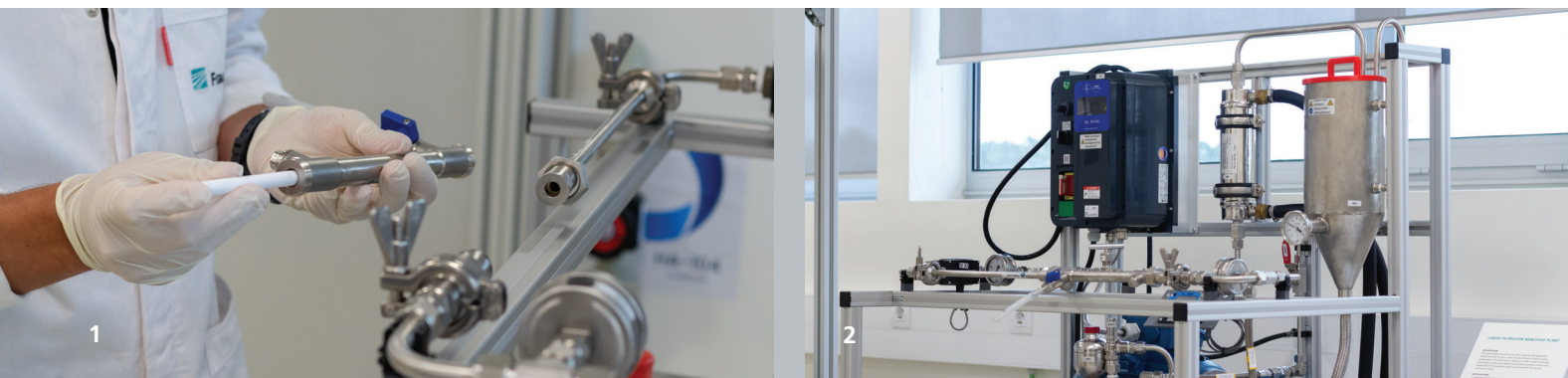




1 Detail of a tubular ceramic membrane being installed in the modules.

2 Bench-top filtration unit for screening tests.

SCREENING, CHARACTERIZATION, AND ON-SITE TESTING OF MEMBRANES FOR LIQUID FILTRATION

Background

Membrane technology plays a significant role in a wide range of liquid filtration applications, from water and wastewater treatment to industrial processes. The effectiveness of these systems relies on the precise selection and optimization of porous membranes – both organic and inorganic – tailored to meet specific needs. High selectivity, permeate flux, and stability are essential for optimal performance.

As membrane properties can vary widely regarding pore size, flux, and chemical resistance, a thorough screening, characterization, and selection process, is crucial to guarantee that the system meets the exact demands of its intended application.

Solution

Fraunhofer Portugal AWAM works at the forefront of this field, focusing on the development and implementation of state-of-the-art membrane technologies. We collaborate closely with partners within Fraunhofer Society to advance ceramic membranes development and implementation, conducting tests at both lab- and pilot-scale under realistic conditions.

Fraunhofer Portugal AWAM operates a range of membrane test plants, from compact

benchtop models to larger units equipped with industrial-scale modules and membranes. Our research center features a versatile and mobile membrane plant that accommodates various membrane geometries, including micro-, ultra-, and nanofiltration ceramic membranes up to 1.2 meters in length and a total filtration area of 2.3 m². This widely automated system can be used for membrane and process testing with pressures of up to 18 bar and a feed flow of up to 8 m³/h. In addition to laboratory testing, our mobile plant can be deployed for piloting tests directly at customer sites.

Services

- Customized laboratory membrane screening and testing;
- Ceramic membrane development and modification in cooperation with R&D partners;
- Membrane characterization;
- Design and prototype construction;
- Technical plant design and operational guidance;
- Plant implementation and commissioning;
- On-site piloting and application testing.

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