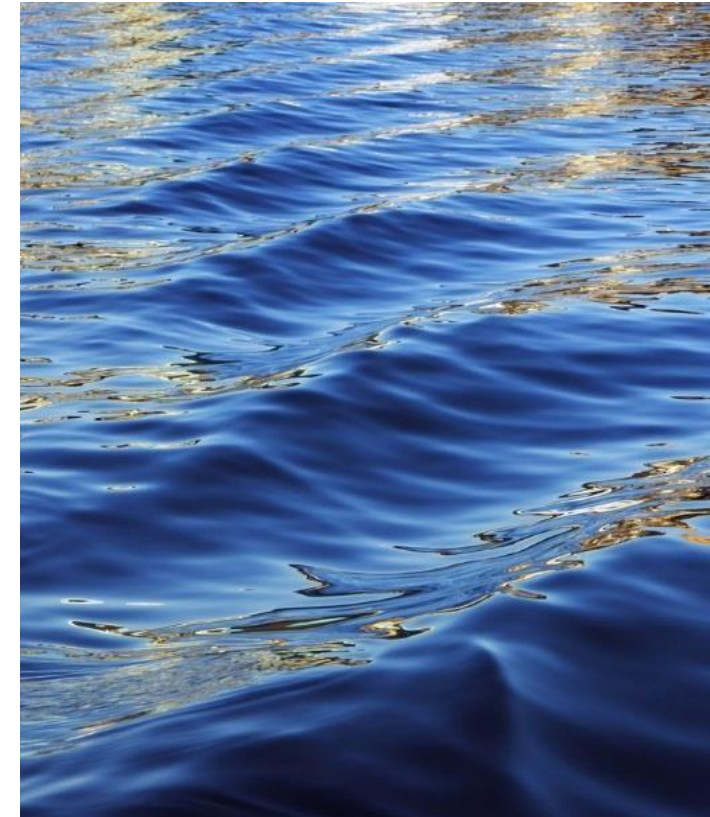




DSE Green Technologies

Consortium DSE

- D** DGNI Deutsche Gesellschaft für Nachhaltige Industrialisierung
- S** Steinbeis Global Institute Tübingen
- E** Export-Akademie Baden-Württemberg



Unlocking the power of innovation to transform
industrialization for good in the world



About DSE

At the end of 2019, DGNI, Steinbeis Global Institute Tübingen (SGIT) and Export Academy Baden-Württemberg started to develop a comprehensive localization concept for the entire value chain for green hydrogen production in Africa.

It was the first comprehensive initiative worldwide to establish leading-edge and sustainable technologies and value creation on the African continent in order to exploit the enormous energy resources in the SADC region.

Today, 14 cutting edge European technology companies have joined forces to form a consortium to implement the Green Hydrogen Africa Initiative. The goal: to create the world's leading provider of energy, water treatment, electrolysis and direct air capture solutions.

The name of the consortium is **DSE**.



