

## Novel Flat Solar Collector Technology for more efficient green energy production

Our partner, a Hungarian SME has developed a novel solar collector that offers an 80% efficiency compared to the 40-60% efficiency gained by other solar collectors available on the market. The novelty of this technology is based on conceptions never used before and implies totally new elements in technical solutions, making the invention completely novel and unique. Our partner is looking for business partners for buying or licensing the technology and know-how.

### Background information

At the increasing demand on the market day and day appear new types of solar collectors. Unfortunately these products are not always supported by research and developmental background, because these are very expensive, time consuming tasks. Many manufacturers by the consideration that a layman user just looks at the price -not to the product efficiency, reliability- launch its own products in order to gain profit, intentionally misleading the customers.

As it is widely known, the solar collectors transform the captured solar radiation into heat, offering green solutions for water heating, back up heating systems and swimming pool heating. For all year-round operation two types of solar collectors are most commonly used. These are the flat solar collectors and the evacuated tube solar collectors. The selectively coated flat solar collector's are currently the most appropriate technologies for the production of alternative energy, mainly for their reliability and investment costs due to the relatively short payback. The offered technology is a closed flat solar collector with selectively coated absorber. Measurements support that the current collector efficiency is with 19% higher compared to the newly developed solar collectors available on the market, which is due to its highly efficient absorber.



The used technical solutions increase the efficiency not just for individual flat solar collector panels, furthermore the efficiency of the whole built-in solar collector system. This technology permit of more effective, cheaper and timeless solar panel production with low maintenance costs.



## Innovation of the technology

Our partner has designed a specific geometrical shaped and surface treated absorber which provides the most efficient heat absorbance and transfer, including all the benefits of low quantities of heat transfer fluid (1.7 Litre/1.82 m<sup>2</sup> active absorber surface). **According to the TÜV Rheinland certificate at 1000 W/m<sup>2</sup> irradiation its performance is 752 W/m<sup>2</sup>.** Other collectors available on the market have just maximum 500 W/m<sup>2</sup> performances at the 1000 W/m<sup>2</sup> irradiation.

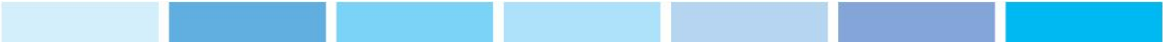
The lower volume of the heat transfer fluid and the higher heat transfer surface provides more efficient heat transfer. All the components and the materials used for build up are the best qualities (low iron content glass seal) and offer long lasting durability, extreme weather resistance (thermal, UV, hail etc.). The inner capacity's vapor can be abandoned. The solar collector house was specially designed to give a solid structure, light weight and making possible the proper insulation beside the aesthetic appearance. **To a 2000 mm x 1000 mm x 0.061 mm solar panel external size associates just 38.6 kg mass.**

The evacuated tube collectors daily operating time is 4-5 hours, which implies from construct (at particular illumination angle of the pipes obscure each other), while the flat collectors offer much higher operating time. **The inventor's south oriented solar collectors at 70° angle of inclination still work close to 80% capacity, which corresponds to 8-9 hours per day effective operating time.** These results are supported by the measurements made by TÜV Rheinland, therefore, high efficiency can be provided in the case of vertical integration too.



**The most important feature of the presented technology -out of conventional type solar collector- is a technical solution, where the heat-absorbing surface is nearly identical to the heat transfer surface, thus providing an exceptional thermal performance, the highest available efficiency.**

## Main advantages

- Extrem efficiency: 80% efficiency compared to the 40-60% efficiency gained by other solar collectors available on the market.
  - The highest efficiency and lower cost thanks to a number of design innovations.
  - There is no mediatory element between the absorber heat transferring surface and the heating medium, therefore there is no galvanic rusting, which would work as an insulation, there is no bad pressing, bad assembling, which would result in lowering the efficacy of the system.
  - The ideal ratio of the absorber surface and heat transfer fluid confers high temperature shift between the input and output branches, thus increases the heat transfer efficiency at the reservoir.
  - Day-long running time (8-10 hours) that allows to decrease the container volume required, as determined by the daily consumption.
  - Even vertically build in is powerfull.
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- Efficient heat transfer without heat loss .
- Aesthetic, economies of scale, with reduced mass.
- Resolved the enclosed volume demisting.
- Up to 30 years lasting operation time
- 2-8 years payback time depending on the size of the system
- Market approved product.
- The technology has TÜV Rheinland product approval and DIN CERTCO certificate.

### Potential areas of use

Back up heating systems, heating water or for heating swimming pools.

### Stage of development

The technology and the know-how are ready made, approved by the market. There are several private and industrial references, the solar panels built on/in houses. The technology has TÜV Rheinland product approval and DIN CERTCO certificate.

### Intellectual property status

The specific structure design associated with this technology is under design protection.

### Type of collaboration

Our partner's intention is to sell or licensing his technology and know-how outside the territory of Hungary.

### For further information please contact

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