

BiO
FARM

miO
LAB

MicroPyros BioEnerTec®

Technology Facilities



BioFARM provides a unique R&D environment that embraces all processes related to biomethanation.

BioFARM: real working conditions

BiO
FARM



BioFARM is located inside the Straubing Wastewater Treatment Plant (SER). Real working conditions are replicated in our bio-reactor by using real biogas and wastewater sludge.

BioFARM: simulating all gas input possibilities



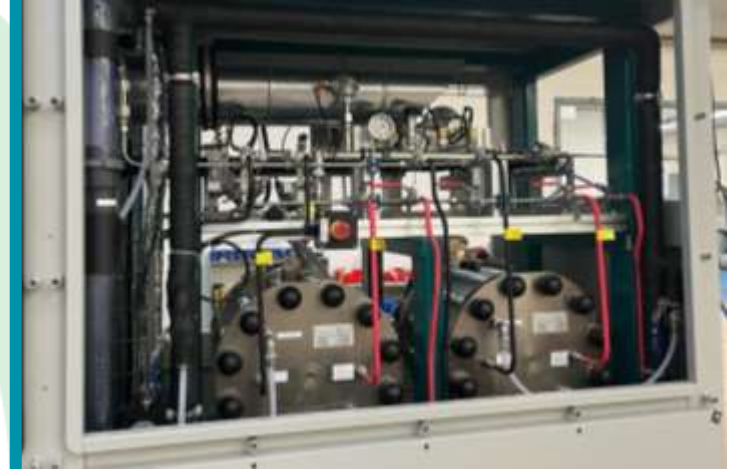
Biogas Methanation

Real biogas from wastewater plant digester is fed into BioFARM to test biomethanation in real conditions. Sludge from the digester is also used as substrate for the microorganisms.



Syngas Simulations

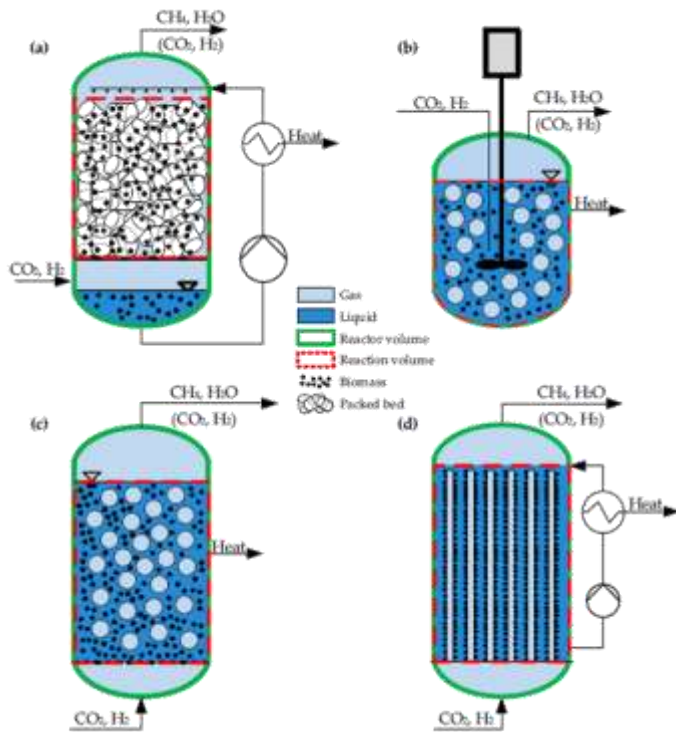
Using a set of various gas bottles, it is possible to simulate different kind of syngas compositions. Ratios between various gases are automatically controlled.



