

Green Mobility of Tomorrow

For FLEET Convention

21st of June 2022 / Stefan Igerz



The Obrist Group
Head Office - Lustenau, Austria

Engineering for Emission Reduction

Thermal Management



Austrian
Operations



US Operations



DE Operations



Hybrid Powertrain



CN Operations

Based in the
newly acquired
Felix Wankel Institute



aFuel Marketing



Offering Green Technology for the World

We will lead the entire automotive industry, global mobility and humanity into a CO₂-neutral future.

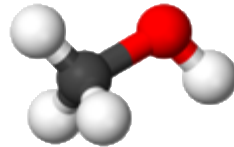
Green Refrigerant
R744 / R290comp. / eScroll



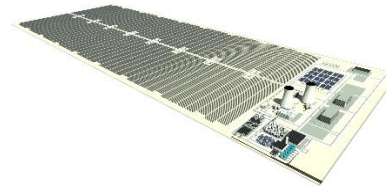
HyperHybrid
The Smarter Electric Vehicle



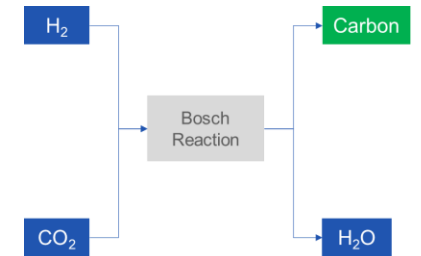
Global Energy Carrier
aFuel®



“The Modern Forest”



Active CO₂ Reduction



Global Relevance Today

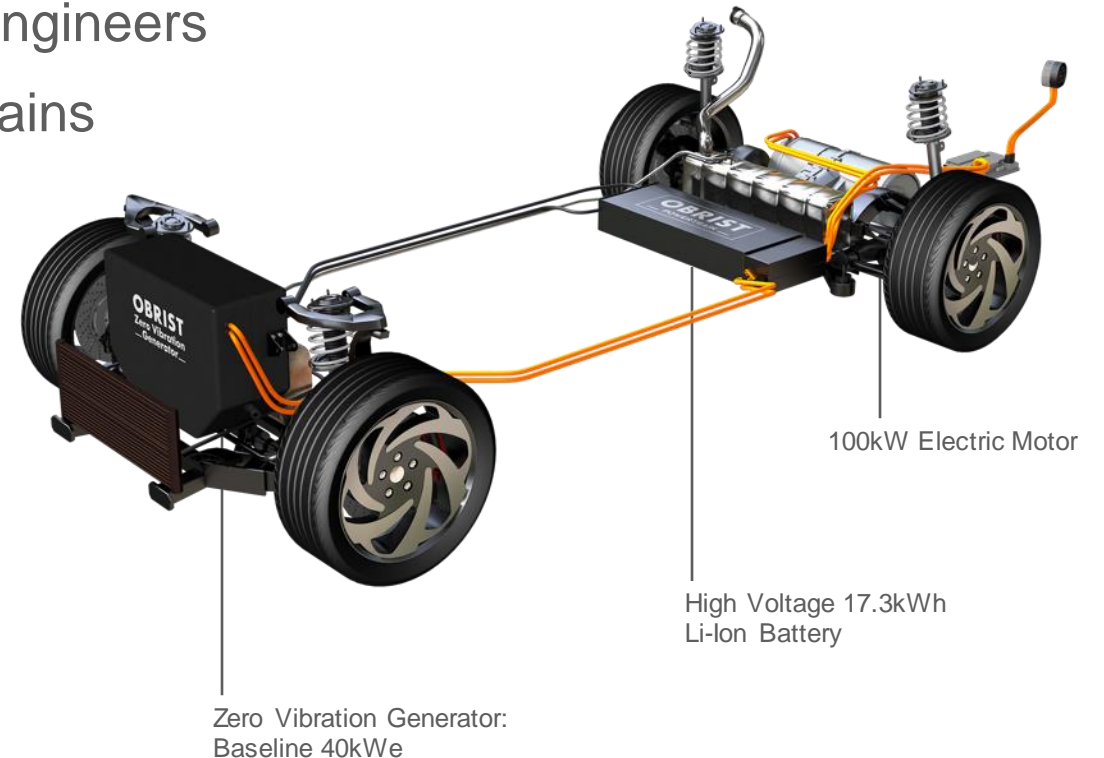




HyperHybrid[®] Powertrain Series Plug-In Hybrid Solution

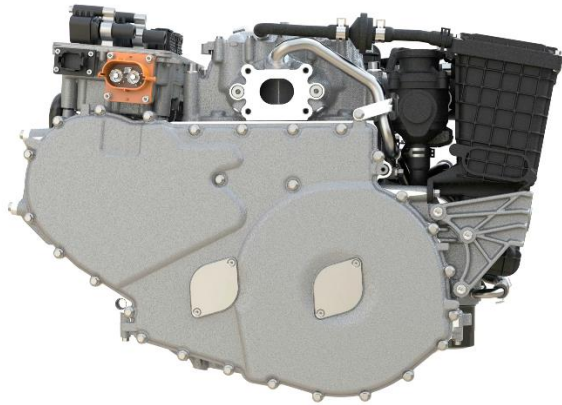
- Packaging freedom for automotive designers & engineers
- Price comparable to common gas/diesel Powertrains
- Significant weight reduction compared to BEVs
- Low center of gravity & perfect mass balancing
- Plug-in chargeable (not mandatory)
- Electric rear-wheel drive
- Superior NVH behavior
- Flexibility & modularity
- No range anxiety

