

# CONTINUOUS MANUFACTURING FOR GAS-CATALYTIC REACTIONS

Gas-catalytic projects of Microinnova focus mainly on making fuels and solvents. Input materials for these projects were syngas or synthetic gas mixtures as well as products generated from biomass. Typical reactions are water-gas-shift, methanol synthesis and Fischer-Tropsch including unit operations like gas compression, condensation and evaporation.

Commercial catalysts and proprietary catalysts were used, which have to be prepared in a wash-coat procedure in micro-channels of reactor plates. Microinnova has worked with processes in the fields of process development, engineering and plant construction, using its core competences in continuous manufacturing and process intensification. Skid-based reaction modules were built and installed in a container environment. This enables the usage of the container-based pilot plant on-site for testing with original raw materials.



The modular design allowed for a quick adaptation of the plant setup to different testing scenarios. These plants can be designed with modular automation tools like MTP. Smart manufacturing tools like process analytical technology (PAT) can be integrated into the plants according to the technical requirements of the client.

Advanced control strategies like model predictive control are available on request.