

CASE STUDY 'ENERGY', PMA CABLE PROTECTION SOLUTIONS

PMA cable protection for sustainable energy

Thanks to innovative technologies, ABB has reduced the energy consumption of Umwelt Arena Schweiz by 30%



Using energy efficiently and in a sustainable manner – this is one of the biggest challenges of our times. As a key partner of Umwelt Arena Schweiz, ABB brings its extensive know-how into the picture. So for example, the PMA conduits are used in the building-integrated photovoltaic installation to protect DC power cables.

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01 PMA conduits from ABB protect DC power cables of the photovoltaic system at the groundbreaking Umwelt Arena in Spreitenbach, which features a theme park and event location.

Sustainability, renewable energy and nature. How does that go together with the needs for living, mobility and energy? How does it run without comfort losses and additional costs?

These are the global questions that the Umwelt Arena Schweiz addresses in its exhibition.

The Umwelt Arena Schweiz in Switzerland is an exhibition and event platform for products and services for a modern, ecofriendly lifestyle. Over 100 companies and organisations provide information in 45 exciting exhibitions. A world of experiences for energy and environmental issues.

Using energy efficiently and in a sustainable manner

As main partner of the Umwelt Arena Schweiz, ABB brings its know-how on board and strives to encourage dialog about a sustainable energy future. For ABB, the Umwelt Arena is the ideal platform to bring technologies in the areas of energy efficiency and the connection of renewable energy sources to life.

The Umwelt Arena itself relies on ABB technology: As a result, the facility was able to reduce energy

consumption by 30% over the last few years.

Increasing efficiency across the entire energy chain is one of the core competencies of ABB, extending from the transmission and distribution of electric energy to its application in industry, transport and building facilities.

Protection of the photovoltaic installation using PMA conduits from ABB

Enthroned on top of the Umwelt Arena building is the largest building-integrated photovoltaic installation in Switzerland. With a total surface of 5,300 m², the system was designed and installed by BE Netz, a Swiss company which specializes in electric power and heat from the sun for building energy purposes.

The photovoltaic installation at the Umwelt Arena is an undertaking of remarkable size. Over 5,000 modules cover a surface of 5,300 m² and generate a total output of 750 kWp. This exceeds the needs for in-house consumption: The volume of electricity of 540,000 kWh per year corresponds to the consumption of around 120 households.



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02 A roof which produces energy. The photovoltaic installation at Umwelt Arena Schweiz with over 5,000 modules covers a surface of 5,300 m² and generates a total output of 750 kWp.

03 PMA conduits protect the DC power cables in the roof-integrated photovoltaic installation.

04 At the neuralgic roof entry points, the cables coming from the photovoltaic panels are pooled together using PMA conduits and guided into the building well-protected.

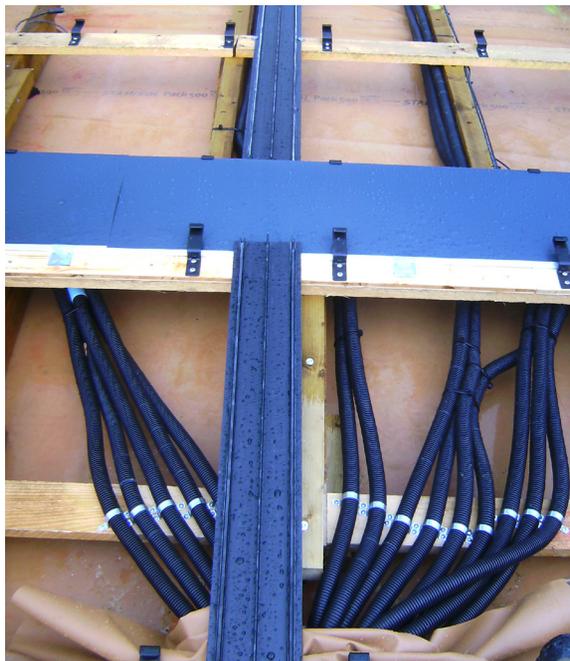
A total of 33 surfaces oriented in different directions build the roof of the Umwelt Arena; the incline varies from 6 to 62 degrees. This created the need to design a separate power inverter concept for each roof surface. The crystal-shaped roof design is therefore a big challenge for the planning and installation of the solar power system.

Top-quality sustainable solutions

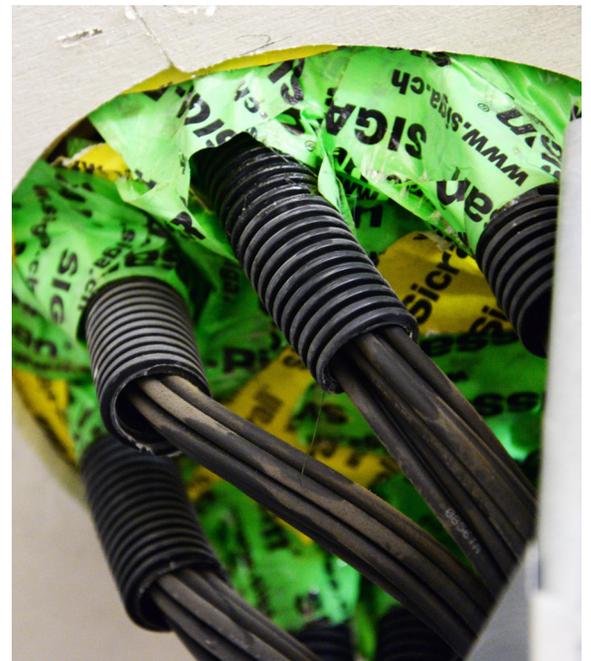
The DC power cables of the installation are pooled together at four roof entry points and guided into

the building to the solar power inverters. The 60 solar power inverters convert the DC power from the solar modules into AC power and feed the electricity into the in-house power grid.

