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COOPERATION. INNOVATION. COMPETITIVENESS

Technical Assistance for Turkey in Horizon 2020 Phase-II
EuropeAid/139098/IH/SER/TR

Turkey in Horizon 2020 Phase II

Dr Mahmut Sami BÜKER
SOLIMPEKS Solar R&D

National Advisory Group Meeting on Horizon Europe
18th Nov 2022

REPUBLIC OF TÜRKİYE
MINISTRY OF INDUSTRY
AND TECHNOLOGY

COMPETITIVE SECTORS PROGRAMME

TÜBİTAK

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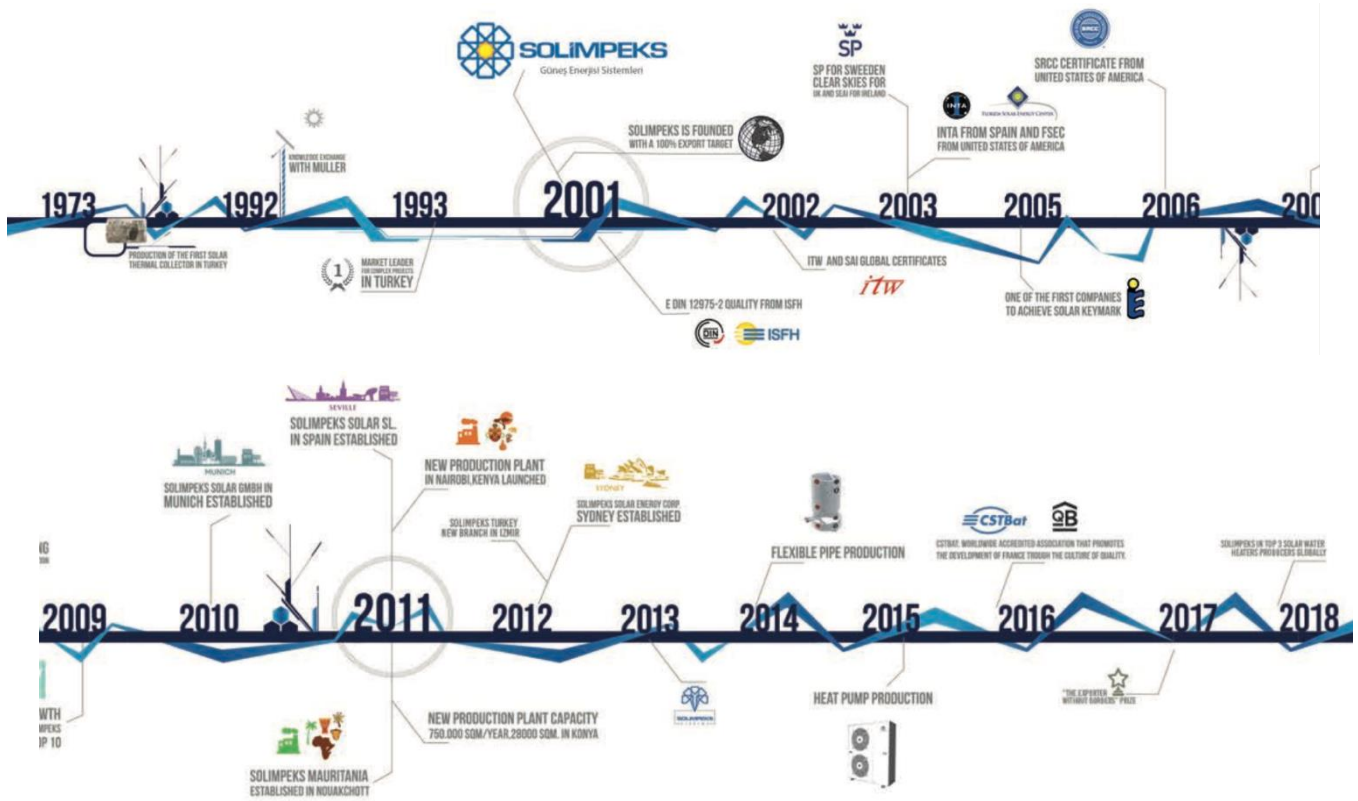
SOLIMPEKS Solar in brief

- Manufacturer of solar thermal panels, PV/T panels, heat pumps and boilers
- Turkiye's largest exporter of solar energy products



