

# “The enemy of my enemy is not my friend”

The importance of large solar thermal systems and solar houses in the future is a much discussed topic, at least in Central Europe. Large-scale storage is needed for both. Josef Jenni of Switzerland is the pioneer of large heat storage systems. We talked to him about solar houses and the competition against photovoltaics and heat pumps.



Josef Jenni is one of the pioneers of the solar thermal community. He is best known for the seasonal storage tanks his company manufactures and for building the world's first 100 % solar heated building in 1989.

Photo: Jenni Energietechnik

*S&WE: Mr Jenni, at the moment heat pumps seem to be more successful on the market than solar thermal energy, but then people from the solar thermal industry say that we should watch out for the electricity gap in the winter. And I've heard heat pump proponents saying that solar thermal energy is just greenwashed natural gas heating, although both have an enemy in common – which is oil and gas. Does anyone actually benefit from these mutual attacks?*

**Josef Jenni:** The enemy of my enemy is not, in fact, automatically my friend. Between solar thermal and heat pumps there is, of course, direct competition. Most people who install a heat pump don't also use a solar thermal system. For a heat pump, January is an especially noteworthy period. During this time, the additional electricity demand is thermally generated with an efficiency of 30 to 50 %. If, for example, an air-source heat pump is running at an output figure of less than two, heating with coal would be better for the environment.

*S&WE: You also say that we have too little solar electricity for heat pumps in winter.*

**Jenni:** It is an illusion if people think they could generate the power for their own heat pump by means of a PV system. They must be joking.

*S&WE: What's the situation in Switzerland?*

**Jenni:** Plainly speaking, we have 60 % hydropower and 40 % nuclear power in Switzerland.

*S&WE: After all, hydropower is a very flexible source of energy.*

**Jenni:** Yes, a majority is made up of hydropower storage plants, which helps us achieve relatively high peak performances. Switzerland is in a quite privileged situation for offsetting a shortage of electricity from photovoltaics. We have more options than, say, Germany. In winter, we aim to generate peak electricity with combined heat and power plants (CHP). Unfortunately, CHP plants are currently not at all financially viable. If there is a shortage of power, then it should cost more. As a result, CHP plants would become possible again.

*S&WE: Considering that solar thermal is actually your main concern, you have also written a good deal about electricity.*

**Jenni:** When talking about energy, many people mistakenly think exclusively of electricity. And people from solar thermal

and photovoltaics are not cast in the same mould. Solar thermal companies have a certain propensity for idealistic thinking, while people from the PV industry quite often go straight for the money.

Some years ago, a potential client came to see me in an automobile weighing three tons with plans for a 500 m<sup>2</sup> villa that he wanted to build, complete with both indoor and outdoor swimming pools. Moreover, he wanted the house to be energy autonomous with storage of about 100 to 200 m<sup>3</sup>. He asked us for an offer and said he was Germany's largest solar panel installer. I tell you, he might be a good businessman, but he just doesn't get what this industry is actually all about.

“People from PV go straight for the money”

**S&WE:** Are others also aware of this difference?

**Jenni:** Eduard Kiener, who wrote the preface to my book, is a former director of the Swiss Federal Office of Energy. He said to me early on, "Mr Jenni, you need to understand that photovoltaics people are a different breed. They are ruthless." I noticed this some years ago when Swissolar was going to make recommendations about the distribution of millions in public funds. The people representing PV demanded every cent for their industry without a second thought. They didn't want to share.

**S&WE:** Do you think that's part of the reason that photovoltaics has seen such success?

**Jenni:** Of course a lack of consideration is a path to success. PV people will stop at nothing to sell their solar cells, just like heat pump people. So if someone with a photovoltaic system purchases a heat pump, they're quite happy – whether it makes sense or not. All that matters is that they can sell their heat pump or their PV system.

**S&WE:** You are currently building two new solar apartment buildings and thus leading the way in demonstrating that one can break free from public funding. The aim is for the houses to pay for themselves on the free market. What's the schedule?

**Jenni:** Starting this summer, people can move into the first apartments. Most of our bottlenecks are happening during planning, since we're working on expanding our factory at the same time. We will then need a few months of rest before starting out on a new construction site.

**S&WE:** How many units will each building have?

**Jenni:** They will have eight apartments each.

**S&WE:** And will they be let or sold?

**Jenni:** We can do as we please. We were able to let the first house completely without any issues. The second is also almost full, and we aim to sell the third as owner-occupied flats. For me, it's all about demonstrating that people will live in this type of flat. This should set an example for others to follow suit and build the same. That would be ideal for me.

