



# ***Ibrahim Muritala***

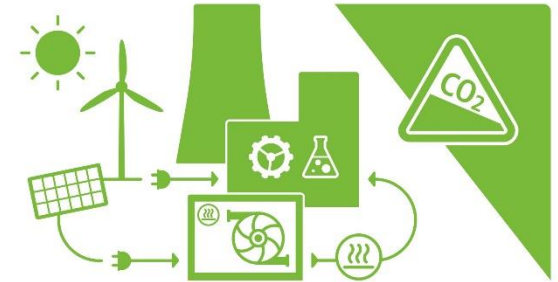
***Deutsches Zentrum für Luft- und Raumfahrt (DLR)  
/ German Aerospace Center***

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# Institute of Low-Carbon Industrial Processes,

Deutsches Zentrum für Luft- und Raumfahrt (DLR) / German Aerospace Center

- Our scope of topics and expertise relevant for the energy transition by addressing the specific requirements and research needs to decarbonise huge energy-intensive industrial sectors (power plants, steelmaking, cement industry, petrochemical industries, chemical industries, and primary aluminium production).
- At the same time, the research topics of the institute complement the activities for sustainable power generation and storage.



**Mission:** offer solutions in the field of energy research and energy system transformation for industry.

**Target:** Reduction of CO<sub>2</sub> and pollutant emissions from industrial processes and power plants.

# Departments & Research focuses:



## - High-Temperature Heat Pumps (HTP) CO<sub>2</sub>-neutral high temperature process heat

- ✓ Development of HTHPs
- ✓ Design and testing
- ✓ Alternative components
- ✓ Environmental friendly working fluids

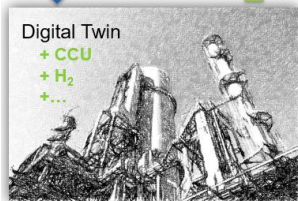
## - Low Carbon Reducing Agents (LCR)

### CO<sub>2</sub> reduction through the use of alternative reducing agents such as hydrogen

- ✓ Mitigating process-related CO<sub>2</sub> emissions
- ✓ Alternative carbon sources
- ✓ Techno-economic analyses
- ✓ Simulation and experiment



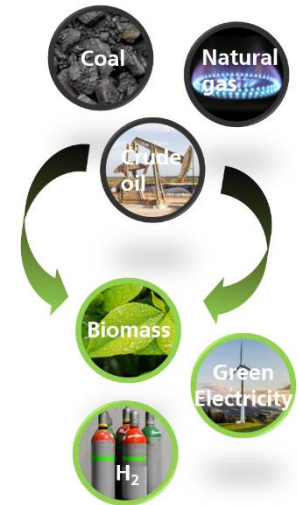
Simulation  
Transformation



## - Simulation and Virtual Design (SVD)

### Virtual design / Digital twin of decarbonized industrial processes

- ✓ Simulation of real industrial processes and plants
- ✓ Predictive control and optimization
- ✓ Assessment of key technologies
- ✓ Development of site specific strategies



# Project Idea

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## **HORIZON-CL5-2022-D3-02-06: Direct renewable energy integration into process energy demands of the chemical industry**

**Project Idea:** Production of renewable energy and green hydrogen to decarbonize chemical processing.

- **Objectives:**

- to decarbonize chemical industry and its processes with renewable energy supply & integrating with green hydrogen production.
- to promote innovative technical processes through CO<sub>2</sub> footprint reduction strategies in chemical production value chains.

- **Expected results:**

- Implementation of new technologies, e.g. high temperature heat pumps and energy storages, to substitute fossil fuel-based heat generation with renewable energies.
- Process modification and replacing fossil energy sources by adapting existing processes with renewable energies and green hydrogen technologies.

# Consortium - profile of known partners *(if any)*

No	Partner Name	Type	Country	Role in the Project
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01

02

03

Seeking consortia to join as partner in the following calls:

**HORIZON-CL5-2021-D3-02-05: Energy Sector Integration: Integrating and combining energy systems to a cost-optimised and flexible energy system of systems**

**HORIZON-CL5-2022-D3-01-11: Demonstration of innovative forms of storage and their successful operation and integration into innovative energy systems and grid**

**HORIZON-CL5-2022-D3-02-06: Direct renewable energy integration into process energy demands of the chemical industry**

**HORIZON-CL5-2021-D3-02-02: Sustainability and educational aspects for renewable energy and renewable fuel technologies**

# Consortium - required partners

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Seeking interesting partners from:

- Industries
- Universities
- Private/Public R&Ds
- Research Infrastructure



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