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SOLIMPEKS
Solar in brief

COMPETITIVE SECTORS PROGRAMME

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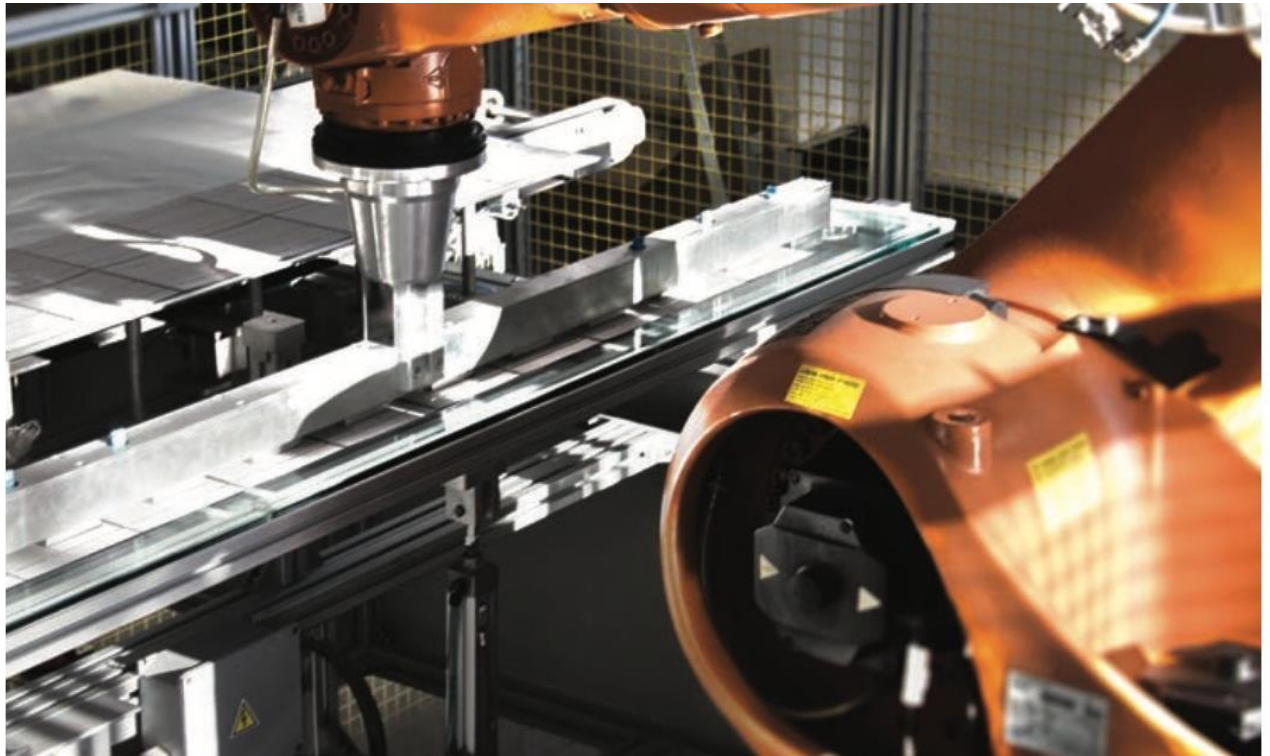
SOLİMPEKS SOLAR



