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DIGISOLAR in a NUTSHELL

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DCARBO2

Advanced digital tools for optimised planning, maintenance and operation of solar thermal hybrid systems

DIGISOLAR will reinforce Europe’s leadership in renewables, driving a sustainable future.

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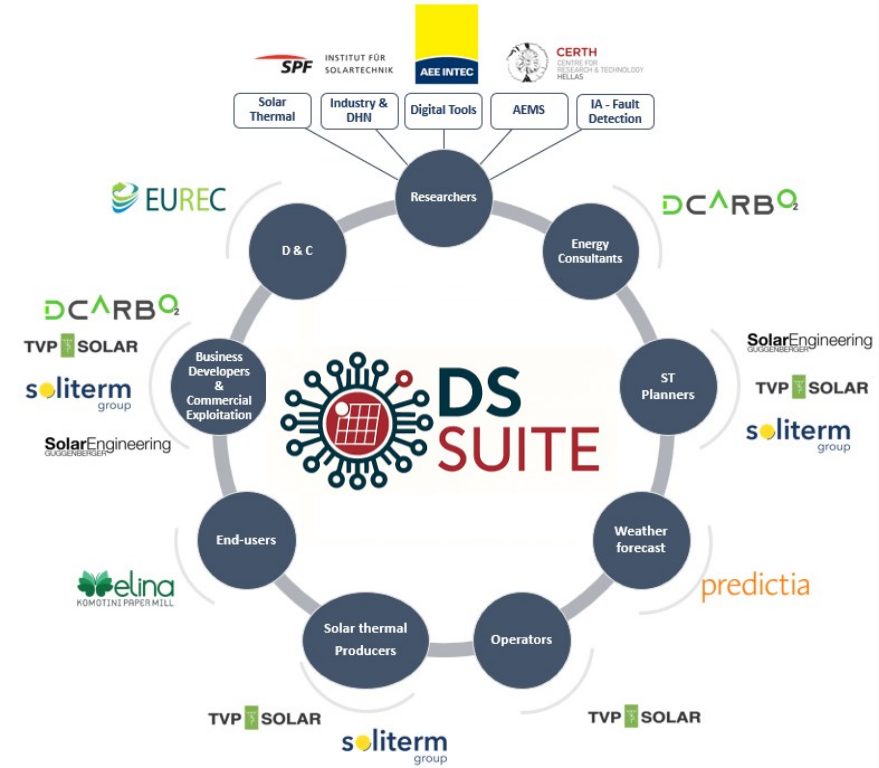
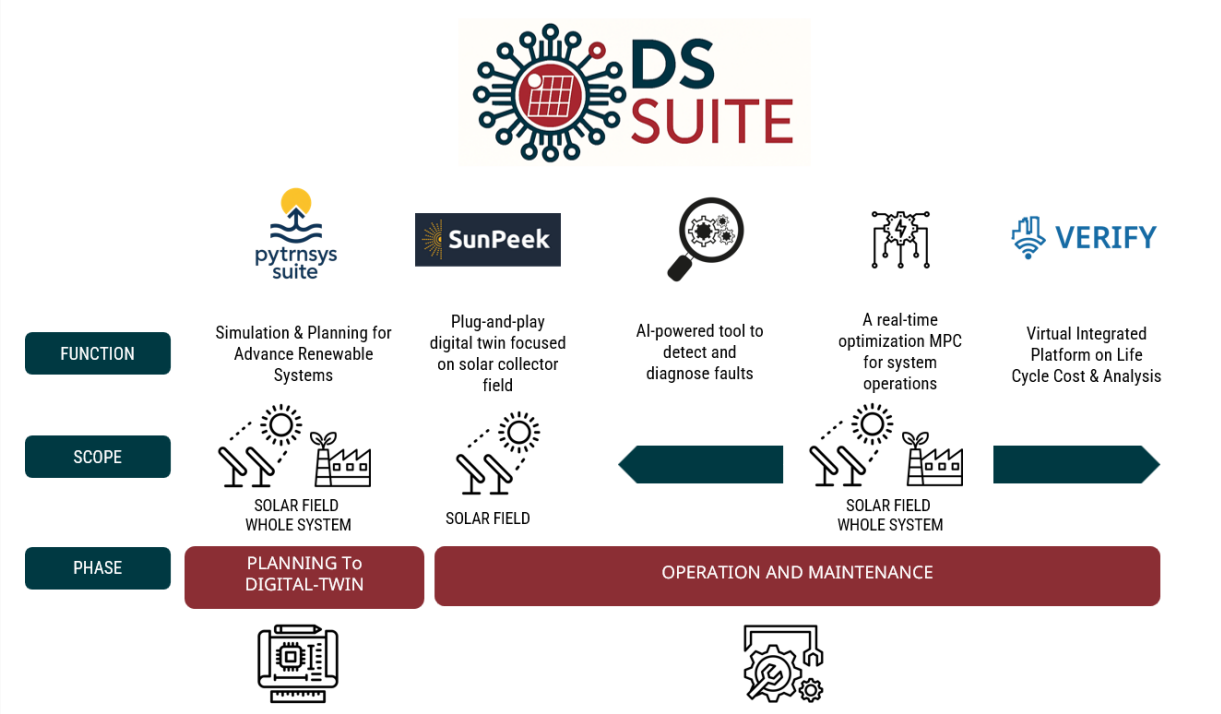
General data, consortium and project budget

