The concept

MEMBER aims to demonstrate state-of-the-art CO_2 capture technologies in an industrially relevant environment. To achieve this, MEMBER will scale-up and manufacture advanced materials and prove their added value in terms of sustainability and performance at TRL 6 in novel membrane based technologies, that outperform current technologies for pre- and post-combustion CO_2 capture in power plants as well as in H_2 generation systems with integrated CO_2 capture and meet the targets of the European SET plan.

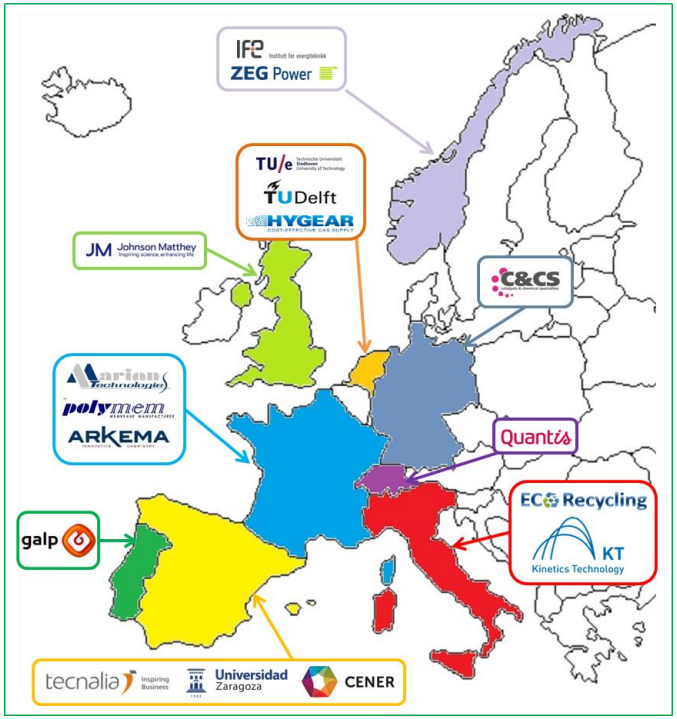
Two different strategies will be followed to achieve CO_2 separation:

- A combination of Mixed Matrix Membranes (MMMs) for pre- and post-combustion CO_2 capture,
- A combination of metallic membranes and sorbents into an advanced Membrane Assisted Sorption Enhanced Reforming (MA-SER) process for pure H_2 production with integrated CO_2 capture.

In both cases, a significant decrease of the total cost of CO_2 capture will be achieved. MEMBER targets CO_2 capture technologies that separate >90% CO_2 at a cost below 40€/ton for post combustion and below 30€/ton for pre-combustion and H_2 production..

The MEMBER systems and related business models will be demonstrated at three different representative end user sites across Europe, covering different sectors, membrane based technologies and CO_2 containing streams.

Partners and contacts



Project Coordinator:
TECNALIA
Dr. José Luis Viviente
joseluis.viviente@tecnalia.com

Dissemination Manager:
HYGEAR
Dr. Robert Makkus
robert.makkus@hygear.com

Project Innovation Manager:
KT
Dr. Emma Palo
E.Palo@kt-met.it

Exploitation Manager:
POLYMEM
Dr. Olivier Lorain
o.lorain@polymem.fr

MEMBER in figures

~9.6 M€ project (~7.9 M€ EU funded)
Duration: 4 years (2018 - 2021)
Key milestones:
• Feb. 2020: three CO_2 capture concepts designed;
• Dec. 2020: prototypes ready for testing;
• Dec. 2021: demonstration of the prototypes in industrial relevant conditions at TRL 6.

Horizon 2020 research and innovation programme - EU

Advanced MEMBranes and membrane assisted processes for pre- and post- combustion CO_2 captuRe

MEMBER

https://member-co2.com/

Duration: 4 years (2018 – 2021)

