

Integration of Biomass Gasification into Existing Industrial Infrastructure

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 Bundesministerium
Innovation, Mobilität
und Infrastruktur

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 Für die
Stadt Wien



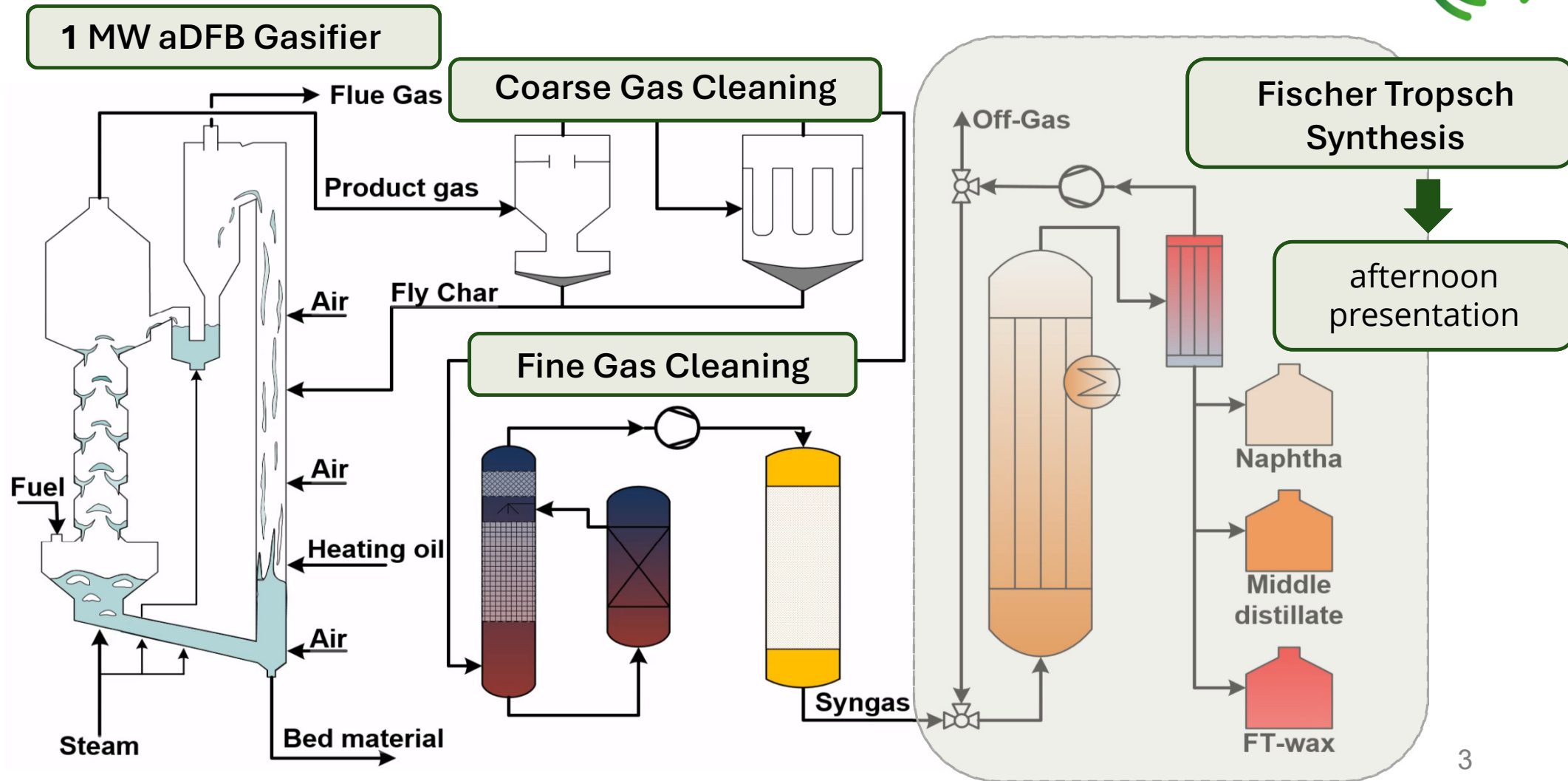


SYNGAS PLATFORM VIENNA

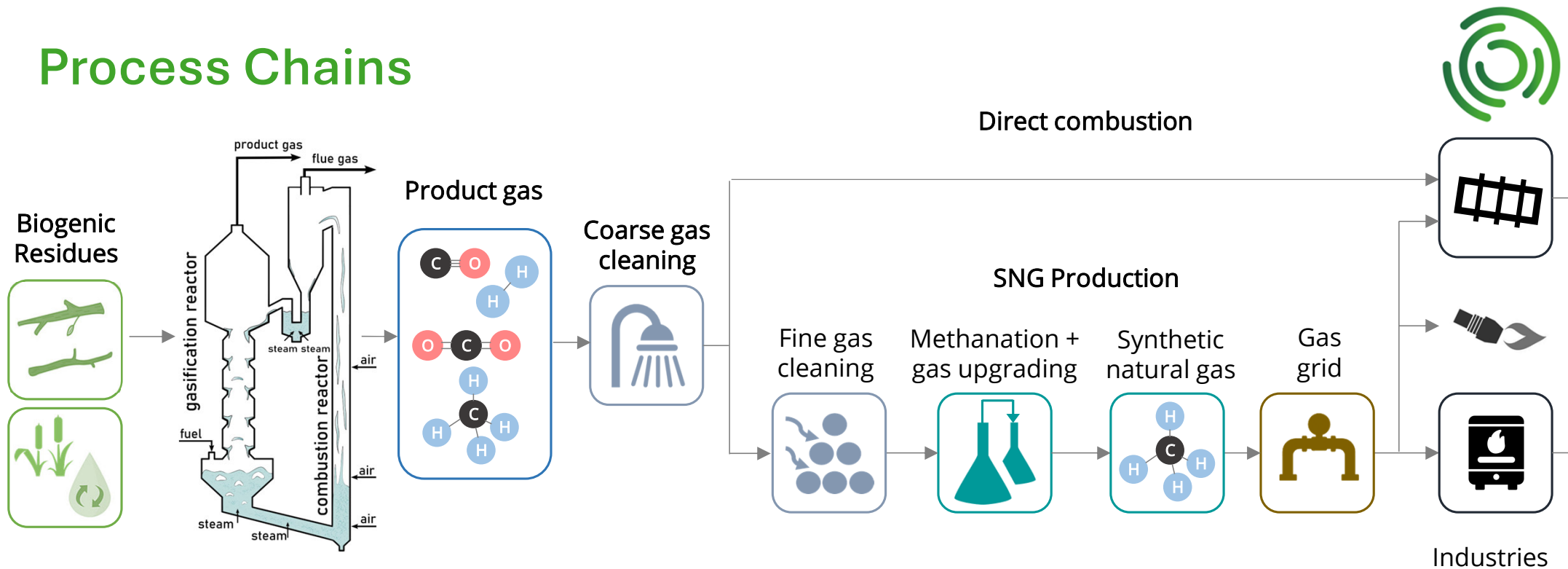