DSE

Green Technologies



Silica



Solar Cells



Polysilicon



Solar Modules



Wafer



Inverters



Glass



Tracker

Solar Plant



Annual capacity: 20GW

Windhoek

Electrolysis



Gaborone

Botswana

Equipment Localization
Southern Africa



Smart Stacks

Johannesburg

South Africa

Durban



Wind - Assembly



Wind - Blades



Desalination



Water-treatment



CSP Panel

CO2 - DAC



Saldanha Bay



Wind - Towers



Wind - Gondula

Private and Confidential
Düsseldorf, 08.08.2022

Status today in SADC

1150 USD per kwp installed



20 GW capacity PV
per year /
100% Localization

25-26% PV Efficiency – **Best in Class!**

21-22% PV Efficiency



Performance
Guarantee

100% Import /
0% Localization

Munich RE

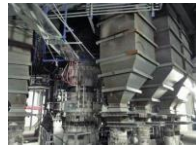
<600 USD per kwp installed



Full localization in Namibia



Silica Mine



Silica Arc Furnace



Polysilicon



Tracker



20 GW capacity PV
per year /
100% Localization



Solar Cells



Solar Modules



Inverters



Full localization in Namibia

DSE

Green
Technologies



Private and Confidential
Düsseldorf, 08.08.2022

DSE - solarlite



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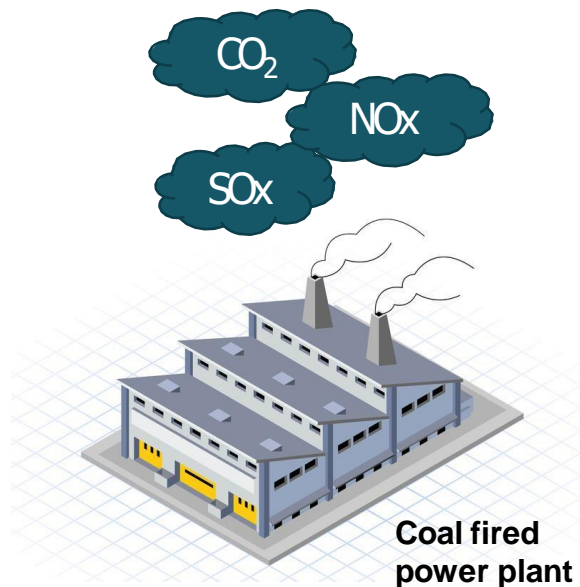
Environmentally friendly direct steam generation

DSE & Solarlite is the only consortium worldwide to have designed and constructed commercial solar thermal parabolic trough power plants based on direct generation of water/steam. The company has successfully tested the technology in three pilot and test plants in Germany and Thailand. The first commercial plant is built north of Bangkok, the capital of Thailand. Direct steam generation has the following advantages:

- **Direct steam generation is climate and environmentally friendly and eliminates hazardous and flammable substances.**
- **Direct steam generation brings a reduction in total investment costs by eliminating components.**
- **Direct steam generation makes operating temperatures of $>500\text{ }^{\circ}\text{C}$ possible.**

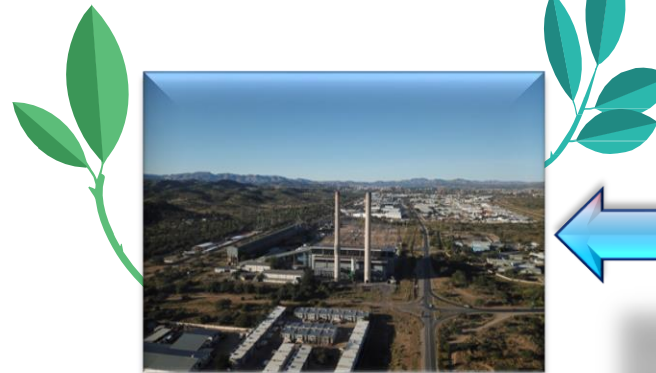
With the advanced DSE Concentrated Solar Technology, it will be possible to convert current coal fired power plants and turn them **green** and feasible.

Coal is the most climate-damaging of all energy sources. For every ton of coal burned, one ton of the greenhouse gas carbon dioxide is inevitably released, regardless of the efficiency of the power plants.



0.65Kg coal/kwh > **0.65kg CO₂ /kwh !**

➤ Zero CO₂
➤ Zero NOx
➤ Zero SOx



Van Eck Power Station, Namibia
120MW

Saving over 600tsd tons of CO₂ per year!



- Conversion to a Concentrated Solar Powerstation
- Providing Steam at 500°C by CSP
 - Utilizing existing turbines and generators
 - Utilizing existing substation and grid connection
 - Utilizing existing operating team
 - **Reducing Kwh price**
 - **Eliminating Coal imports**
 - **Eliminating CO₂ emissions**



DSE Green H₂ commitment:

Cutting edge technology – largest capacity and availability globally – best in class feasibility – highest quality certified

and guaranteed by **Munich RE** 

Together with our partners we are building the largest production facilities to produce up to **30GW Electrolysis capacity per year**. – And we are the first and only one introducing large scale automation and assembly lines.

We will offer both PEM and Alkali Technology.

We will deliver **below 1000 USD per Kw** Electrolysis.

We are committed to enhance the sustainable industrialization on the continent, and to make Africa the most competitive player in the rising Green Hydrogen Market with high end equipment
“Made in Africa – Designed in Germany”.

