

## THE ENERGIZER – VOLUME 64

### A BIWEEKLY UPDATE ON BLOCKCHAIN TECHNOLOGY APPLICATIONS, DISTRIBUTED ENERGY RESOURCES, AND OTHER INNOVATIVE TECHNOLOGIES IN THE ENERGY SECTOR.

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#### Energy Alert

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#### RESEARCHERS DEVELOP ULTRAFLEXIBLE SOLAR CELL WITH 13% EFFICIENCY

Researchers at Monash University in Australia have developed an ultraflexible organic solar cell, or flexible organic photovoltaic (“PV”), capable of producing 130 watts of electricity per square meter. Researchers made the cell with non-fullerene blends and applied a post-annealing treatment to minimize degradation, resulting in an expected lifespan of 11.5 years. The cells' reported power conversion efficiency is 13 percent and their efficiency retention after 1,000 bending cycles is 97 percent, which is one of the highest rates for organic solar cells.

The researchers believe ultraflexible organic solar cells are a promising power source for wearable electronic systems because they are inexpensive to produce, are light weight, and are composed of robust mechanical properties. Traditional silicon-based photovoltaic cells, in contrast, are brittle, so they are much less durable than organic solar cells. Moreover, the researchers believe their organic cells are more malleable than traditional silicon-based solar cells. Accordingly, they may be more adaptable to wearable electronics.

Longer lasting, lighter weight cells could help power more and more powerful wearable electronics, enabling the market to further expand.

#### LONG-DURATION SOLAR ENERGY STORAGE TO POWER MINES IN LATIN AMERICA

Azelio and Industria Mecanica VOGT (“VOGT”) are partnering to offer long-duration solar PV energy storage systems for the mining industry throughout Latin America. Azelio is a Swedish company that has developed a novel and highly efficient long-duration thermal energy storage system. VOGT is a Chilean industrial equipment company for mining companies in Latin America.

This collaboration will use Azelio's thermal energy storage system to use solar PV to power 10 MW of VOGT's pumping systems. VOGT's pumping systems are presently fueled by diesel generators in off-grid locations.

Azelio and VOGT partnered to lower electricity costs and to transition VOGT's pumping systems away from diesel-powered mechanisms and toward lower carbon footprint alternatives.

## **ANSALDO NUCLEAR DEVELOPED A MACHINE RETRIEVAL SYSTEM TO HANDLE NUCLEAR WASTE**

Ansaldo Nuclear, a British nuclear engineering consulting company, is deploying a Machine Retrieval System (“MRS”) to remove nuclear waste from a decommissioned nuclear power plant in Caorso, Italy. The MRS is a remote-controlled robot that will retrieve, verify, pack, and seal radioactive waste, resins, and sludges. Controlled remotely, the MRS is capable of self-recovery in the event of earthquakes or other external safety issues. The MRS is a unique invention, specifically designed for the decommissioned Caorso nuclear power plant.

Società Gestione Impianti Nucleari SpA hired Ansaldo Nuclear and JAVYS in 2015 to remove 5,600 drums containing 200 kg of radioactive waste from the Caorso facility. The MRS has the capacity to relocate 2,000 of these drums. These drums will be relocated to a JAVYS facility in Jaslovské Bohunice, Slovakia.

## **POWER LEDGER PARTNERS WITH PERTH RESIDENTIAL COMMUNITIES FOR BLOCKCHAIN-BASED ENERGY TRADING**

On April 21, 2020, Power Ledger, an Australian blockchain technology developer, announced that it signed a partnership with Connected Communities Energy, a project by the Nicheliving property company, to create an energy trading platform for ten residential communities in the metropolitan area of Perth. The three-year deal includes use of Power Ledger's blockchain technology in SkyHomes Inglewood, a flagship project for Nicheliving, to facilitate the purchase and sale of renewable energy on an embedded electric system using a photovoltaic solar and storage microgrid.

Initially, the project will encompass 62 apartments in the Inglewood community, followed by an additional 40 apartments. According to Power Ledger, the blockchain platform will track residents' energy consumption and transactions, thereby facilitating the sale of excess solar energy and providing useful energy usage data. Nicheliving expects the program to help incentivize residents to transition from fossil fuels for their electricity needs.

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