A **research hub** featuring a Waste2Value process chain: 1 MW **DFB gasification** + 250 kW **Fischer-Tropsch** synthesis demo

A connected **laboratory** supplied **with real syngas** for gas cleaning and upgrading

Syngas Platform Vienna



Process Chains



BioHEAT

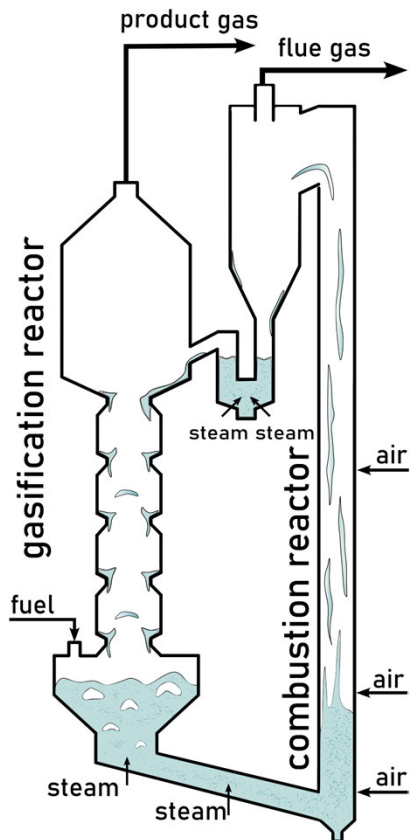
conventional DFB gasification
 Lab-scale fluidized bed methanation (TUW)
 Lab-scale fixed bed methanation (MUL)
 Comparison to direct product gas combustion

