

Engineered in Europe.  
Made for the World.



**sunmaxx.**

Dresden, Germany

REVOLUTIONARY  
PHOTOVOLTAIC-THERMAL MODULES (PVT)

18 December 2024

Your Energy Alternative  
100% Independent  
100% Green



## EU must cut carbon emissions three times faster to meet targets, report says

Climate commissioner says pace of reductions needs to speed up in buildings, transport and agriculture to meet 55% target by 2030



Source: The Guardian, October 2023

- “To fully achieve these targets, the **pace of emissions reductions needs to step up**”
- “But over the past three decades **it has cut emissions by just 32 %**”
- “[...] significant emissions cuts are needed in buildings and transport. Progress in these sectors has been sluggish at best.”
  - **Wopke Hoekstra**, EU’s climate commissioner

**Large efforts needed to reduce CO<sub>2</sub> – especially in heating.**

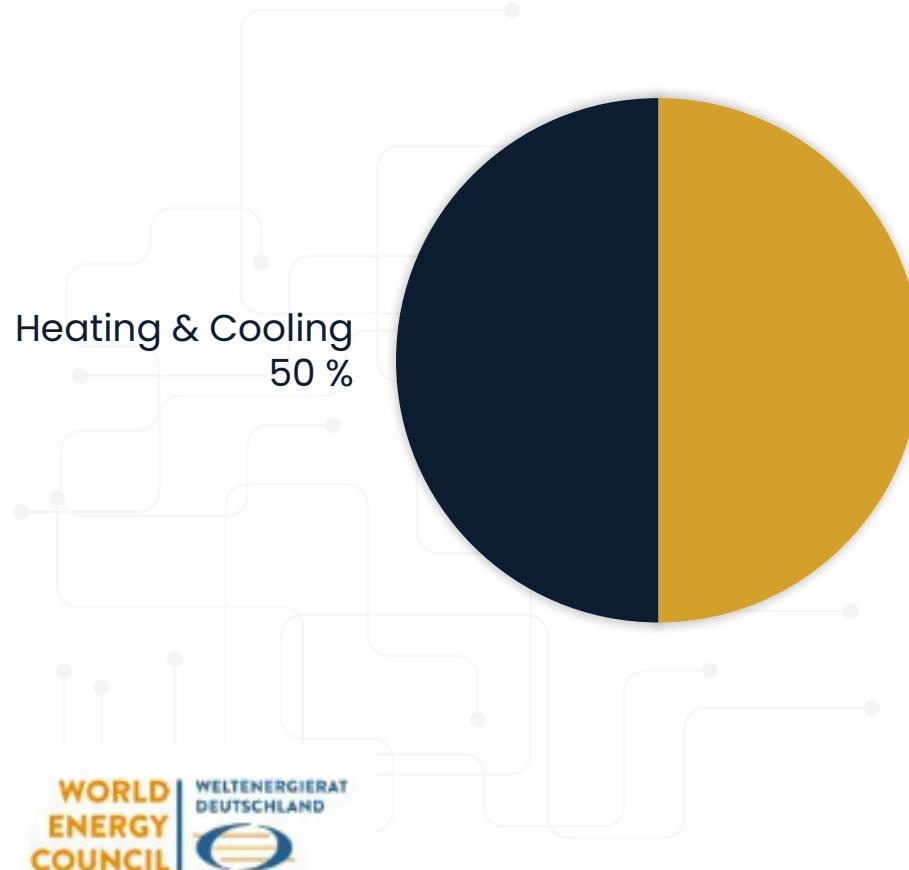


Sunmaxx PVT: THE BIG CHALLENGE

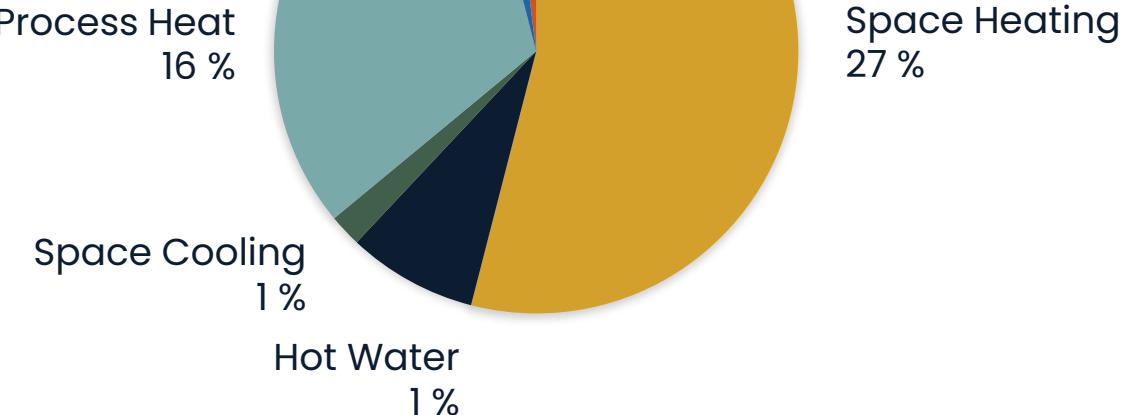
# HEAT TRANSITION



## TOTAL ENERGY EU28 HEAT AND COOLING



Process Cooling  
1%  
Others  
1%



Source: Heat Roadmap Europe



Sunmaxx PVT

# THE TOTAL ENERGY SOLUTION



## FOSSIL INDUSTRY

**Gas firing**  
Efficiency  
approx. 30 %



**Combined  
heat & power  
(CHP)**  
Efficiency  
> 60 %

## RENEWABLE INDUSTRY

**Photovoltaic  
modules  
(PV)**  
Efficiency  
approx. 20 %



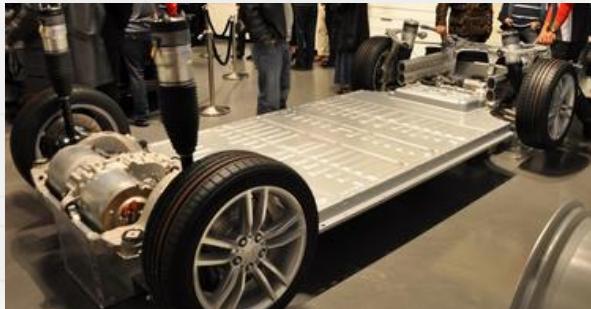
**Photovoltaic  
thermal  
modules  
(PVT)**  
Efficiency  
> 80 %



