# Integrated dual-use solutions for renewable energy conversion storage and re-conversion

INDY DUET2024

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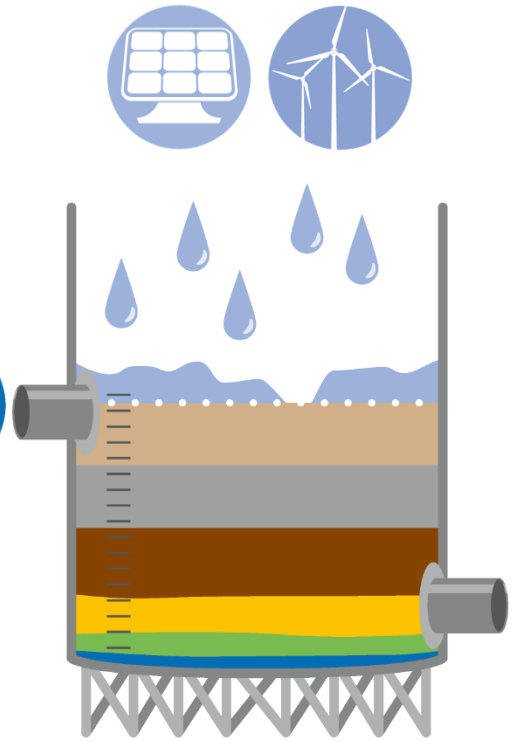
# Future Energy Scenario Metaphor: Water-Tower

## Today

Fluctuating Energy Supply



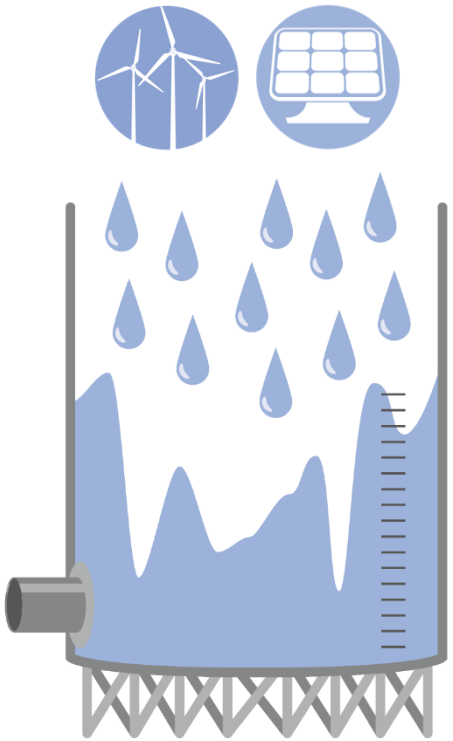
Predictable Energy Supply

**Major GOAL**

**Energy Security**
for end consumer

## 2050

Fluctuating Energy Supply



**Energy Buffer**

- Global Renewable Energy Trading
- Chemical Energy Carrier

**Grid Stabilisation**

- Decentral Power and Heat Generation

# Next Generation Electrolyzer Technologies
# 1MW 40ft Container Solid Oxide Electrolysis System

- 87% efficiency demonstrated - water steam electrolysis on SOEC module level
- Module Integration, Container Build Up, Testing, Commissioning by AVL

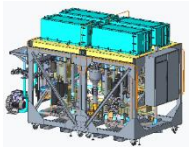
# SOEC Power-to-Liquid Demonstration Plant