H₂ Production

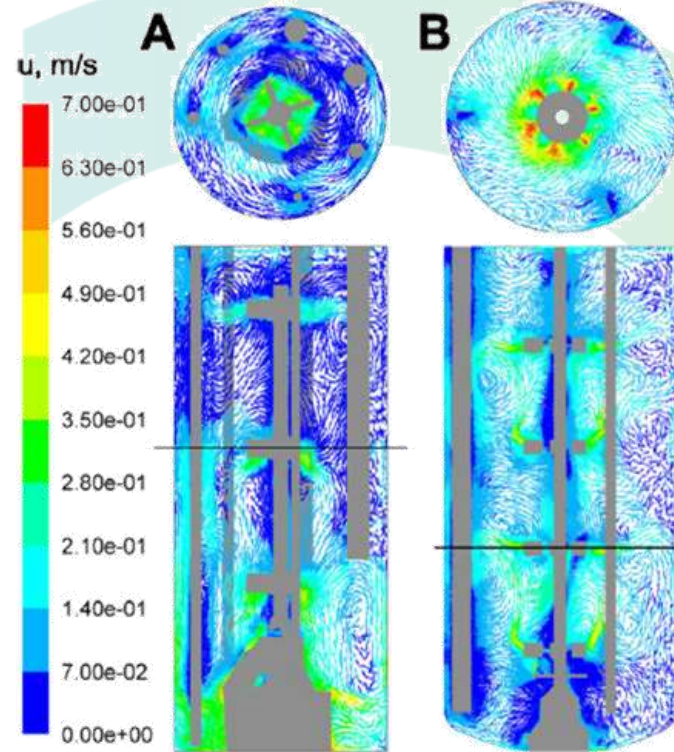
A fully dedicated 40 kW AEMWE electrolyzer from Hyter is installed at BioFARM to fully replicate a P2G system.

BioFARM: bio-reactor development



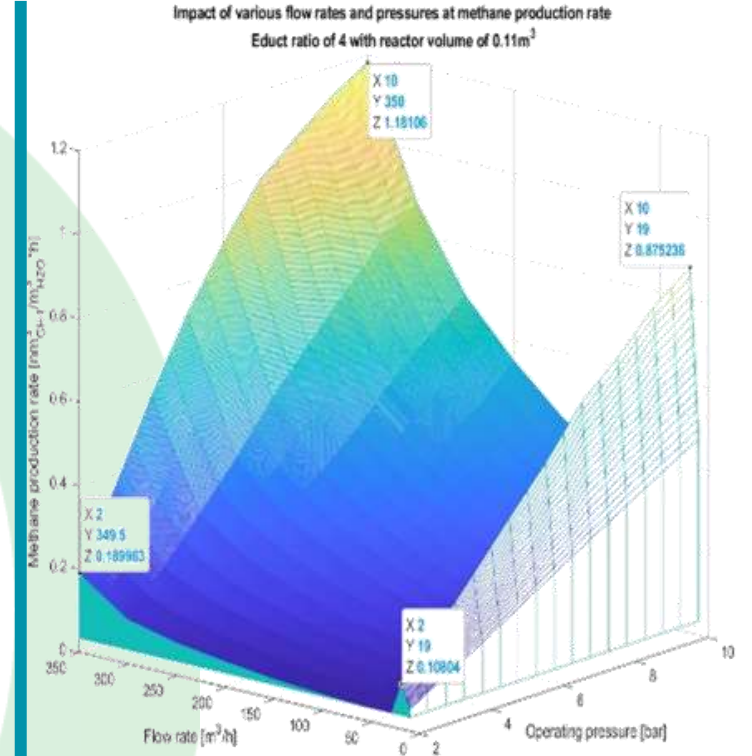
Multiple Type Testing

Modular construction allows for testing of stirrer reactor, bubble reactor, jet loop, or any combination of technologies.