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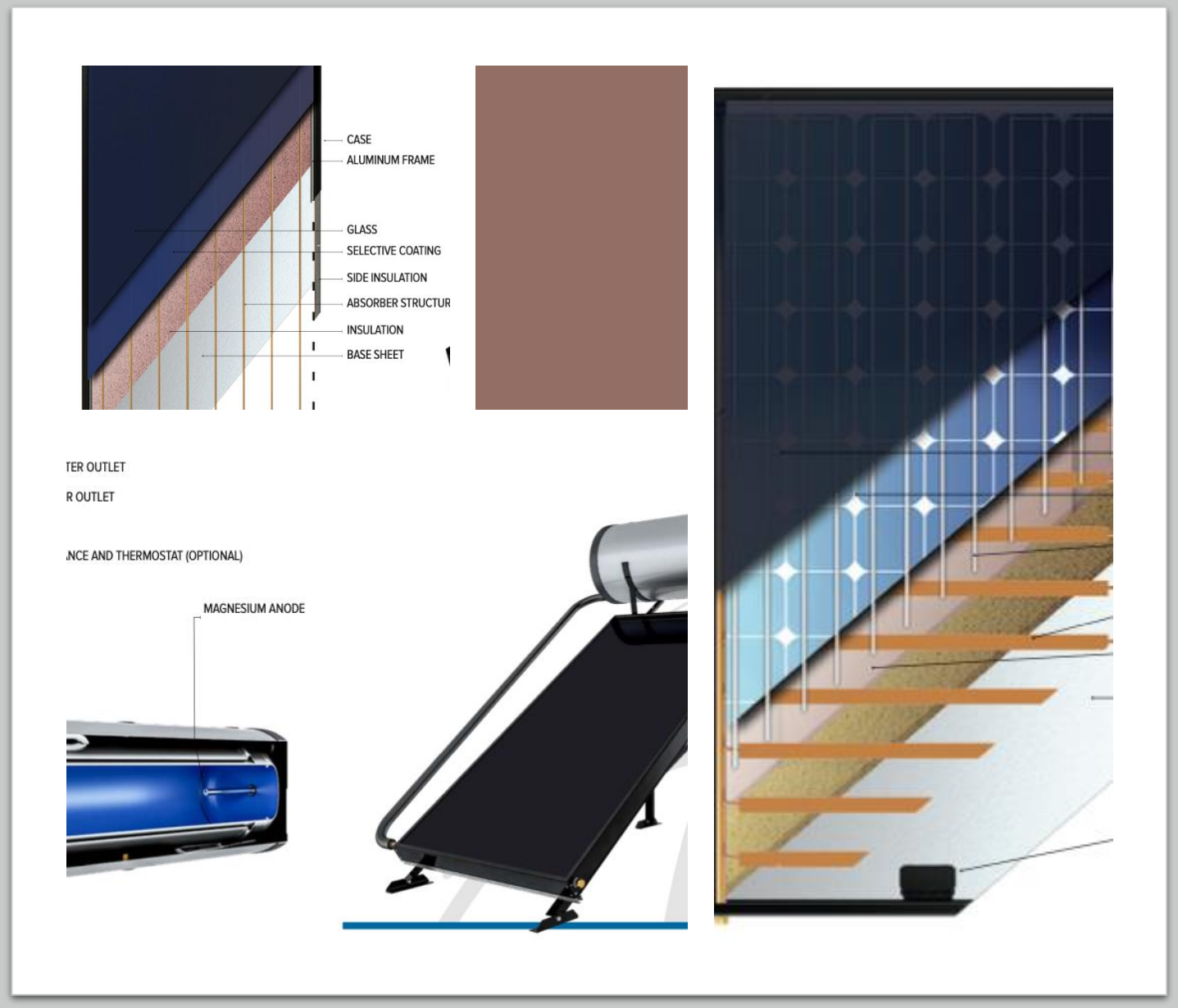
www.solimpeks.de

Product range

- Solar thermal panels
- Hybrid PV/T panels
- Thermosyphon systems



Product range

Heat pumps

- Currently have 8, 12 and 16 kWt
- Developing 25 and 50 kWt
- Boiler heat pump

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SOLIBUFFER

SOLITANK

SOLIKOMBI

Product range

Boilers

- 200, 300, 500, 800 and 1000 L
- Compatible with heat pump and hybrid energy systems including solar

It works perfectly since 2002

Quality

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Certificates

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R&D Projects

TUBITAK

- Development of a high performance air source **heat pump** using a new generation refrigerant (7151375)
- Development of a hybrid solar **photovoltaic-thermal (PV/T)** assisted **heat pump** system for SOLIMPEKS headquarters (1180177)
- Design and application of a hybrid **photovoltaic/thermal (PV/T)** module (7090758)
- Investigation of the effect of design parameters on the performance of **solar water heating tank** with **corrugated metal hose heat exchanger** (7140301)
- Design and manufacturing of an energy efficient, multi-source, plug & play **boiler** system (3225050) - ongoing

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R&D Projects

EU

- EAGLE. VII Framework programme (EU FP7-SME-2011-286161) - completed
- PIPESTORE. VII Framework programme (EU FP7-SME-2010-1-262062) -completed
- **SUREFIT. H2020 Programme (H2020 -LC-SC3-EE-2019) – ongoing**
- SOLARHUB. Horizon Europe Programme (HORIZON-WIDERA-2020-ACCESS-04) – about to start
- SECUREHEAT. Horizon Europe Programme (HORIZON-EIC-2022-PATHFINDERCHALLENGES-01)
- 2 applications being prepared for => **Efficient, sustainable and inclusive energy use (HORIZON-CL5-2022-D4-02)**