Sunmaxx PVT

**sunmaxx.**

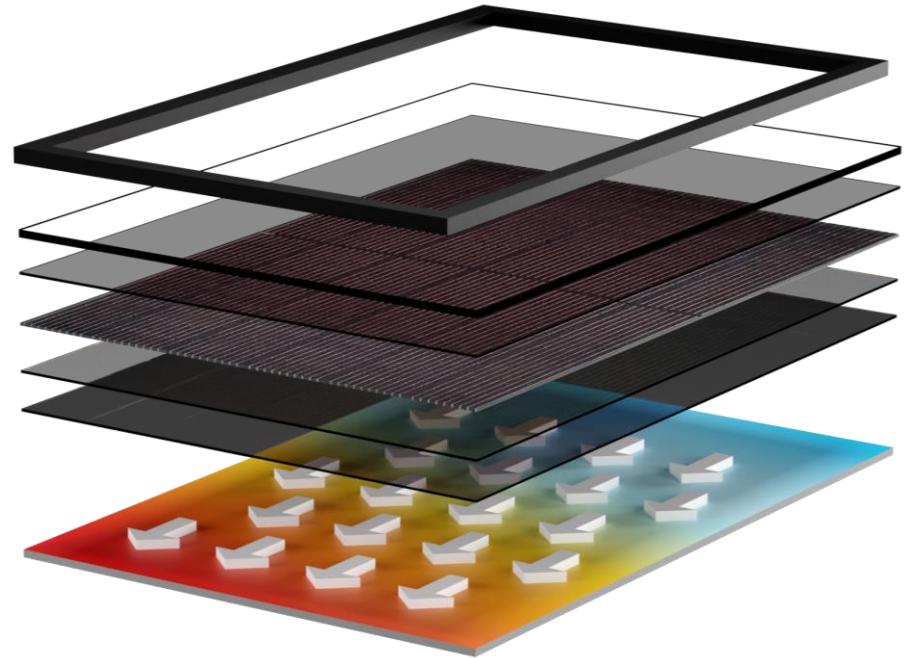
# DEVELOPMENT WITH MAHLE



**MAHLE**  
World Leading  
Electric Car Cooling Tech



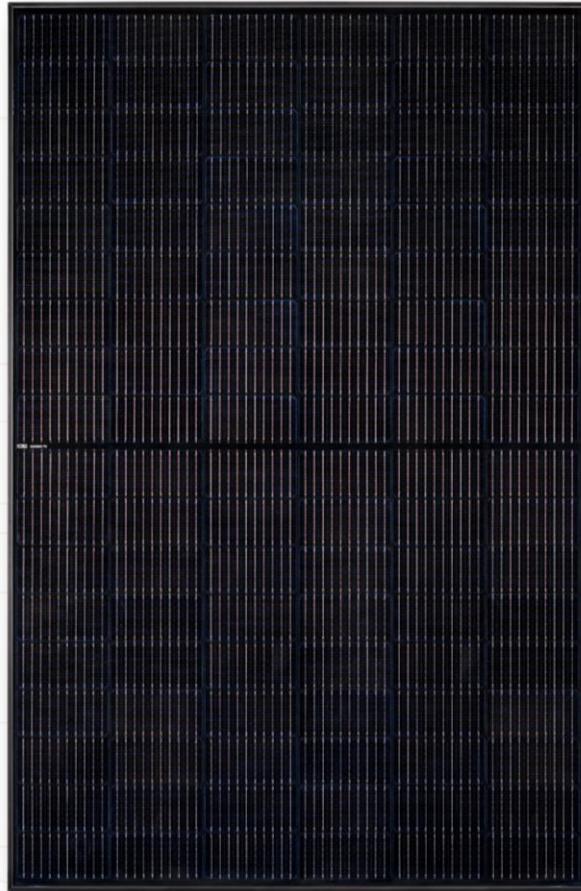
**sunmaxx. Worlds' First PVT Module**  
Integrating Automotive  
Thermal Management Heat Converter





Data Sheet  
**SUNMAXX PX-1**

Affordable, High Performance.  
High Quality.



<b>Dimensions</b>	1.725 mm x 1.137 mm x 40 mm
<b>Weight</b>	29 kg
<b>PV Cells</b>	108 M10 Mono Half Cell TOPCon
<b>PV Power</b>	430 W <sup>1</sup>
<b>PV Efficiency</b>	22.0 % <sup>1</sup>
<b>Cooling Gain</b>	5 – 10 %
<b>Thermal Power</b>	1.200 W <sup>2</sup> / 1.522 W <sup>3</sup>
<b>Thermal Efficiency</b>	0.60 <sup>2</sup> / 0.76 <sup>3</sup>

<sup>1</sup> STC conditions: 1,000 W/m<sup>2</sup> radiation, 1.5 air mass, 25 °C cell temperature

<sup>2</sup> MPP measuring: 1,000 W/m<sup>2</sup> radiation, 144 l/h volume flow, 25 °C temperature, 0 m/s wind speed, 0 K temperature difference

<sup>3</sup> V<sub>OC</sub> measuring: Same conditions as MPP measuring

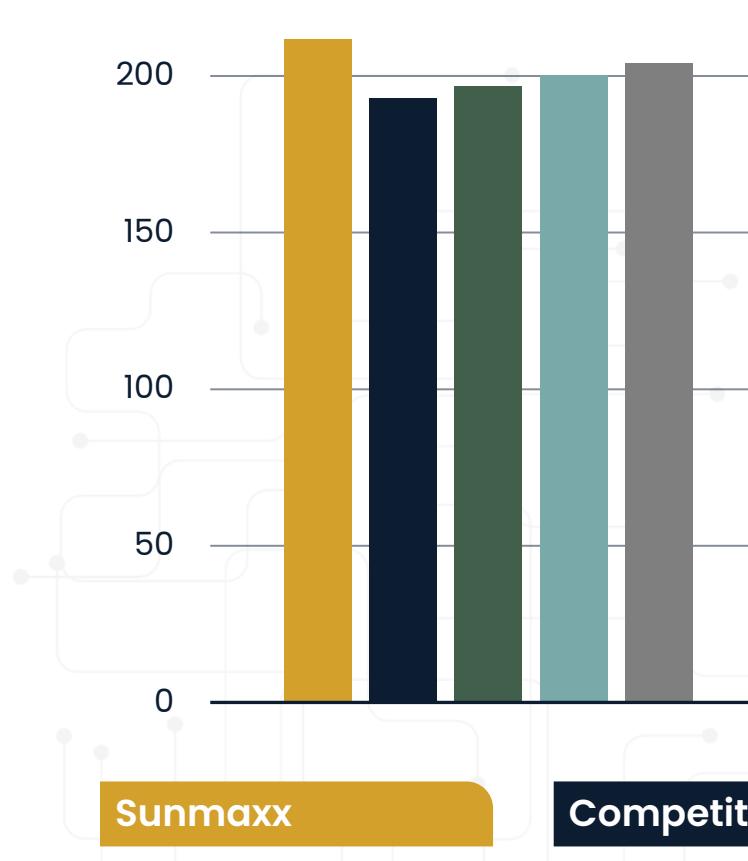


## Data Sheet

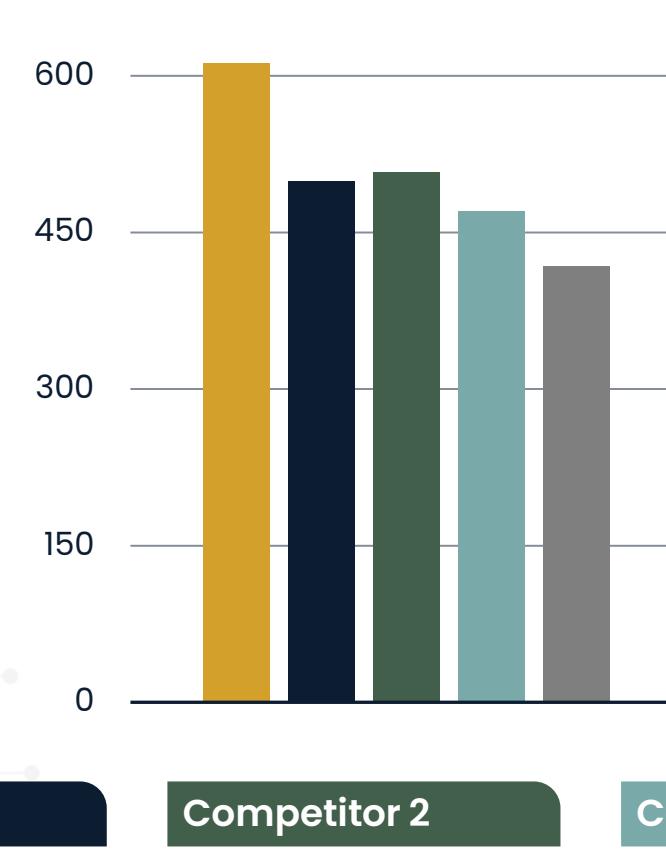
# sunmaxx. BEST PRODUCT AT LOWEST PRICE



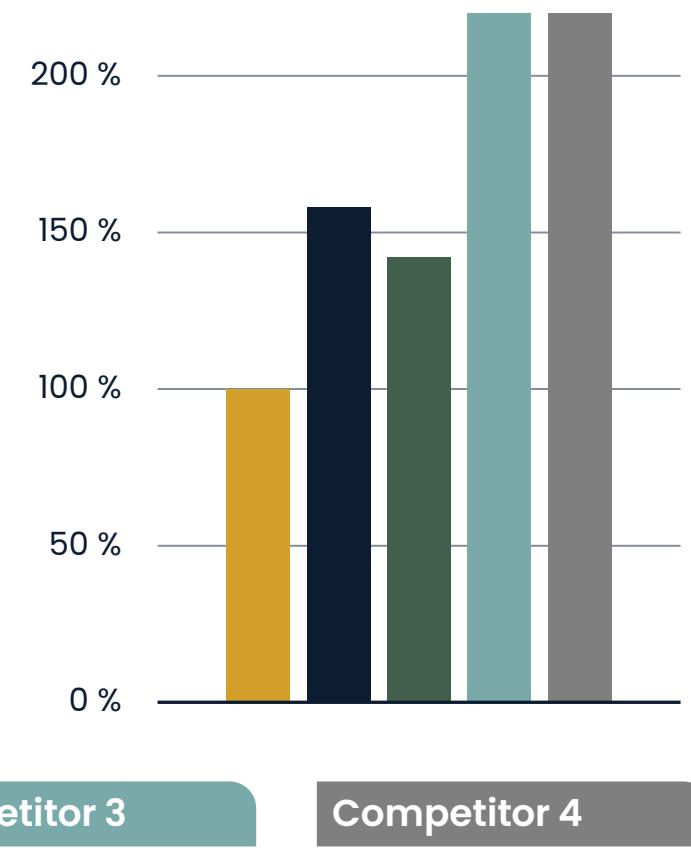
**Electric Power** in W/m<sup>2</sup>



**Thermal Power** in W/m<sup>2</sup>



**Price** per m<sup>2</sup>





Sunmaxx PVT

# MOST ADVANCED PVT PRODUCTION TO DATE



1st MASS-PRODUCED PVT PANEL (DEC 23)



