Synhelion

solar fuels

ELCOM FORUM
5.11.2021

Our mission

TURNING SUNLIGHT
INTO FUEL

We contribute to a zero-emissions transportation sector by replacing fossil fuels with carbon-neutral solar fuels.

The challenge

Global CO_2 emissions are rising

Transportation: 3 billion tons of fuel

Liquid fuels are here to stay

The solution: solar fuels

SUSTAINABLE
alternative to fossil fuels

SCALABLE
to cover global demand

COMPATIBLE
with existing infrastructure

Our vision

TURNING SUNLIGHT INTO FUEL.

Let’s close the carbon cycle.

Synhelion

TURNING SUNLIGHT
INTO FUEL.

Concentrated solar system delivers high-temperature process heat.

Video: Solar tower IMDEA Energy Institute, Móstoles, ES

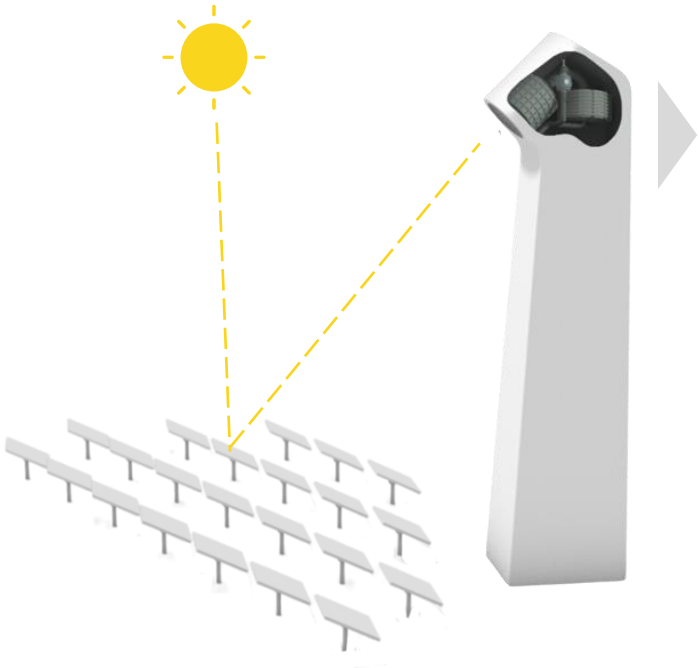
Synhelion technology

TURNING SUNLIGHT INTO FUEL.

Synhelion uses solar heat to convert CO_2 and H_2O into synthetic fuels. We call them solar fuels.

The 3 innovation fronts

Turning sunlight into fuel.



SOLAR RECEIVER

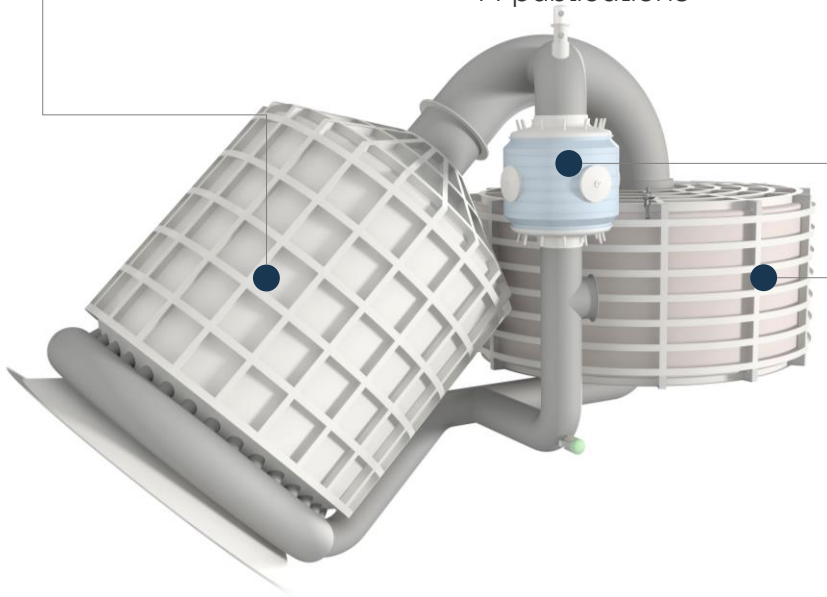
High-temperature process heat

- 5 patent filings
- 1 publication

THERMOCHEMICAL REACTOR

Syngas production

- 5 patent filings
- 14 publications



THERMAL ENERGY STORAGE

24/7 heat delivery

- 4 patent filings
- 5 publications

A record-breaking path to market

TURNING SUNLIGHT INTO FUEL.

