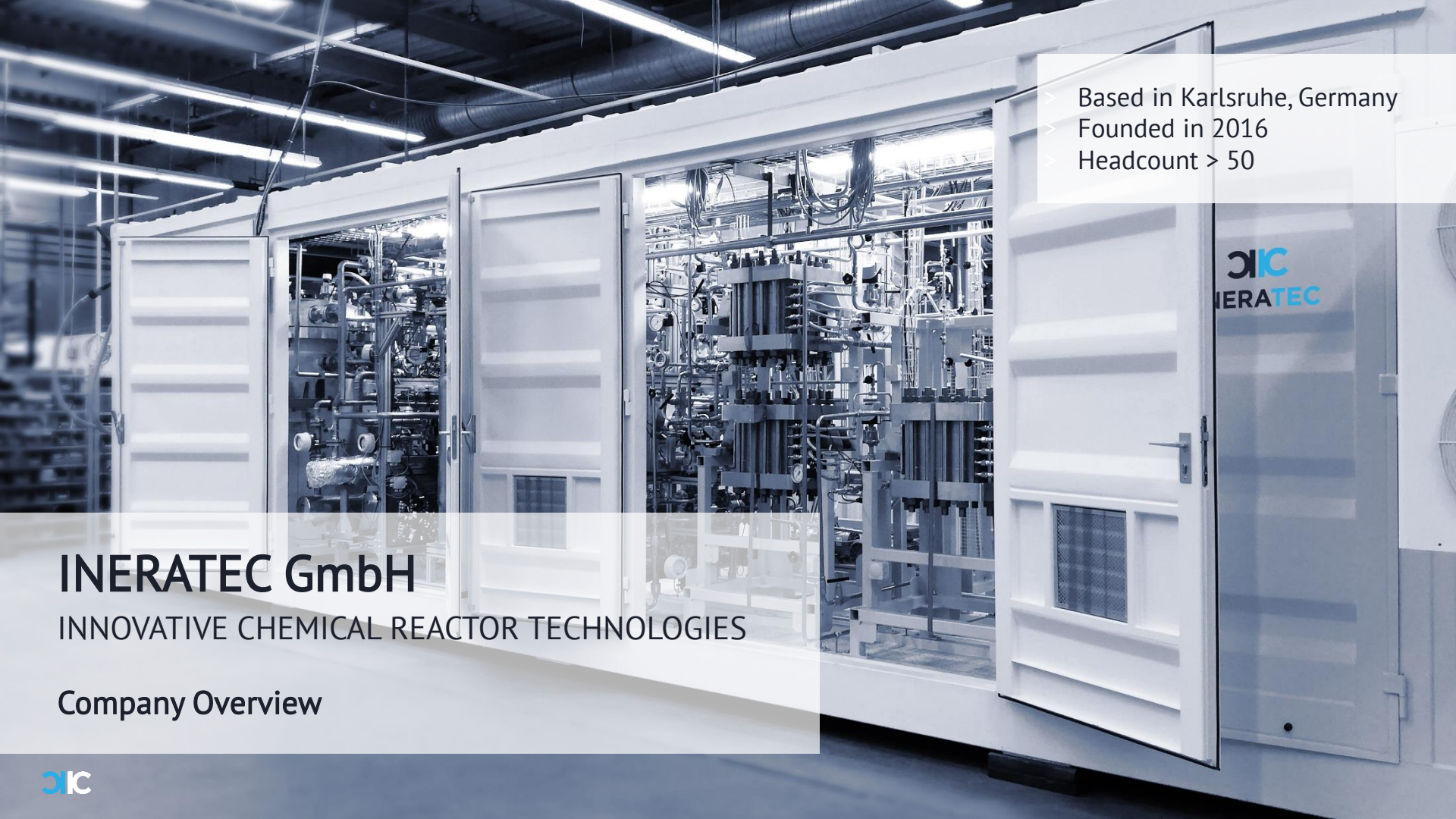


- Based in Karlsruhe, Germany
- Founded in 2016
- Headcount > 50

# INERATEC GmbH

## INNOVATIVE CHEMICAL REACTOR TECHNOLOGIES

**Company Overview**

# PROBLEM

## WE ARE DEPENDING ON HYDROCARBONS MADE FROM OIL AND GAS

**WORLDWIDE ENERGY CONSUMPTION 2035: >55% OIL AND GAS**

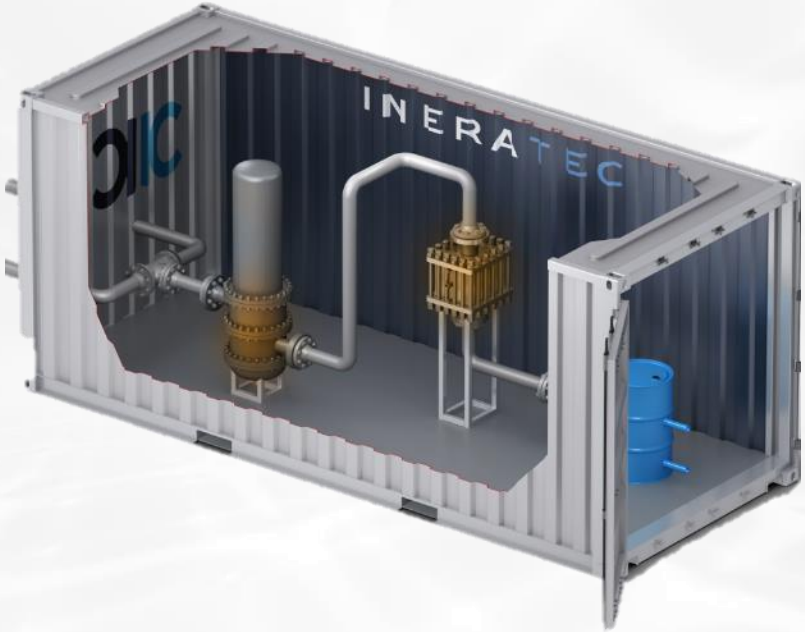
**ANNUAL $CO_2$ EMISSIONS: >35,000,000,000 TONS**