**S&WE:** Then you could focus again on your core business, storage systems.

**Jenni:** Right. We built the first apartment building because nobody else had done it yet. What's great

**Snow is not a big problem for solar houses. Typically the collector area is very steep, so that the snow slides off very easily.**

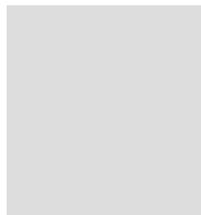
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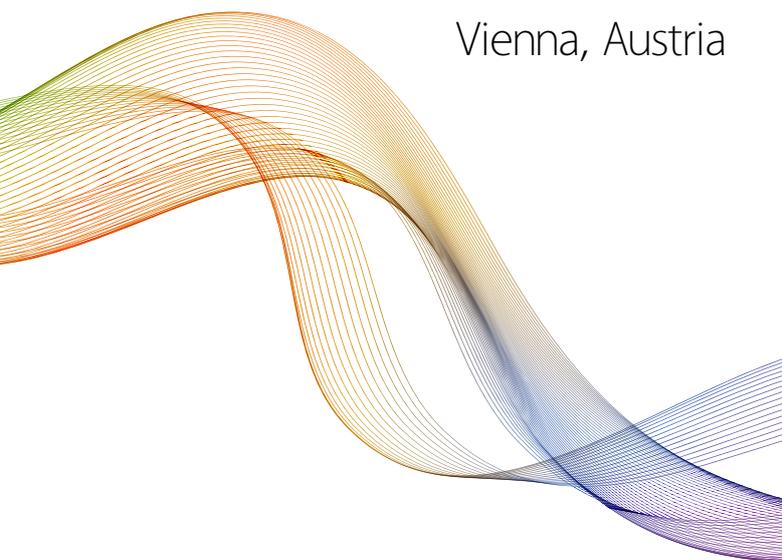
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is that, with this house, we actually succeeded in sparking work on apartment buildings, with companies like FASA in Chemnitz, Germany, following suit.

**S&WE:** *One more question about the target group for this type of building. Are we talking about larger flats? At least at first, are you looking at a wealthier crowd?*

**Jenni:** Yes, they are not exactly strapped for cash.

**S&WE:** *Where are you selling storage systems for such solar houses? Are there any regional hotspots?*

**Jenni:** Of course, Chemnitz in eastern Germany is an absolute hotspot. FASA accounts for just under five per cent of our sales and is therefore our second largest customer. Our biggest customer is a collector manufacturer in Switzerland.

**S&WE:** *The first storage systems for your solar houses were oversized. What's the situation these days?*

**Jenni:** Yes, that's true. For the first house, we had a storage system of 205 m<sup>3</sup>. We then realised that we could reduce the storage volume by half. For the new buildings, we've gotten it down to 107 m<sup>3</sup>. In addition, because of our experience with that first house, we

**"I think that the storage systems are still oversized"**

have great potential for optimisation. I think that the storage systems are still oversized by a factor of two. However, small storage systems make us more dependent on the weather. There are clearly more and less solar friendly winters. And if a winter is unfriendly, then storage volume is important after all. The worst situation is permanent fog – much worse than bad weather. Even during bad weather, the clouds still open up every so often and let the sun come out.

**S&WE:** *Such a large storage tank also has heat losses. Doesn't this have any effect?*

**Jenni:** This is one of those frequently asked questions that don't actually have practical relevance any longer. I've gone to see a customer only once so far to check why the apartment is so hot in the summer. However, the problem there was the sunroom, which could not be shaded. If the storage units are insulated enough to transfer heat from autumn to winter, the waste heat in northern latitudes is tolerable and can be ventilated at night. At first, we used considerably thicker insulation and installed ventilation systems for the storage rooms. Today, we've done away with all this and adjusted the insulation thickness downwards time and again – because we never heard any complaints.

**S&WE:** *Do your buildings still use auxiliary heating? Solar houses are frequently equipped with a wood stove.*

**Jenni:** Our own projects don't have auxiliary heating for PR reasons. If the houses are built for customers in industrial production, an emergency heating system makes more sense. Otherwise, the storage systems can get quite big, if one really intends to face every bad winter.

**S&WE:** *Are the last few percent usually the most costly ones?*

**Jenni:** Yes, especially the last few percent of security. We had two winters in our first apartment building where a 20 m<sup>3</sup> storage unit might have been sufficient because the sun helped us out. And 20 to 30 m<sup>3</sup> of storage would have been enough for a solar coverage of 95 % with this type of flat, and that would be more reasonable. You just have selective wood-fired auxiliary heating here. This is justifiable, if it remains the exception and the sun is quite clearly the main source of heating.

**S&WE:** *Your focus is on solar heating. Have you ever thought about taking on electricity?*

**Jenni:** Providing a house with heating, if possible all year round, can still be achieved more efficiently and cost-effectively with solar thermal energy. However, many of our recent projects have been fitted with solar cells in addition to solar collectors. Our first house, where my brother's family lives, was also completely autonomous all year round in terms of electricity for eleven years. We had no access to the public grid during that time – and no gas stove or wood-burning oven. Really, nothing else at all. The sun was the source of everything.

*The interview was conducted by Jan Gesthuizen.*



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