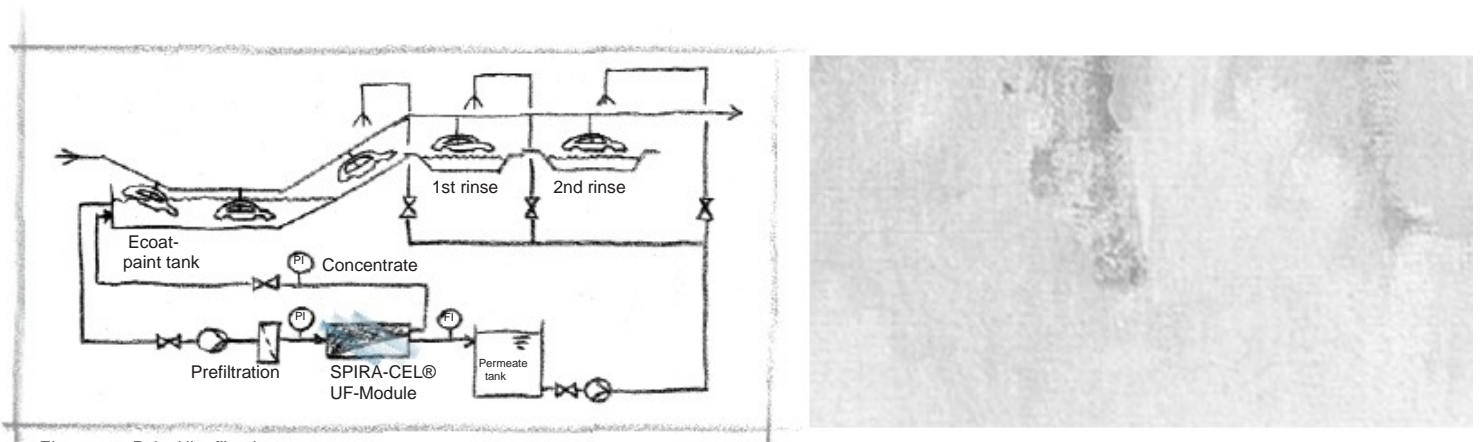


Ultrafiltration of electrocoat paint



Electrocoat Paint Ultrafiltration

In process of electrophoretic coating leads to an excellent, very homogenous and defect-free coat, even on workpieces with sharp edges and inaccessible recesses.

This process involves the electrophoretic deposition of charged paint particles in an aqueous solution onto a conductive (metal) workpiece.

After deposition the workpieces are sprayed to rinse off excess dragout paint. While the permeate of the integrated ultrafiltration is used for the purpose of rinsing, the mixture of paint and rinse water is returned to the paint bath from the downstream rinse system.

The volume in the paint bath remains constant and in this way the introduction of an ultrafiltration unit into this process leads to a closed loop cycle including a multi-stage rinse system. No waste water is produced and therefore almost no deionized water is required for the purpose of rinsing.

The surface area being coated and the geometry of the workpiece determine the necessary volume of the rinsing fluid. This volume has to be provided constantly as permeate flow by the process of ultrafiltration.

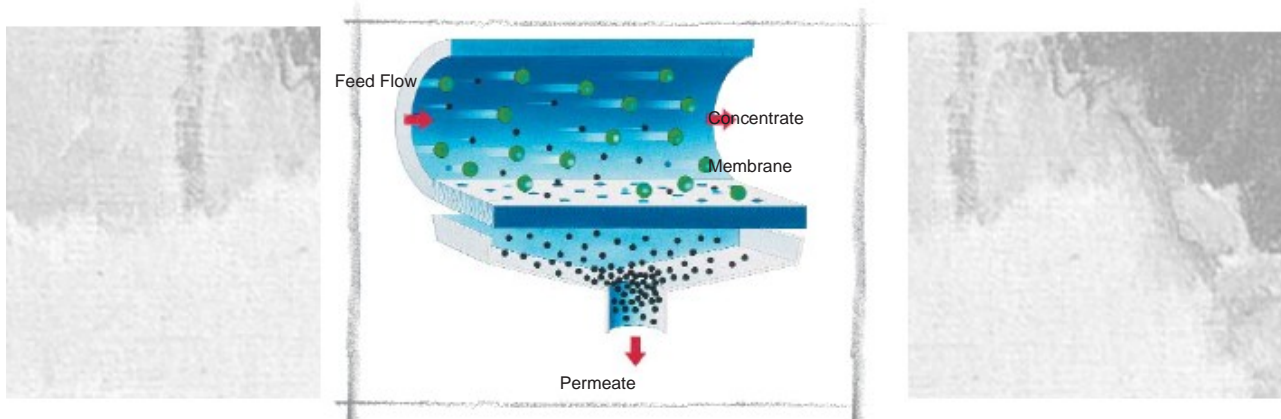
The achievable permeate flux of the ultrafiltration, operated in the cross flow mode, depends on the operating pressure and the flow velocity on the membrane surface.

