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Autor: Dietrich, Stephan
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Solar Energy on the Upswing

Towards the sun

The relative importance attached to solar energy in Switzerland is still rather modest, but interest in its possible utilisation has recently increased enormously. Its benefits are self-evident: solar energy is friendly to our environment, and its "stocks" are unlimited.

In the Leuenberger pasta factory in Huttwil (in the Canton of Berne) spaghetti, noodles and "hörnli" (a typical Swiss pasta speciality) have in recent months been dried by means of solar energy.

On the roof of the factory, solar collectors have been installed over an area of more than 400 square metres (4,300 square feet). In them, a mixture of water and glycol is heated to a temperature of 150°C, and is used for heat-treatment in the drying process (also, in winter, for heating the building).

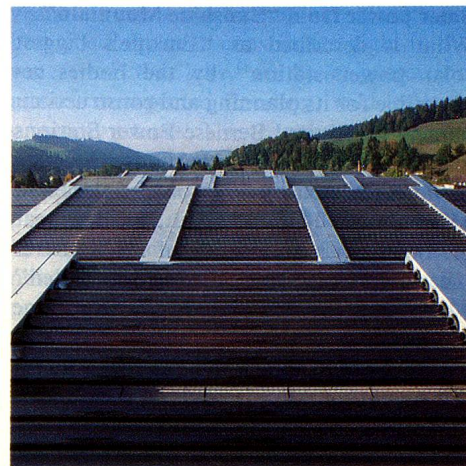
The management hope that these collectors will prove capable of supplying up to one third of the heat needed. How much exactly is something that scientists in the University of Geneva, who are closely observing this "experiment", will be ascertaining.

The "solar spaghetti" from Huttwil are unique in the world (with the exception of genuine home-made pasta dried by direct exposure to the sun's rays in the open air!). With its utilisation of solar process heat, the Leuenberger firm is not only the third largest manufacturer of pasta in Switzer-

land and a supplier to the giant Marks & Spencer chain of stores in England, but can claim pioneer status among Swiss manufacturers. For while by 1988, private individuals had already installed more than 1,100 solar installations, covering an area of 42,000 square metres (say, 475,000 square feet), industry has lagged far behind in this sector. Apart from a wine-producing firm, Rimuss in Hallau, Leuenberger seems to be the only manufacturer successfully obtaining process heat in this manner. This is all the more regrettable as unit costs in large-scale installations are appreciably lower than in small-scale operations. But while the low level of oil prices continues to make conventional heating more economical than the use of solar energy, industry does not so far display much interest in ecologically beneficial aspects of the newer form of energy.

The demand is exploding

The situation is different in the sector where photovoltaic cells are used, whereby sunlight is used not as a source of heat, but of electric current.



Unique in the entire world: a Swiss spaghetti factory creates process heat through a solar installation on the roof (see picture). (Photo: pd)

Willy Maag of the firm Fabrimex, importers of solar cells, says: "The demand for solar cells has recently expanded all over the world in a manner that one can only term explosive". A considerable proportion of the demand comes from remote relay stations in the field of telecommunications. But how times have changed! Only a few years ago, supporters of solar energy were often regarded as cranks, not to be taken seriously. The biggest solar cell installation so far in Switzerland is located high up on Mount Grimsel, where it is used for illuminating the tunnel on the road over the pass. Solar panels have also long since been installed in numerous mountain lodges and refuges in the Alps. These smallest installations supply electricity stored in batteries for "on-the-spot" requirements (lighting, milking machines, transporter lifts, etc.) Connection with power supply mains in these remote locations would be either very costly or completely impossible. The utilisation of solar panels is particularly beneficial in such circumstances, and is economically viable.

Even in fields where solar energy does not yet "pay" in terms of francs and centimes, public authorities and interested private parties have recently begun to promote various solar projects. Until quite recently, only a negligible share of the state expenditure on research generally was allocated to research on solar energy, work in this sector being left mainly to a few idealists. "But today, the situation has changed by almost 180°: the cash flows in a bit more rapidly than before, and what we lack now is sufficiently competent staff, and suitable projects for research" is the view expressed by Otmar Humm, an expert on solar energy.



