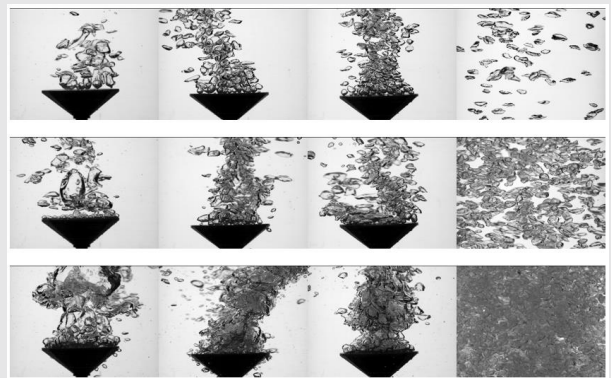
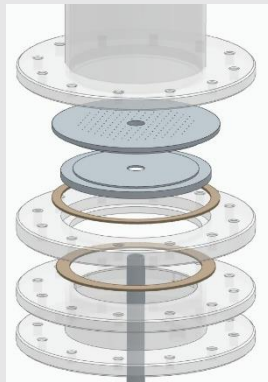
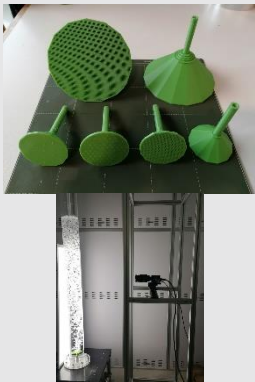


Research Topic

Power-to-gas aims to provide technologies for the energy future that are capable of storing renewable energies efficiently. One of these methods is the methanisation of the greenhouse gas CO_2 and electrolytic hydrogen, since methane has great energy values and good storability. In addition to catalytic methanation, the focus is shifting to biological methanation using archaea. In this process, methanation takes place at comparatively low temperatures. The frequently used stirred tank is well researched, but has severe disadvantages, like additional energy input and low mass transfer.

In bubble columns, on the other hand, mixing of the solution takes place due to the resulting hydrodynamics. The design of bubble columns is simple, but the existing correlations are not completely researched and understood.



Possible tasks

- Construction, modification and further development of the bubble columns and their sensoric.
- Development/Design of disperser
 - Digital modeling
 - 3D printing
- Investigation of the temperature and viscosity influence on the system.
- Investigation of the dispersers influence on the bubble column:
 - Bubblesize/distribution
 - Gas hold-up
 - Mass transfer
- Comparison of the bubble columns and correlation determination (Scale-up effects!)
- Evaluation of the sensoric and optical data