Current Team (July 24)



ISO 9001 CERTIFICATION (AUG 2024)



50 MW<sub>el</sub> Mass Production – Largest,  
Most Advanced PVT Facility Worldwide



Sunmaxx PVT  
**SUNMAXX ACADEMY**

**Sunmaxx Partners: Product Trainings**



**Demo Installation: Full system PVT-HP**

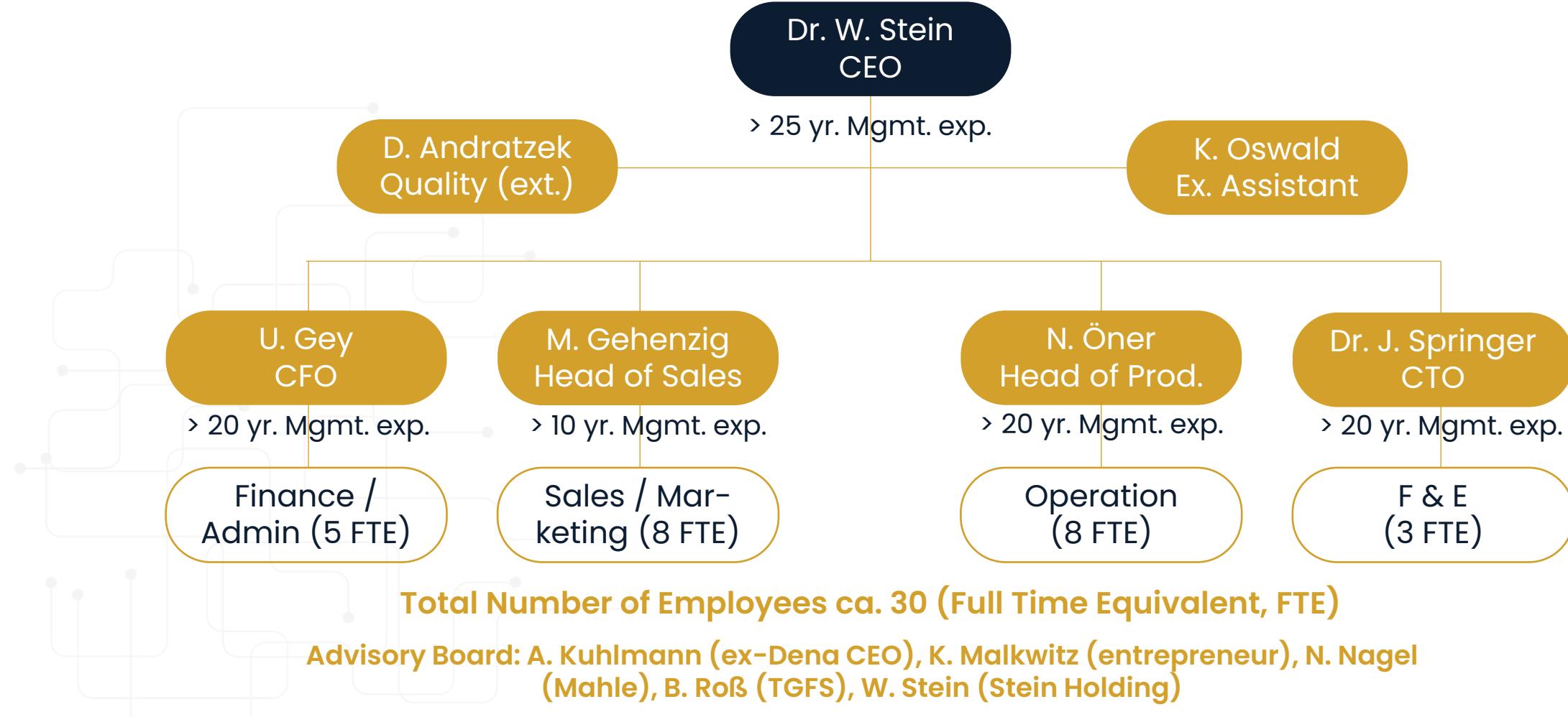


**Theoretical & Practical Training for New Installation Partners Every 2 Weeks**





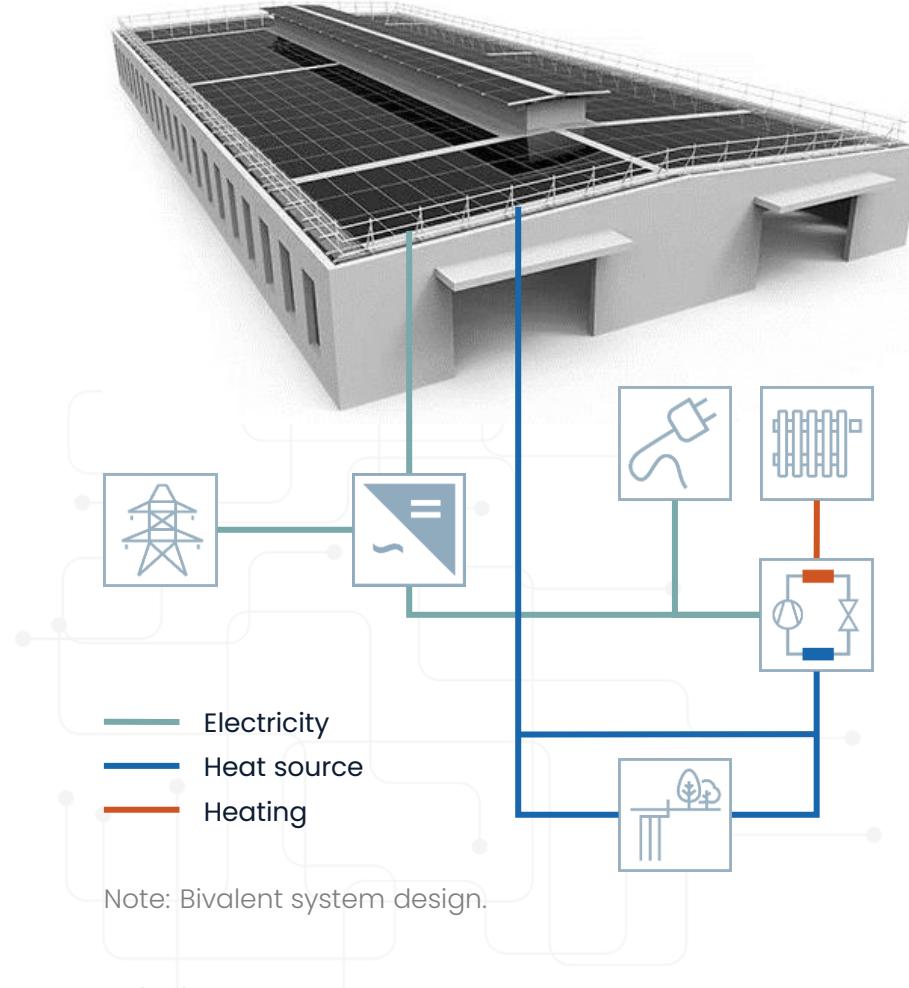
# ORGANIZATIONAL STRUCTURE





## PVT APPLICATIONS

# ENERGY COMMERCE / INDUSTRY



### PVT Modules

Provide heat and electricity with  
> 80 % efficiency

### Heat Utilization

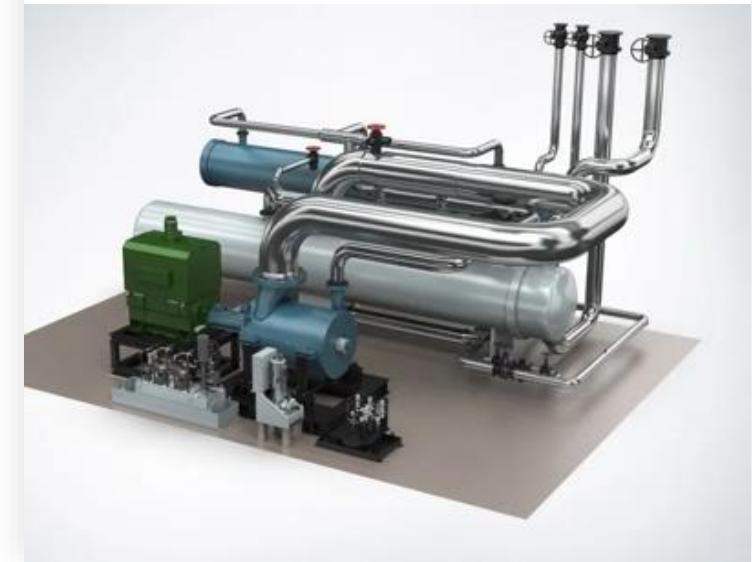
Domestic hot water, space heating, process heat possible

### Seasonal Storage

Store solar heat from summer to winter (seasonal),  
