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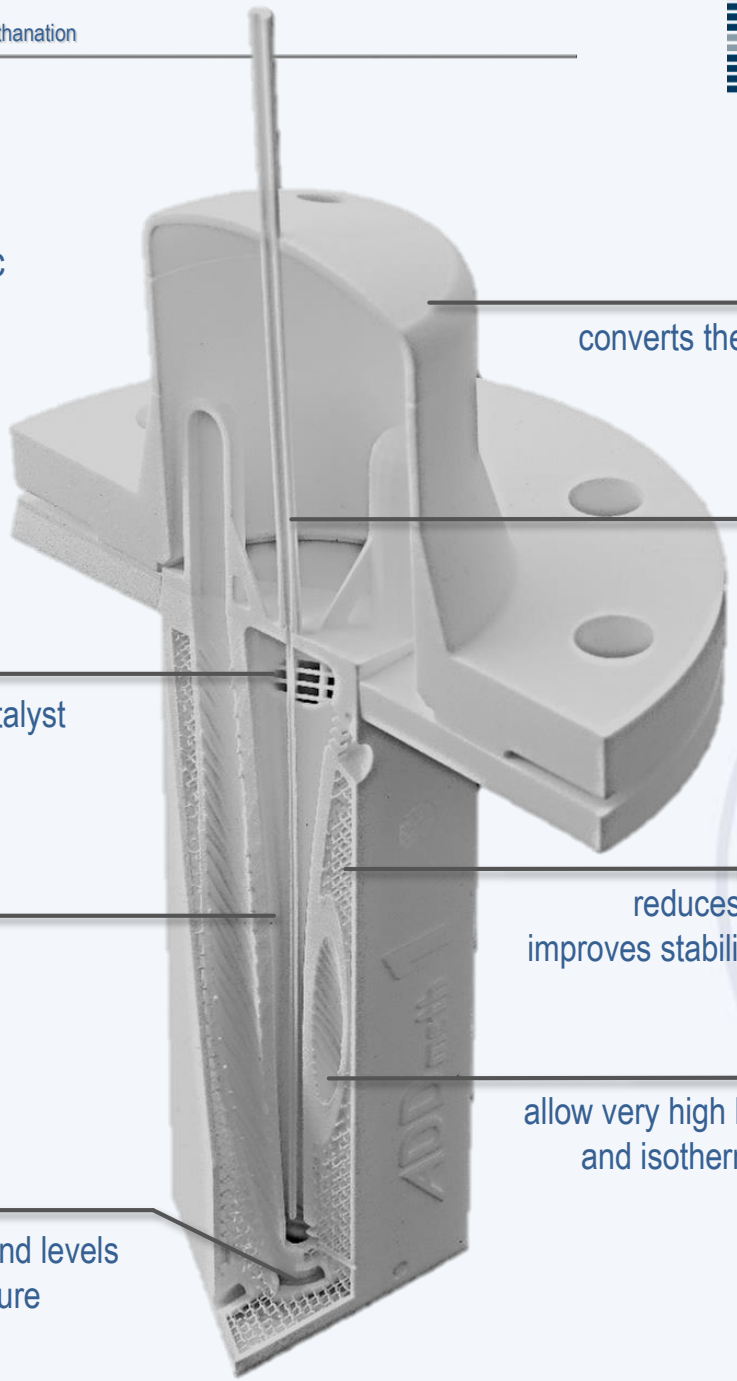
TECHNISCHE FAKULTÄT

ADDmeth

additive manufacturing for catalytic methanation



single unit cell

with triangular shape is the basis for a up-scale

grates

keep commercial catalyst pellets in place

conic reaction channel

forms key innovation: variation of local residence time improves temperature control and product yield

fluid reservoir

connects all three heat pipes and levels cooling pressure and temperature

evaporator

converts the released reaction heat to useful saturated steam

thermowells

are integrated for axial temperature measurement

lattice structure

reduces material consumption and improves stability and feed gas preheating

heat pipes

allow very high heat flux densities and isothermal heat transport

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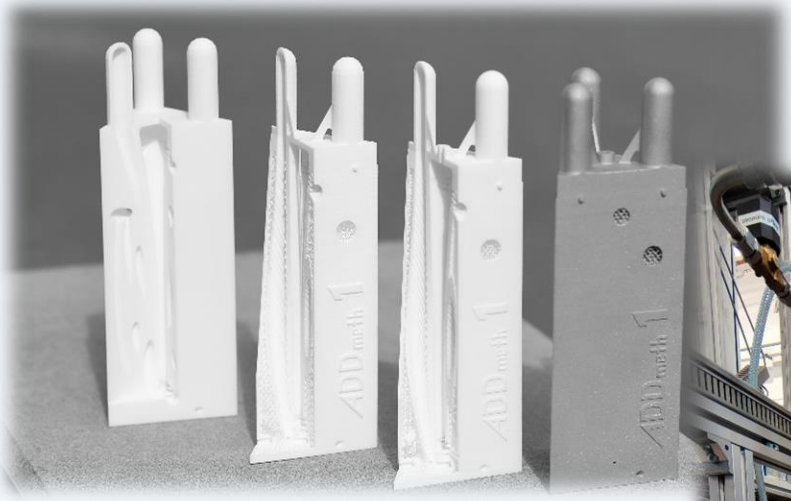
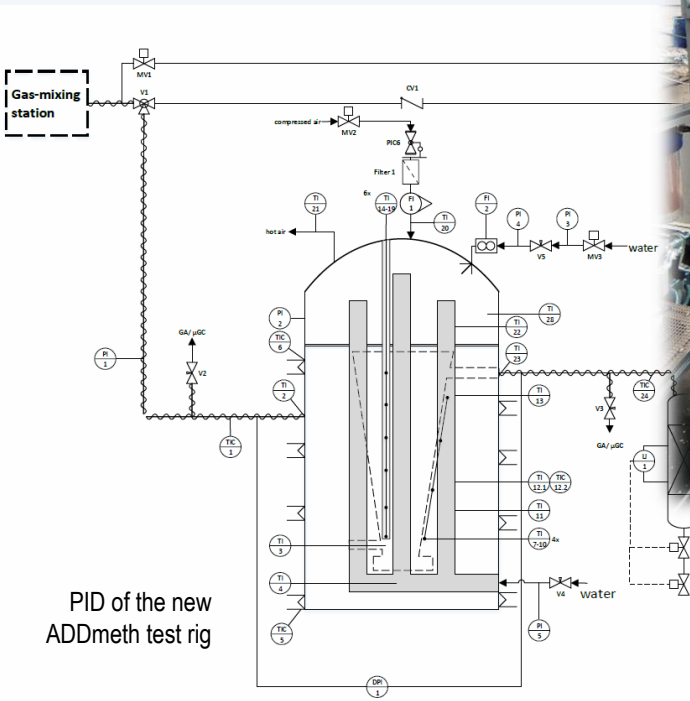
ADDmeth1

