

## Switzerland solar thermal energy

Large-scale solar concentrating technologies are already established at an industrial scale for solar power generation, for example in Spain, the US and in China. These plants typically operate at up to 600 degrees. At higher temperatures, heat loss by radiation increases and reduces the efficiency of the plants. A major advantage of the thermal trap developed by ETH Zurich researchers is that it minimises radiative heat losses.

Our approach significantly improves the efficiency of solar absorption," says Casati. "We are, therefore, confident that this technology supports the deployment of high-temperature solar plants." However, detailed technical and economic analyses are still pending, he says. Such analysis is beyond the scope of the current experimental study, which the researchers have published in the scientific journal external page Device.

Casati is continuing his research to optimise the process. The technology could one day make it possible to use solar energy not only to generate electricity, but also to decarbonise energy-intensive industries on a large scale. "To combat climate change, we need to decarbonise energy in general," says Casati. "People often think of energy in terms of electricity, but we actually use about half of our energy in the form of heat."

Casati E, Allgoewer L, Steinfeld A: Solar thermal trapping at 1,000°C and above. Device, 15. May 2024, doi: external page 10.1016/j vice.2024.100399

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Besides external factors (CO<sub>2</sub> tax with a very limited impact and fluctuating oil price), the Swiss solar thermal market is predominantly driven by the good will of private persons and the trust they put into this solution to help the planet and their wallet. This is why the market is primarily on single family houses and to a smaller extent also on pre-heating of DHW in dwellings. In addition, the Swiss cantons are about to establish cantonal building regulations requiring the use of renewable energy in new buildings or in the case of renovating the heating system. However, with the latest changes a stronger trend to heat pump solutions and PV can be observed.

Increased cantonal subsidies for domestic solar thermal systems can not make up for the tendency to further electrify the energy system. Missing subsidies and other incentives for solar district or solar industrial heating make it difficult to establish new and more profitable market branches.

The Swiss solar thermal industry is relatively small. About half of the collectors installed in Switzerland are imported, mainly from European countries. The other half originates from domestic production. From the total Swiss collector production, about one quarter is exported. Most products are sold via manufacturers to

installers. Since the merger of two of the three dominant manufacturers on the market, a single market leader has emerged.

The Swiss solar professional association Swissolar estimates that there are about 2,000 jobs from the solar thermal market slowly shifting towards the solar PV market as well as towards the heat pump market or wood boilers suppliers.

Swiss installations tend to be of high standard corresponding to the demand of the market and better quality comes often at a price. One example: The use of (more expensive) stainless steel storages for domestic hot water installations is common instead ofenameledsteel storages. Quality controls are to be deployed with low-cost monitoring devices coming from pilot projects that showed their benefits.

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