e.g. geothermal earth probes

### Large-scale Brine Heat Pump

Established, sustainable and safe renewable heat  
Temperatures up to 200 °C  
Power up to megawatt range



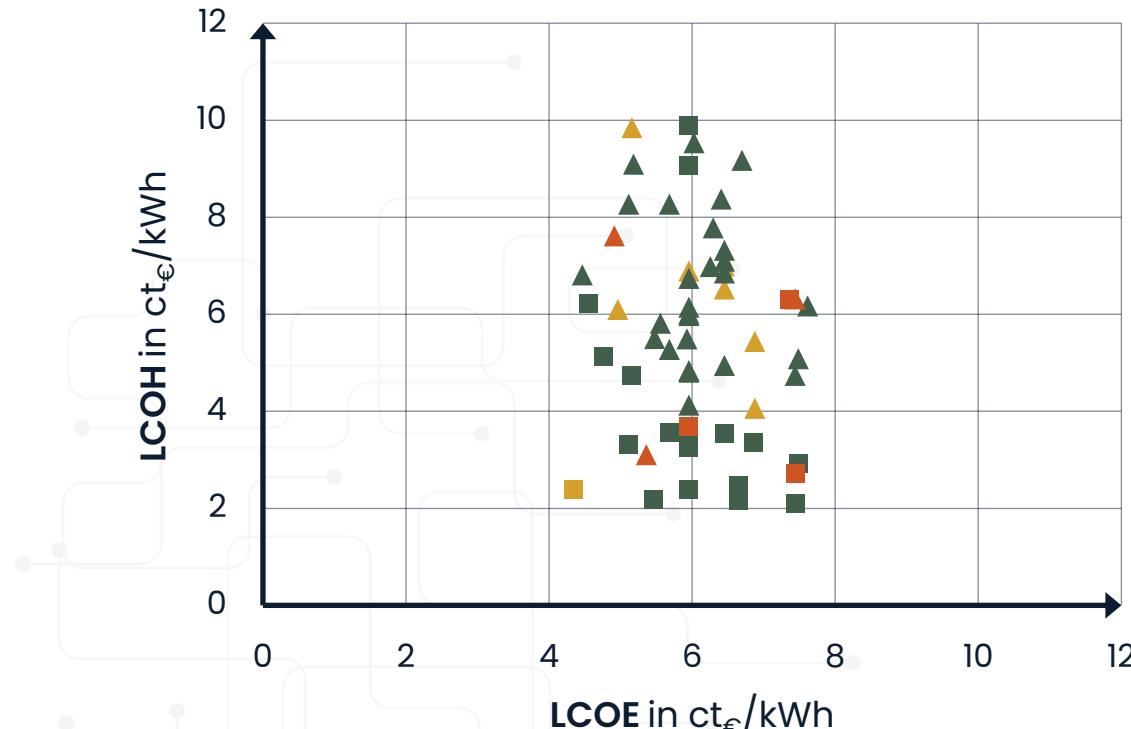


## PVT APPLICATIONS

# CHEAP HEAT & ELECTRICITY



### Levelized costs



### Return on investment





# COOLING WITH PVT RADIATION OR CONVECTION

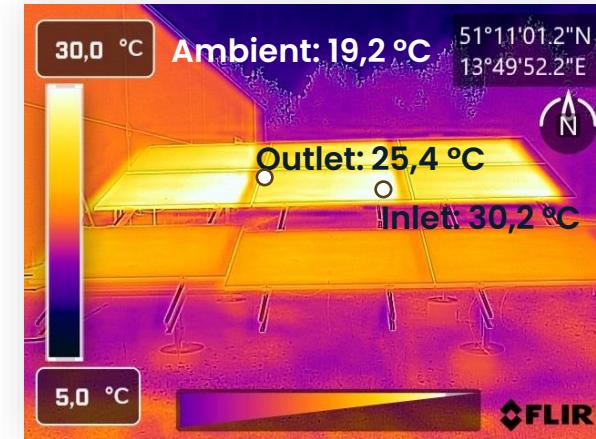
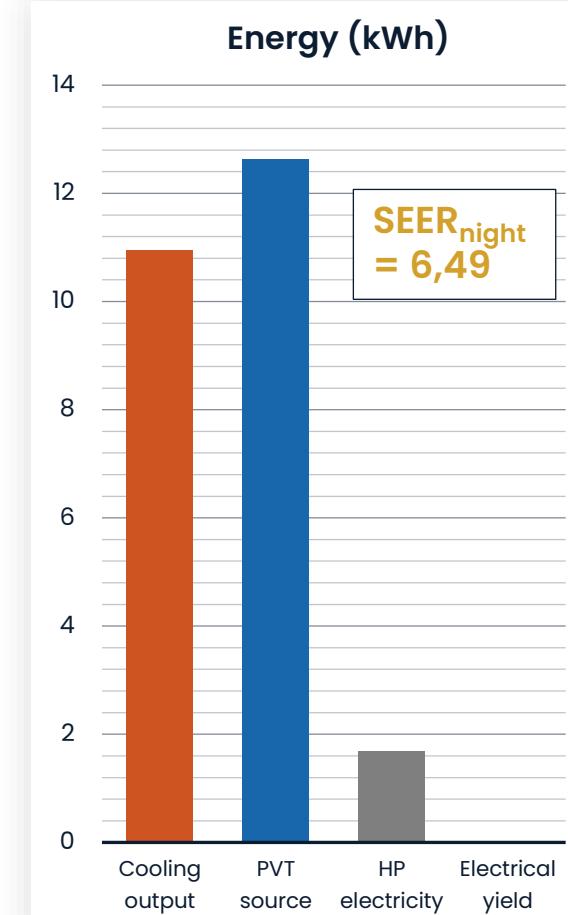


## Active and passive cooling



- Reversible heat pump during the day
- PVT cools overnight via convection
- No air-con needed (cost-effective)

<sup>1</sup> 25 modules or 50 m<sup>2</sup>



- Significant reduction in the electricity bill for cooling
- Much higher Efficiency Coefficients than standard AC cooling
- Enormous potential in southern countries