DSE

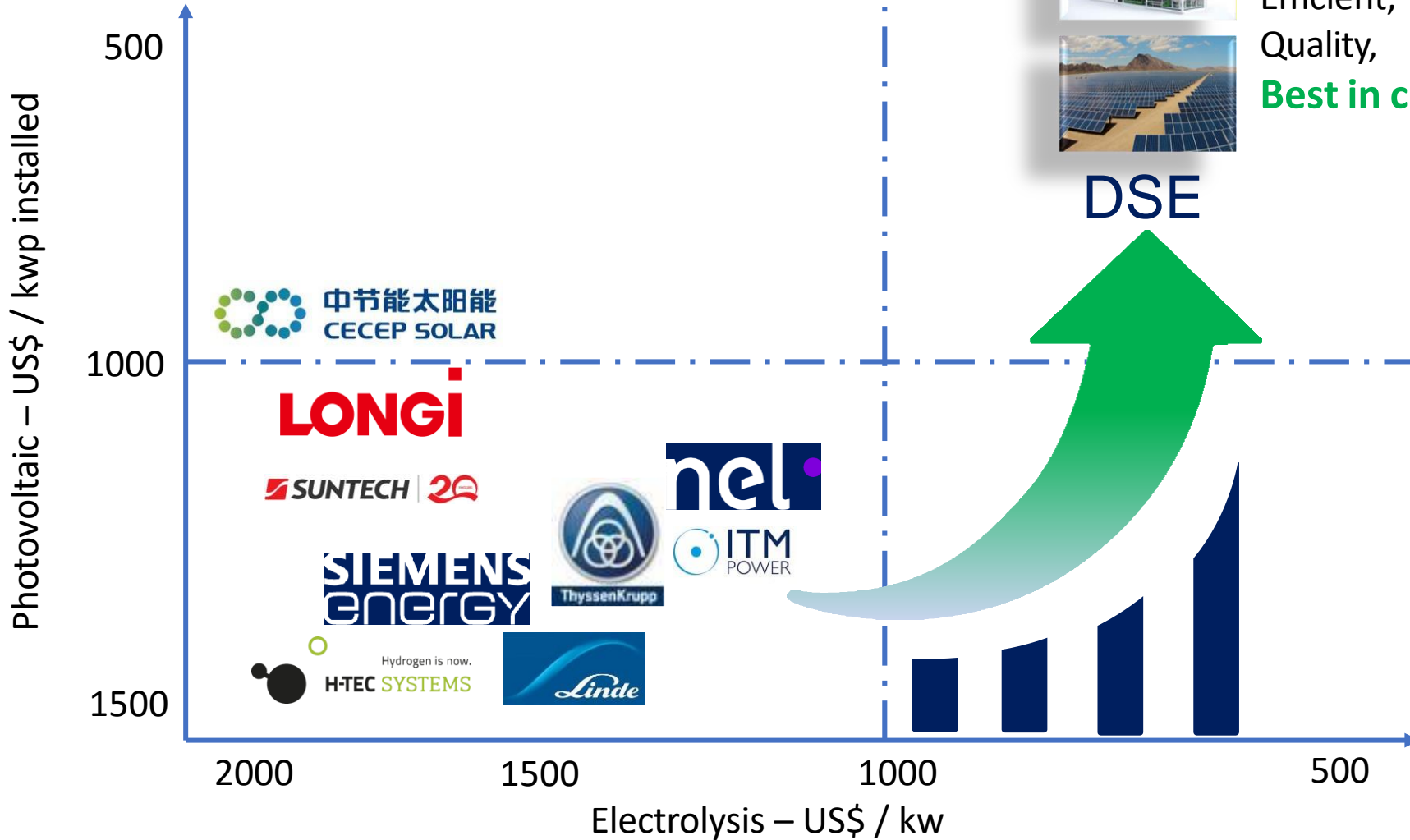
Green
Technologies



Go with **DSE** the <2USD/1kg Green Hydrogen Road – Feasible, reliable, and sustainable!



Economic,
Efficient,
Quality,
Best in class!





As the effects of climate change are increasingly felt through more severe storms, wildfires and flooding, the need to reduce greenhouse gas (GHG) emissions — such as by switching to electric vehicles, deploying solar panels and reducing deforestation — is critical. At the same time, the latest climate science indicates that such efforts will not be enough to keep temperature rise below 1.5° C, which would prevent the worst impacts of climate change.

Meeting climate goals will also require carbon dioxide removal (CDR) — systems that remove carbon directly from the air — likely at the billion-MT scale by mid-century. Carbon removal is needed to reduce the high concentration of carbon dioxide in the air, which is triggering increasingly devastating climate change impacts.

GreenCap and DSE will revolutionize the industry by introducing a new Direct Air Capturing System, which will cut costs per captured CO₂ MT down to <100 USD.

DSE

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DSE

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