- **Budget**
  - Overall 5.7 M€
  - EU funded 2.9 M€
  - Swiss funded 2.0 M€
- **Start 01.09.2025; End: 31.08.2029**
- **11 partners, 7 countries**
- **End TRL 7**
- **Demonstration in 4 pilot plants**



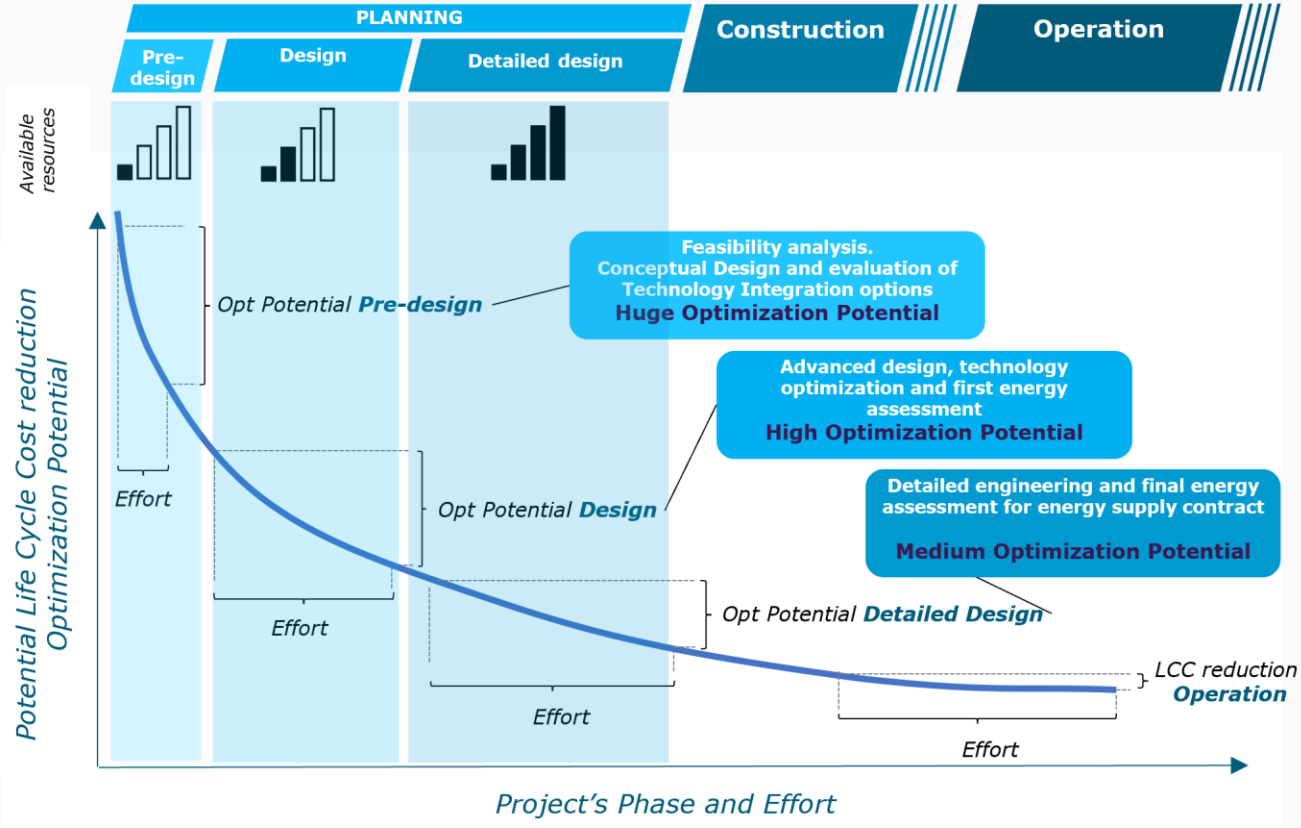
The DIGISOLAR software suite (DS Suite)

