THE QUEST FOR LONG-LASTING SUSTAINABLE BATTERY STORAGE SOLUTIONS AND CONFLOW POWER'S UNIQUE APPROACH

[1]. Essentially, a battery is a device that stores chemical energy that is converted to electrical energy when needed.

The ubiquitous battery[1].

Sometimes it's visible, but more often it's tucked away in the inner sanctum of our gadgets, relentlessly powering them until it wears out. And then it's either recycled or unceremoniously discarded.

The battery has been with us for a long time.

The consumer electronics revolution that started with the radio in the early twentieth century could not have happened without it.

These days, it's hard to imagine how gadgets, especially mobile devices, would work without batteries.

It used to be that only small consumer electronics like mobile devices depended on batteries.

Not anymore.

Big power systems, like electricity grids, now use massive batteries to integrate intermittent renewable energy generation from solar and wind.

Then in automobile transportation, electric vehicles (EVs) are poised to take the use of Lithium-ion batteries to a new level as these "green wheels" become widely adopted in the coming decades.

KING LITHIUM

There are two broad classes of batteries: Primary and Secondary.

Primary batteries, like those small AA and AAA batteries we use in remote controls and radios, cannot be recharged, so they're discarded once used.

Secondary batteries are rechargeable, and these are the powerhouses of modern-day devices and appliances. Once used, they're either recycled or discarded.

Still, not all batteries are created equal.

While rechargeable batteries come in different shapes and sizes with different chemical compositions (chemistries), the Lithium-ion (Li-on) battery is the king of rechargeables.

Stanley Whittingham, John Goodenough, and Akira Yoshino, who were jointly awarded the 2019 Nobel Prize in Chemistry, are credited with inventing the Li-on battery in the late twentieth century.

And riding on the back of continuous innovations in their applicability, Li-on batteries have become the most common type of rechargeable battery deployed across various industries, especially transportation, energy, and electronics.

WHY LITHIUM BATTERIES ARE NOW GETTING A BAD REP

While Li-on batteries continue to serve us enormously well, their place in an increasingly environmentally sensitive world is under scrutiny.

This is because they're not "sustainable" in form and function.

In terms of form, they have the following ecological drawbacks:

- They are made from finite resources like metals or metal amalgams
- They are not made in an environmentally friendly manner
- They're harmful to the environment because many cannot be recycled and yet cannot be safely discarded.
- In terms of function, they have the following drawbacks:
- They gradually degrade from repeated recharge and discharge
- They have limited energy storage capacity.

