

Test system for thin-film modules in Zurich

At the end of November, the Migros group of Switzerland inaugurated a 24 kW test installation for PV panels on the roof of one of its supermarkets in Zurich. The company, which installed the system with six different thin-film models on 360 m² of roof surface, intends to

compare the results with a crystalline reference module. Migros hopes the project will further encourage the use of thin-film modules in Switzerland and Central Europe and contribute to a reduction in module prices. The company had a 20 billion CHF (\$14.5 billion) turnover in 2001, and in November its president was named Ecological Manager of the Year by the German branch of the World Wildlife Fund and the business magazine Capital for the company's ethical, social, and ecological commitment.

Migros financed the 300,000 CHF (\$217,000) for the PV system; the electric utility of Zurich (EWZ) and the Swiss Ministry of Energy provided 200,000 CHF (\$145,000) for the measurement technology and system monitoring. The EWZ will buy the electricity from the PV sys-



Putting it to the test: The Swiss company Migros installed seven different types of modules at different elevations on a 360 m² surface.

tem; it will be offered through a green-pricing program that includes one product based solely on solar. The Migros project was initiated by the consultancy Energiebüro Zürich, which planned and developed the thin-film system and will analyze the monitoring results over the next two years.

The system will not allow for the comparison of different inverters, as it exclusively uses Sunny Boy 1100 devices from SMA Regelsysteme GmbH. However, Energiebüro will examine module performance at various elevations: some of the modules are installed at a 20-degree angle, and the rest is installed horizontally. To compare performance losses at higher module temperatures, some of the flat modules are thermally isolated with covers on their backsides, while the other batch is uncovered on their backsides to allow cooling from natural ventilation.

Energiebüro hopes this comparison will verify that thin-film modules are especially suitable for building-integrated applications, as it expects that thermal isolation on the backside will hardly affect performance.

Energiebüro's Roland Frei intends to present measurement results from the first six months of operation at the PV world conference in Osaka in May. *ik*

Migros 24.5 kW PV test system

| Manufacturer | Model | Technology | Power |
|--------------|----------------------|------------|--------|
| Bekaert ECD | US 64 | a-Si | 4.2 kW |
| BP Solar | BP Millennia BP 850* | a-Si | 3.6 kW |
| Dumasolar | D5 40 | a-Si | 3.4 kW |
| Kaneka | K 58 | a-Si | 3.1 kW |
| RWE Solar | ASE 30-SG opak | a-Si | 3.5 kW |
| Shell Solar | ST 40 | CIGS | 3.4 kW |
| Shell Solar | SM 110-24 | mono | 3.3 kW |

*BP Solar has recently stopped production

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Dünnschicht-Testanlage Migros Altstetten, Zürich, 2002

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