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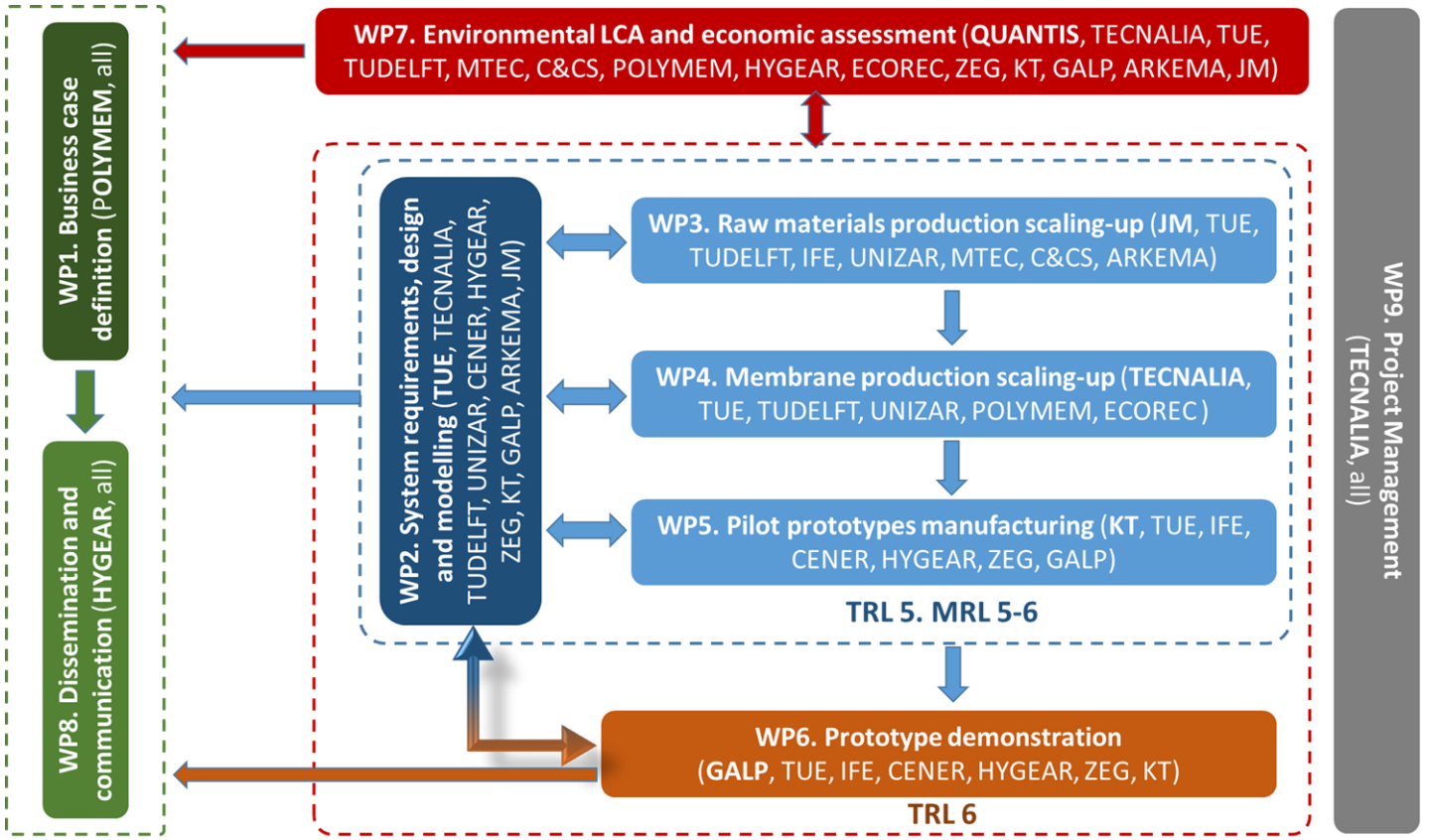
MEMBER in a nutshell

The project is divided in work packages, moving from the single components to the entire system:

- **Business case definition,** will set the foundation for effective development and exploitation of results into the market.
- **System requirements, design and modelling**, will define a coherent set of specifications for the membrane based CO_2 capture systems as well as the requirements of the different materials and their scale up.
- **Core materials production scaling-up,** will scale-up the production processes of the core materials (sorbents, catalyst, polymers & MOFs) required for the CO_2 capture solutions.
- **Membrane production scaling-up,** will tackle the production of the MMMs and Pd based membranes for the prototypes.
- **Pilot prototypes design, construction & testing,** all the different materials and balance of plant components will be integrated into the prototypes.



- **Prototype demonstration,** will be focused on the demonstration at TRL 6 of the three CO_2 capture systems developed in MEMBER, each of them being located at different relevant demonstration sites.
- **Environmental LCA and economic assessment,** accounts for the effective impacts of the separation system on the environment from the raw material extraction to the end-of-life as well as for the costs of the systems.
- **Dissemination and communication,** runs throughout the whole project, providing support to exploitation of project results through highly focused communication and dissemination activities.