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Expansion of solar energy continues to grow globally - even floating

PV's promising future

Despite the global coronavirus lockdown, solar energy is still experiencing strong growth. It offers significant advantages in times of crisis, as displayed by China's Q1 energy production statistics. In addition to new field and rooftop installations, new applications like floating PV are also on the rise.

In the solar energy sector, continued strong worldwide growth in new system construction has been forecast for this year. The global coronavirus lockdown could still slow this growth to some extent. However, this technology offers major advantages in the current crisis, as clearly reflected in energy production statistics from China for the first quarter. While conventional energy sources, especially coal, were down, solar energy production showed two-digit growth.

Economic advantages

Even with industries paused due to coronavirus restrictions, solar energy production in China increased by 20 percent compared to the previous year, while all other fossil-fuel sources of energy production collapsed. Among solar energy's many advantages are its near-zero marginal costs. In economically challenging times, even energy costs need to be carefully considered in production. Solar energy can also be produced on-demand, quickly and flexibly to keep up with changing demand in real time.

These additional arguments in favor of solar energy highlight its key role among renewable energies among efforts to meet the Paris climate goals. The world's growing energy needs, along with increased efficiency due to declining costs as a result of technological advancements and economies of scale, continue to drive construction of new solar energy systems. Following worldwide growth of 25 percent last year, highlighted by market growth exceeding 100 percent in Europe, growth forecasts for this year have been somewhat downgraded in light of the coronavirus situation. Even so, solar energy already exhibits the lowest electricity generation costs in many regions — and the technology continues to evolve, which will make it even more attractive in the future.

Solar energy production on the water

In the past few years, floating photovoltaic (FPV) systems on unused water surfaces or artificial bodies of water like quarry ponds and reservoirs, sea coasts, lagoons, wastewater treatment plants and dams have emerged as another interesting application for highly efficient solar energy production.



Lac de Toules: Floating solar power system in the Swiss Alps ©Romande Energie



Installation of floating PV on a Swiss mountain lake ©Romande Energie



PV connector portfolio for long-lasting, safe and reliable operation

Since the first commercial systems were built in California in 2008, a few additional test and commercial systems have been built in Asia (primarily in China and Singapore) and Europe (France, Netherlands, Germany). One advantage of floating PV power plants is that they make it possible to devote larger areas to energy production even when land is scarce. These plants are also more efficient than traditional systems, thanks to water cooling and the additional sunlight that is reflected off the surface of the water.

Combining PV with water power or pumped-storage power plants can generate additional advantage. While PV provides greater operational flexibility, e.g. in case of water shortages; fluctuations in PV power generation can also be compensated for by the other system.

Solar energy from a Swiss mountain lake

Products from Stäubli, the market leader for photovoltaic connectors, are already being used in these types of applications as well. For example, they are part of a recent installation on Lac de Toules, a Swiss mountain lake located 5940 feet above sea level. If the pilot project in the Valais Alps is successful, enough electricity will eventually be generated to power over 6000 homes. The current project consists of 36 bifacial photovoltaic modules covering an area of over 24,000 square feet, with an estimated production of 800,000 kWh per year (the yearly consumption of about 220 homes).

Unique climate conditions

What's most interesting about this project is its unusual — and so far, one-of-a-kind — location in the mountains. With the thinner mountain air and the stronger UV radiation at this altitude, it should be possible to generate up to 50% more solar energy. In addition, the sunlight is reflected by the snow in winter. Stäubli PV connectors are exceptionally robust, ensuring safe and loss-free power transmission under the tough conditions on Lac de Toules. They can withstand local weather conditions that include temperatures as low as -22°F and winds of up to 75 miles per hour.

“Stäubli is ready to meet the growing need for photovoltaic installations,” confirms Matthias Mack, Director of Global Alternative Energies at Stäubli, “and we're ready to support and help shape technological developments in this market.”

- Solar energy generally refers to the energy from solar radiation, which can be technically used in the form of electrical power, heat or chemical energy. Its best-known direct uses are photovoltaic systems (in which solar cells generate direct current) and solar thermal energy (in which solar collectors capture heat).
- With over 1.5 billion PV connectors, Stäubli has been a pioneer providing reliable, long-lasting and robust connections for photovoltaic applications since 1996. With an installed capacity of over 300 GW worldwide, Stäubli is the global market leader. At the core of all of Stäubli's electrical connectors is the unique, loss-free MULTILAM technology.

About Stäubli

Stäubli is a global mechatronics solution provider with three core activities: Connectors, Robotics and Textile. The international Group has a presence in 29 countries.

Stäubli Electrical Connectors is a specialist for advanced contact technology and technically mature solutions with a product portfolio ranging from miniature connectors up to high-power connectors for various industries.