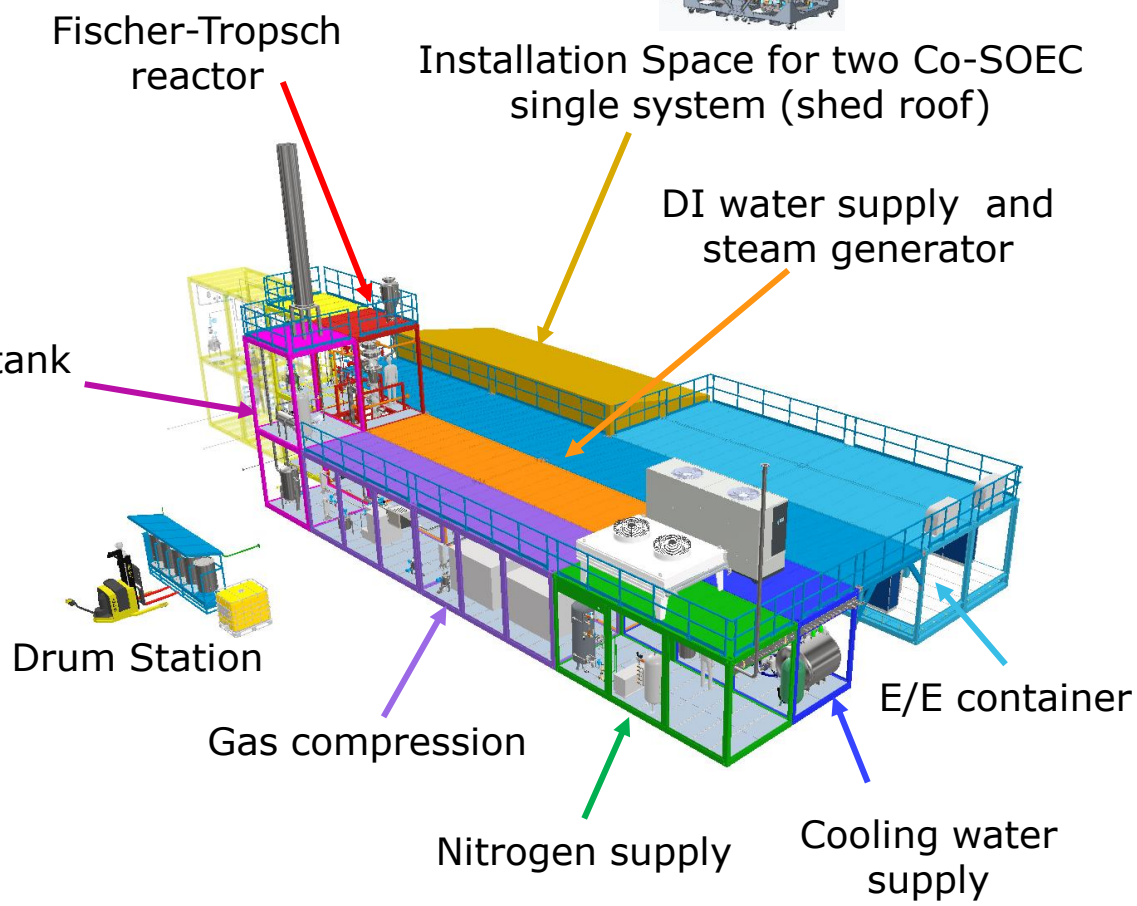
**Main targets**

- Efficiency ~55% overall PtL efficiency (LHV)
- ~100.000 liters of syncrude per year
- 200kW (2x100kWel) Co-SOEC systems
- Focus: SAF
- AVL contribution: Entire Co-SOEC development and integration

**Program timeline**

- 2019/2020 Phase I Concept Study
- 2021 - 2023 Phase II a – Design of a 200 kW PtL Plant incl. development of the Co-SOEC System
- 2023 – 2026 Phase II b – Build-up and operation of a demo plant



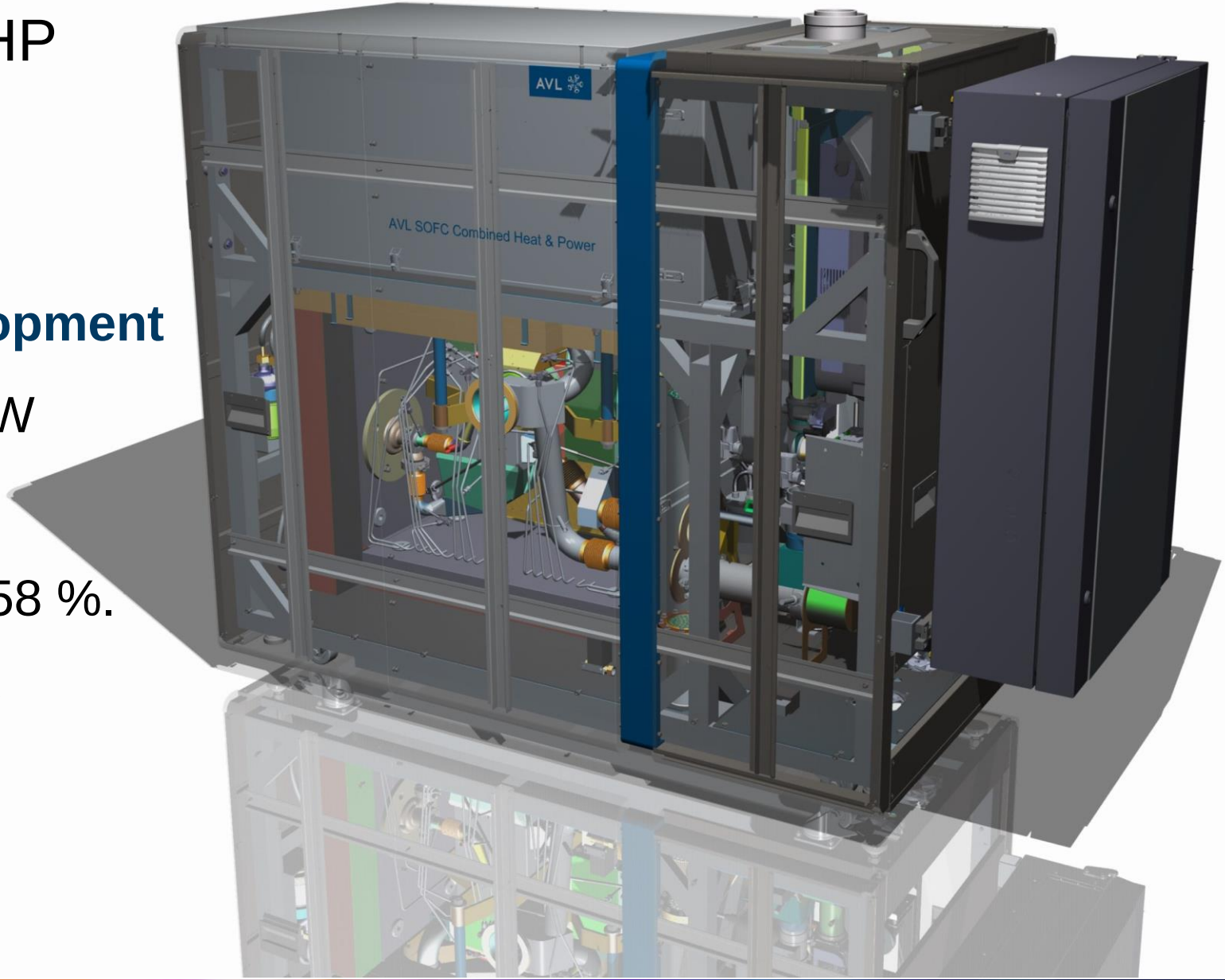



**Process applicable to ammonia, methanol & SNG as well**

# Stationary SOFC CHP

## AVL Prototype Development

- Electrical Power 5 kW
- Fuel Ethanol
- Electrical efficiency 58 %.
- CHP efficiency 90 %



# Thank you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