**PROTECTED
TECHNOLOGY**

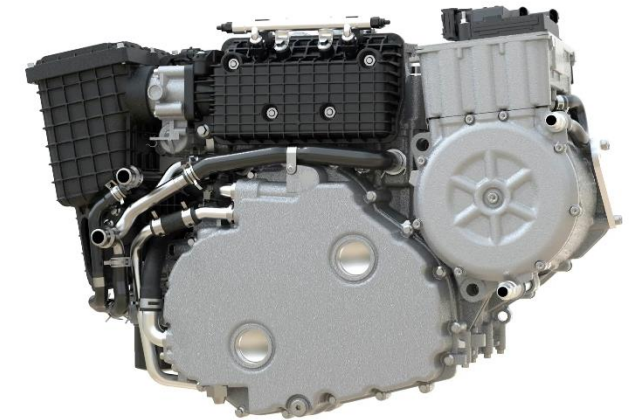


The solution for global automotive mass markets.

Zero Vibration Generator Highlights Main Data Mass Production Design (B-Sample)



Gasoline Version		eMethanol Version
Naturally Aspirated with MP Injection	Air System	Naturally Aspirated with MP Injection
999ccm	Displacement	999ccm
36kW	DC-Power @ 5.000rpm	42kW
40%	Thermal Efficiency (Best Point)	42%
30%	DC Efficiency (Best Point)	34%
110kg	Weight (w/o liquids)	110kg
688*503*269mm	Dimensions (L*H*W)	688*503*269mm
12,5 : 1	Compression Ratio	20 : 1
Gear Drive with constant clearance	Main Drive System	Gear Drive with constant clearance
0	Mass Balancing F1/F2/M1/M2/F	0



Fördermittel des BMBF

- 10 Mio. € Fördermittel zum Ausbau der Test-Flotte im Rahmen des Carbon2Chem-Projektes wurden uns zugesichert.



aFuel Vehicle Presentation IAA Mobility Munich 2021



Dr. Gerd Müller
Future president of UNIDO



PROTECTED TECHNOLOGY

HyperHybrid[®] Algorithm Standard Level

- Concept fulfills requirements for governmental subsidies
- Continuous speed 150km/h - Top speed 170km/h
- 96km battery electric driving range (WLTP)
- Real world fuel consumption 2.0 l/100km and 7.3 kWh/100km

HyperHybrid Algorithm:
When the vehicle is driving below 60km/h, it is powered only by the Li-Ion battery.

Above 60km/h, the Zero Vibration Generator is operating in an alternating manner providing electrical power to drive the car and charge the battery.



