



FIT-4-NMP

Strategic and targeted support
to incentivise talented newcomers
to NMP projects under Horizon Europe

HIGH-PERFORMANCE and SUSTAINABLE COMPOSITES INNOVATION WORKSHOP TU DRESDEN 13-14.10.2022

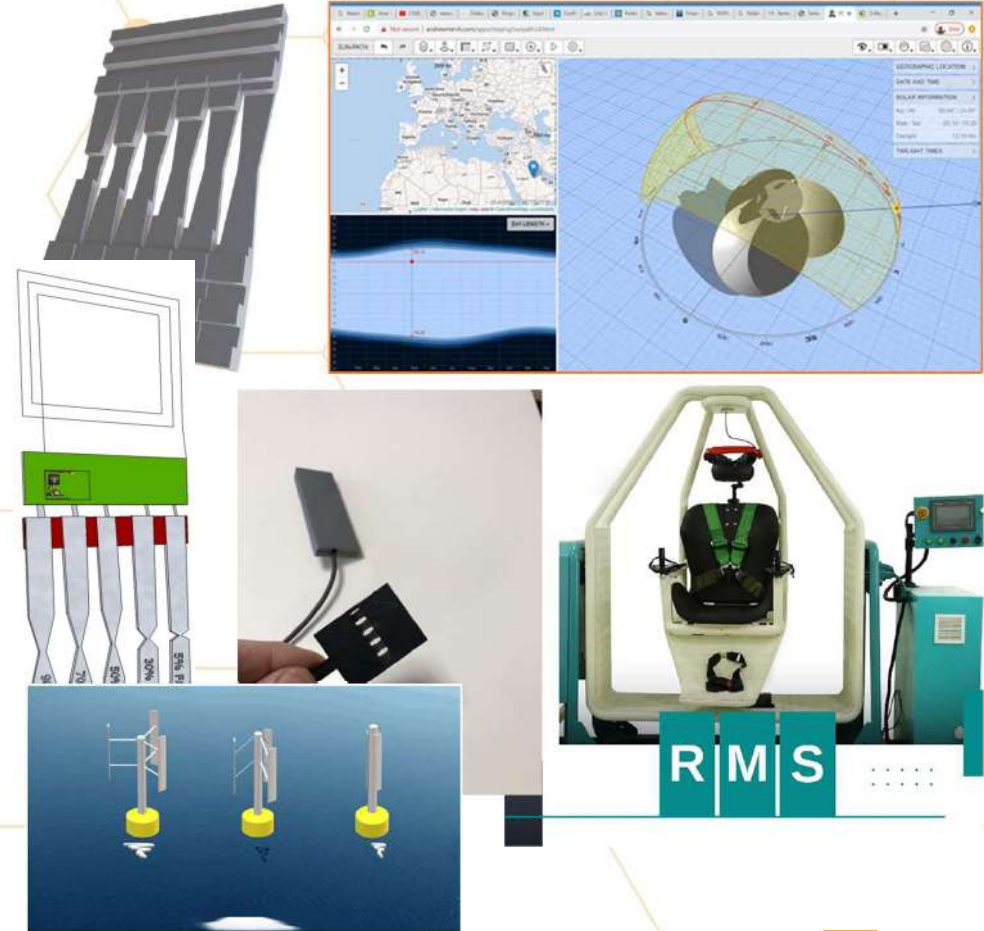
Strategic Innovative Initiatives
Prof. Dr. Tarik Ozkul
Türkiye



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 958255

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- Incubation center for Deep-Tech technologies with special interests on renewable energy, IoT and Medical Technologies
- 50+ granted patents, + 10 Patent applications currently in evaluation,
- Two spinoffs,
- 10+ Awards, recognitions



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HORIZON-CL4-2023-TWIN-TRANSITION-01-31:

ENERGY EFFICIENCY BREAKTHROUGHS IN THE PROCESS INDUSTRIES (PROCESSES4PLANET PARTNERSHIP) (RIA)

1. My key idea for contribution to a project under this topic

A method of making large size parabolic reflectors in the field, in-situ with minimal human intervention. Useful for building large size SRTA type CSP solar collectors. Can be applied in many different combinations including, Fresnel configuration, offset parabolic configuration, and can be applied vertically or horizontally. Expected to reduce solar field cost considerably.

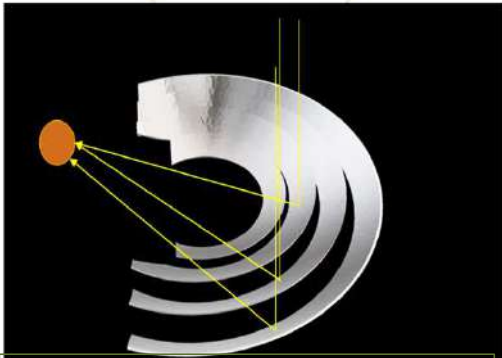
2. Competences relevant to the topic and motivation to apply

We are the patent holders in a large geography. We have partners who can help with industrial adaptation of the technology, mechanical construction, and other necessary parts. The design can be optimized for high temperature applications as well as medium and low temperature.