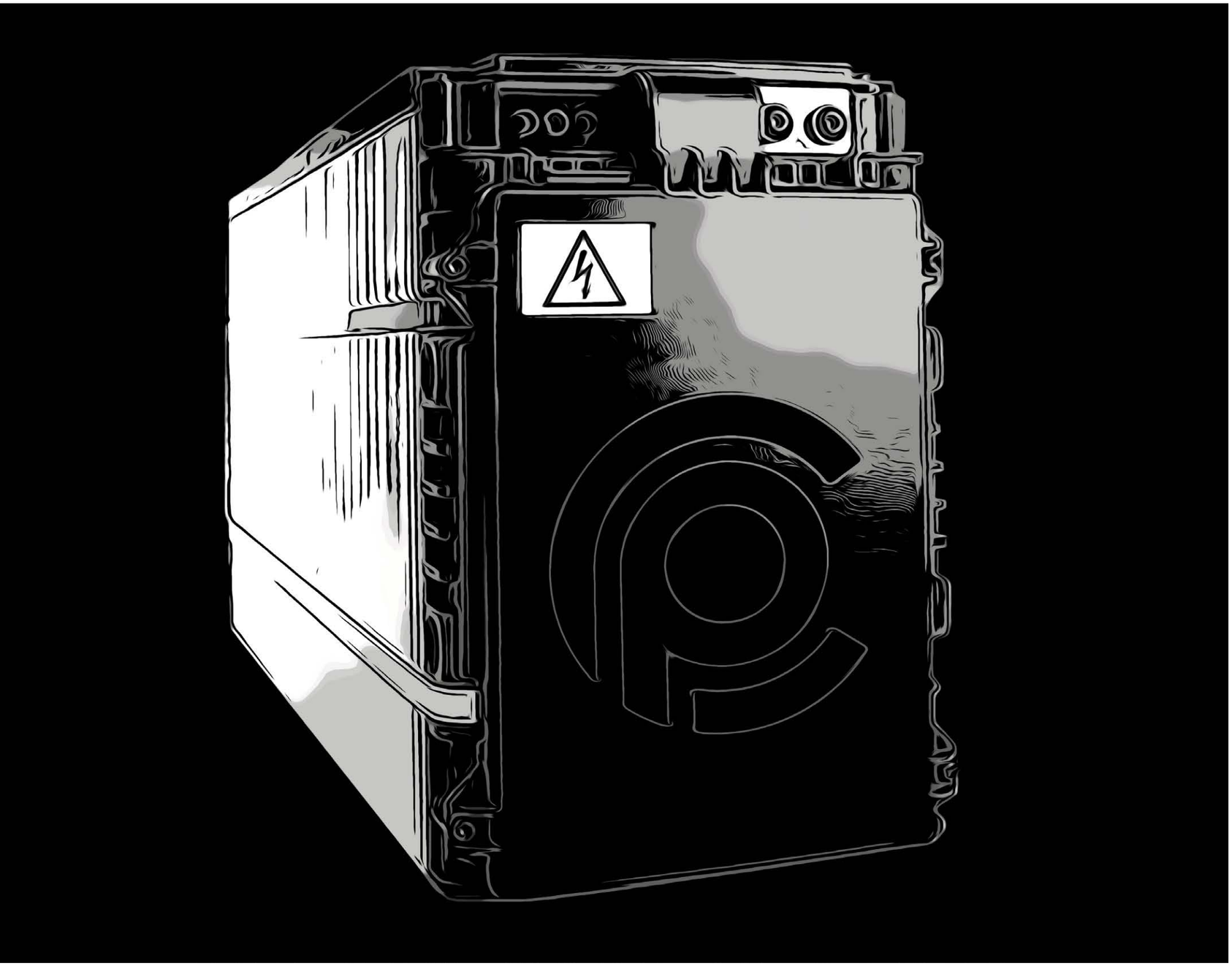
All told, Li-on batteries have serious sustainability issues that may hamper their long-term survival as more people become sensitized to man-made climate change.

Fortunately, researchers around the world are working to resolve these issues.

Their solutions range from incremental improvements in the design and/or chemistries of Li-on batteries to their outright replacement with more sustainable batteries.

The problem is that most of these solutions are still tool costly to deploy in the marketplace on a large-scale.

Until now.



ENTER CONFLOW POWER

Some researchers believe the Lithium-ion (Li-on) battery is beyond the mend.

One such company is ConFlow Power, a late-stage startup based in the United Kingdom.

ConFlow wants to completely replace the Li-on battery with a superior performance product that has few, if any, of the Li-on drawbacks.

Therefore, the company has developed a unique product that combines power generation and battery recharging technologies in one device.

Consequently, the "battery-generator" can generate a continuous flow (conflow) of limitless, useable power.

Remarkably, the battery-generator uses air as fuel and is completely self-recharging.