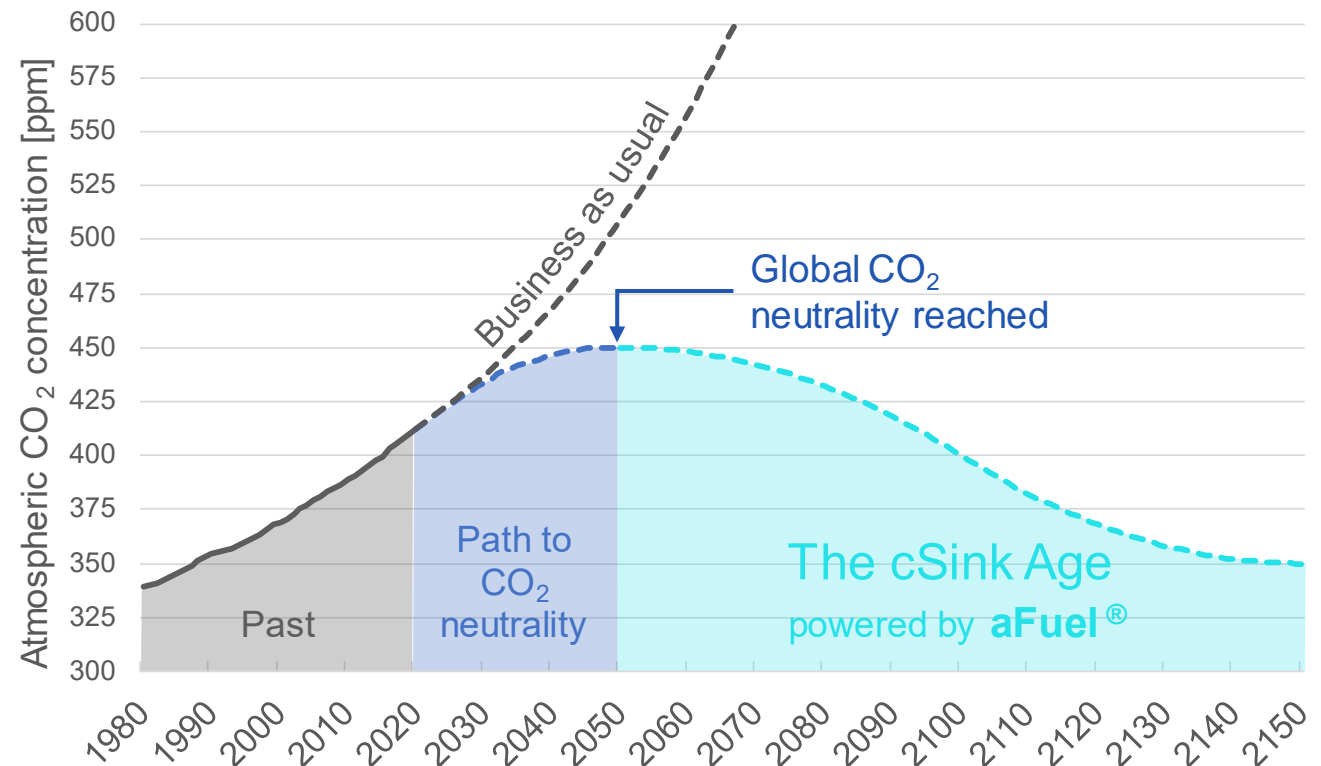
Vehicle Parameters	Unit	Standard Level HyperHybrid
Total Weight	kg	1584
Weight Distribution (front/rear)	%	52/48
Battery Capacity Used (Installed)	kWh	13.8 (17.3)
ZVG Max. Power Output	kWDC	40
ZVG Specific Fuel Consumption	g/kWh	256
PERFORMANCE:		
Drive System	-	RWD
System Power	kW	120
0-100km/h	s	6.6
Top Speed (El. Continuous Speed)	kmph	170 (150)
ECONOMY WLTP:		
Electrical Range	km	96
ECONOMY NEDC:		
ECE 101 Fuel Consumption	l/100km	0.97
ECE 101 CO ₂ Emission	g/km	23
ECONOMY Real World (AutoBild Circuit):		
Fuel Consumption	l/100km	2.01
Electrical Energy Consumption	kWh/100km	7.30

Leading Energy Efficiency

Atmospheric CO₂ Reduction The Path to Global CO₂ Negativity

- After reaching CO₂ neutrality, it is **mandatory to reduce CO₂ levels** in the atmosphere to reverse all damage that humanity has caused over the past centuries
- CO₂ negative technologies **have to be carbon-based**
- aFuel® enables not only CO₂ neutrality, but even **CO₂ negative energy generation**

We believe that we have the solution for **becoming CO₂ neutral** as well as **being CO₂ negative**.