- Support planning, operation and optimisation of large-scale hybrid-ST systems
- Achieve high shares of renewables to accelerate the decarbonization for industrial process and DH



All-in-one harmonized Planning to digital-twin at system level

pytrnsys suite



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SPF INSTITUT FÜR SOLARTECHNIK

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SunPeek: Quality assurance tool for solar termal plants in operation

Friesach,
Source: Solar Engineering Guggenberger

Högslätten Härnösand
Source: Absolicon

Fernheizwerk Graz (FHW)
Source: Picfly.at Thomas Eberhard

SunPeek

Performance Verification

„Does the solar plant perform as expected?“

Performance Monitoring

„Does performance change over time?“

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AEE INTEC

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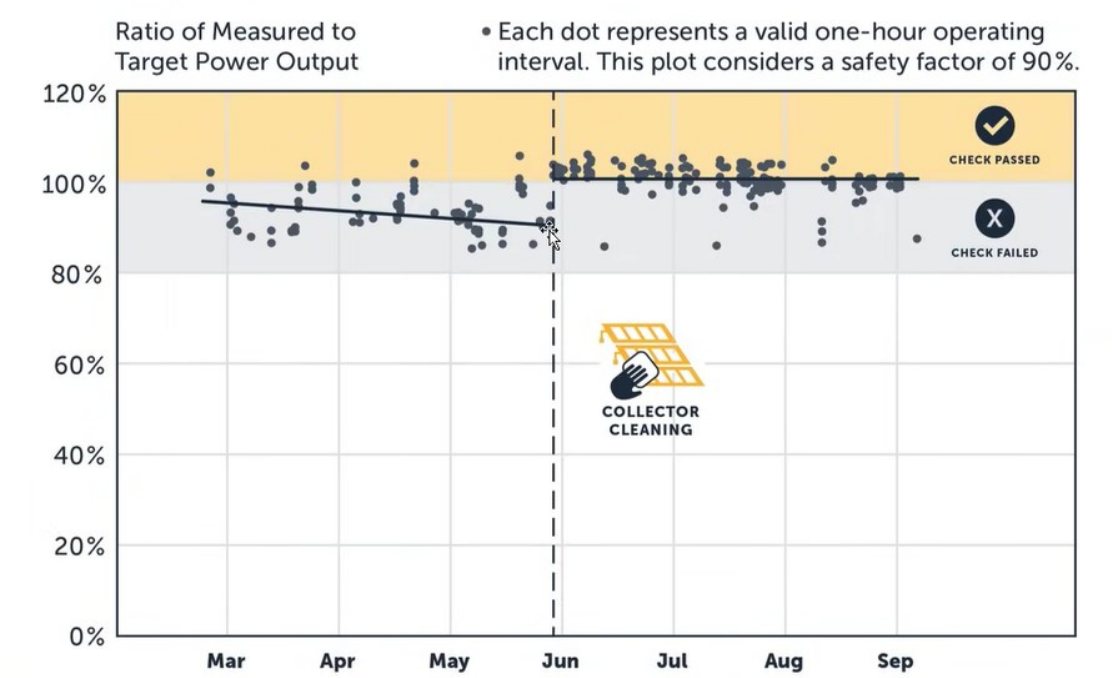
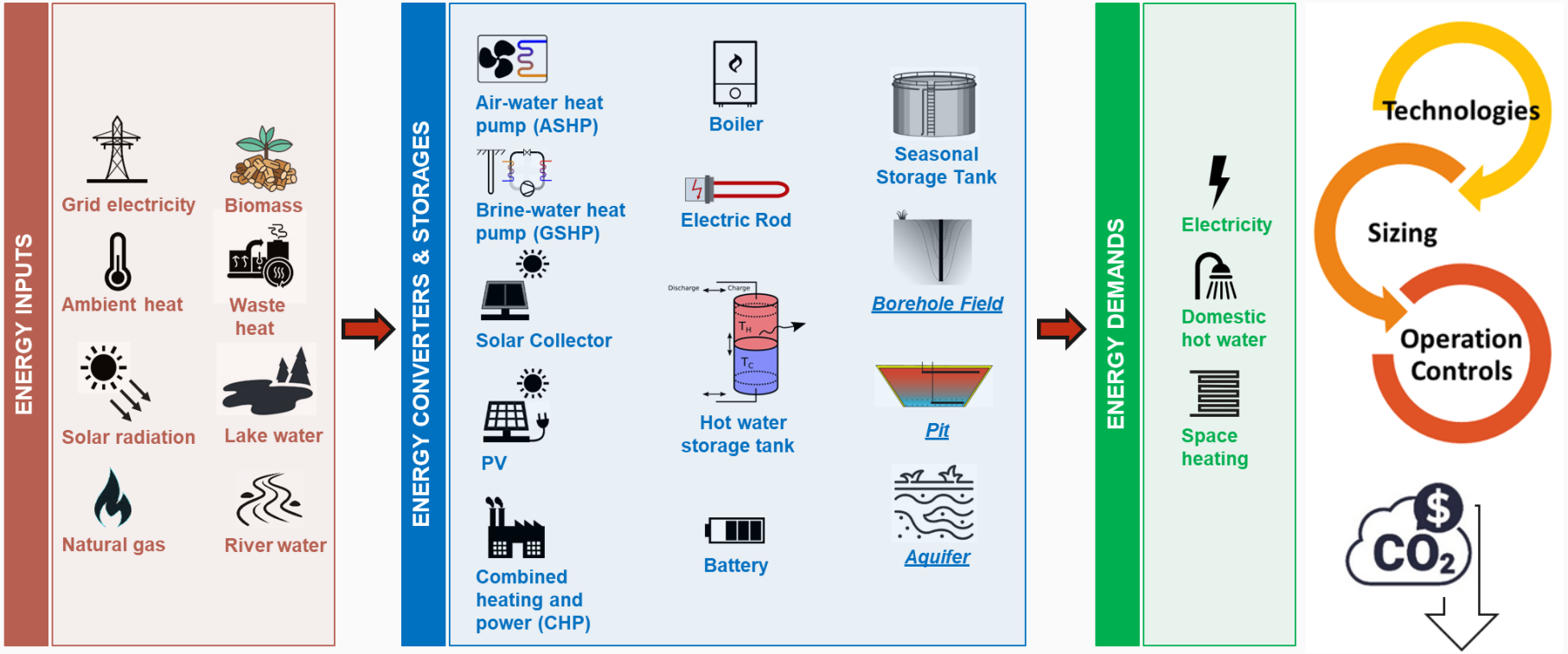
FDD: Fault detection and diagnosis