SuSNG

SEG DFB gasification (BEST)
 Lab-scale fluidized bed methanation (TUW)
 SNG upgrading (TUW)

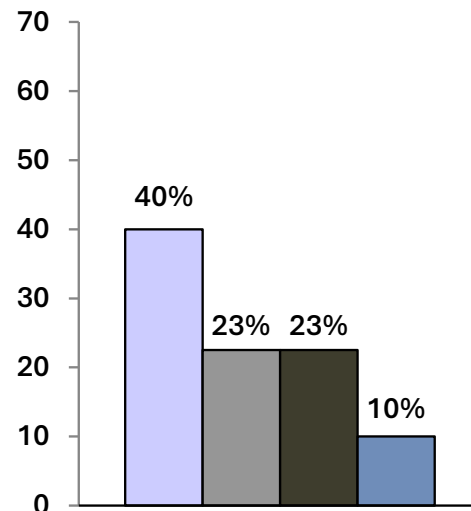
E.g.: rotary kilns in pulp and paper or cement making, reheating furnaces in steel making

Sorption Enhanced Gasification (SEG)

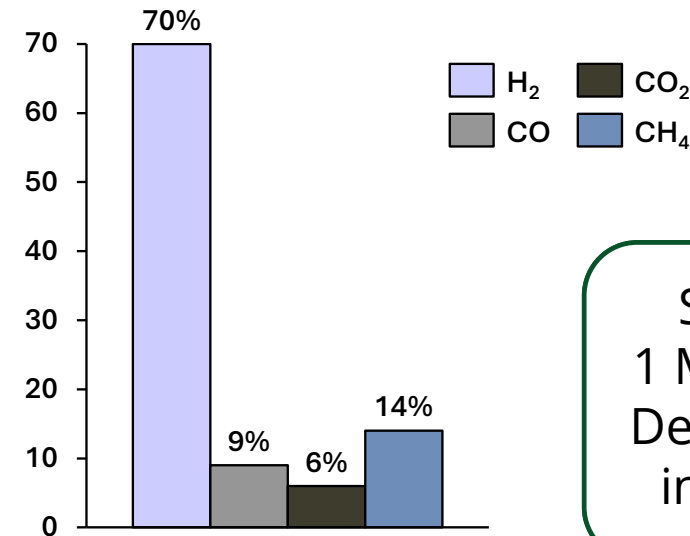


DFB ... Dual Fluidized Bed

conventional DFB



SEG DFB



SEG: Focus Hydrogen

Successful
1 MW DFB SEG
Demonstration
in April 2025

CaO as bed material for in-situ CO₂ separation in the gasification reactor

Different temperature levels in the gasification and combustion reactor required compared to conventional DFB