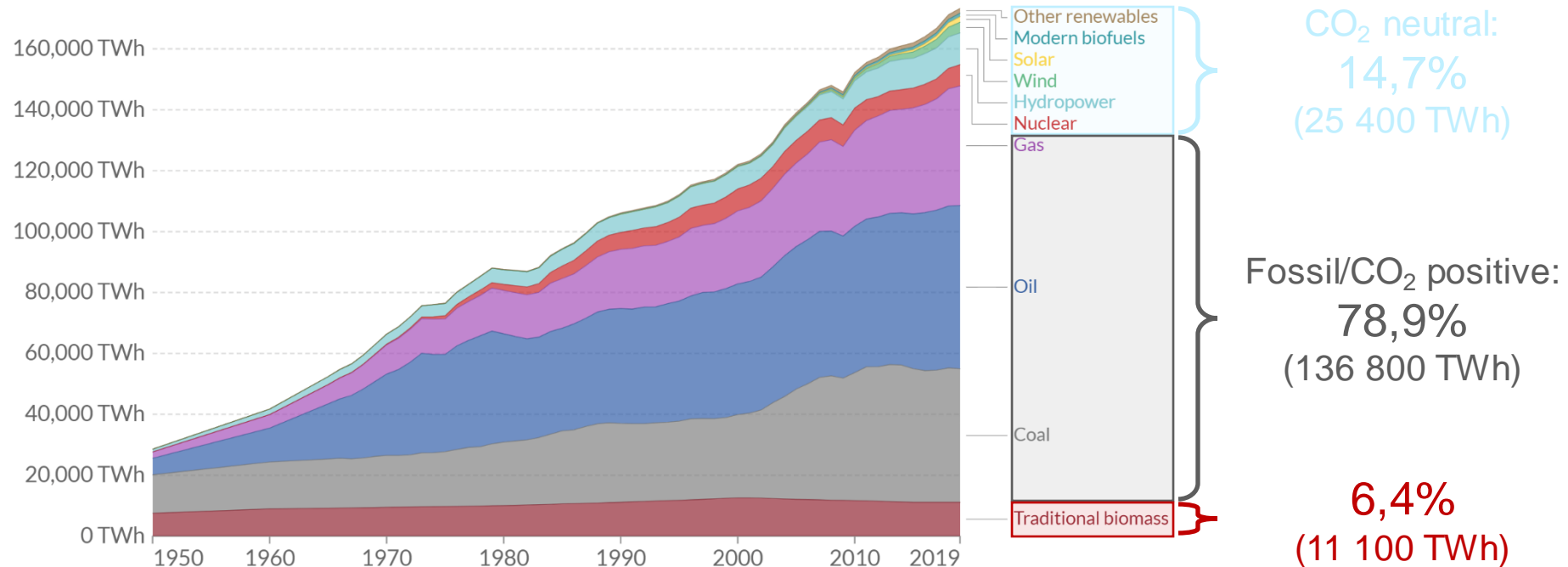


Fossil & Renewable Energy Status Quo

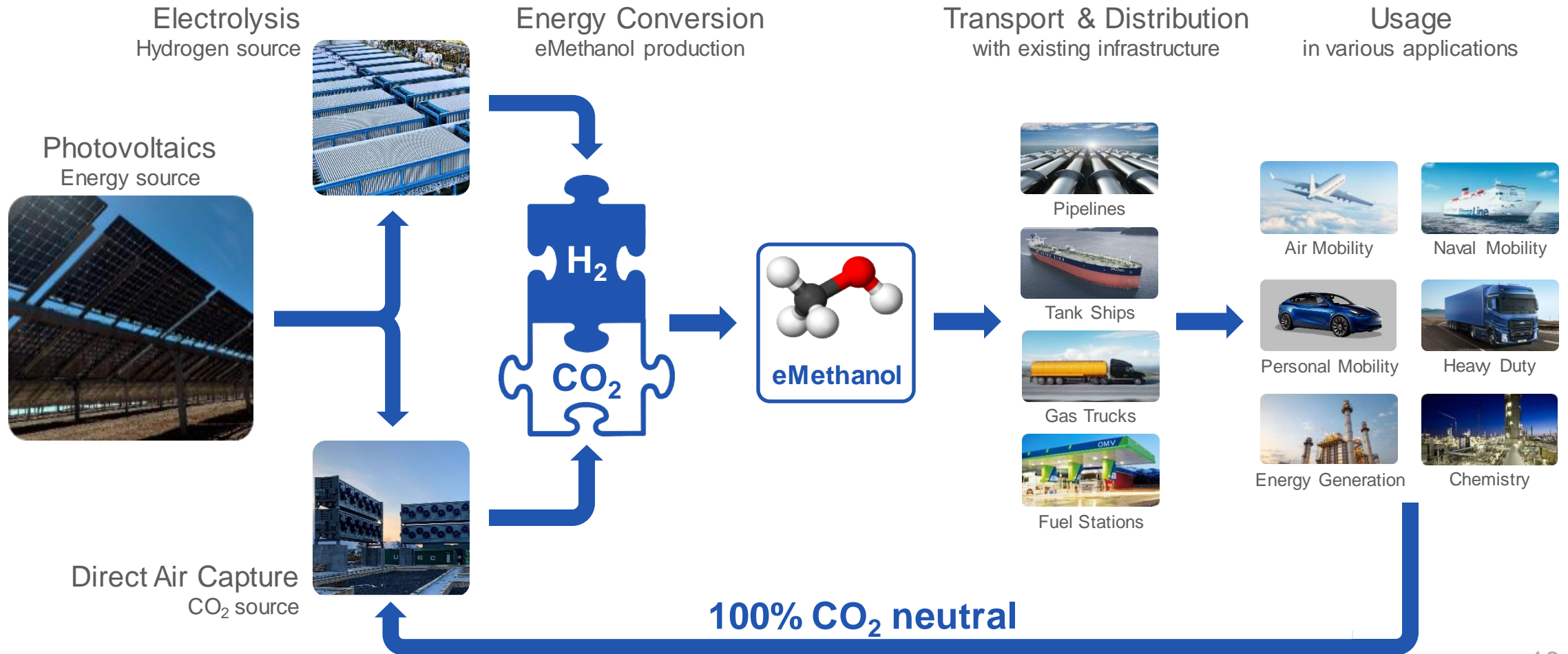
Global primary energy consumption by source

Primary energy is calculated based on the 'substitution method' which takes account of the inefficiencies in fossil fuel production by converting non-fossil energy into the energy inputs required if they had the same conversion losses as fossil fuels.

