications

- Displacement: 4.6 ml/rev (H21) | 6.2 ml/rev (H23) | 7.7 ml/rev (H25)
- Min Flow Rate: 0.6 GPM (2,270 mL/min) at 500 rpm
- Max Flow Rate: 7.0 GPM (26,565 mL/min) at 3,450 rpm
- Max Differential Pressure: 125 psi (8.6 bar) [50 psi with PTFE gears]
- Max System Pressure: 1,500 psi (103.4 bar)
- Temp Range: -29° C - 121° C (20 to 250 °F)




*Micropump pumps deliver smooth, controlled flow of whitening agents to the bleaching towers.*

## SUCCESS STORIES

Hydrogen peroxide is injected to pulp as it arrives from the digester or TMP plant. It is extremely important that the pump selected to dispense the hydrogen peroxide performs with no pulsation. Due to the tendency of the fluid to evaporate, especially at elevated temperatures, a pulsating pump would lock up. Micropump pumps GJ and GLH have been used in numerous systems along with 10 micron filtration of the fluid as part of a closed loop system and control speed signals to control speed and flow rate.

At one paper mill, a complex process for adding optical brighteners to pulp was causing severe reliability problems. The process to adjust the pump metering of brightening cycles and reliability issues were causing thousands of dollars of rejected product. A Micropump GC-M25 was chosen due to the ability to handle the flow rate at a relatively low speed for extended operating life. The pump was mounted on a skid system with a motor, VFD and flow meter that automatically shuts down once the metered dose is delivered. The Micropump solution was able to meet the customer's +/-5% accuracy requirements for higher paper grades.

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