5 kW bench-scale reactor of the ADDmeth concept

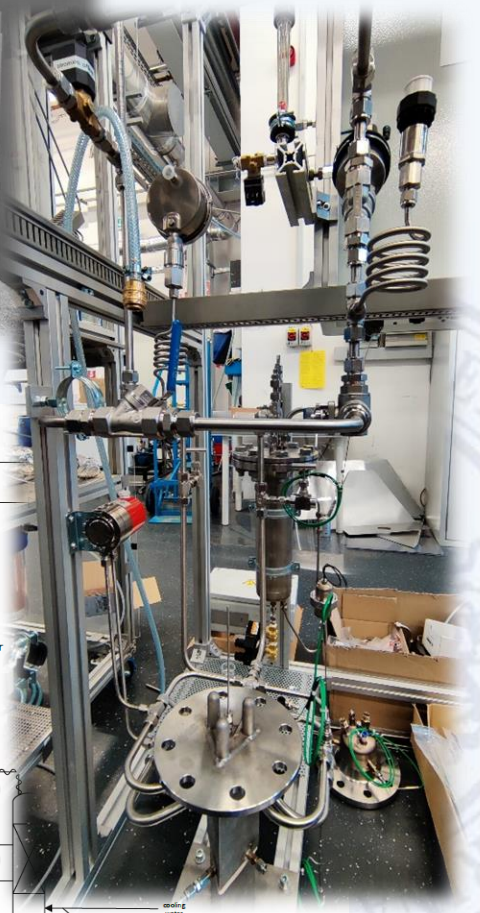
ADDmeth1 with fittings and piping for reactants, product gas, cooling and instrumentation



Evolution of ADDmeth1



PID of the new ADDmeth test rig



Integration of ADDmeth1 into the rest rig

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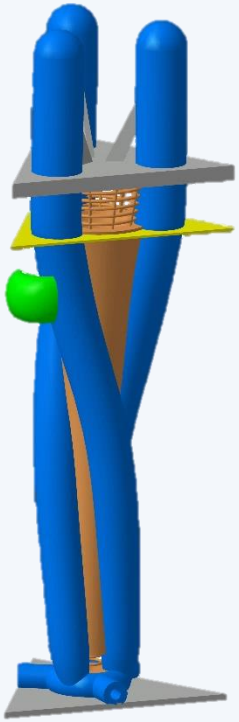
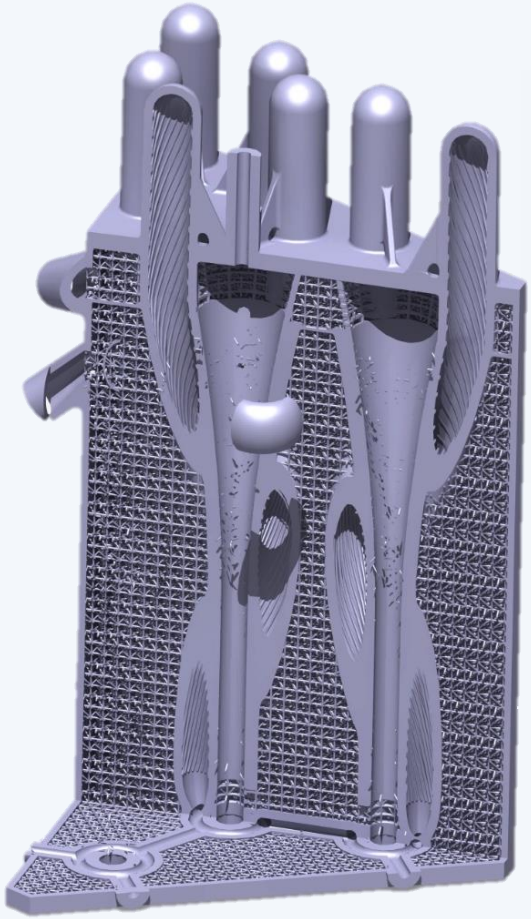
ADDmeth2

20 kW up-scale of the ADDmeth concept



modified single unit cell for up-scale



CAD cutaway model of the up-scale with four unit cells

metal printed 20 kW up-scale ADDmeth2 ready for test rig integration

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i3upgrade
intelligent integrated industries

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