# SOLUTION

## COMPACT CHEMICAL PLANTS THAT PRODUCE RENEWABLE HYDROCARBONS

$CH_4$
Gas-to-X

$CO_2$ + $H_2$
Power-to-X




Renewable
Fuels and Materials

**Greenhouse Gas Recycling** by INERATEC®

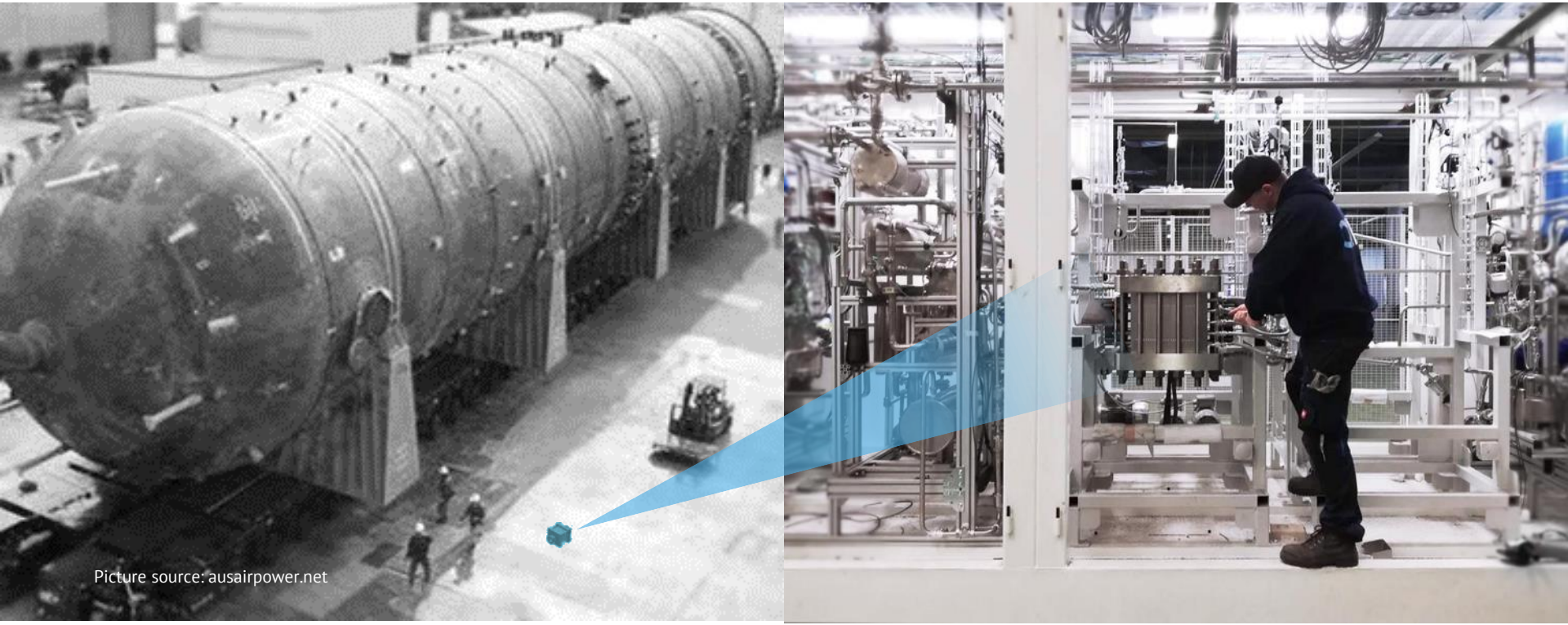
# CONVENTIONAL

## COMPETING TECHNOLOGIES DO NOT MATCH WITH RENEWABLE ENERGIES

Source: ausairpower.net

# INNOVATION

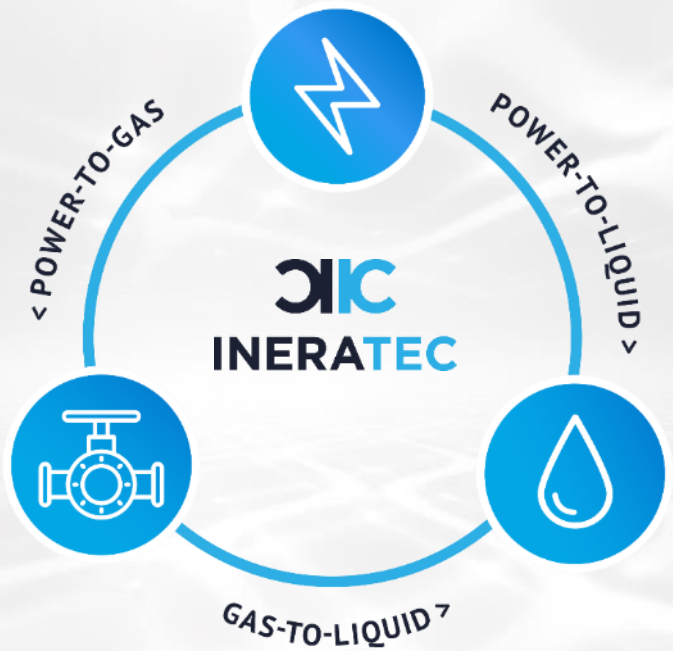