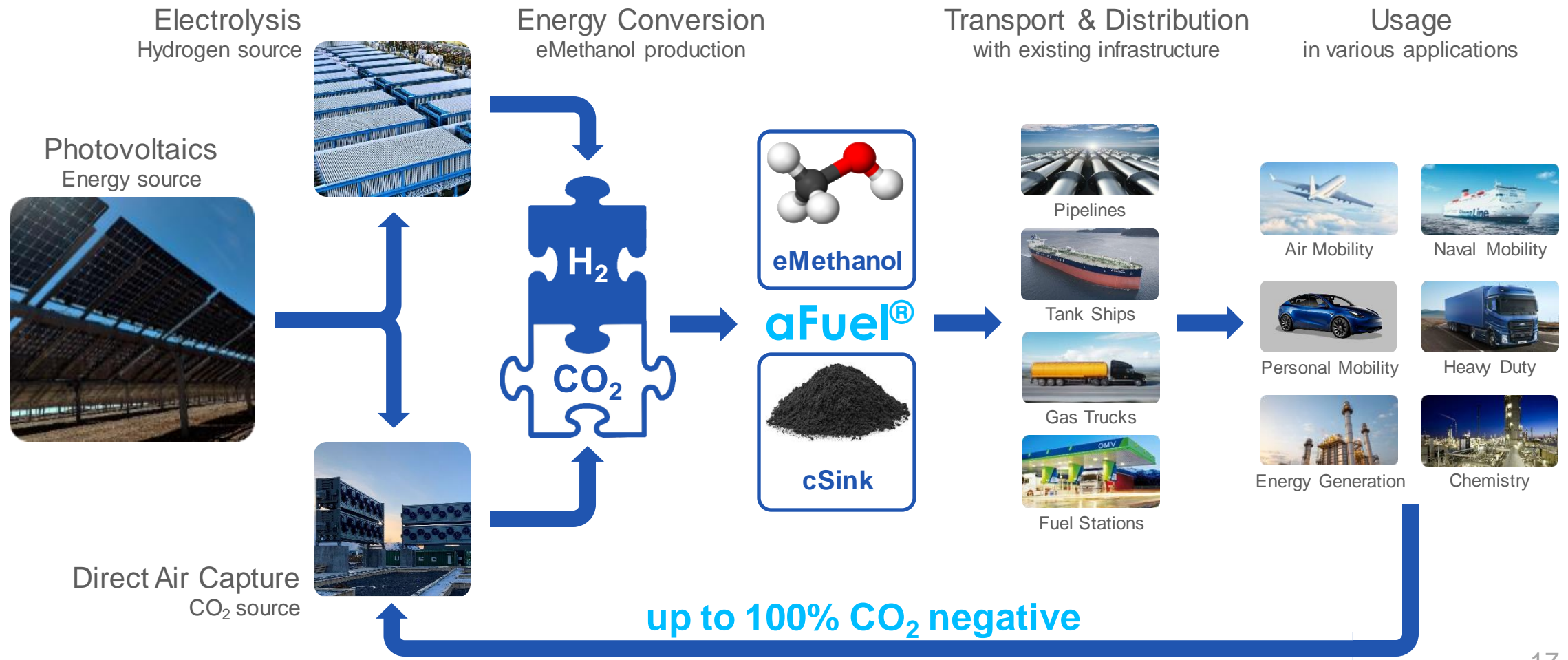
Our World
in Data



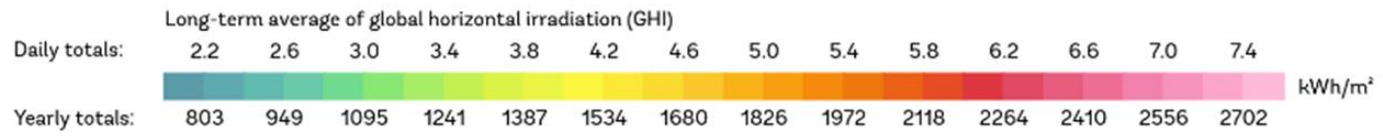
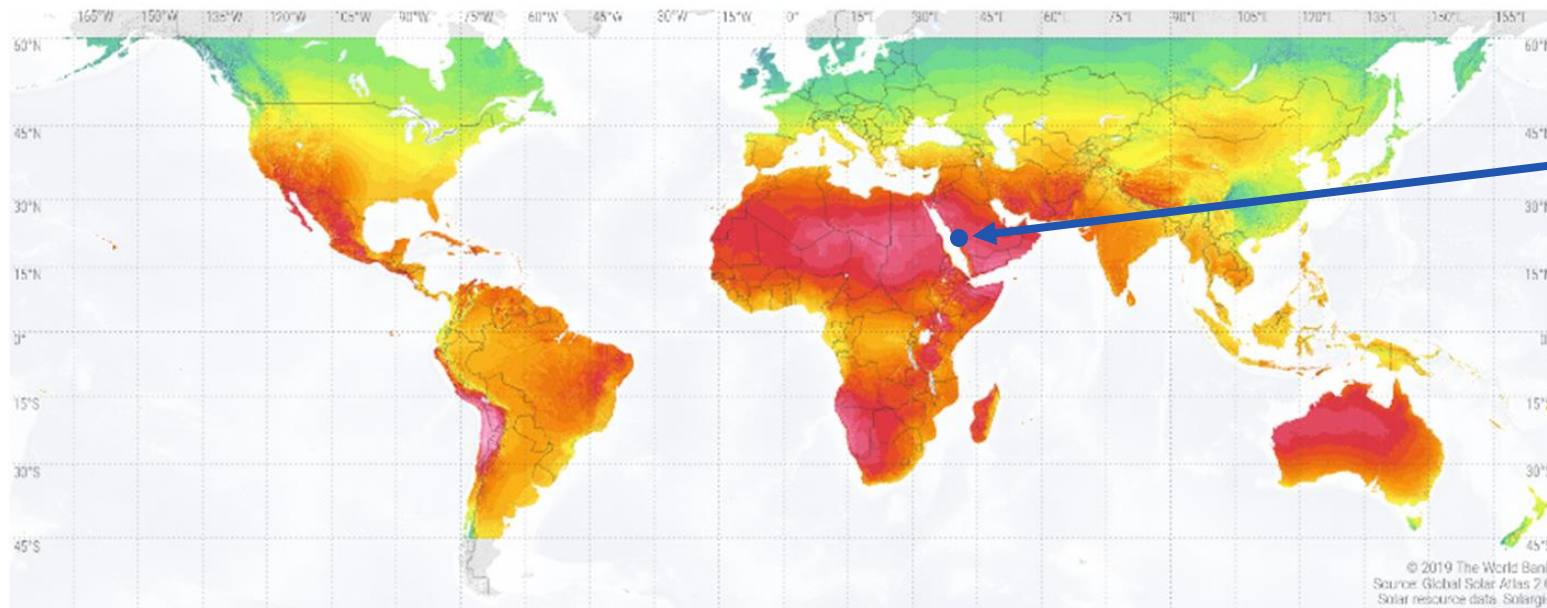
eMethanol The Global Energy Carrier



