

Interview: Skeleton's New Ultracapacitor System in Scotland | Olivier Chabilan, Product Marketing Manager, Skeleton Technologies



After being founded in 2009, Skeleton Technologies has focused on innovation from ultracapacitors to full energy storage systems. In the past years the company's team has grown from 4 to 100 employees, manning the production facilities in Estonia and Germany. Skeleton prides itself in being a market leader in the ultracapacitor market and in being able to offer lower cost, longer lifetime and higher reliability for energy storage, as well as solutions for a renewable future. ees International talked to Olivier Chabilan, Product Marketing Manager, Skeleton Technologies, about the company's new project on the Isle of Eigg and its impact on the future of limiting blackouts throughout the world's energy supply systems.



Olivier Chabilan, Product Marketing Manager, Skeleton Technologies

ees International: Skeleton is a market leader in the field of ultracapacitors. How are those different from regular batteries?

Ultracapacitors excel where batteries fall short. Short bursts of power are detrimental to batteries, it reduces their lifetime and in order to avoid this, manufacturers oversize the battery to ensure the power required can be delivered without damaging the batteries. Batteries only have 3000, maybe 5000 cycles, they have a high energy density and can delivery electricity over a few hours. Batteries take a long time to recharge. Ultracapacitors cannot store much energy but they can deliver short bursts of very high power for up to about 3 or 4 seconds and recharge extremely quickly. They have over 1 million cycles in their lifetime.

ees International: With the new SkelGrid your company has announced the deployment of this technology on the Scottish Isle of Eigg. Why did you choose to be a part of this island's energy system and how will it benefit from ultracapacitors?

The choice was made by the Islanders and the fast response system manufacturers ? Kinetic Energy. The Island was already equipped with a flywheel, but the current quality was still difficult manage. Because of their quasi instantaneous response time, ultracapacitors can improve typical current quality issues such as voltage sags, and frequency instability in order to provide a ?better than most apparatus requirements? current quality.

ees International: The rapid-response-system you are about to launch is going to help with blackouts and energy storage through battery arrays. These will contain lead acid batteries, which are known for having a problem called the ?whiplash effect?. What is the whiplash effect and how is Skeleton's technology going to counter it?

The whiplash effect is a voltage drop that occurs on lead acid batteries when the power demand required is very high and sudden.

The lead acid battery responds by a voltage drop proportional to the demand and it takes several minutes for it to recover and provide the required voltage again. This can cause blackouts on the grid or the systems it provides current to.



Facility on the Isle of Eigg | Source: Skeleton Technologies

ees International: Blackouts are a huge problem in the overall energy sector and especially renewable energy poses a challenge when it comes to storing it. Can ultracapacitors be part of a general solution for this problem or is this type of energy storage only applicable to self-sufficient areas like the Isle of Eigg?

Ultracapacitors can supply power for a few second. A cupboard the size of a large fridge can supply 1MW for 0,5 second. This can be enough time for a larger part of the system to get powered such as batteries, the same size system ca supply 400 kW for several seconds, enough time get a backup genset up to speed and prevent a blackout.

ees International: The Isle of Eigg is a pioneer for different kinds of new energy supply technologies. What influence will the results of the island's different projects have on the world's energy storage market and how will Skeleton benefit from participating in this island's innovative approach?

Eigg's grid is one of a kind, it uses all renewable energies combined with a storage system. This is a very small-scale attempt, there are larger attempts on islands that are more populated, and with a much more acute fossil fuel energy supply issue. Eigg is just the beginning of 100% renewable electricity, more attempts will be made and ultracapacitors should be considered for 2 reasons: 1) prevent blackouts caused by short power outages and 2) Improve current quality such as voltage and frequency.



The Isle of Eigg | Source: Skeleton Technologies

ees International: What other projects will Skeleton have in the future?

This we do not know, and even if we did it would remain unofficial until the systems are 100% functional. There are attempts in

Germany of villages and small towns going off the grid and being successful at providing users renewable energy based current. There will be more isolated attempts where no grid backup will be possible, this is where ultracaps can make a big difference.

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