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K&L Gates’ The Energizer – Volume 63

A biweekly update on blockchain technology applications, distributed energy resources, and other innovative technologies in the energy sector.

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There is a lot of buzz around blockchain technology, distributed energy resources (“DERs”), microgrids, and other technological innovations in the energy industry. As these innovations develop, energy markets will undergo substantial changes to which consumers and industry participants alike will need to adapt and leverage. Every other week, K&L Gates’ The Energizer will highlight emerging issues or stories relating to the use of blockchain technology, DERs, and other innovations driving the energy industry forward. To subscribe to The Energizer newsletter, please click [here](#).

Researchers Develop Innovative Method to Monitor Battery Health

- Researchers at Cambridge and Newcastle Universities have developed an innovative method to [monitor battery health](#) that may prove useful in increasing the adoption of electric vehicles (“EVs”). The researchers use machine learning to study the effect of electrical pulses on the aging of lithium ion batteries. To obtain the necessary data, the researchers developed a simple monitor that can be added to most battery systems. This can detect processes occurring within the battery that may have otherwise been overlooked through traditional testing, which relies on tracking the current and voltage during battery charging and discharging the voltage. Additionally, the researchers are using the data generated by this testing system to develop optimal battery charging protocols that may enable fast charging and minimize battery degradation.
- One of the obstacles to broader EV adoption is the difficult task of projecting the useful lifespan of lithium-ion batteries. This new process may enable more accurate testing of battery performance, which in turn, may lead to the development of more efficient energy storage for EVs. As EV energy storage proliferates, EV adoption may increase.
- Developers of energy storage systems generally may also benefit from the more precise data generated by this testing process because the Cambridge and Newcastle researchers are now using their machine learning platform to understand degradation of different battery chemistries.

Uppsala University Scientists Create Organic Proton Battery

- On March 17, 2020, scientists at Uppsala University published [research](#) regarding the development of a new organic proton battery that can be charged in seconds with an organic solar cell. The battery’s active material is comprised of quinones, which are organic carbonic compounds that absorb and emit hydrogen ions during charging and discharging.

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- Global interest in batteries comprised of organic materials is growing for many reasons. First, manufacturers can use organic materials in place of metals, which require intensive mining. Second, batteries incorporating organic materials are less affected by extreme temperatures. For instance, the researchers demonstrated their battery can retain its capabilities at sub-zero temperatures, including the ability to withstand over 500 charges and discharges without significant loss of capacity.

Power Ledger and ekWateur Partner to Provide Blockchain-based Renewable Energy Trading Platform

- [Power Ledger](#) and [ekWateur](#) are [partnering](#) to establish Vision, a blockchain-based renewable energy trading platform through which ekWateur's customers can select their energy mix and track their electricity in 30-minute intervals. Power Ledger is an Australian-based company that will create the peer-to-peer, blockchain-based energy trading platform, entitled "Vision," and ekWateur is a French utility company whose 220,000 French customers will use the platform.
- The platform will use blockchain to certify the origin and source of energy to be purchased, and track the deployment of energy bought and sold. Users who generate excess solar or wind energy will be able to sell their energy to other users. The platform will be launched initially in France by the end of 2020.

Drax Group's Carbon Capture and Storage Facility Becomes Fully Operational

- [Drax Group PLC](#), the United Kingdom's former largest coal power plant, brought its fully operational Bioenergy Carbon Capture Use and Storage ("BECCS") online in February to further its efforts to become the world's first carbon negative power station by 2025. The current mix of energy produced by Drax is 90% biomass and 10% coal-fired electricity. During the BECCS pilot stage, the facility in North Yorkshire is using technology developed by Leeds-based company, [C-Capture](#), to capture a metric ton of carbon dioxide per day, which is equal to 100 percent of Drax Group's carbon output from biomass energy production.
- Energy companies in the United Kingdom and the United States are turning to biomass fuels harvested from forests, dairies, and farms to substitute away from coal power. Combined with the planting of new trees and use of carbon capture technology, research indicates that biomass energy production can cut emissions of greenhouse gasses.

Insolar and TRCA Collaborate on Distributed Energy Resources

- On April 2, 2020, [Insolar Technologies](#) ("Insolar"), a developer of distributed ledger technology, [announced](#) its collaboration with [Toronto and Region Conservation Authority](#) ("TRCA") through its [Sustainable Technologies Evaluation Program](#) ("STEP"). The STEP program will use Insolar's Assured Ledger technology to create a more effective and integrated energy trading system, focused on maximizing renewable energy and DERs to meet any intermittency on Toronto's energy grid. Insolar believes that when coordinated on the grid edge, renewable DERs can serve as backup and new generation without interfering with utility's reliable service. According to Ontario's Minister of Energy, development of clean DERs is part of Ontario's [Long Term Energy Plan](#).

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