World's first solar jet fuel from H_2O and CO_2 in the lab

World's first carbon-neutral fuels from air and sunlight

Medium-scale demonstration under real field conditions

Full-scale demonstration of key components

2021: Integrated system

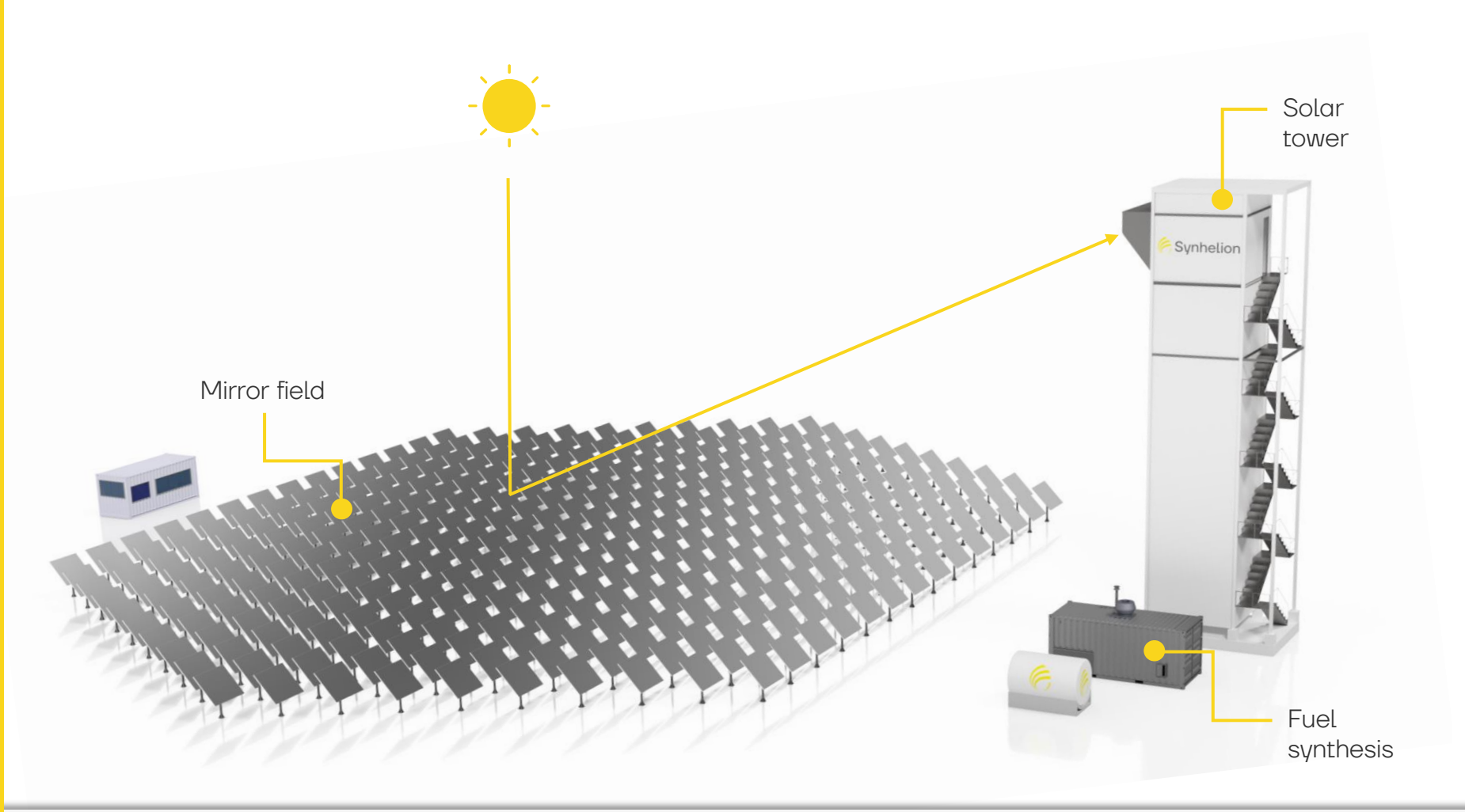
TURNING SUNLIGHT INTO FUEL.

