MEASURED

Membrane scale up for chemical industries

GET TO KNOW THE MEASURED NETWORK OF PROJECTS!

MEASURED has started work on clustering with other European projects active in the fields of membrane materials and process development, modeling and simulation, membrane production, LCA, and techno-economic assessment. The aim is to organize and perform joint activities to establish links with key actors from other EU-funded projects, thereby increasing the impact of the projects.

Networking activities will strengthen the impacts and increase the outreach potential of MEASURED. Synergies will be found in the joint exploitation of dissemination tools and services (i.e., web exchanges, common events for stakeholders, and joint webinars). The output from these activities and collaborations will be fed into the MEASURED project, providing not only technical support but also new commercial opportunities.

Multiple collaboration efforts between partners within the consortium have already been established at the national and international level.

LET'S DISCOVER THE PROJECTS INVOLVED IN THIS CLUSTER!

INNOMEM aims at developing a sustainable OITB (Open Innovation Test Bed) to foster deployment and scale-up of innovative nano-enabled membranes and their derived products. Within the scope of INNOMEM, different types of membrane materials (polymeric, ceramic, metallic and nanocomposite), surface modification, membrane morphology and geometry and applications will be covered, providing for the first time a Single-Entry Point (SEP) to provide the businesses in the sector with a one-stop-shop of the best available experts and technologies. European companies, mainly SMEs, will access through the SEP to develop, test and adopt, new high performance, multifunctional, safe and environmentally friendly nano-enabled membranes in a cost-effective and sustainable way while opening-up opportunities for demonstration of innovative nanomembranes in real life industrial problems (TRL7) and thus accelerating the market opening for these new products.

The **MACBETH** consortium provides a breakthrough technology of highly efficient catalytic membrane reactor (CMR) for advanced downstream processing by combining catalytic synthesis with the corresponding separation units in a single reactor. With this disruptive technology a reduction of greenhouse gas emissions (GHG) and an increase in resource and energy efficiency of large volume industrial processes can be achieved. The revolutionary new reactor design will guarantee substantially smaller and safer production plants and thus reduce operational and investment costs.

MEloDIZER implements high-performance membranes and modules in strategic applications of membrane distillation (MD), hence providing the decisive step for the success of MD. MEloDIZER will address these design issues carefully, via both modelling and experimental work, to provide new knowledge about the best combination and maximisation of module parameters suitable for high-end applications, as well as improved module structures. Our modules will simultaneously increase thermal efficiency and productivity through smart geometry, arrangements, spacers, and energy recovery strategies.

Industrial processes use a tremendous amount of valuable resources including raw materials, water and energy. Enhancing the efficient use of resources in environmentally friendly ways will contribute to a more sustainable and resilient economy. The EU-funded **CUMERI** project will develop and demonstrate advanced membrane separation systems customised for the steel and oil and gas (O&G) sectors. In the steel sector, one comprehensive system will both recover H2 and capture CO2. The O&G industry will benefit from a two-step liquid filtration system to recover base oil and additives recovery from used lubricant oil. The technologies will decrease emissions, enhance the valorisation of valuable chemicals, and increase energy efficiency while promoting a circular economy.

APOLO's main objective is to provide a quantum leap in the development of advanced power conversion technologies based on the smart combination of an innovative onboard ammonia cracking technology based on a Catalytic Membrane Reactor (CMR) coupled with either 1) an advanced Fuel cell running on pure hydrogen or, 2) a novel ammonia engine running on an ammonia/hydrogen blend targeting in all cases the full decarbonization of the maritime sector at the TRL5 scale (125 kW output power).

MEASURED and its sister projects will implement several public actions, offering them to interested stakeholders and users across academia, industry, and public sectors. These activities, designed to disseminate outcomes and involve project stakeholders, include workshops, webinars, and trainings.

PRELIMINARY DISSEMINATION ACTIVITIES TO LOOK FORWARD TO!

Euromembrane 2024

EUROMEMBRANE, scheduled to be held in Prague from September 8-12, 2024, aims to bring together European "*membranologists*" and colleagues from overseas to discuss in a vibrant and dynamic setting all aspects of research and applications of membrane and membrane processes. The event is one of the flagships of the European Membrane Society (EMS), which is keen on supporting scientific or technical events related to membranes and membrane processes.

In this year's call for abstracts, many MEASURED partners have participated to present the advancements related to the project:

- *Study of the performance in Membrane Distillation of PVDF membranes prepared with green solvents and specific coatings*, M. C. Carnevale, F. Russo, A. Corozzi, M. Raimondo, R. Conti, M. Aquino, S. Santoro, E. Curcio, A. Figoli, A. Criscuoli.