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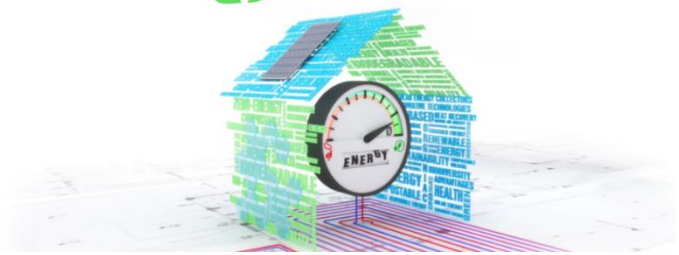
Horizon 2020
Call: H2020-LC-SC3-2018-2019-2020
(BUILDING A LOW-CARBON, CLIMATE RESILIENT FUTURE: SECURE, CLEAN AND EFFICIENT ENERGY)
Topic: LC-SC3-EE-1-2018-2019-2020
Decarbonisation of the EU building stock: innovative approaches and affordable solutions changing the market for buildings renovation
Type of action: IA

Sustainable solutions for affordable retrofit of domestic buildings

SUREFIT



OBJECTIVES

- Fast track renovation of domestic buildings
- Prefabricated technologies
- Target on near zero energy buildings
- Increase the share of renewable energy in buildings
- Innovative technologies involving heating & cooling systems, hot water, lighting, power generation
- Smart control systems
- Demonstration in 5 buildings in different climates
- Development of guidelines and operational tools
- Innovative business models

www.surefitproject.eu

COMPETITIVE SECTORS PROGRAMME

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Sustainable solutions for affordable retrofit of domestic buildings

SUREFIT

CONCEPT

Buildings represent about 40% of the EU energy consumption and 36% of the total CO_2 emissions, major part of which is due to heating and cooling to maintain comfortable indoor conditions. In 2012, energy consumption for residential space heating in the EU was 200 Mtoe. The EU is committed to meet 20% of all energy demand through the use of renewable energy sources by 2020, and a further target of 100% by 2050 is already underway. Rational use of energy and integration of renewable energy technologies can substantially reduce the conventional energy demand in new and existing buildings and assist the EU in meeting the climate change objectives under the 2015 Paris Agreement.

SUREFIT

- **Technologies**
  SUREFIT will address technologies that include (bio)aerogel panels and their integration with phase change materials (PCM), photovoltaic (PV) vacuum glazing windows, roof and window heat recovery devices, solar assisted heat pumps (SAHP) and ground source heat pumps (GSHP), evaporative coolers, integrated solar thermal and photovoltaic systems and lighting devices.
- **Retrofitting**
  The technologies are to be manufactured by the industrial partners of the project consortium and demonstrated under real-life context in five existing buildings under three different European (Mediterranean, Atlantic and North) climates to ensure their excellence in operation (Portugal, UK, Greece, Spain and Finland).
- **Installation**
  Prefabricated solutions will be considered for rapid retrofit with minimal disruption to occupants, ensuring high levels of occupant comfort/indoor environmental quality as well as low risk of moisture-related problems/summer overheating.

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COMPETITIVE SECTORS PROGRAMME

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Sustainable solutions for affordable retrofit of domestic buildings

SUREFIT

PARTNERS

ISQ	Instituto de Soldadura e Qualidade (ISQ),Portugal
AMS ADVANCED MANAGEMENT SOLUTIONS	Advanced Management Solutions Ltd (AMS), Greece
The University of Nottingham UNITED KINGDOM · CHINA · MALAYSIA	University of Nottingham (UNOTT), UK
PCM	PCM Products Limited (PCMP), UK
WINCO technologies	Winco Technologies (WINCO), France
CJR CÂNDIDO JOSÉ RODRIGUES, SA	Cândido José Rodrigues (CJR), Portugal
SOLIMPEKS Solar Energy Corp.	Solimpeks Solar Energy Corp. (SOLIMPEKS),Turkey
KÖSTER LICHTPLANUNG	KÖSTER Lichtplanung Ltd (KOST), Germany
Santa María la Real fundación	Fundación Santa María la Real (FSMLR), Spain
oncontrol	Oncontrol Technologies, LDA. (Oncontrol), Portugal
Aalto University	Aalto University (AALTO), Finland

Research Program funded by the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 894511

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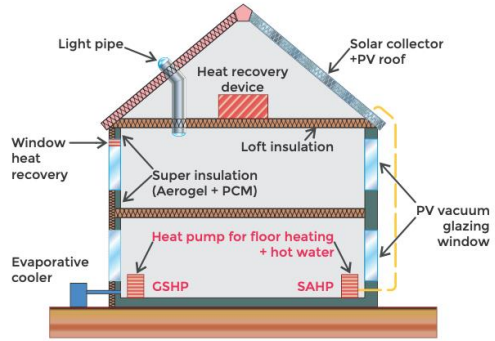
SUREFIT TECHNOLOGIES



Based on modelling simulation, the Surefit technologies per demo site have been identified, which satisfy the requirements for primary energy, CO_2 emissions and payback period reduction.

