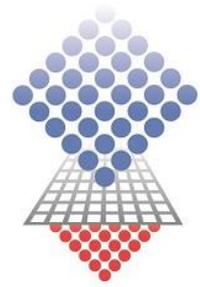


Membranology

Advanced Membrane Applications



HP350 Frontal Filtration Cell

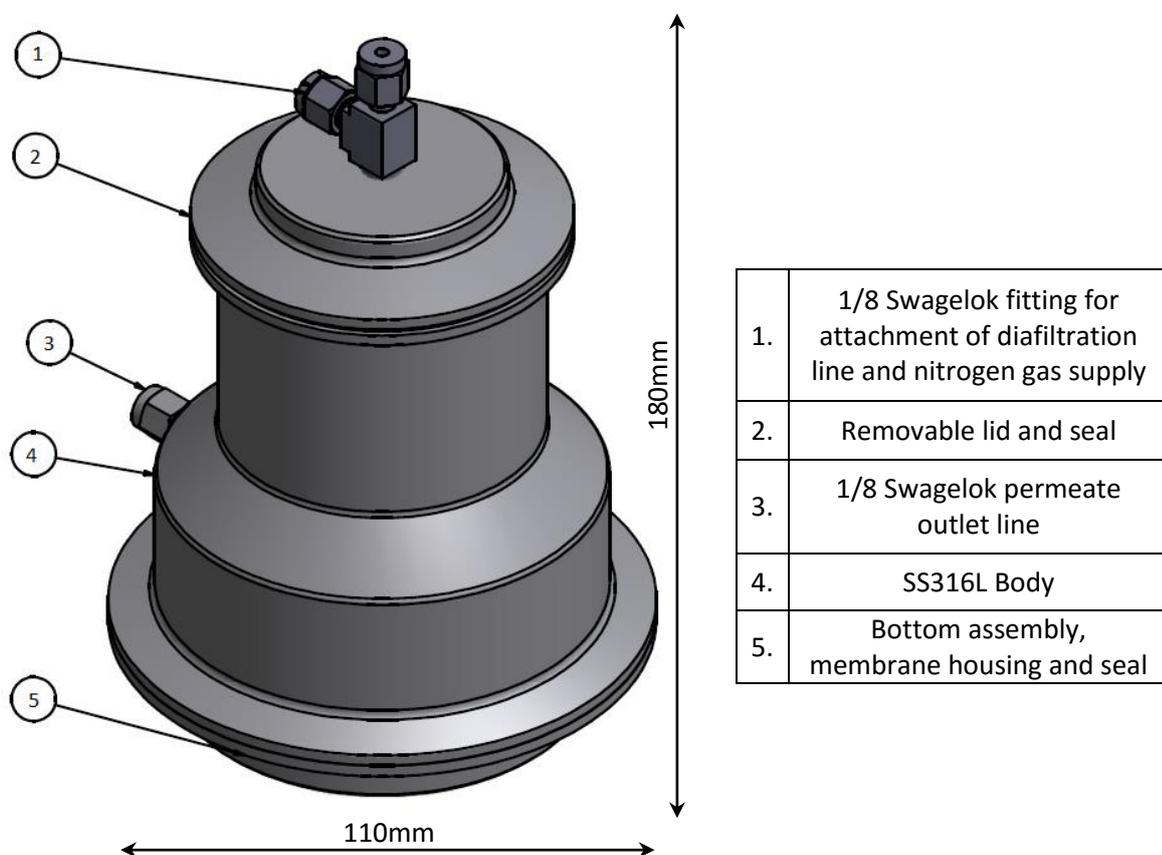
Background Information

The Membranology HP350 frontal filtration cell is a flexible and versatile unit suitable for all bench scale membrane experimentation. This could be simple membrane screening exercises to explore the feasibility of a new process, generating detailed process information ready for scale-up (e.g. membrane flux or rejection), or optimisation of complex separations and diafiltration processes. The frontal filtration cell has been constructed using our 25 years of industrial biotech experience and is specifically designed for the high pressure nanofiltration and reverse osmosis applications, although the cell is perfectly capable of low pressure microfiltration or ultrafiltration applications as well.