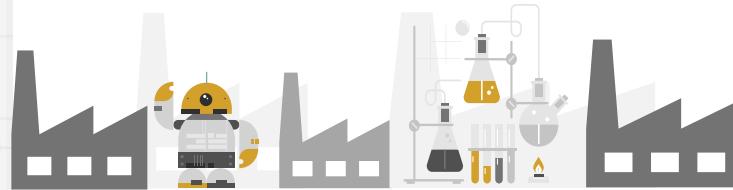


# SUNMAXX PVT: CUSTOMERS MARKET SEGMENTS



## Commercial & Industrial

Replacing  
**Fossil fuels on  
industrial production sites**



**Industrial customers**

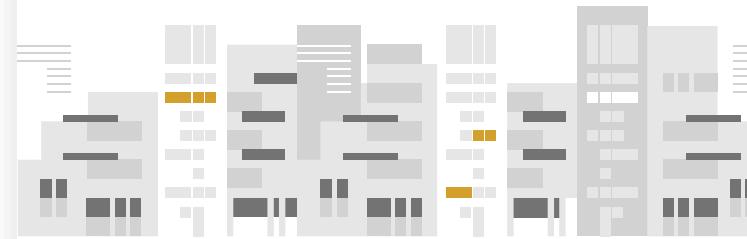
**B|BRAUN**

**MAHLE**



## District Heating

Replacing  
**Fossil-based high-  
temperature heating network**



**Energy providers & public services**  
low-temp. district grid solutions



**STADTWERKE STUTTGART**



**Stadtwerke  
Leinfelden-Echterdingen**

## Residential

Replacing  
**Air heat pumps with  
high electricity demand**



**Wholesalers to installers  
and partner network**

**KÜTRQ**  
ERNEUERBARE ENERGIEN

**HANEBUTT**



**Wagner Solar**



Sunmaxx



# REFERENCE-PROJECTS

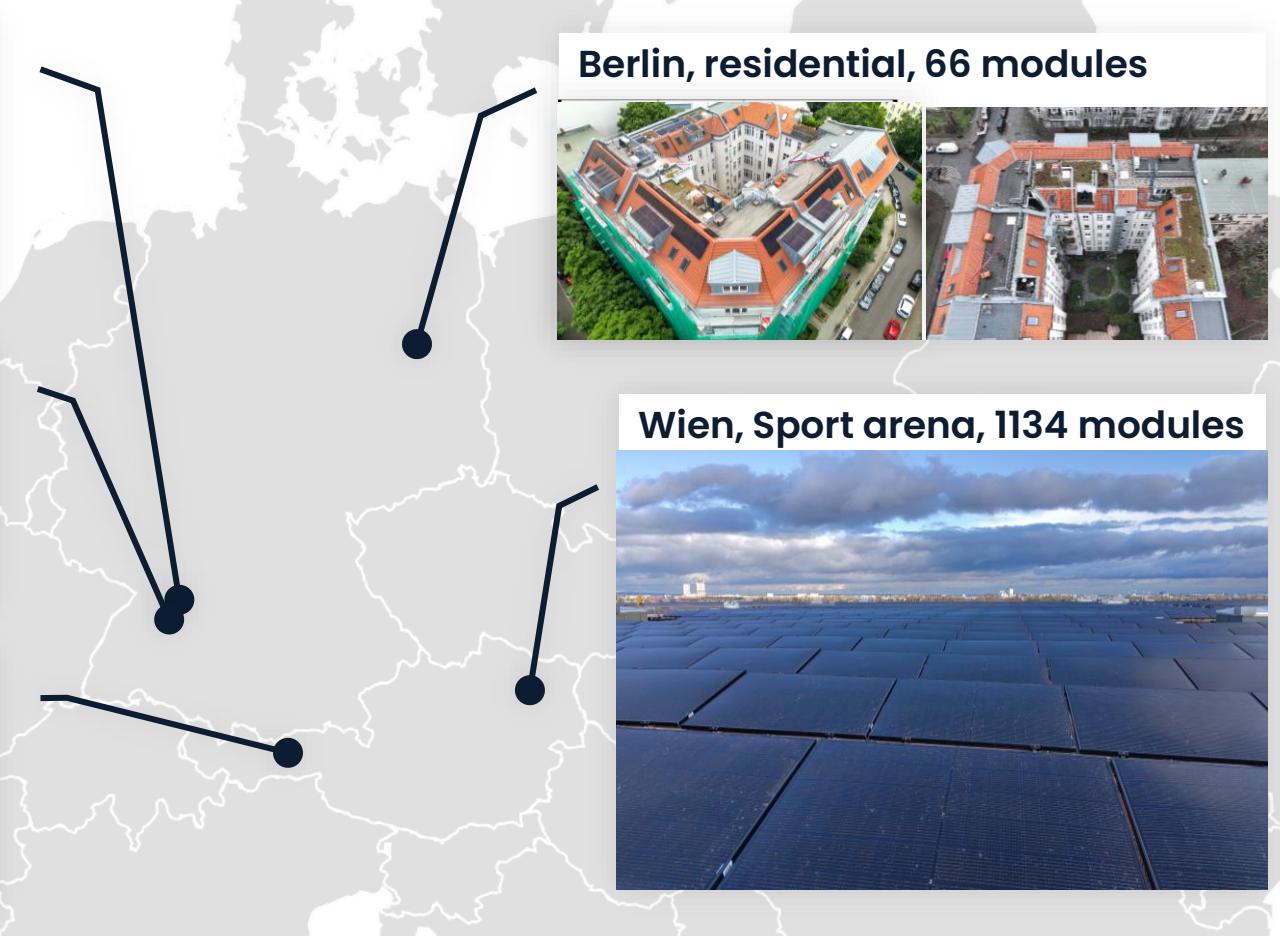
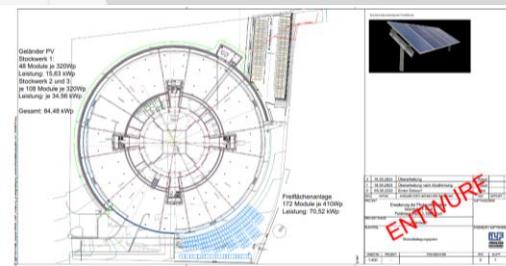
Vaihingen/Enz,  
Industrial  
production site,  
1400 modules



Leinfelden-  
Echterdingen,  
Wärmenetz,  
156 modules



Rum/Innsbruck,  
Bürogebäude,  
172 modules



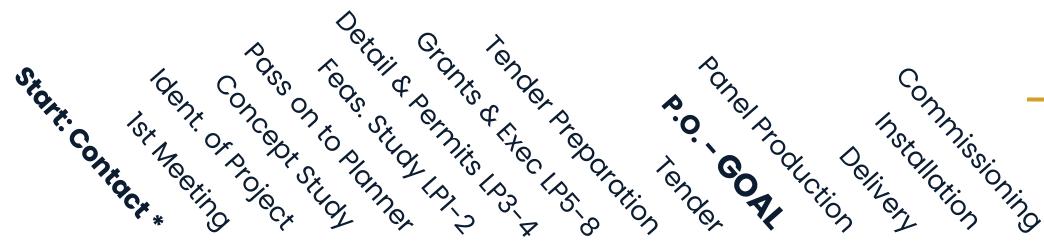


## CUSTOMER JOURNEY: COMMERCIAL & INDUSTRIAL

# MAHLE VAIHINGEN-ENZ



**MAHLE**



Sunmaxx	x	x	x	x	x		x	x	x	x	x	x
Industr. Customer	x	x	x	x	x	x	x	x	x	x	x	x
Facility Planner						x	x	x	x	x		x
Mount. Syst. Supplier								x				x
Installer/ EPC									x		x	x

\* Industrial Customer Approaches Sunmaxx:

(Press Release, SoMe, Newsletter, Rewards & Openings, Media Coverage, Trade Fair, Partner Recommendations / Reps, Word of Mouth, ...)

\* Pro-active Approach of Sunmaxx to Customer: Conferences, Press Release, Association, Trade Fair, Sunmaxx Field Sales