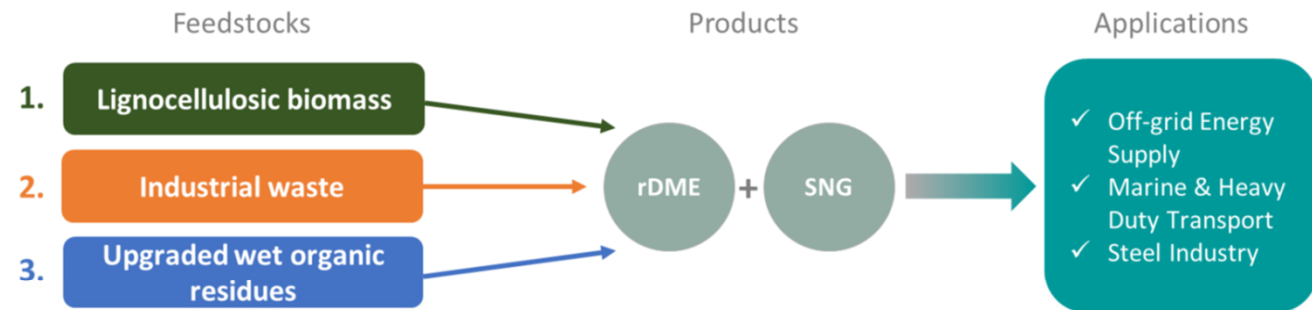
SNG and DME Syntheses

BUTTERFLY

Horizon

Biomass Utilized To The Extended portfolio of Renewable Fuels with Large Yields

Project duration
01 2026 – 12 2028



300 hours of cumulative SNG production from aDFB syngas

Feedstocks: ASR, Black Pellets

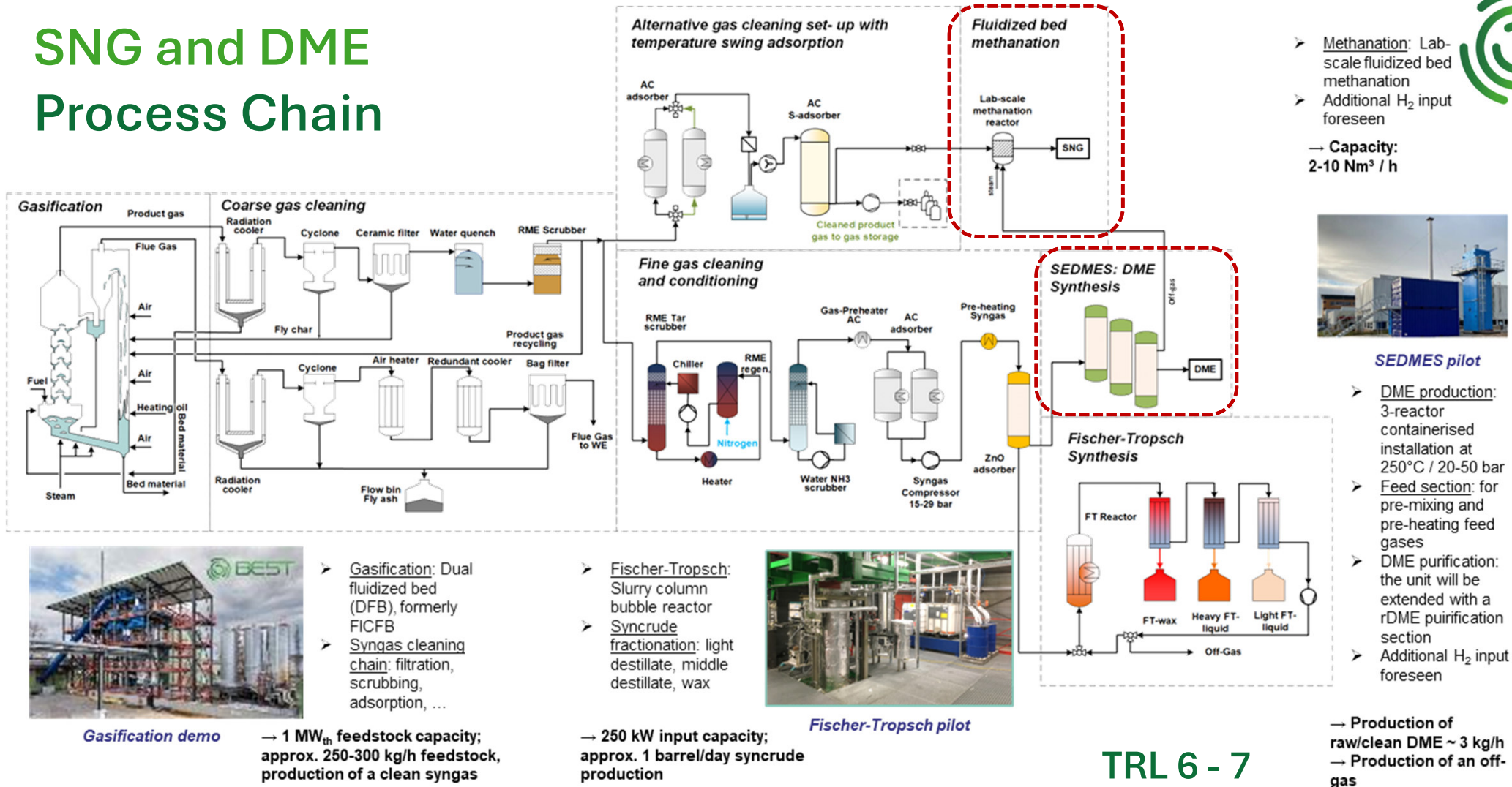
Goal: 1000 Nm³ raw-SNG

300 hours of cumulative rDME & SNG production from aDFB syngas

Feedstocks: Lignocellulosic (non-waste)

Goal: 750 kg rDME

SNG and DME Process Chain



- **Methanation:** Lab-scale fluidized bed methanation