Demonstration of solar syngas production at industrial scale on solar tower of DLR

Picture: Solar tower German Aerospace Center, Jülich (DE)

2022: Industrial plant Jülich

TURNING SUNLIGHT INTO FUEL.



Main specifications

- 1'000 m² mirror area
- 250–500 kW solar input power
- 10'000 l/y fuel demo batches
- Status: fully financed
- Construction / commissioning: 2022 / 2023
- Customer: Zurich Airport

Supported by:

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

Synhelion roadmap

TURNING SUNLIGHT INTO FUEL.

= 50% of Switzerland's jet fuel consumption

= 50% of European jet fuel consumption

2021-2023

FIRST INDUSTRIAL PLANT

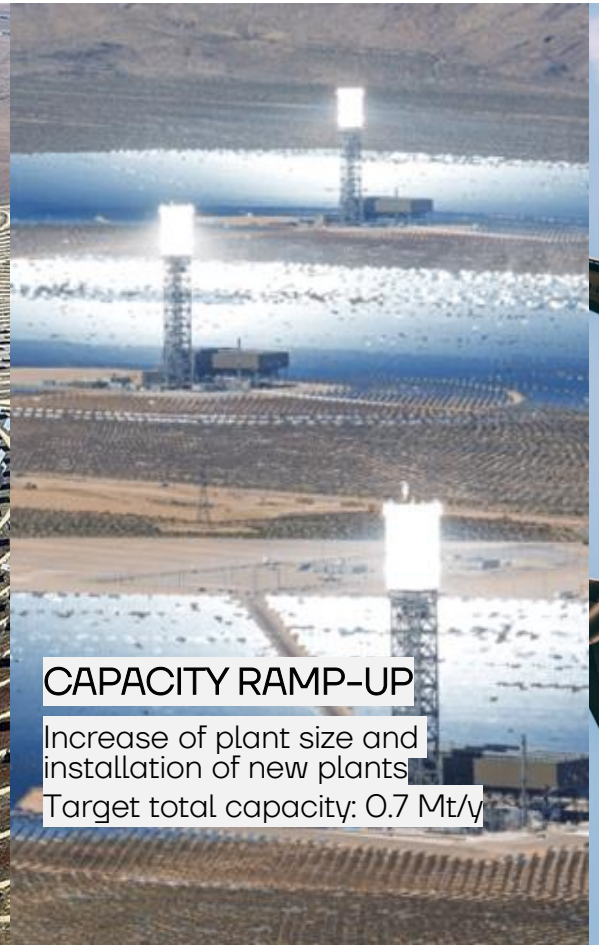
Building an industrial-scale plant to start fuel production
Capacity: ~10'000 l/y

2023-2025

FIRST COMMERCIAL PLANTS

First two commercial fuel plants
Capacity: 2 Mio L/y

2025-2030



CAPACITY RAMP-UP

Increase of plant size and installation of new plants
Target total capacity: 0.7 Mt/y

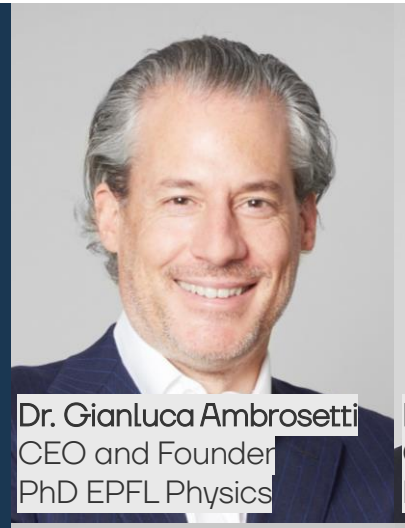
2040

TOWARD NET ZERO

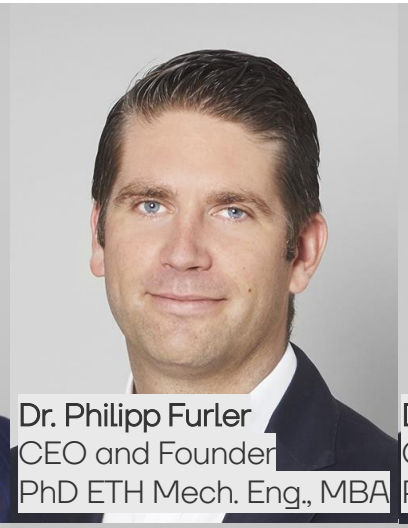
Ramp-up of production capacity
Target total capacity: 40 Mt/y

Core team

Turning sunlight into fuel.



