



RENEWABLE GASES AND POWER-TO-GAS TECHNOLOGIES

The topic has become an increasingly important strategic goal of the research base of University of Miskolc in the recent decades. Combustible gases from fossil sources still have many years to go, given to current trends, but on the other hand it can be predicted that climate protection efforts will not avoid the gradual replacement of fossil fuels. The utilization of biogases from different sources (sewage gas, landfill gas, agricultural biogas) has many decades of experience, and hydrogen has become one of the most popular topics of recent years.

Power to Gas (PtG) technologies are pioneers in energy conversion and storage, providing an excellent opportunity to convert non-uniformly generated electricity from renewable sources into a storable form. The stored gas can be methane and hydrogen. Research links electricity, methane, hydrogen, carbon dioxide, gas storage, pipeline transportation and use.



SERVICES

- Technologies for the production of biogas from different feedstocks
- The treatment and purification of the produced renewable gases
- Possibilities of utilization of gases in gas-fired equipment
- Possibilities of injection purified gases into natural gas network
- Modelling and simulation of processes the technologies
- Gas quality issues of utilization and injection into public gas networks
- Issues of transport use
- Linking technologies with PtG projects
- Process modelling of the developed PtG technologies
- Legal / regulatory issues for injection of renewable gases to the natural gas network
- Organizing further trainings in the subject areas



EQUIPMENT

- ASPEN HYSYS process modeling software package
- ANSYS engineering numerical simulation software package
- Gas analyser, thermal camera, pressure and temperature measuring equipment



REFERENCES

- EIE/06/221/SI2.442663 REDUBAR Examination of legal methods and the removal of administrative barriers for combustible gases from renewable energy sources used for heating and cooling (Project leader: DBI Gas- und Umwelttechnik GmbH, Leipzig)
- R&D Investigation of the supply of biogas from different sources into the natural gas network
- Szunyog, I.: Quality Requirements of the Application of Biogases in Natural Gas Public Utility Services in Hungary; PhD dissertation, 2009.
- Szunyog, I. – Galyas, A.B.: Power-to-gas technologies in the gas industry of the future; Épületgépész, VII. évf. 2018/10. ISSN 2063-5400