- *Sustainable PVDF membranes preparation using γ-Valerolactone (GVL) as a green solvent*, F. Russo, F. Galiano, A. Gordano, M. Aquino, S. Santoro, E. Curcio, A. Criscuoli, F. Figoli.
- *Ceramic Biomimetic Coatings to Boost PVDF Membrane Performance in Treating Low Surface Tension Wastewater Streams*, A. Corozzi, M. Caruso, F. Russo, F. Galiano, M.C. Carnevale, A. Gordano, R. Conti, F. Gallucci, E. Curcio, A. Criscuoli, A. Figoli, M. Raimondo.
- *Acid Resistant Hybrid Silica (HybSi) Membrane for Enhanced Esterification Reaction by Pervaporative Dehydration of Acrylic Ester Reaction Mixture*; M. Nikbakht Fini, M. van Tuel, Y. van Delft, D. Dhaler, D. Tournigant, S. Tretjak.
- *Integration of pervaporation in organic compounds dehydration processes*, F-T. Lo, S. Clercq, E. Gout, P. Moulin, E. Carretier.

Stay tuned for more updates!

CHISA2024

The 27th International Congress of Chemical and Process Engineering will take place in Prague, (CZ) from August 25th to 29th, 2024. The CHISA Congress is among the most important in chemical engineering events all over the world, which every year brings together more than 5000 scientists from all over the world.

In this year edition, MEASURED will be featured into the program, with an abstract on the use of HybSi membrane for esterification reaction in pervaporation process: *Acid Resistant Hybrid Silica (HybSi) Membrane for Enhanced Esterification Reaction by Pervaporative Dehydration of Acrylic Ester Reaction Mixture*, M. Nikbakht Fini, M. van Tuel, I.Tyraskis, Y. van Delft, D. Dhaler, D. Tournigant, S. Tretjak.

More details will follow soon!

The second winter school on Membranes and Membrane reactors in Eindhoven

The event will take place on 27-28 January 2025 at TU/e in Eindhoven (Netherlands), and it is organized by the APOLO and MEASURED projects. The event will provide exciting presentations from experts in the field of membrane reactors, in particular membrane preparation, scale-up, catalyst development for membrane reactors, laboratory and large-scale demonstrations. In particular, the school will feature a presentation of the Hybsi membrane development (TNO/CTI), a modelling presentation (AMU/TNO), and a presentation about the pilot & the application (Alsys/Arkema).

Joint Workshop MELODIZER & MEASURED

The event, organised by CNR-ITM, will be held on June 5, 2025 at the Hotel San Michele, Cetraro (CS) Italy. It will focus on the development of innovative membranes for enhancing the performance of the three lines identified in the MEASURED project (membrane distillation, pervaporation and gas separation). The innovative membranes and modules for membrane distillation developed in the MEloDIZER project, will also be presented. The Workshop will be an interesting opportunity to exchange ideas among Colleagues in the field of membrane development and optimization for industrial applications. In order to attract participants, also not involved in the two projects, the Workshop will be included in an International MD Conference (Membrane Distillation and Innovating Membrane Operations in Desalination and Water Reuse) which will be organised on June 4-6, 2025. The expected number of participants is around 70.

INTERESTING INITIATIVES FROM OUR SISTER PROJECTS!

INNOMEM FINAL WORKSHOP

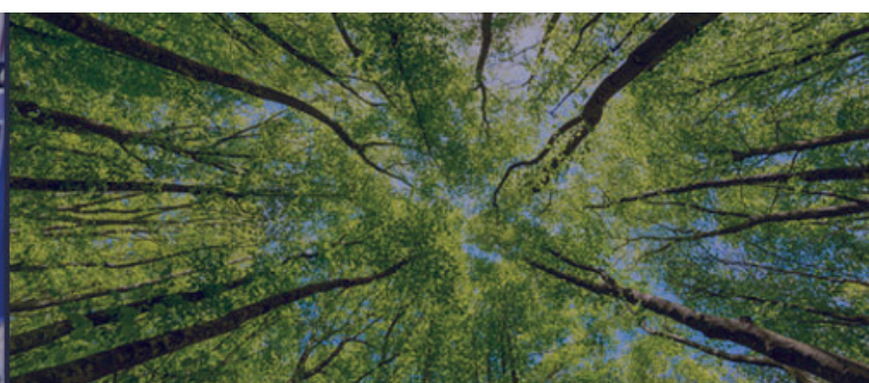
Discover the opportunities of the 1st European single entry point for all your membrane related questions! Satellite event of EUROMEMBRANE 2024. 10 September 2024, 14:00 – 18:00, Prague Congress Centre – Chamber Hall, Prague (CZ). More info available here.

Would like to join our network for collaborative Dissemination and Communication activities?

Contact our designated team below:

- Luca Di Felice, Project Coordinator from TUE: l.d.felice@tue.nl
- Manuela Guiducci, Dissemination Manager from PNO: m.guiducci@ciaotech.com

Subscribe to our newsletter and follow MEASURED on LinkedIn and X (Twitter) to be always updated on the latest news and the project progress!



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