Pre-study

On-site Visit  
Facility Planner

Comprehensive  
Feasibility Study

Planning Finalized & Tender  
Process for Contracting

P.O. Received

Commissioning  
and Implementation

02/2022

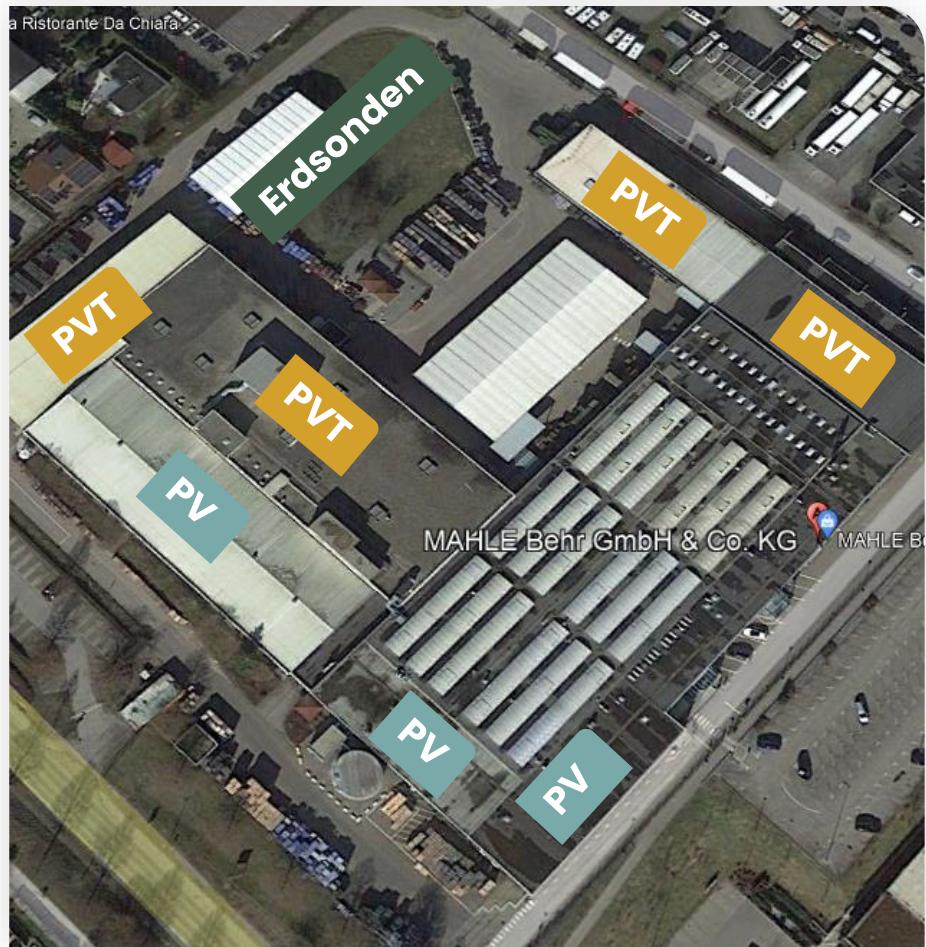
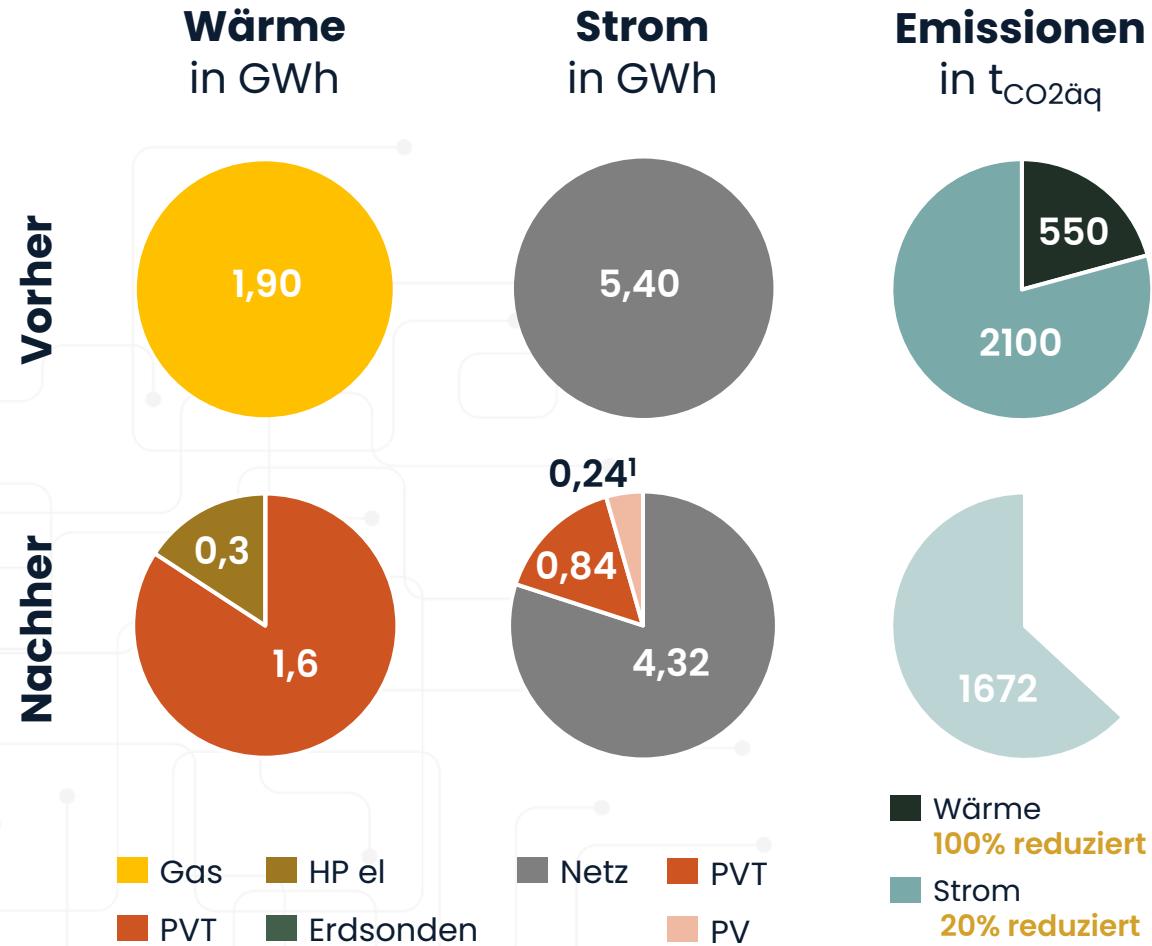
04/2022

08/2022

09/2024

10/24

Planned Q4/24





# CUSTOMER JOURNEY: DISTRICT HEATING STADTW. LEINFELDEN



	Start:contact *	Ident. of Project	Pass on to Planner	Concept Study	Feds. Study LP1-2	Detail & Permits LP3-4	Tender Preparation	Grants & Exec LP5-8	P.O. - GOAL	Panel Production	Commissioning	Installation	Delivery	Tender
Sunmaxx	x	x	x	x	x			x	x	x	x	x	x	
Energy Utility Cust.	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Facility Planner						x	x	x	x	x	x	x	x	x
Mount. Syst. Supplier								x					x	
Installer/ EPC									x			x	x	x

\* Industrial Customer Approaches Sunmaxx:

(Press Release, SoMe, Newsletter, Rewards & Openings, Media Coverage, Trade Fair, Partner Recommendations / Reps, Word of Mouth, ...)

\* Pro-active Approach of Sunmaxx to Customer: Conferences, Press Release, Association, Trade Fair, Sunmaxx Field Sales



First Contact  
Facility Planer

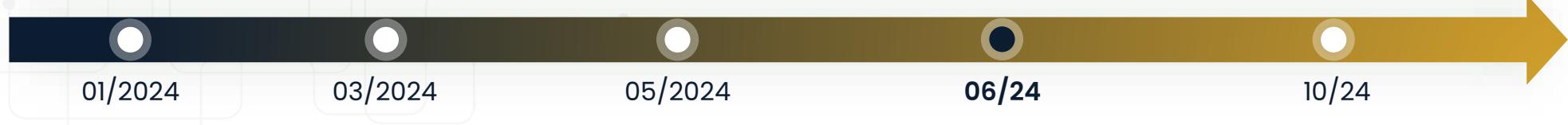


Tender  
Preparation

Tender

P.O. Received

Commissioning  
and Implementation





# CUSTOMER JOURNEY: PRIVATE CUSTOMER / RESIDENTIAL FAMILY HOME IN BAVARIA



Start: contact \*  
 On-site Survey  
 Prep. of Quotation  
 Private Cust. Order  
 Delivery Panels/Mat. \*\*  
 Panel Production  
 Installation  
 Commissioning  
 REPLEN. STOCK – GOAL  
 Restock Delivery

Sunmaxx	x						x	x		
Private Customer	x	x	x	x		x				
Facility Planner								x		
Supplier / Wholeseller			x		x			x		
Installer/ Service Partner	x	x	x	x	x	x	x	x	x	

- \* Private customer calls Sunmaxx or service partner directly (Press Release, SoMe, Newsletter, Rewards & Openings, Media Coverage, Trade Fair, Partner Recommendations / Reps, Word of Mouth, ...)
- \*\* From wholeseller or from stock



Contact Customer with Service Partner

Quotation



Private Customer Order

Installation and Commissioning

**REPLENISH STOCK – Sunmaxx P.O. Received**

03/2024

04/2024

06/2024

08/24

10/24



Commercial & Industrial Large

# Sports arena Vienna



- Multifunctional Sports Arena
- 3.0 GWh/a Electricity  
1.4 GWh/a Heat
- Lighthouse project in Austria
- 1134 panels PVT, 540 KW  
brine heat pump, 80 Earth probes
- 20.000 m<sup>2</sup> space area
- **100% climate neutral**



C&I large  
**Sunmaxx. Sports arena Vienna**



18/12/2024

21

Engineered in Europe. Made for the World.