At the same time these parameters determine the energy consumption of the membrane system.

The use of SPIRA-CEL® modules allows for a cost effective operation of an ultrafiltration system within the process of electrophoretic coating. The characteristic parameters of the paint bath, such as total solids, pH and temperature strongly influence the performance of the membrane with regard to the achievable permeate volume.

NADIR® membrane show a high resistance towards solvents and temperature over a wide pH range and, as they are manufactured out of specially developed polymer, they have the ability to permanently maintain their hydrophilic properties despite frequent cleaning during their operational lifetime.

Features of Cross-Flow Filtration



Practically In cross-flow filtration the fluid feed stream is fed across the membrane. This concept supports turbulent mixing of the fluid stream during the filtration process and prevents the deposition of particles on the membrane surface. Due to turbulent mixing Particles that have already precipitated are flushed away.

Regarding the ultrafiltration of electrophoretic paint mainly the deposition of rejected pigments on the membrane surface strongly influence the process of fouling and leads to a decrease of the water flux through the membrane.

MICRODYN-NADIR has long experience in the evaluation of the influencing factors to optimize membrane processes.

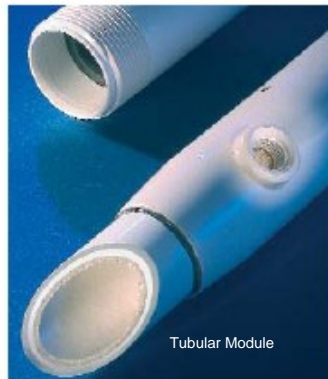
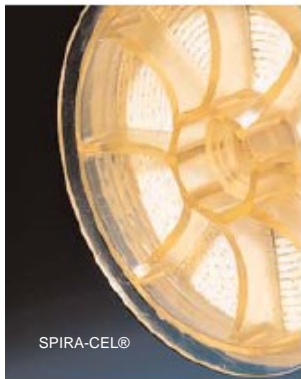
The Liquid which are difficult to process can be filtered through Cross Flow filtration which maintains stable permeate fluxes over longer period of time.

In comparison of conventional dead-end processes the prevention of membrane fouling and the enhanced fluid mixing leads to a better membrane performance and ongoing stable process during cross-flow filtration.

The efficiency of the cross-flow filtration of liquids is mainly determined by the correct choice of membrane type, construction of the module, main parameters of the process, pressure and cross-flow-velocity. Furthermore the process performance depends on many different factors.



A new generation of membrane products



Our new generation of membranes and elements for the micro-, ultra- and nanofiltration provides better performance and stability and is compliant with industry specifications.

Our membranes are available in roll stock, flat sheet, hollow fiber cartridges, tubular configuration and a wide range of standardized or customized spiral wound modules depending on the required membrane material and molecular weight cut-off (MWCO).

Modules are available in sanitary and industrial versions for high temperature and high pH conditions.

Our production processes meet the current industry standards, and we demand all our suppliers to do so as well. We assist our customers in process development with our lab & pilot service. Our capabilities for field service and short delivery times, also for custom products, are more essential qualities of the MICRODYN-NADIR organization.

Application	Features	Benefits
Cathodic electrophoretic coating Anodic electrophoretic coating Spray Paint Deionised water dip rinse	Separation of pigments	Cost effective production of rinse water Reduction of waste water Recovery of paint Lifetime extension of the dip rinse Improvement of the rinsing water quality
Degreasing baths	Separation of particles, Oil and grease	Lifetime extension Cost reduction on discharge and chemicals