

QUALITY IMPROVEMENT AND COST SAVINGS IN ALUMINIUM ANODISING



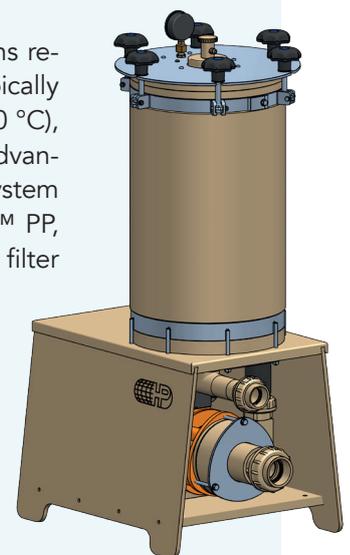
Since 70 years, Hendor is well-known for providing pumping and filtration solutions for the surface treatment and adjacent industries. In the metal finishing industry, quality specifications either by customer demand or by (international) standards are increasing. At the same time, due to intensifying competition, margins are under pressure. We at Hendor regard it as our core task to provide pump and filtration solutions that help our customers to optimize processes and products to the lowest possible total cost of ownership. In the fast-growing aluminium finishing industry, Hendor provides the following outstanding solutions.

Hot Seal filtration

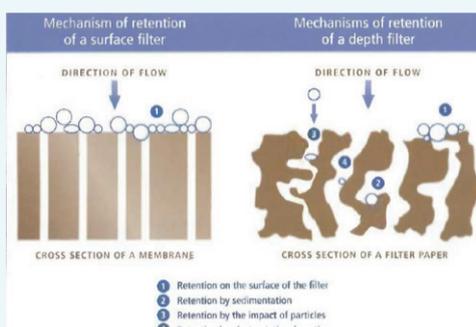
Surface smut necessitates labour intensive post-treatment and contaminated baths require replacement and re-heating. To avoid sealing smut, hot seal baths are typically filtrated at 1-1.5 turnover per hour. Due to the high temperature (generally 96-100 °C), usually stainless steel cartridge filter pumps are used. To overcome the typical disadvantages of these filter pumps Hendor provides a very robust PP horizontal disc filter system with mechanical seal pump which, made from Simona® high-grade Alpha Plus™ PP, well withstands the hot seal bath temperature. The advantages over stainless steel filter pumps are:

- Significantly lower investment costs
- Lower operating costs due to use of low cost filter paper
- Less energy losses due to PP's excellent thermal insulation properties
- No corrosion of pump and filter
- Less disposal costs (cartridges are chemical waste)
- Ease of handling due to partitioned filter disc stacks

Hendor's PP horizontal disc filter systems are standard available with capacity up to 30 m³/h. Though initially developed for hot seal application, these filter systems are well suited for use with cold seal baths, electrolytic colouring, and rinse tanks.



Filter media



Although for hot and cold seal, colouring and rinse tanks both cartridge and disc filtration can be used and in fact both types are supplied by Hendor, the use of disc (paper) filtration is recommended. The main advantages of using filter paper are the following:

- Low filter media costs
- Low waste volume
- Lower disposal costs

Down time of the filter unit is avoided by purchasing additional disc stacks for immediate exchange.

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Residual oil and grease removal

Organic contaminants originating e.g. from the extrusion process or subsequent handling prior to the surface treatment can pollute baths and lead to inferior anodising and/or colouring quality. Hendor provides a special PP filter unit with so-called spaghetti fibres, made of plasma-charged PP, which adsorb the non-emulsified oils and greases up to 5-6 times their own weight. The main advantages are:

- Improved anodising and/or colouring process
- Improved product quality
- Longer bath lifetime / less costs involved in chemistry
- Less water usage



Bath circulation / agitation

For an optimum and homogeneous anodising process, and subsequent stable product quality sufficient bath circulation/agitation is of utmost importance. Rather than using a large circulation pump, a smaller sized pump in combination with eductors can be used. Due to the venturi design of the eductors, the resulting circulation flow can be 5 times the pump input.

Pump / eductor systems are ideal to replace conventional air agitation thereby avoiding the inherent disadvantages associated with air agitations. The advantages of using pump / eductor tank circulation are:

- Less to no acid mist above the tank (sulphuric acid mist is carcinogenic)
- Bath conductivity improvement leading to faster processing
- Lower energy consumption
- More stable process due to less temperature variation
- No dirt intake by polluted pressurised air



For bath circulation Hendor's well-known robust vertical PP pumps are advised. In those situations where the tanks do not allow sufficient space for these vertical pumps, the special Out-of-Tank versions can be used, thereby maintaining the advantages intrinsic for Hendor's vertical pumps without requiring tank space. Due to the single, stainless steel shaft, oversized motor bearings and absence of bearings or seals in the volute these pumps are very reliable and can essentially operate maintenance-free.

Pumps and eductors are available in various sizes to suit each bath geometry. Hendor gladly advises in the use and positioning of eductor systems and sizing of pumps.

