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## Energy revolution

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### Course change for electrical power consumption

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A new photovoltaic power installation on the roof of the production hall delivers about 50% more electrical energy than needed for the power consumption of Truninger AG in Switzerland. High quality Japanese solar panels on a total surface of 1'180 m<sup>2</sup> deliver sufficient electrical power for around 60 average households or enough power for the company plus 20 more households.



*Figure 1:* Mounting procedure on the roof of Truninger AG's production site in Switzerland

Additionally, the roof of the building has been renovated completely. A new construction consisting of an insulation layer of 30cm thickness and a Kalzip-aluminum surface reduce thermal energy consumption of the roof according to the highest Swiss standard: "Minenergie". Also the window rows in the shed-type roof have been equipped with 3 layered glass.

These modifications create a very favourable situation for the 40 year old industrial roof. On the south side, the solar modules lay flat on the roof in ideal exposition to the sun while on the north side, lines of windows provide indirect light to the production hall. This results in a bright working environment and a significant reduction in oil heating costs.

The motivation for the projects were diverse. The power supplied to the national grid is subsidised, producing a return on the investment in the long run. This is especially true in view of the very low interest rates paid to companies for capital today. Furthermore, our own resources could be used for engineering and electrical installations and everybody liked the idea to be part of a green energy company.

The founder of our company Paul Truninger would certainly be pleased with the project. He acquired a building in the 30s for his electro-mechanical workshop in the city of Solothurn. The building was located next to a creek which drove a turbine in the basement. All machines were mechanically connected to a common shaft by transmission belts. All this machinery was “electrified” by Paul Truninger installing a central self manufactured generator next to the turbine and electric motors to drive each machine.

This resulted in a dispute with the local power station, because the electricity meter was running backwards over night and showed hardly credible consumption. Subsequently, the return of electrical power was prohibited by officials which motivated our company founder to fill up a big part of the basement with self manufactured lead-acid batteries for the storage of excess electrical energy over night.

Today we would like to convey a clear message to our grandfather: “Mission accomplished, the meter is running backwards and the power station people do not even mind”.



Figure 2: Finished roof surface

## Technical details

Solar Modul	Panasonic, Sanyo HIT240	Roof renovation	InduBau AG, Gunzgen
Inverter	ABB, PowerOne Aurora	Folded seem roof	Kalzip GmbH, Koblenz
Number of module	936 pcs	Roof surface	1'890 m <sup>2</sup>
Total surface	1'180 m <sup>2</sup>	Window surface	560 m <sup>2</sup>
Peak power	224 kW	Insulating value roof	0.19 W/m <sup>2</sup> K
Annual output	230'000 kWh	Insulating value window	0.70 W/m <sup>2</sup> K