aFuel® Global Energy, but CO₂ negative



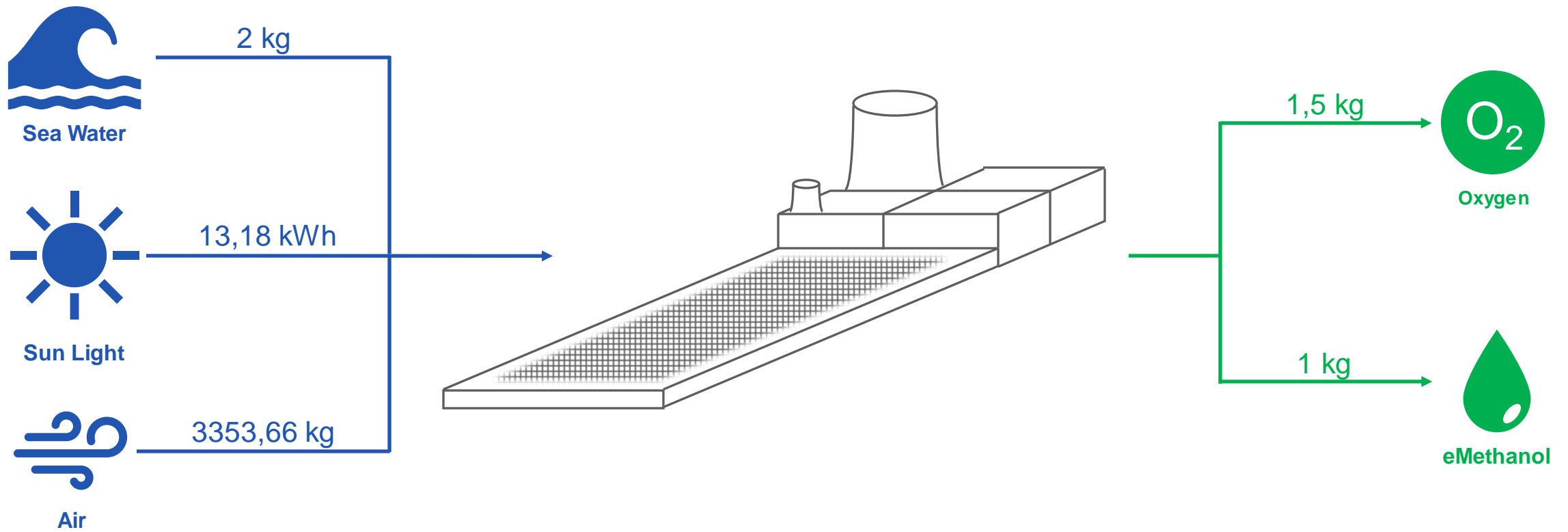
Photovoltaics in Sun Belt Cheapest Energy worldwide