Protection of the cables is especially important at this neuralgic point. Strict fire safety regulations must be complied with and the cables must be protected from damage and weather conditions. For nearly 10 years, BE Netz has been using the PMA conduits from ABB to protect their photovoltaic cabling systems.



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Up to 15 DC power cables are therefore well protected inside the conduit and guided into the building. With this in mind, it was quite clear for René Künzli, head of photovoltaic solutions at BE Netz AG, that the PMA conduits from ABB had to be used once again for this extraordinary project.

“The PMA conduits feature outstanding quality and fulfill our strictest requirements, such as the fact the conduits used must be self-extinguishing. Our sustainable installations are designed for longer time horizons spanning more than 30 years. With their high quality and durability, the PMA conduits fulfill our requirements perfectly. In our installations, whether they are rooftop or roof-integrated systems, we rely on PMA conduits and power inverters from ABB, because in addition to the factors I already mentioned, we value their level of service and readiness to deliver.

“With their high quality and durability, the PMA conduits fulfill our requirements perfectly.”

A top-quality conduit with impressive properties

For the protection of cables, we use XSOL, a highly flexible multi-layer conduit featuring good mechanical properties, resistance to UV and weather conditions, and good fire protection characteristics. XSOL conduits consists of two layers: a top-quality outer layer made from a specially formulated polyamide 12 and an additional specially formulated polyamide 6 inner layer which

has particularly good gliding properties, allowing the cable to be inserted quickly and without complications.

“More than 40 years of experience in cable protection to develop optimal solutions.”

Long-time experience and partnership

“The broad range of PMA products includes solutions which are also suited for use in difficult environmental conditions. Our experience in the development of cable protection systems spanning over 40 years guarantees optimal solutions for applications in energy installations, no matter if they are powered by water, wind, sun or gas,” says Roger Spuler, responsible Regional Sales Manager at ABB Switzerland. “We had already successfully implemented a photovoltaic installation on our ABB production building with BE Netz years ago and can certainly rely on our long-time partnership.”

Additional projects in the area of sustainable energy production

Even the world’s first energy-autarkic apartment building near Zurich in Switzerland, a project of the Umwelt Arena Schweiz, was equipped by BE-Netz with PMA conduits and ABB solar power inverters. In addition, the installed ABB house and building automation system helps to keep energy consumption in the buildings in both projects as low as possible.

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04/ PMA conduits such as XSOL are highly flexible, feature good mechanical resistance and very good fire protection properties, which is especially important in energy technology.

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05/ Even in the world’s first energy-autarkic apartment building, BE Netz AG relies on ABB products such as the PMA conduits and ABB power inverter. The facade and roof of the building are made up completely of solar modules.





— 06/ The PMA cable protection product range from ABB offers an extensive portfolio of conduits, fittings and main accessories for a variety of markets and applications.

ABB and the Umwelt Arena Schweiz

ABB helps customers in the power supply sector, in industry, transport, logistics and in building facilities to use electric energy more efficiently, intelligently and therefore in a more sustainable manner. The Umwelt Arena Schweiz also relies on ABB Technik in its KNX system. It makes intelligent control and monitoring of climate control, lighting or access control in a building possible. Consistent energy management means that the facility was able to reduce energy consumption by 30% over the last few years.

Since its opening in 2012, ABB Switzerland has been a key partner of the Umwelt Arena Schweiz and even has its own exhibition on-site. Visitors can bring the ABB stand to life by themselves: As they enter, the LED lighting reacts, music chimes and the wind blows - the more visitors there are, the more intense it gets. That way, the conversion of electric power into various forms of energy becomes an adventure (for information and opening times <http://events.umweltarena.ch/umweltarena-en/>)

Some BE Netz AG facts

BE Netz in Ebikon has been a specialist in power and heat from the sun for building energy purposes for many years. The company's services include engineering advice, planning and implementation of photovoltaic and solar thermal installations, as well as heat compensation with renewable energy sources.

Experience gained from over 2,300 bigger and smaller installations guarantees top quality materials and services. BE Netz works with proven products and leading technologies. Based on over 20 years of industry experience, BE Netz AG focuses on the maintenance and operation of photovoltaic installations. In addition, the company is continually expanding its own solar power park and is among the largest producers of solar energy in Switzerland. For nearly 10 years, BE Netz AG has been using ABB products in its energy projects.

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