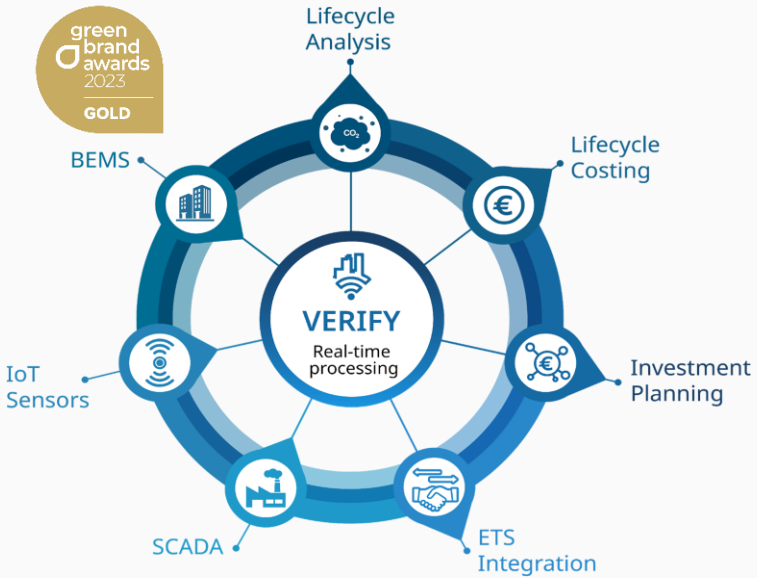


- Ratio of measured to target power output
- Each dot represents a valid one-hour operating interval.
- This plot considers a safety factor of 90%

AEMS: Advance Energy Management System for optimal dispatch



VERIFY: Life Cycle analysis (LCA) and Life Cycle Costs (LCC)



- Accounts for **real-time field production** and **consumption** data of energy components & **dynamic** changes in the energy, environmental and economic landscape
- Utilizes both **primary** (IoT) and **secondary** (APIs) data
- Designed for EU's **Emissions Trading System (ETS2.0)** - *operational by 2027-*
- Combines multiple **commercial** and **innovative** technologies for energy production, management and storage. **Parameters can be adapted:** per demo, per thermal comfort preferences, per billing systems, per energy infrastructure
- Follows international standards, such as **ISO 14040 / 14044**

District Heating (Italy)

- High Vacuum flat plate collector
- Collector area: 1’000 m2 - 707 kW peak power
- Thermal energy storage: 350 - m3
- Other technologies: CHP, heat pump (147 kW)

Pulp and Paper (Turkey)

- Parabolic through collectors (PTC)
- 10’000 m2 - 3.5 MW
- Thermal energy storage: 350 - m3
- Process cooling , air conditioning and hot water
- Absorption chiller 4.9 MW (cooling)

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Food processing and district heating (Germany)

- Flat plate collector (Savosolar)
- 28’872 m2 - 20 MWth
- 12.8 GWh/year; 443 kWh/m2
- Hot water 75 ºC
- TES 8’000 m³
- Solar contribution 50 %
- 16 MWth biomass boiler
- 2 x 350 kWth biogas generation
- 1.1 MWe co-generation
- 2 MWp PV