## MOST COMPACT CHEMICAL REACTOR TECHNOLOGY IN THE WORLD



Picture source: ausairpower.net

# PROCESSES

## POWER-TO-GAS, POWER-TO-LIQUID AND GAS-TO-LIQUID



# COMSYN

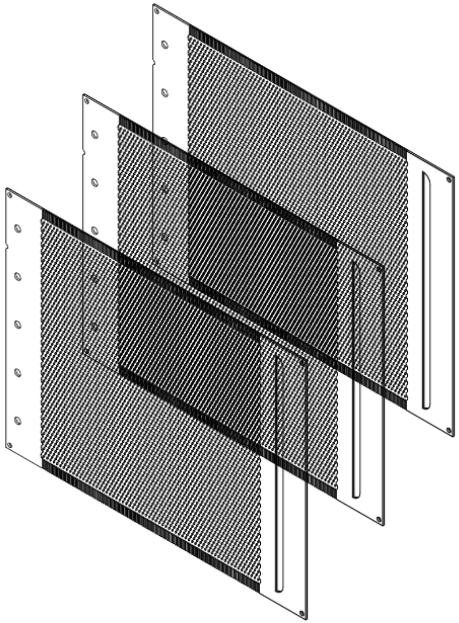
## PROJECT OBJECTIVES

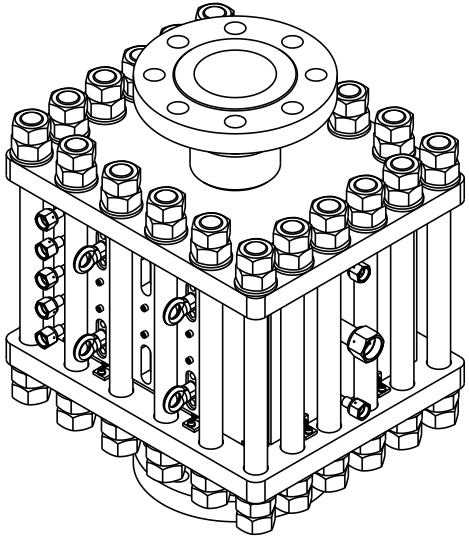

COMSYN

- Optimizing the operating conditions for max. paraffin yield
- Reactor testing with purified gas from VTTs gasification: Long term stability of FT-technology