CFD Modelling Confirmation

Confirmation of fluid dynamics and biology theories. Data is elaborated through CFD calculations



Searching New Frontiers

The combination of modelling, biological environment, and modular reactor design aids in the search of new biomethanation applications

Technical Data

- **40 kW** electrolyzer, with room for another 40 kW stack
- **400 liter** bioreactor volume
- **8 Nm³/h** H₂ production and consumption
- **2 Nm³/h** CH₄ production
- **6 – 10 bar** operational pressure range
- **100°C** max operational temperature
- **>96%** product CH₄ purity
- **CO₂, CO, H₂, CH₄** cylinder for syngas simulations

Technical Contributors

MICROPYROS

Microbiology technology for biomethanation

 **Pietro Fiorentini**

System integrator and reactor development

 **HYTER**
NEW ENERGY ROUTES

AEMWE electrolyzer producer

bio-komp
Specialty compressors for renewable gases

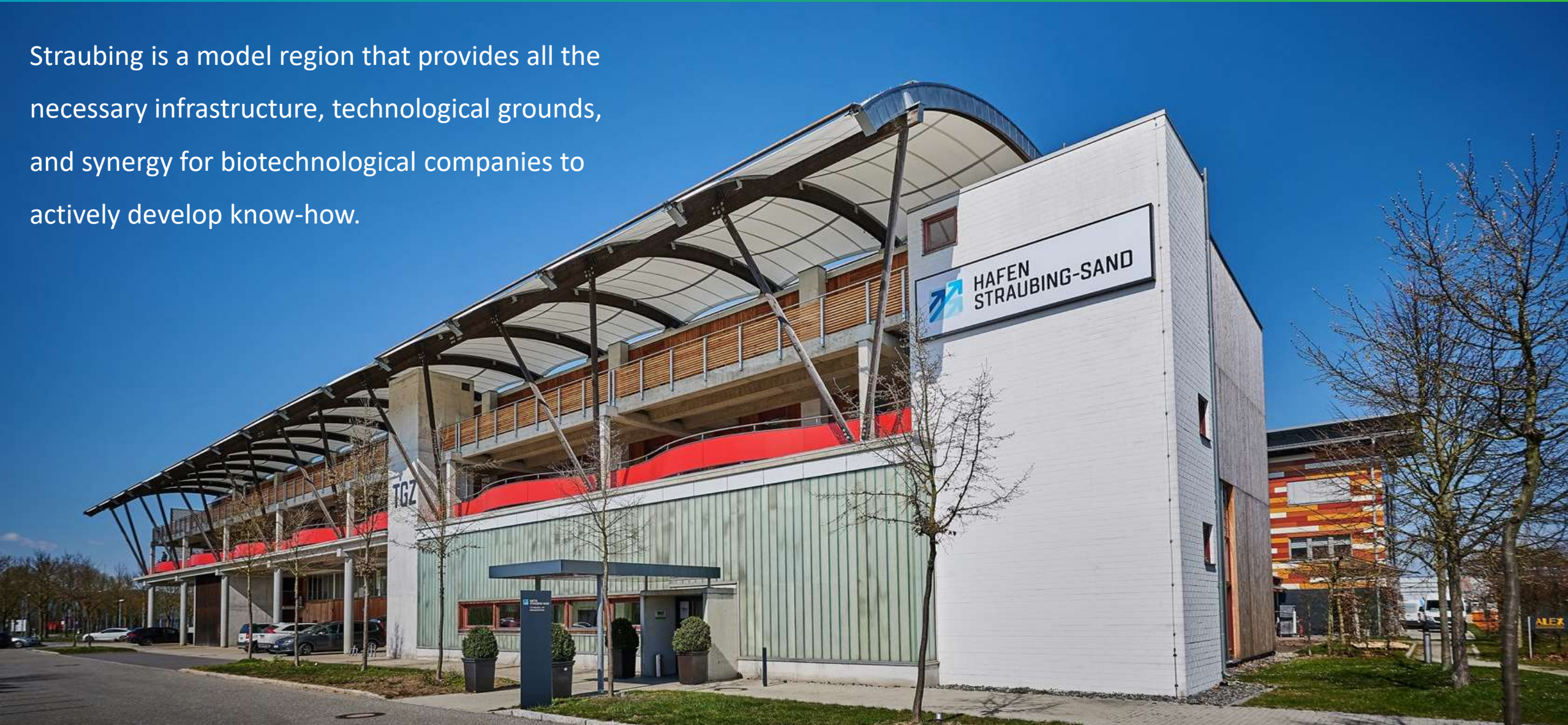
Specialty compressors for renewable gases

BioFARM: some image



MioLAB: a territory devoted to biotechnologies

Straubing is a model region that provides all the necessary infrastructure, technological grounds, and synergy for biotechnological companies to actively develop know-how.