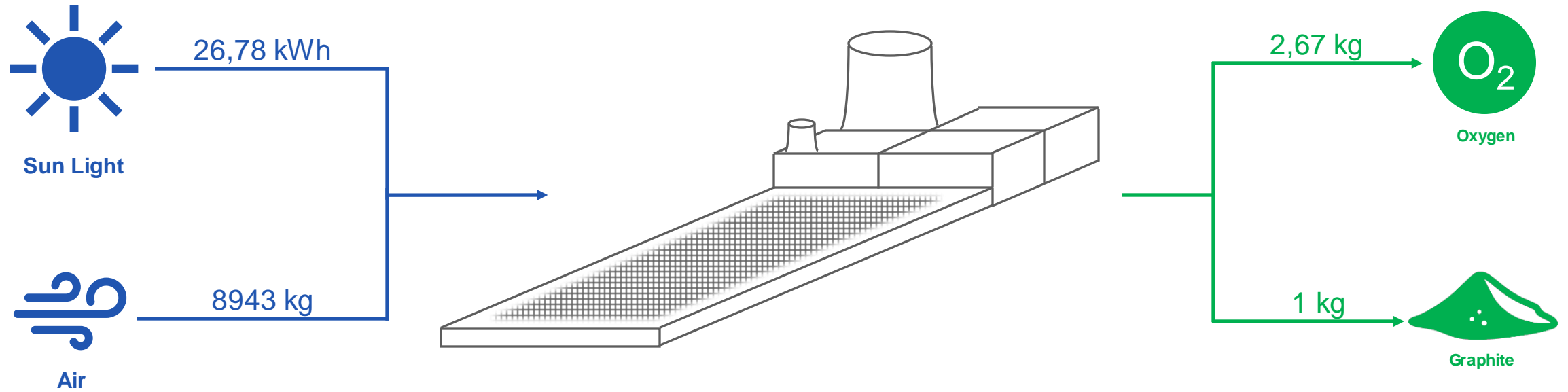
Shuaibah, Saudi Arabia
600MWp
2400kWh/m² irradiance

0,88 ct/kWh
Lowest LCOE worldwide
(April 2021)

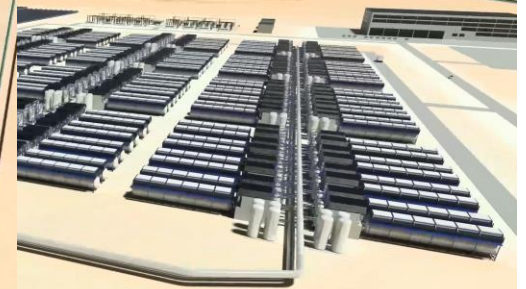
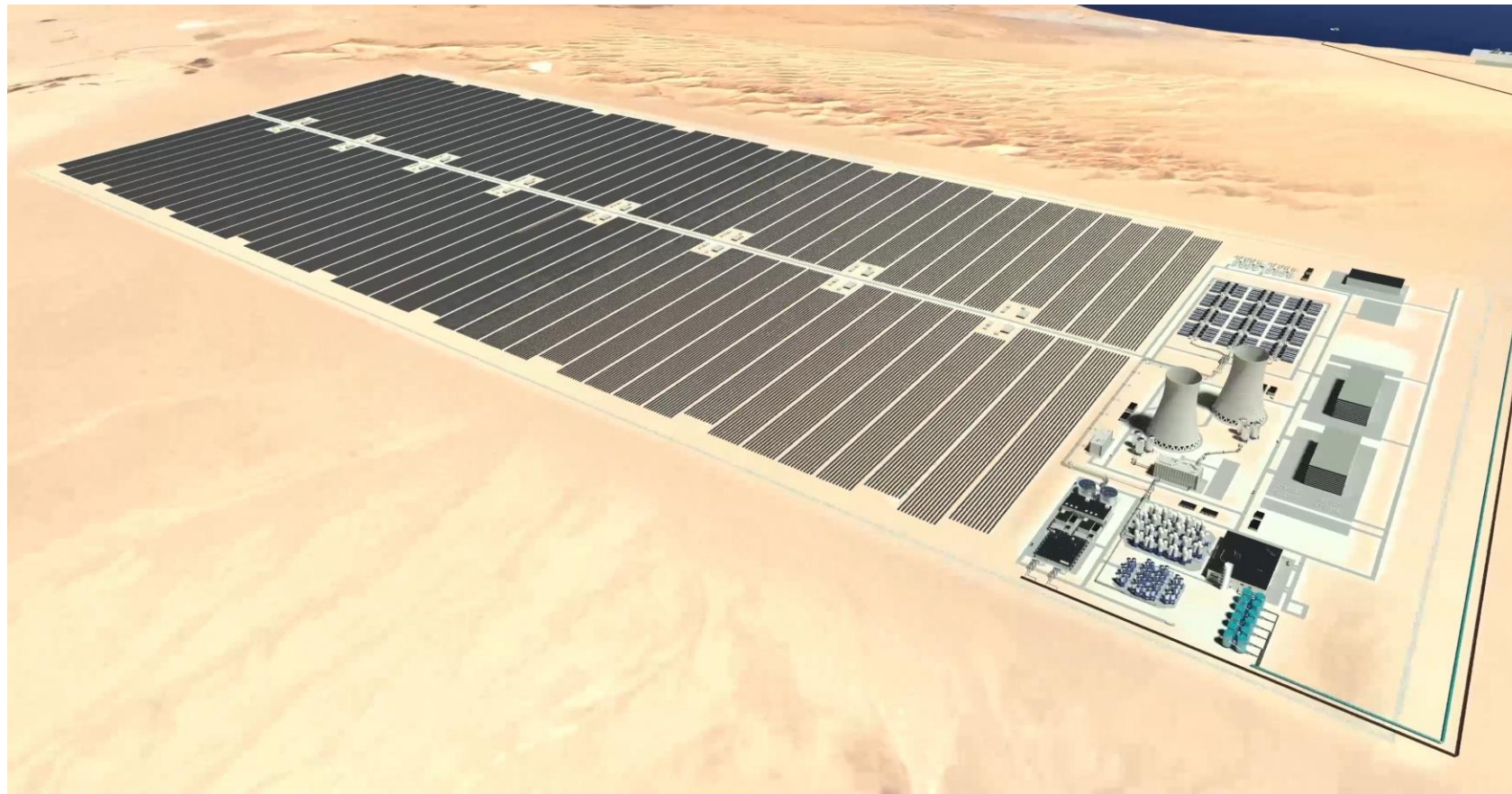
The Modern Forest Basic Concept



