

- Anti-reflective coated glass (Series 5A™) enhances energy production.

At temperatures above 25°C, First Solar modules produce more energy than competing solar modules due to a superior temperature coefficient. This proven performance advantage provides stronger plant performance in high temperature climates, where more than 90% of a plant's generation will occur when module temperatures are above 25°C and First Solar modules have a proven performance advantage.”

Solar panels on tailings ponds

An innovative and energy-smart concept to harness clean solar power for multiple applications is being tested in the Mediterranean, off the island of Malta. Conceived and developed by researchers at MIRARCO and Laurentian University in Sudbury, Canada, the Offshore Passive Photo-Voltaic (OPPV) project is using thin solar panels (photo-voltaic cells) floating on the water's surface to generate energy. The array of panels, measuring about 20 m by 20 m, is expected to have a peak output of 8 kW.

MIRARCO researcher Kim Trapani: “We believe our system is a substantial improvement on other forms of marine renewable energy, such as offshore wind, rigid offshore photo-voltaic structures, wave and tidal energy. The floating PV panels do not pose a collision risk, and should require very low maintenance.”

Dr Dean Millar, Professor in the Bharti School of Engineering and the MIRARCO Research Chair of Energy in Mining is particularly interested in the potential applications of the OPPV project in mining.

“Wherever they are located, mines tend to consume appreciable amounts of energy to support mineral production,” said Millar. “The Maltese demonstration project is a world first that aims to prove thin-film PV technology in the saltwater marine environment, but it has also been developed as an electricity generating system for mines.”

The flexible laminated panels will float on the surface of the water of tailings ponds, said Millar. “The panels could form a barrier to isolate wildlife from the tailings waters, while the panels generate electricity for the mine.”

Trapani and Millar have published research suggesting that for remote mines, the cost per kilowatt-hour produced with the PV systems is lower than the cost of installing and running diesel-powered generators. “Our OPPV technology could have game-changing implications for the mining industry, especially with remote mine sites, by providing clean and cheap energy that can be set up where needed with relatively little infrastructure. These demonstration projects aim to prove longer term reliability,” said Millar.



Power management

In May, **Schneider Electric** announced Premset, its innovative range of solid insulated medium voltage switchgear for power distribution management. Premset is the first global product to use solid and shielded insulation. The earth shielded system offers unprecedented safety, efficiency and ease of use. The main circuit components are insulated by a layer of solid material covered by an external conductive coating with ground potential. There is no electric field in the ambient air, because live conductors and the ground is confined within the switchgear enclosure.

“Premset is a breakthrough innovation that combines the Schneider Electric expertise in air-insulated switchgear and gas-insulated switchgear to deliver the innovation of a Shielded Solid Insulation System (2SIS) that reduces internal arcing risk for increased safety,” said Juan Macias, Senior Vice President-Energy, Schneider Electric. “Premset represents the future of medium voltage distribution, embracing intelligent connectivity to bring a new level of efficiency to help meet the growing demand for power.”

With embedded smart technology, Premset includes:

- Shielded Solid Insulation System (2SIS) and screening of all live parts, ensuring improved safety and reliability
- Simple, flexible, modular design makes it easy to install, upgrade and maintain, thanks to (2SIS) technology
- Advanced protection, control and monitoring technology is fully integrated for higher reliability and energy efficiency.

Premset enables simplified network upgrades, with the ability to leverage the same accessories and monitoring devices across the entire range. The ‘plug and play’ design allows for on-site additions that do not require special training, tools or adjustments. Designed with

standardised dimensions, a reduced footprint and simple front accessible power connections, Premset reduces installation time and cost and can minimise future downtime delays when used with Schneider Electric services. Additionally, through advanced monitoring and control, Premset switchgear helps ensure the network is at its peak performance, enabling:

- Automated Redundancy (Auto Source Transfer) with pre-engineered, easily applied solutions
 - Load management with integrated, smart metering
 - Asset management with advanced switchgear and transformer monitoring
 - VIP self-powered protection and communication relay for higher MV network availability
- In addition to standard electrical, mechanical and visual equipment inspections, Schneider Electric also offers optional start up and commissioning services for all Premset purchases, to ensure equipment and components are functioning properly. This service includes:
- Confirmation the system has been installed properly and the equipment is operating as specified
 - Gathering and evaluation of initial operational data to check insulation, current path, functionality and sequencing to minimise future downtime and expenditures
 - Verification of correct operation of interfaces between new and existing equipment.

WEG Transformers Africa (WTA), a division of Zest WEG Manufacturing, is determined to continue growing its share in both the African transformer market. Louis Meiring, Chief Executive Officer at Zest WEG Group Africa, says the acquisition last year of Heidelberg-based TSS Transformers facilitated immediate access to additional facilities as well as best-in-class technical skills. “Upskilling ourselves in this