DEMO CASES

Demo Sites in 5 representative buildings in different European climates

Social house in Mafra Municipality, Portugal
Renovation technologies:
- PV vacuum glazing
- PV systems assisting heat pump compressor
- Window heat recovery
- Solar assisted heat pump providing both DHW and space heating
- Daylight louvers
- Smart control systems

Impacts based on modelling simulations:
- CO_2 reduction: 75% - 84% *
- Primary energy reduction: 74% and 83% *

*variations depending on the addition of insulation

Small apartment building in Peristeri, Greece
Renovation technologies:
- PVT
- PV vacuum glazing
- Breathable membrane
- Smart control systems
- Prefabricated thermal insulation panels

Impacts based on modelling simulations:
- CO_2 reduction: 62%
- Primary energy reduction: 62%

Semi-detached house in Nottingham City, UK
Renovation technologies:
- Bio aerogel insulation panel
- PV vacuum glazing
- PV systems assisting heat pump compressor
- Evaporative coolers
- Window heat recovery
- Solar assisted heat pump
- Smart control systems
- Ground source heat pump

Impacts based on modelling simulations:
- CO_2 reduction: 67%
- Primary energy reduction:62%

Mill houses in Valladolid, Spain
Renovation technologies:
- PVT
- PV vacuum glazing
- Breathable membrane
- PCM panel
- Window heat recovery
- Daylight louvers
- Smart control systems
- Prefabricated thermal insulation panels

Impacts based on modelling simulations:
- CO_2 reduction: 46% - 61% *
- Primary energy reduction: 45% - 60% *

*variations depending on the final scenario/final dimensioning

Prefabricated house in Finland
Renovation technologies:
- Daylight louvers
- Air vapour barrier
- *PV systems*
- *Prefabricated modules for ducts and pipes*
- *Insulation of piping system*
- *Centralized HR unit*
- *Insulation of balcony walls and roof*
- *Prefabricated ventilation module*
- *Ground source heat pump*
- *Smart controls*

} Commercial Technologies

Impacts based on modelling simulations:
- CO_2 reduction: 68%
- Primary energy reduction: 45%