Subject to change. Non-Binding.





C&I large

# Sports arena Vienna





# DECARBONIZATION, MARKET & COMPETITION

## GLOBAL PV / PVT MARKET



### Global Installed Solar PV Capacity

900  
GW

2021

~ 5x\*

5,000  
GW

2030

Source: IEA.  
\*CAGR: 20%.  
Note: 2022 installed capacity: 1,185 GW  
2023 installed capacity: 1,600 GW

### Annual Global PV Panel Market Value in \$

100  
bn

2021

- Commercial & Industrial
- Residential
- Utility

3x\*\*

300  
bn

2030

Source:  
Custom Market Insights 2022 and  
Company data.  
\*\*CAGR: 13%.

### Global Installed Solar PVT Electrical Capacity

250  
MW

- Europe
- Asia w/o China
- China
- MENA region
- Other

2021

60x

15  
GW

2030

Source: IEA data and  
AEE INTEC and Company data.

### Global Annual PVT Panel Market Value in \$

350  
m

2021

> 20x

Sunmaxx.  
Global leader.

7.5  
bn

2030

Source: Company data based on IEA 2021.



# THE WAY TO MASS PRODUCTION UPSCALING



Source: Company data. Note: \* assumed sales price adjustment to mass production. m = million



Sustainable premium margins

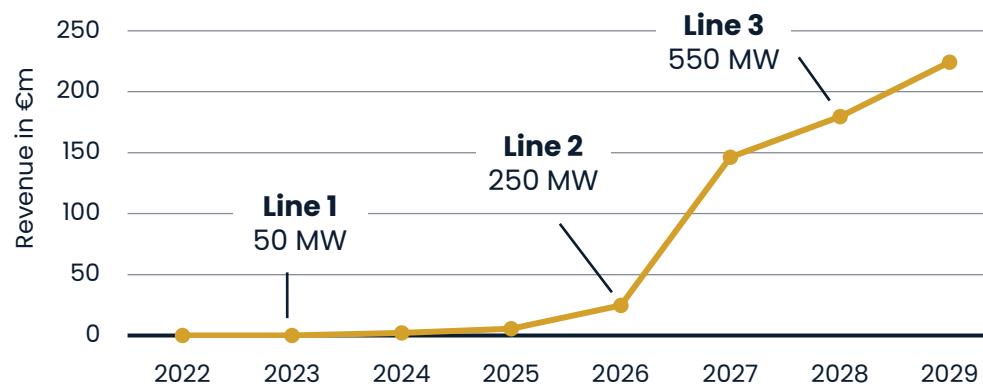


# sunmaxx. ACHIEVING SUPERIOR MARGINS AT SCALE

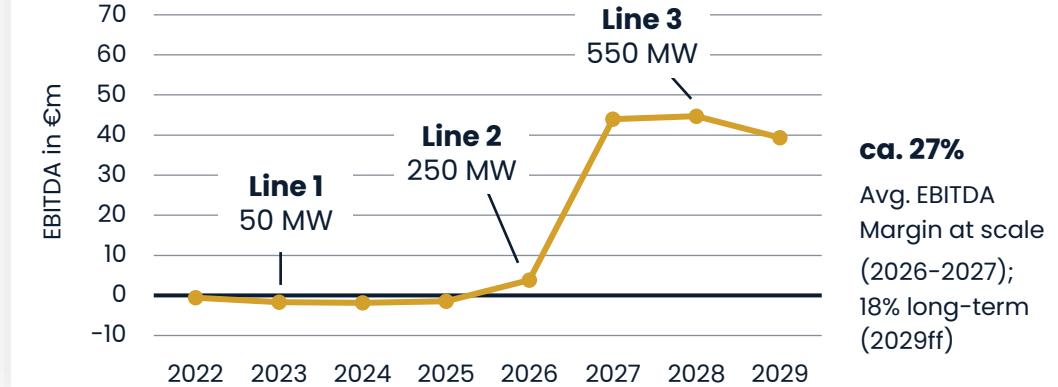
## Major Financials

- **Company firmly heading towards profitability:** First cash positive months already achieved
- **Gross margins already at 37% after only 9 months of production**
- On track for **2,4 m€ revenue in 2024**, high growth **to 224 m€ revenue in 2029**
- **High YOY growth of 151%**
- **EBITDA positive in 2026, High EBITDA of 40 m€ in 2029**

### Forecast Revenue Growth



### Forecast EBITDA Growth



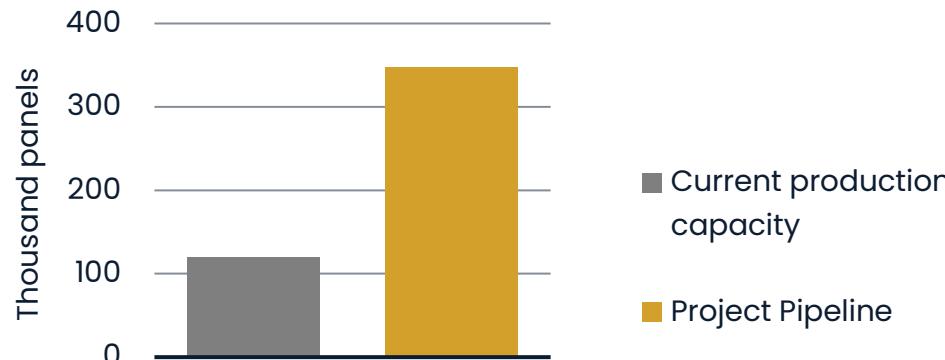


# Sustainable premium margins SERIES A/B INVESTMENT

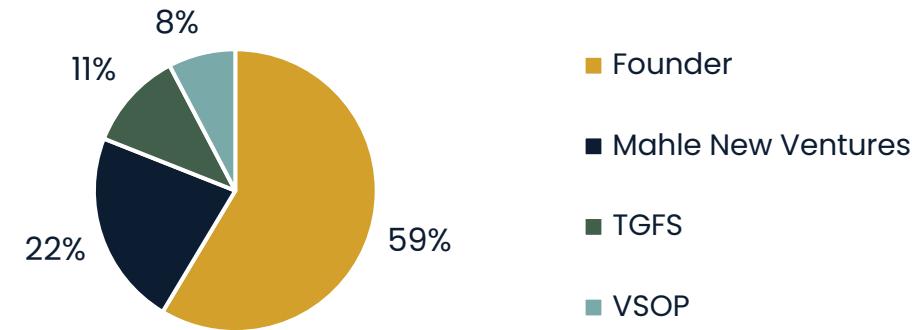
## Transaction Overview

- Sunmaxx is seeking additional resources and investors to support its scale up plans: **Series A/B funding of 5-7 m€**
- Main shareholders MAHLE New Ventures and TGFS invested overall **6,9 m€ so far (Equity & convertible notes)** they look forward to working closely with the new investor(s) to take the company to the next level
- Opportunity to **participate in European solar value chain reshoring** with state-of-the-art technology, well ahead in terms of performance, efficiency (heat and electricity), quality and scalability
- Direct alignment with **UN SDG 7, 11, 12, and 13**: Affordable and Clean Energy, Sustainable Cities and Communities, Responsible Production and Consumption, and Climate Action
- Multiple exit channels: **Heat Pump Industry/ Energy/ PV&Renewables/ IPO**