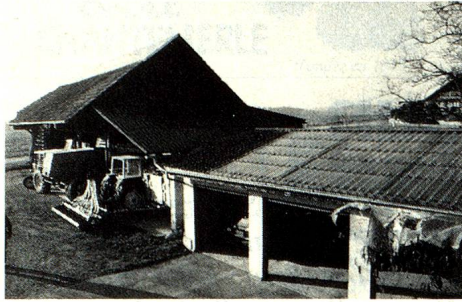
How electrically powered motor cars can refuel. (Photo: Dominik Labhardt)



Solar power from "Sunshine Mountain"

What is described as "Europe's biggest solar power station" by the bodies responsible for its planning and construction, namely the United Bernese Power Stations and the giant Elektrowatt AG, is scheduled to be completed by 1991 on the slopes of Mont Soleil. This mountain, located near St. Imier, with an altitude of 1,248 metres (nearly 4,100 feet), is called "Mont Soleil" which can be translated as "Sunshine Mountain".

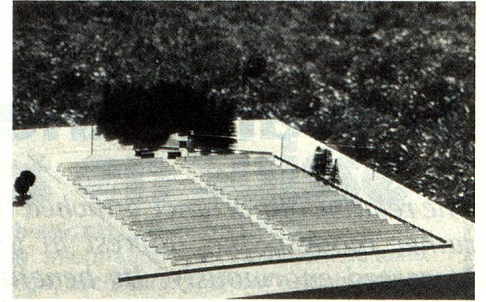
On what would appear to be an ideal site for this operation, it is planned to produce current sufficient for the requirements of two hundred families. The area of the plant will be about 20,000 square metres (215,000 square feet) - roughly the area of two football pitches! The power station to be built on Mont Soleil will not have the production of electric current as its primary objective. It



Use of solar energy in farming. (Photo: RDZ)

will be used principally for research into the problems and possibilities involved in the application of photovoltaic technology in a large-scale installation.

Stephan Dietrich



What Europe's biggest solar power station on Mont Soleil near St. Imier will look like by 1991 when it should be completed. (Photo: BKW)

Switzerland leads the world

The utilisation of solar energy in Switzerland attracted really popular interest through a sporting event: the "Tour de Sol" race for solarmobiles, which was held last year for the fifth time. Public interest was concentrated first and foremost on the high-speed "racing solarmobile cars" which (still) have the solar cells mounted direct on the vehicle. Less spectacular are cars known as "Alef's" (an acronym based on the German name which is roughly equivalent to "Electromotive vehicles suitable for every-

day use"). These are electrically powered light-weight vehicles, either made in short runs or rebuilt, and intended primarily for short journeys and commuter traffic. On them the solar cells are not mounted on the vehicles themselves but are permanently installed in some convenient location. The current generated is fed into the mains and can be drawn upon through a wall socket. This is the system known as "mains connection". One of first organisations to promote the use of this method was the Ecological

Centre at Langenbruck. The Langenbruck people - who also operate a small wind-driven power station - had for a long time to haggle with the local electrical supply works over the price charged for current. The argument proved well worth while - and not only for them: today they get about the same supplies of electricity as they had themselves to pay for before. In the meantime, the Association of Swiss Electricity Works ("VSE") has recommended its members to adopt a similar procedure for installations for an output of up to 3 kW. Thus in the field of decentralised feeding into the mains Switzerland has taken a leading position world-wide. Thereby it is no exaggeration to say that the "Tour de Sol" has attained its original goal, namely that of not merely helping to develop lightweight solar or electrically operated vehicles, but that of promoting first and foremost the use of solar energy as such.

Switzerland spellbound by solar developments

In recent months hardly a week has passed without news of a solar project - big or small - being launched, or put into operation. Here are some examples:

■ The town of *Olten* has installed on the roof of the municipal workshops solar cells with an output of 9 kW. The energy is fed into the power network and is used - among other purposes - for driving the six municipal "electromobiles", which thus deserve the name of "solarmobiles".

■ Alongside the railway stations at *Liestal* and *Rheinfelden* a group with common interests in the private sector has set up a solar installation and also a solar "filling station", where parked electromobiles can refuel.

■ The electricity works of the City of *Zurich* is planning a major solar installation connected with the mains. A decision is still pending as to its location - whether it should

be built in the city itself or in the mountains of the Grisons.

■ The public transport departments of *Geneva* and *Berne* have begun to produce current for the operation of their tram cars and trolley buses by means of solar cells.

The Geneva authorities are aiming at producing within a few years 10% of the current needed by its public transport system, in this manner.

■ Already last year, on the *Titlis* mountain, a solar installation with an output of 2.5 kW, commenced its operations. It is, at an altitude of 2,540 metres (83,312 feet) above sea level, the world's highest solar installation with power supply to the mains. Among other functions, it serves for research into the performance of solar installations under extreme weather conditions.



The "Tour de Sol" race for 'solarmobiles' - pace-makers for the development of solar energy in Switzerland. (Photo: Tour de Sol)