- Design and establishing the manufacture for reactor modules with 8 bpd size

# MICROSTRUCTURED REACTORS







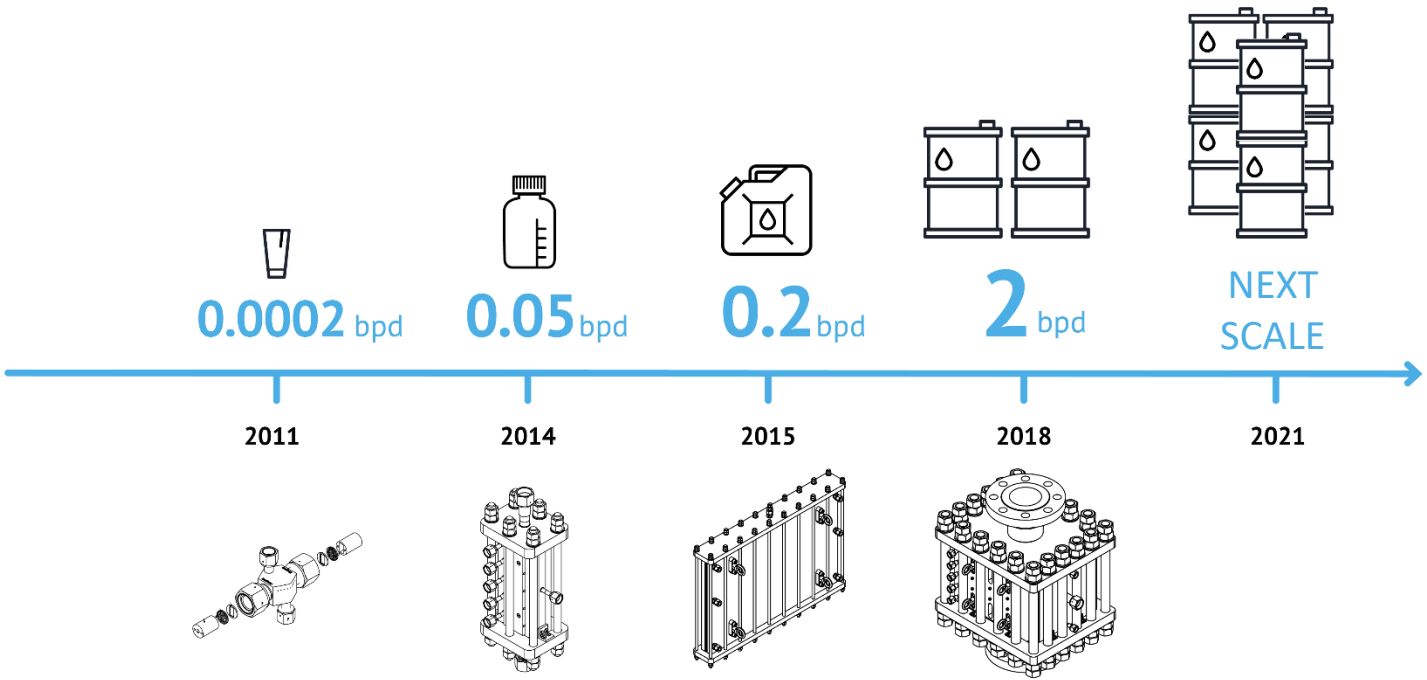
- Design and establishing the manufacture for reactor modules with 8 bpd size
- Development/ Identification of manufacturing processes for scale-up and numbering up
- Cost reduction by functional design of microstructured plates and decreased number of processing steps