The cSink Basic Concept

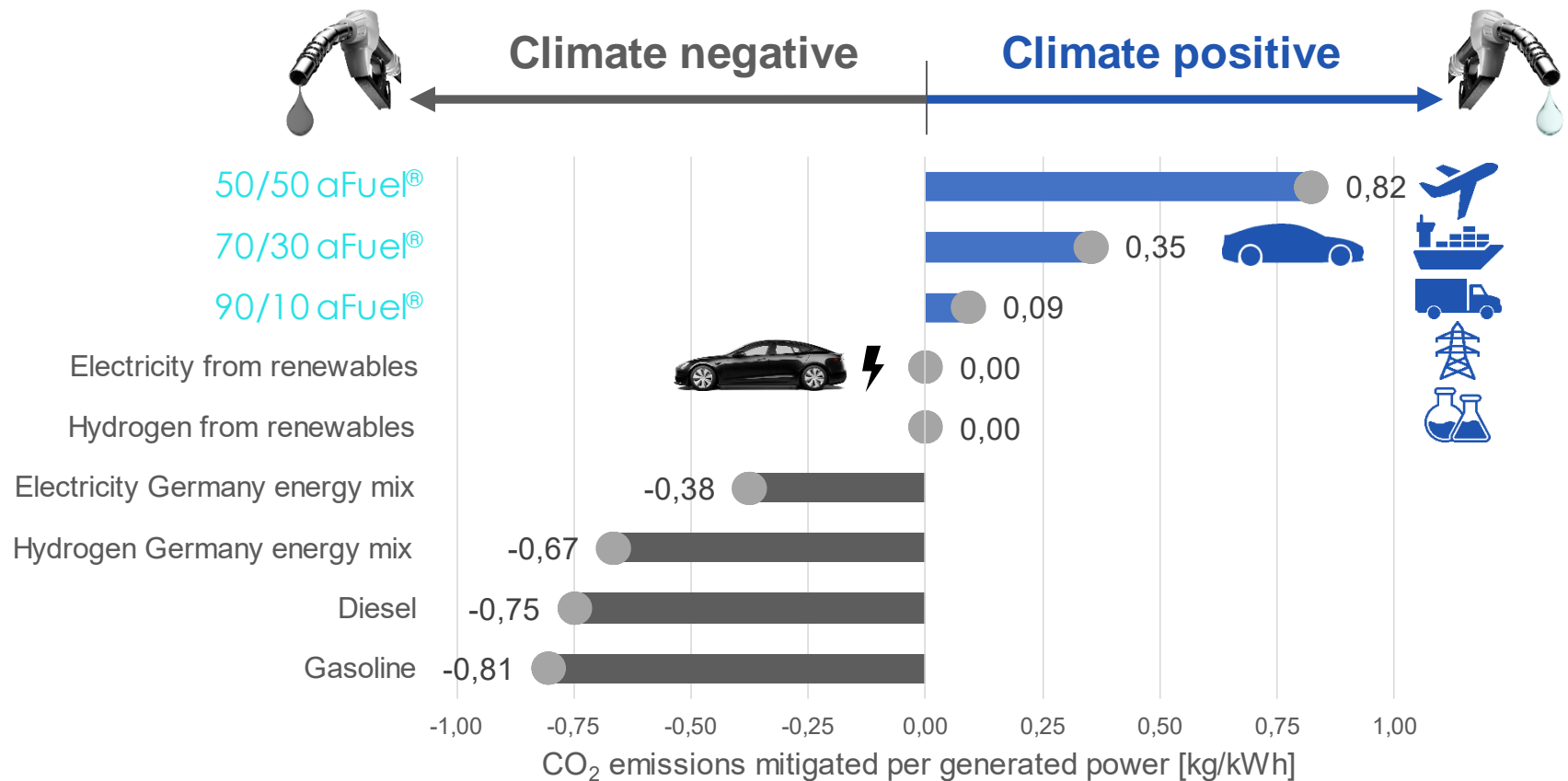


aFuel[®] Plant Concept



aFuel® World's First Global Climate Positive Fuel

- aFuel® offers the unique possibility to **actively reduce CO₂ out of the atmosphere** parallel to being a CO₂ neutral energy carrier, making it **carbon negative**
- Other non-carbon-based energy carriers **can only be CO₂-neutral**



OBRIST Powertrain GmbH

Rheinstrasse 26-27
A-6890 Lustenau
AUSTRIA

+43 5577 623 70
office@obrist.at
www.obrist-powertrain.com