- Additional H₂ input foreseen

→ **Capacity:**
2-10 Nm³ / h



SEDMES pilot

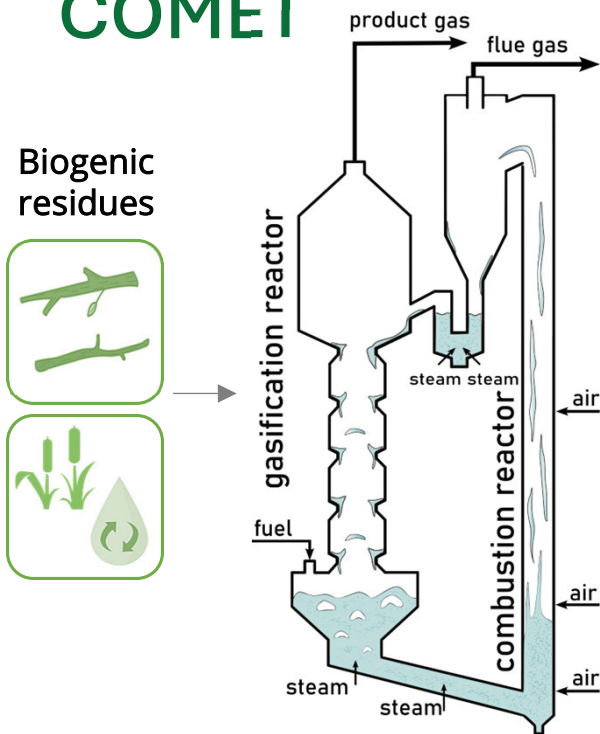
- **DME production:** 3-reactor containerised installation at 250°C / 20-50 bar
- **Feed section:** for pre-mixing and pre-heating feed gases
- **DME purification:** the unit will be extended with a rDME purification section
- Additional H₂ input foreseen

→ Production of raw/clean DME ~ 3 kg/h
→ Production of an off-gas

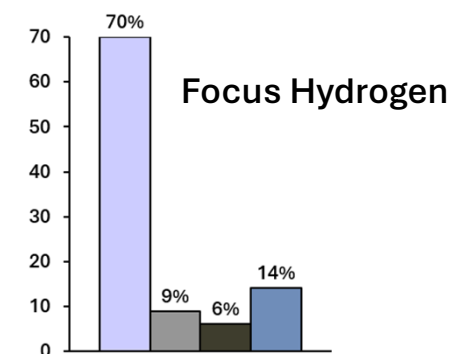
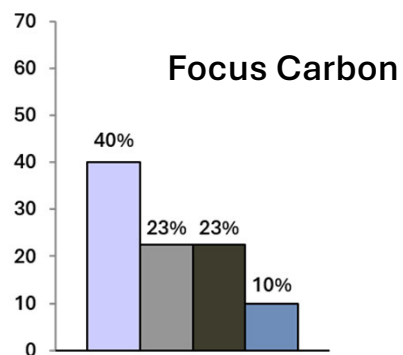
Focus on Long-Term Operation