## Strong project pipeline and Market Traction



## Current Shareholder Structure

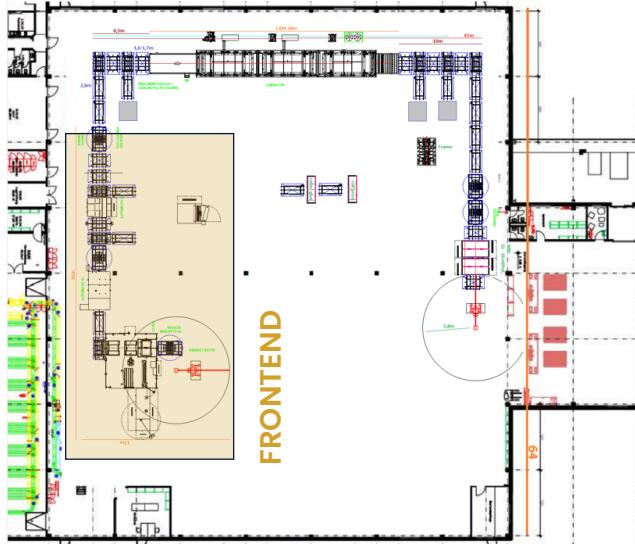




# Expansion USE of Proceeds



## 1. 50 MW – Front End Expansion



- Addition of stringer & frontend (of line, FEOL)
- Solar cell-in

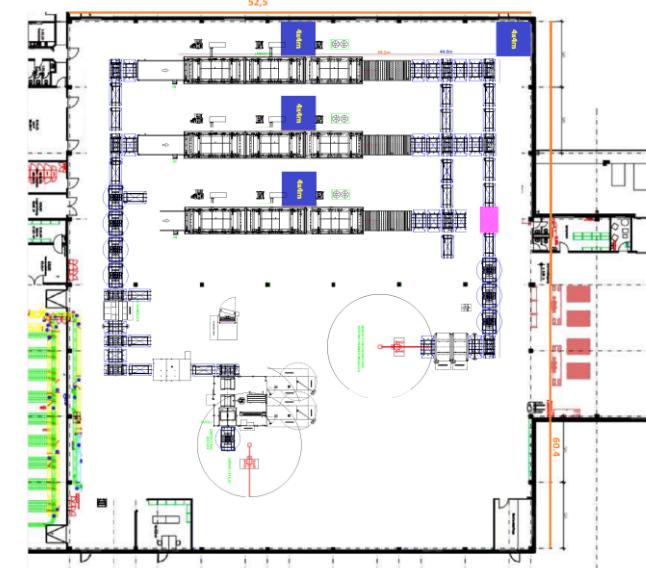
## 2. Grow Sales & Marketing

## 3. Expand R&D

18/12/2024

LATER (in B.P.)

**250 MW**



- Additional laminators
- In current hall possible

LATER (in B.P.)

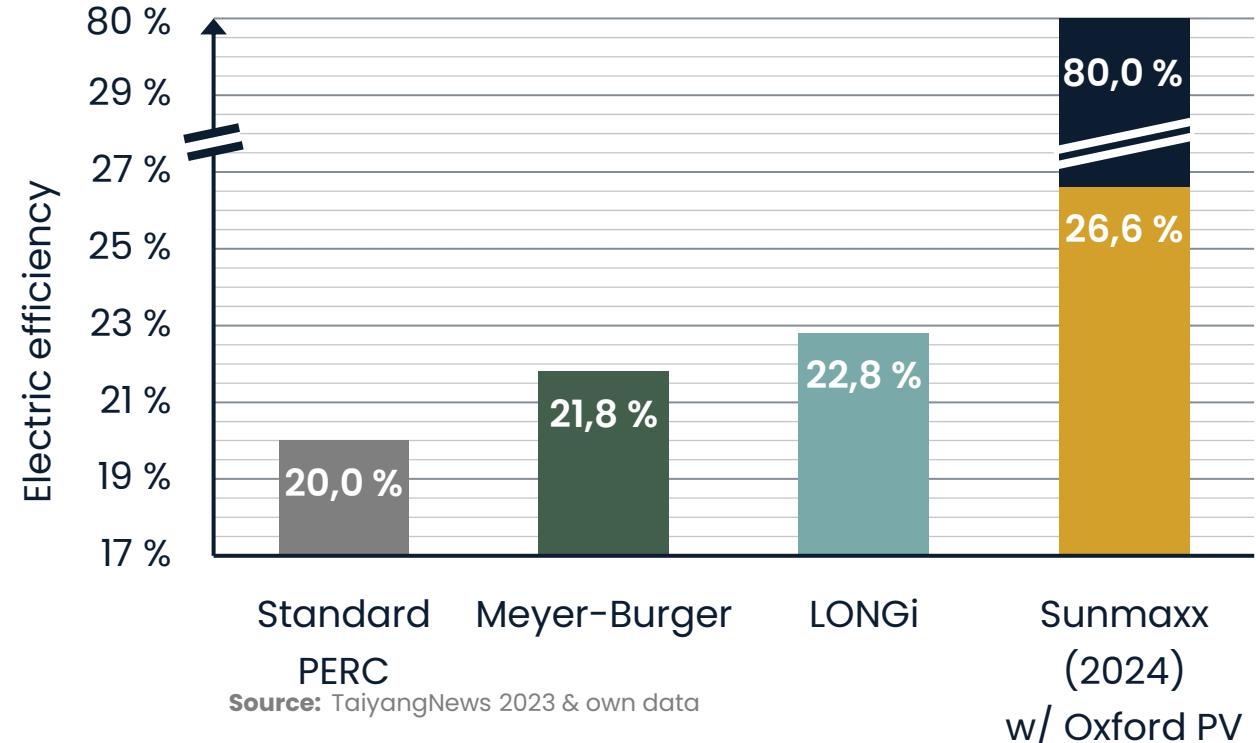
**550 MW**



**Expansion of Production Hall  
On-site Possible**



# DRIVING INNOVATION: RECORD MODULE REVEAL @ INTERSOLAR '24



**Pic:** World record module with 26,6% electrical eff. and 80% total eff. at Intersolar Munich 2024.  
Herbert Diess, Ex-CEO Volkswagen (left), and Dr. W. Stein, CEO Sunmaxx (right).



# SUNMAXX PVT PRESS



**SOLARENERGIE**  
Solarindustrie: Kommen die deutschen Hersteller zurück?

*Sunmaxx-Chef Wilhelm Stein in seiner künftigen Produktionshalle*

**Capital 07/23**

**Gulf Oil and Gas  
05/24**

**GULF  
OIL&GAS  
com**

News Events Projects Tenders Products Services Jobs **UKRAINE COP**

**Sunmaxx supplies green heat and electricity for major municipal project in Echterdingen**

Source: [www.gulfoilandgas.com](http://www.gulfoilandgas.com) 5/30/2024, Location: Europe

**zdfheute**

Produktion von PVT-Modulen

## Hoffnung für deutsche Solarindustrie?

von Anna Möllers

15.04.2024 | 17:11

**ZDF 05/24**

Die deutsche Solarbranche steckt in der Krise. Doch ein Hersteller trotzt dem Trend - setzt auf Innovation und Technologievorsprung. Eine mögliche Zukunft für den Standort?

[pv magazine](#) | 19.06.2024 15:05 Uhr

**Sunmaxx PVT, Oxford PV present perovskite-silicon tandem solar thermal module with 80% overall efficiency**

**PV magazine  
06/24**

**mdr**

NACHRICHTEN & THEMEN MEDIATHEK & TV AUDIO & RADIO

Sachsen Sachsen-Anhalt Thüringen Deutschland Welt Sport Leben Kultur Wiss.

**LEBENSZEICHEN AUS DER SOLARBRANCHE**

## Sunmaxx eröffnet Werk in Ottendorf-Okrilla

**mdr 05/24**



Efficiency Beyond Limits

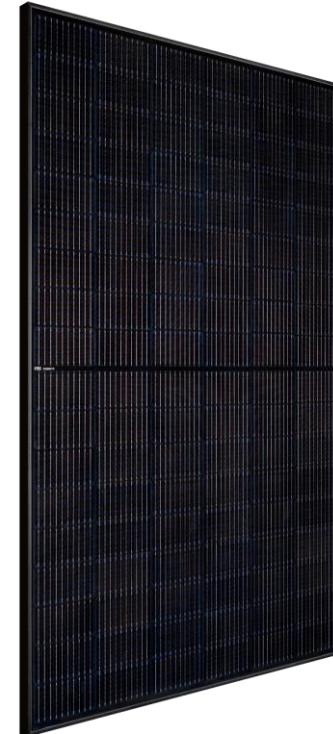
Your Energy Alternative

100% Green

100% Independent

# Decarbonisation? It's Sunmaxx.

- Engineered in Europe.  
Made for the World.



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