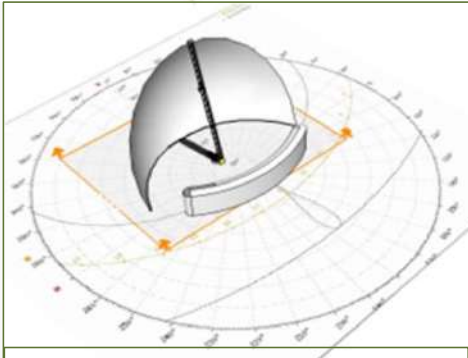
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APPLICATION POSSIBILITIES



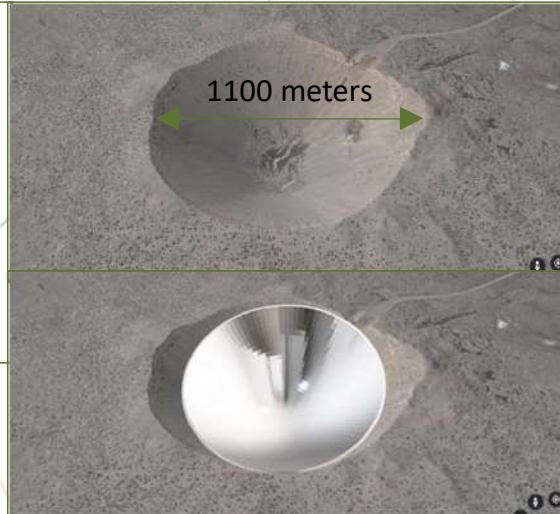
FRESNEL CONFIGURATION

The innovative shaping mechanism can be setup to generate parabolic reflector in Fresnel configuration. Fresnel configuration reduces the height of the parabolic bowl.



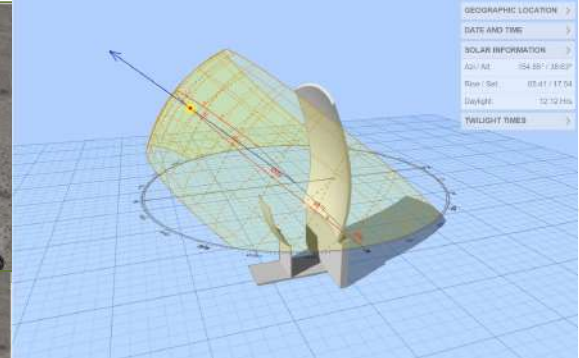
Any size, Any Orientation Full or Offset Configuration

The patented mechanism can be used to build the parabolic reflector on earth or in space in any orientation or focal length. This can be done in the field giving "in situ" construction capability.



Ability to shape desert sand

The patented SRTA-CSP/ROBOTIC mechanism can "sculpt" sand in near perfect parabolic shape. Additionally, solidification of desert sand can be done using biotechnology that generates "0" CO₂ emission.



High-temperature Configuration

The patented mechanism can be used to build high-temperature configuration with corrective mirror.

Shaping Façade for carbon neutral buildings

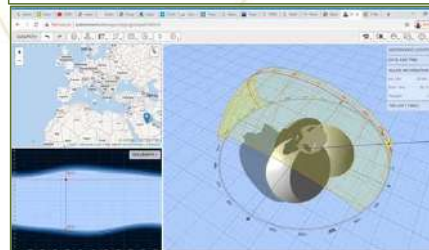
With the new technology we can shape building façade to help generate carbon neutral buildings. They will not be the most efficient power generators, but they will certainly help to generate the next generation eco-friendly buildings with unique architectural features.

Architectural Beauty

CSP's have not been architectural beauties so far. Not any more. With the patented technology it will be possible to generate architectural masterpieces that are also functional. The shape can be optimized for the latitude, so no two in different latitudes will be the same.

AUTO, "NO WATER" CLEANING

Cleaning is the "Achilles heel" of CSP. The innovative mechanism that builds the parabolic reflector, doubles its function as the automatic cleaning mechanism that cleans and polishes the surface of the giant reflector at night. Can't finish in one night? No problem, it will continue where it left next night.



HORIZON-CL4-2024-RESILIENCE-01-24:

DEVELOPMENT OF SAFE AND SUSTAINABLE BY DESIGN ALTERNATIVES (IA)

1. My key idea for contribution to a project under this topic

We have a unique SHM (Structural Health Monitoring) sensor that can follow structural health of critical structures like airplanes, ships, bridges, high speed trains, railroads, offshore structures, oil platforms, wind turbines. The technology is much easier to apply than currently used ones being much cheaper as well as being more accurate. It remotely monitors structural health with structures with a battery that lasts 10 years.

2. Competences relevant to the topic and motivation to apply

We are the developer of the technology and patent holder. Our spinoff company “FatigPro” is an expert adapting the technology to different applications.



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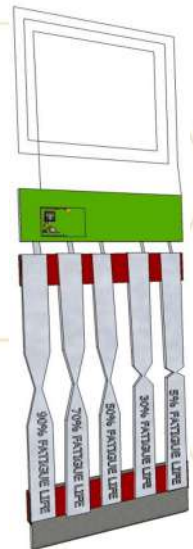
Technology enables safe and sustainable design,

By:

- Accurately monitoring aging of structural elements with $\pm 2.5\%$ accuracy,
- It enables effective predictive maintenance,
- It enables getting more life out of parts,
- Multi stage warnings provide confidence in measurements,

This means:

- Safer aircraft, train, ship, bridge, heavy machinery,
- Wind turbines with more life,
- Safer offshore structures,
- Environmentally friendly pipelines, (we can monitor corrosion indirectly),



HORIZON-CL4-2023-TWIN-TRANSITION-01-31 HORIZON-CL4-2024-RESILIENCE-01-24 RELEVANT EQUIPMENT AND FACILITIES

- Design tools,
- Prototyping equipment,



Some photos are from partner organizations



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