Our filtration cell has been successfully employed for many applications such as seawater desalination, wastewater clean-up, and the fractionation and concentration of low molecular weight organics (typically dyes, oligosaccharides, pharmaceuticals, mononucleotides...etc.). The processing time is rapid and the operation is simplistic. The equipment is supplied with operating instructions, care and maintenance advice and the back-up of our full technical support and specialist laboratory services if needed (ask for details).

System Information

The HP350 filtration cell is shown below:



The HP350 filtration cell is designed for research and development activities and is perfectly suited for all modern liquid phase membrane operations. The system is constructed from high grade stainless steel (SS316L) and is chemically resistant to most normal operating conditions. The set-up and operation of the unit is very quick and simple. The unit is designed for a maximum operating pressure of 68 bar and is tested to 100 bar (for higher pressure operations please contact us). The membrane area is 41.8 cm² and the recommended capacity of the unit is 350 mL (400 mL to top seal) although with the connection of a diafiltration unit the internal volume is practically limitless.

If the HP350 is not what you are looking for then we can customise the unit specifically for a client. For example, we can supply all of the connections, valves, and instruments required for any operation. This could be a basic model or we could supply a unit with digital instrumentation and data-logging capability for an increased cost. If you require a customised unit we are more than happy to help, contact us with your specifications.

Typical operational data

A typical set of rejection data from the HP350 filtration cell is shown below.

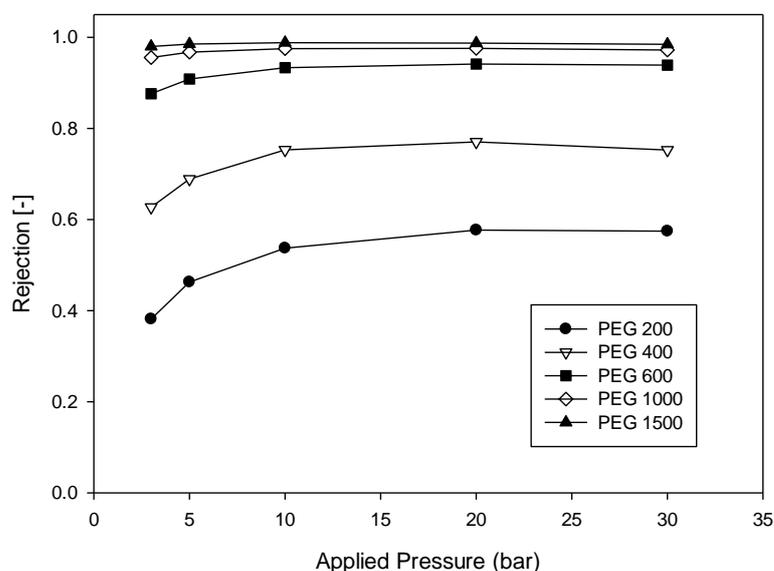


Figure 1: Experimental rejection data for nanofiltration with polyethyleneglycol (PEG) solutions. Concentration 1 g L⁻¹; temperature 20 ± 1 °C; stirring at 300 rpm.

Oatley-Radcliffe, D.L., S.R. Williams, C. Lee and P.M. Williams (2015), Characterisation of Mass Transfer in Frontal Nanofiltration Equipment and Development of a Simple Correlation, *Journal of Membrane Science and Technology*, 4, 149-160.

Oatley-Radcliffe, D.L., S.R. Williams, T.J. Ainscough, C. Lee, D.J. Johnson and P.M. Williams (2015), Experimental determination of the hydrodynamic forces within nanofiltration membranes and evaluation of the current theoretical descriptions, *Separation and Purification Technology*, 149, 339-348.



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