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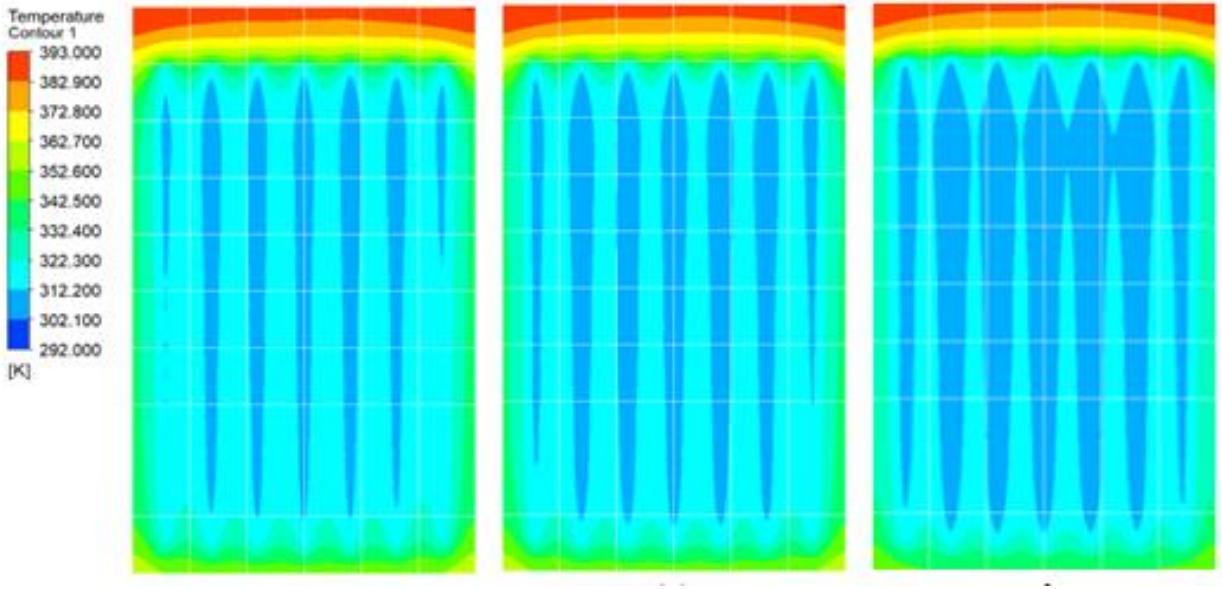
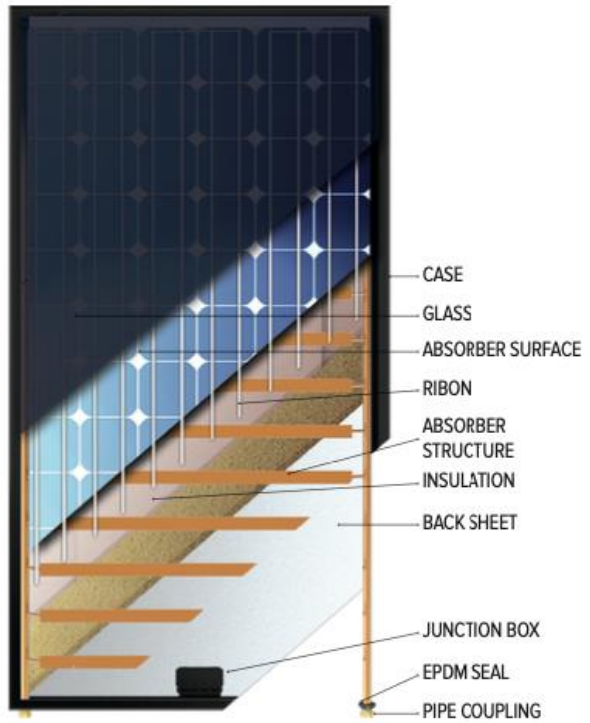
SUREFIT Research





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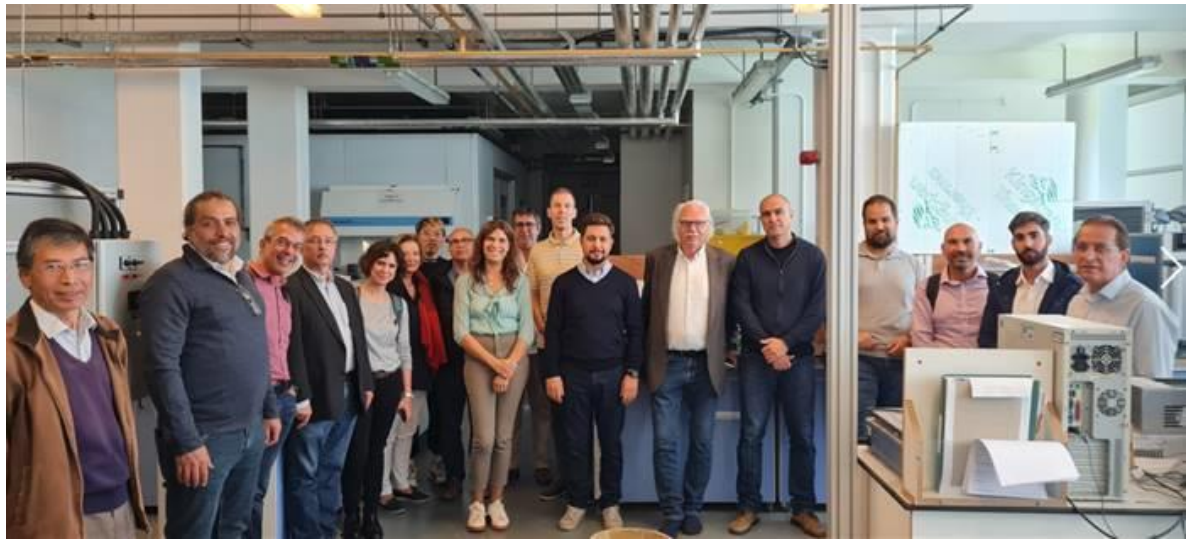
SUREFIT

Surefit M24 Consortium meeting



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Thank you!

Dr. Mahmut Sami BÜKER

SOLIMPEKS Solar R&D

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/ mahmut-sami-buker

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