# IN-HOUSE MANUFACTURING

- Established an in-house production
- Improved the milling tool lifetime
- Optimization of milling program
- Optimization of finishing steps

# REACTOR SCALE-UP





# FLEXCHX

## PROJECT OBJECTIVES

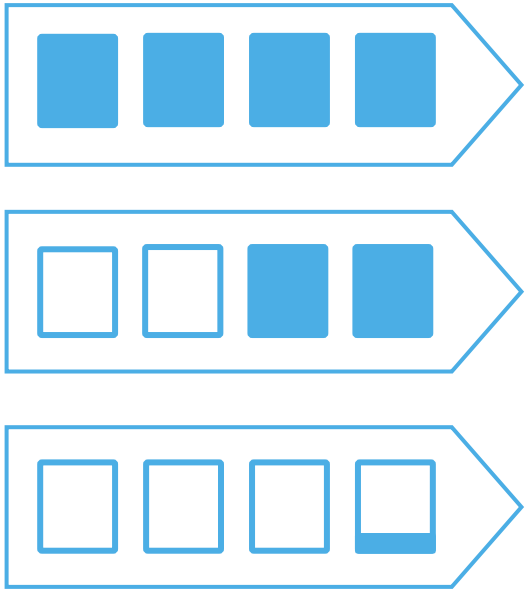

FLEXCHX

- Design of flexible FT-synthesis process to achieve maximal effectivity for summer season and heating
- Test key design issues affecting the flexibility and performance of the process
- Scale up of plant design and performance for industrial scale synthesis unit

# MODULAR PLANT CONCEPT

## LOAD FLEXIBILITY





* Conceptual visualization only, does not display actual reactor quantities

### MODULARITY CONCEPT

Due to the modular design of the unit, partial loads could be realized. It is made up of several parallelized reactor modules. In case a load reduction/increase is desired, there are two options:

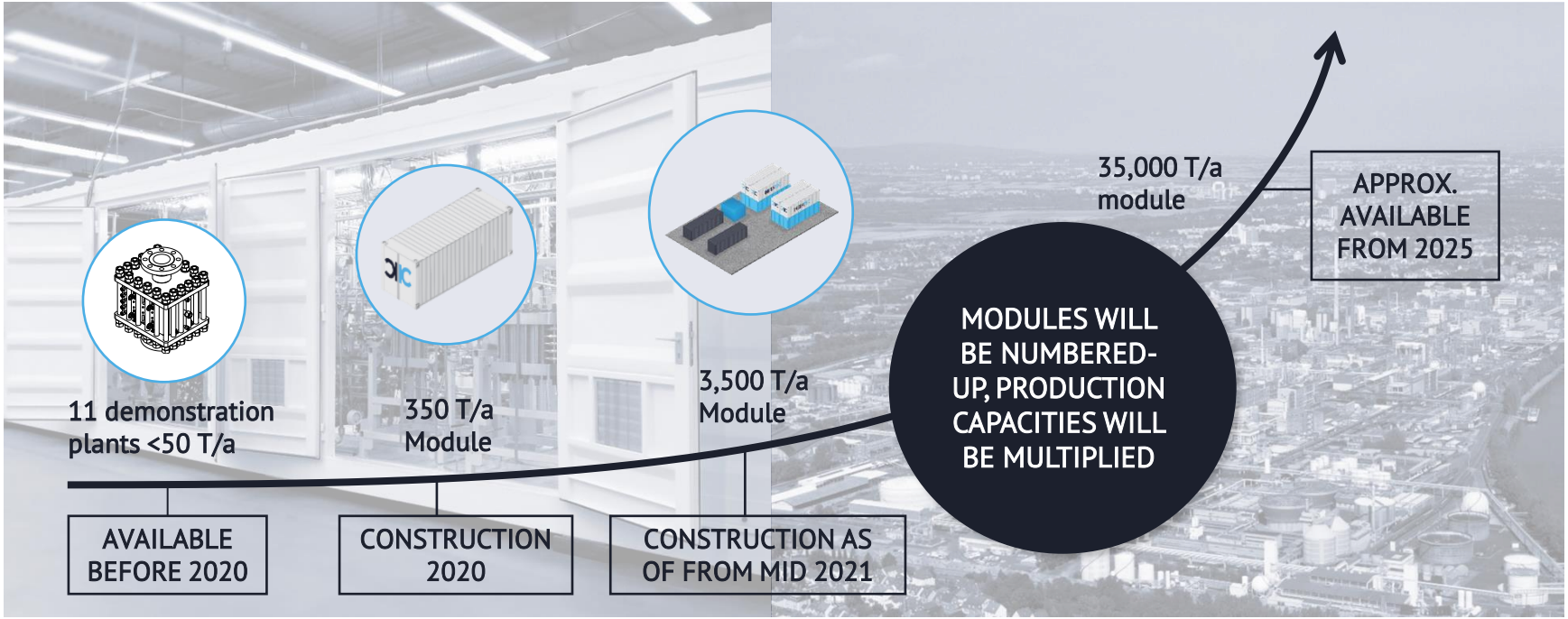
> Reducing/Increasing the load of one or more reactors or
> Startup/Shutdown of a number of individual reactors

**Therefore, INERATECs modular technology aims at partial load operation within a range of 10 to 100% of nominal load.**

# PLANT SCALE UP

## BY NUMBERING-UP

20.01.2021



**Tim Boeltken**
Managing Director

# INERATEC GmbH

SUSTAINABLE, AFFORDABLE FUELS
& MATERIALS FOR EVERYONE

## AWARDS

#SET100 CERTIFIED

DEUTSCHER GRÜNDER PREIS

LOTHAR SPÄTH AWARD | 2018
Für herausragende Innovationen in Wissenschaft & Wirtschaft

**INNOVATIONSPREIS** DER DEUTSCHEN GASWIRTSCHAFT **2018**

CLEAN TECH OPEN

# ACKNOWLEDGEMENTS OF FUNDING



## FLEXCHX


This project has received funding from the European Union's Horizon 2020 research and innovation Programme under Grant Agreement No 763919.

## COMSYN