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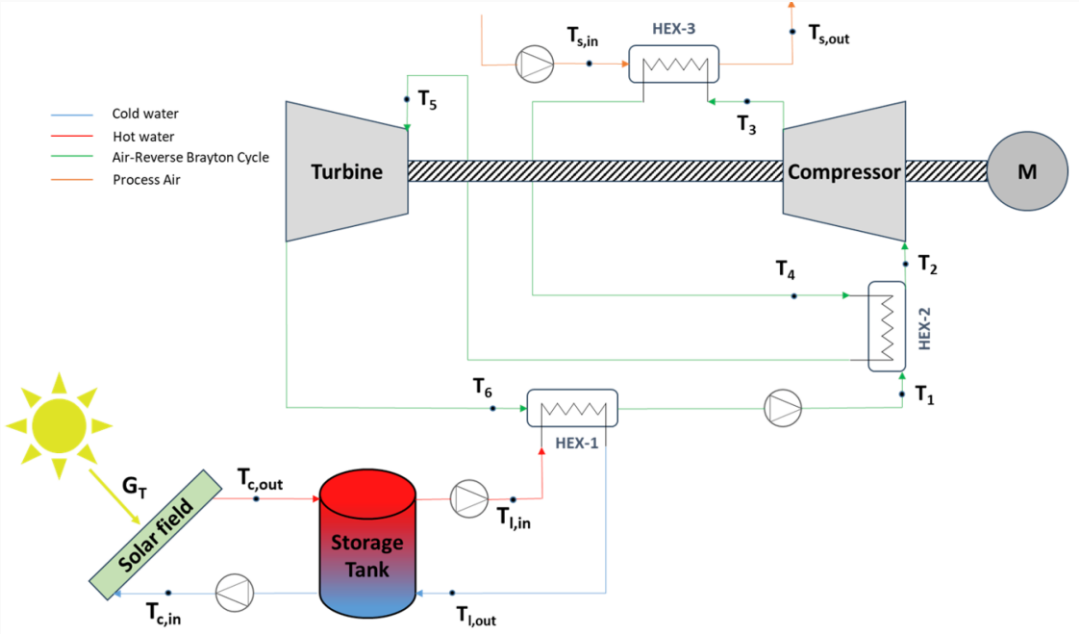
Pulp and paper (Greece)



- Steam generation
- High Vacuum Flat plate collector
- 700 m2 HVFP with 400 kWth
- 100 kWp PV
- 15 m3 water TES at 130 ºC
- 9 MW Biomass steam boiler
- 378 kW high temperature heat pump
- Air Brayton cycle
- 195 ºC

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Funded by

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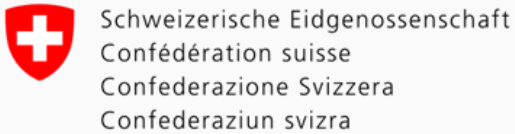

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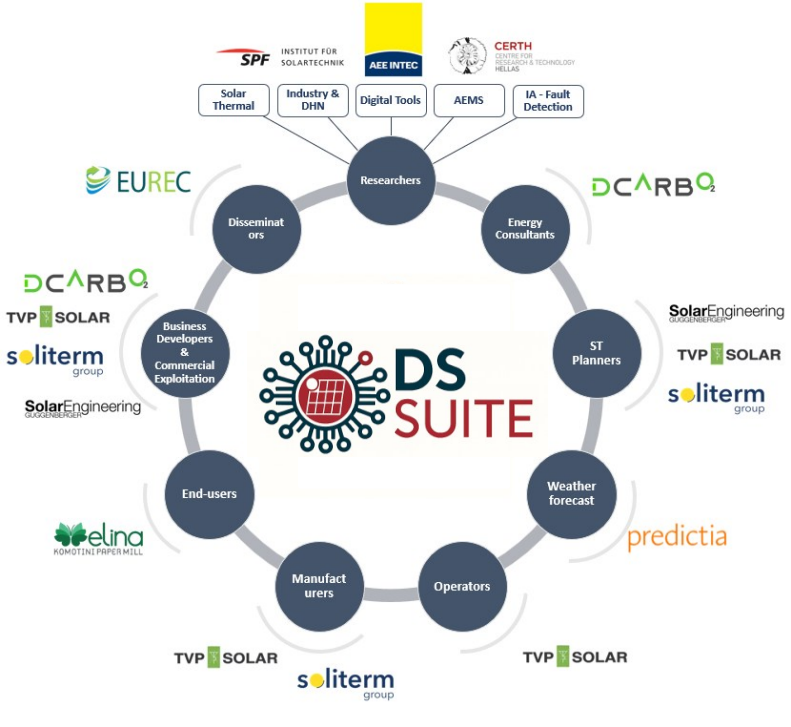
Thank you



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