MioLAB: unlocking the full biomethanation potential



Biological Laboratory

MicroPyros has a fully equipped laboratory with all necessary facilities for cultivation and selection of more than 70 different anaerobic microorganism strains.



Multi-gas Distribution System

MioLAB has a dedicated gas distribution system for 8 different gases, which makes it possible to simulate all possible working conditions of gas mixtures.



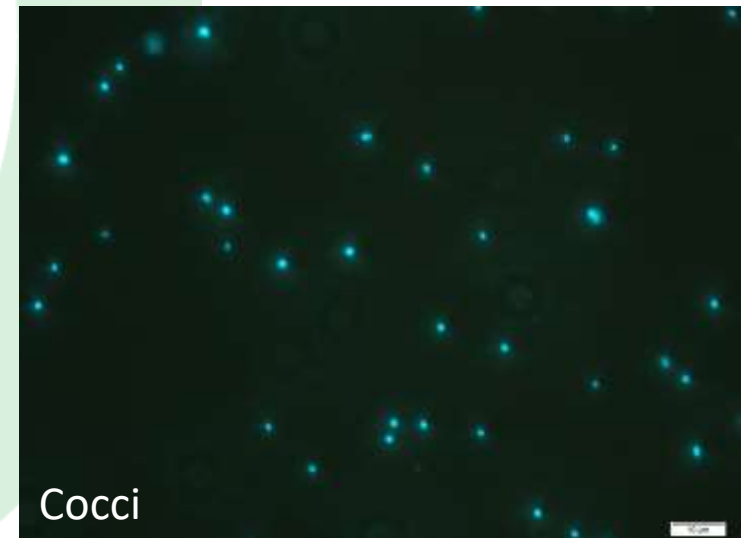
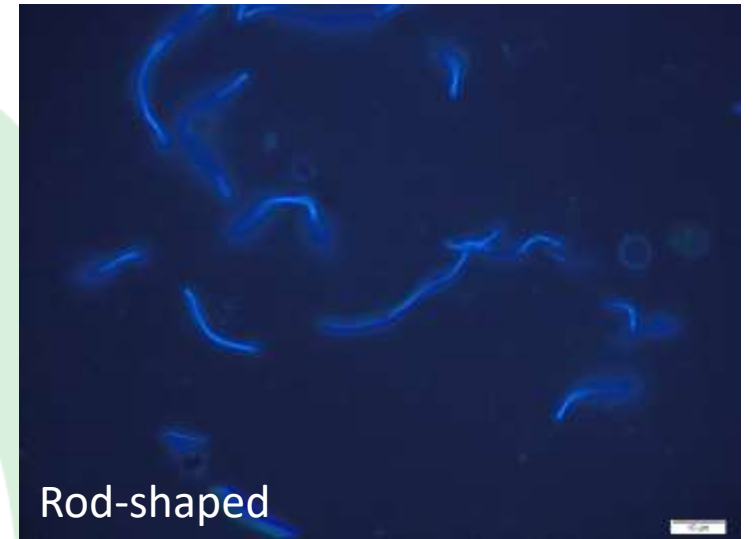
Anaerobic Chamber

An innovative anaerobic chamber ensures experiments using microorganisms are conducted in the total absence of oxygen.

MioLAB: visualization of methanogenic archaea



X1000 magnification



MioLAB: selection of microorganisms

We aim to increase the reproduction rate of microorganisms...

... in artificial medium

... in sewage sludge

... in medium and syngas

... that are highly fluorescent

MiO LAB images



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MicroPyros

The BioEnerTec[®] Company

www.micropyros.de