CARBONSWITCH COMET

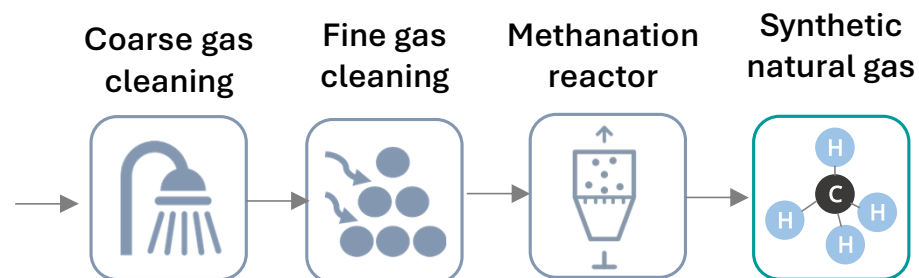
2 DFB operation modes



1 MW DFB gasification



Project duration
10 2026 - 03 2031



Methanation reactor
up-scaling to 250 kW

1500 hours operation

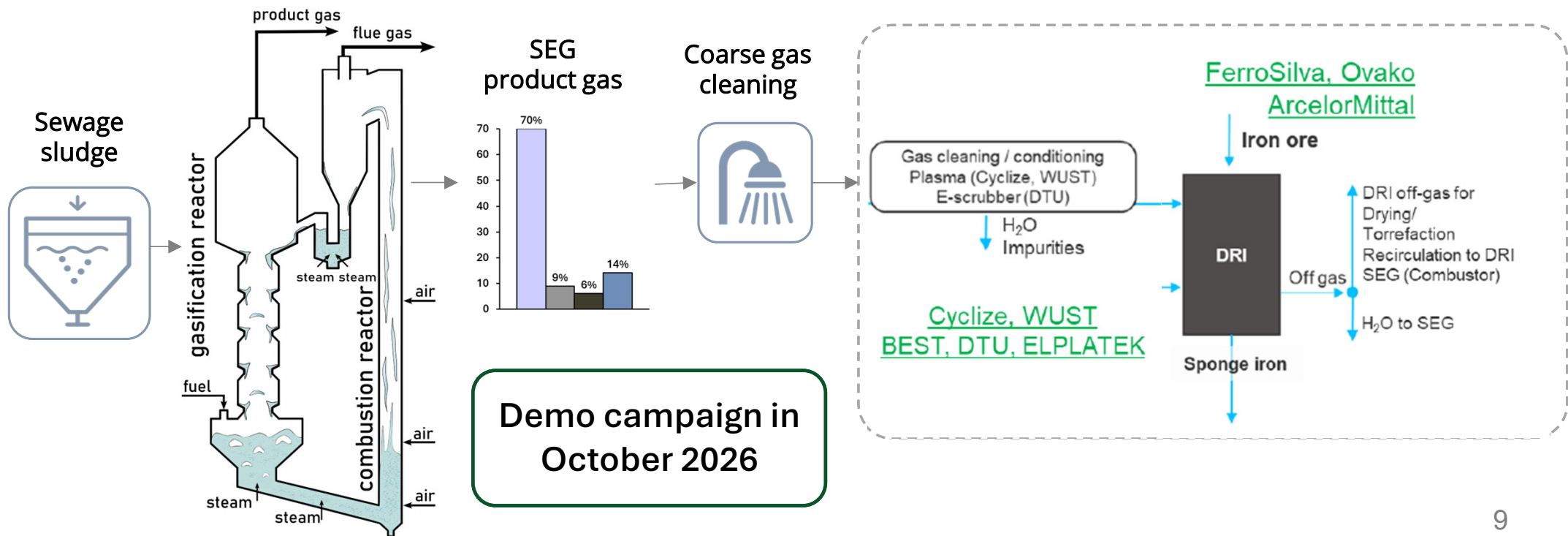
H₂ Production for the Steel Industry

BioH2Steel

CET Partnership

Efficient Utilization of Biogenic H₂-rich Syngas with CO₂ Capture for Production of Steel and Sustainable Fuels

Project duration
12 2025 – 11 2028





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