Dr. Gianluca Ambrosetti
CEO and Founder
PhD EPFL Physics

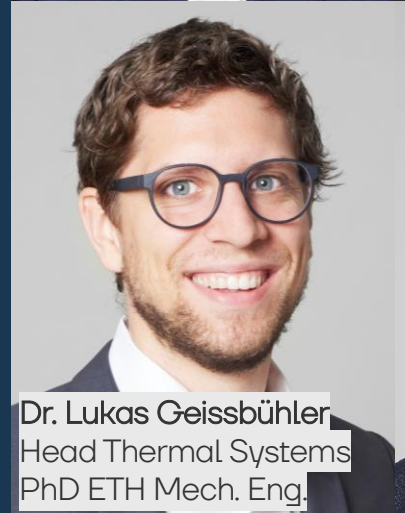


Dr. Philipp Furler
CEO and Founder
PhD ETH Mech. Eng., MBA

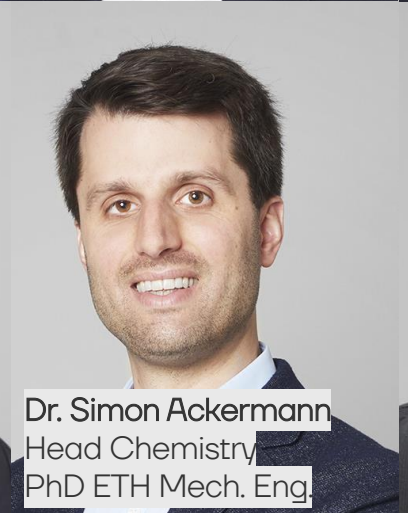
Dr. Philipp Good
CTO
PhD ETH Mech. Eng.

Mirjana Blume
CFO
Economist FH, MBA HSG

Patrick Hilger
Man. Dir. Synhelion DE
MSc in Energy Engineering



Dr. Lukas Geissbühler
Head Thermal Systems
PhD ETH Mech. Eng.

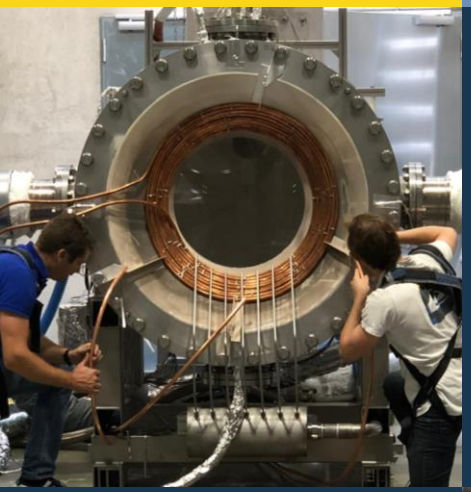


Dr. Simon Ackermann
Head Chemistry
PhD ETH Mech. Eng.

Carmen Murer
Head Corporate Comm.
BA Multilingual Comm.

Simon Dieckmann
Head Software Develop.
Dipl. Ing. Mech. Eng.

Total:
20 FTEs



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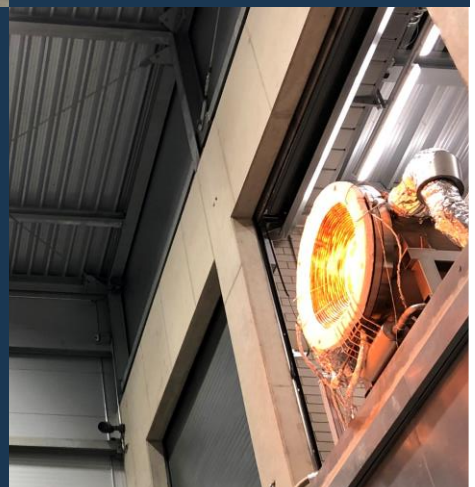

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Office fédéral de l'énergie OFEN

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and Energy

on the basis of a decision
by the German Bundestag

Solar fuels are the most

- AFFORDABLE
- EFFICIENT
- SCALABLE
- ECO-FRIENDLY

solution for clean, long-distance transportation.

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