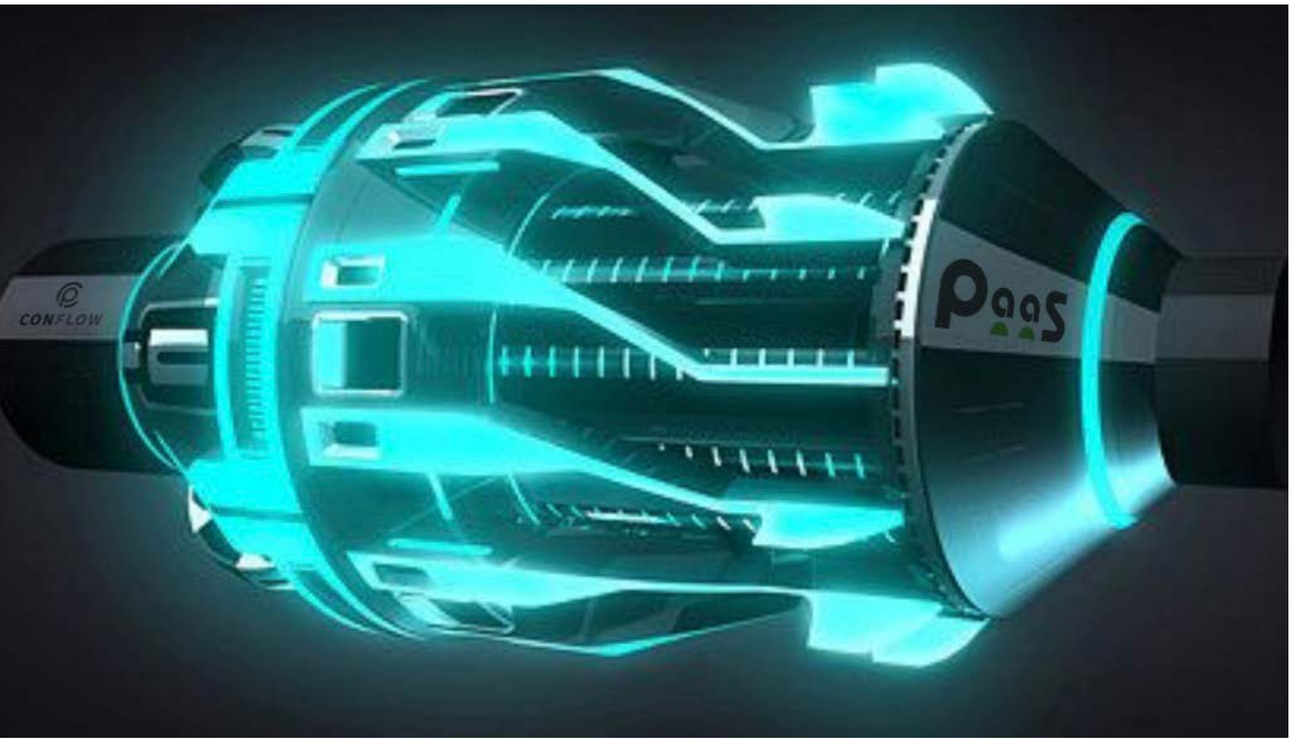
When evaluated against the drawbacks that plague Li-on batteries, the table below indicates how the battery-generator measures up.

The ConFlow battery-generator could revolutionize the portable electronics industry the way the non-rechargeable battery revolutionized the consumer electronics industry a century ago.

Imagine you never again have to worry about finding a cable to charge your phone?

In fact, the battery-generator will impact any industry where interrupted power is critical. We're talking medical services, the food industry, aviation, the electricity sector, the automotive industry, etc.

If the battery-generator lives up to its touted potential once commercialized , then it could change the world.



Li-on Batteries	ConFlow's Battery-Generator
They are made from scare or non-renewable materials.	It doesn't use any exotic metal or metal amalgam.
They're not manufactured in an environmentally friendly manner: Their manufacturing process uses a lot of water and produces toxic sludge.	Its manufacturing process produces no emissions, and the device produces zero waste when in use.
Some cannot be recycled or safely discarded.	It never needs to be replaced.
They degrade from repeated recharge.	It's self-recharging.
They have limited energy storage capacity.	It doesn't store energy as much as "harvests" it by capturing electrons from the air. It's scalable to any size for any application.

TABLE 1. CONFLOW BATTERY/GENERATOR vs. LITHIUM-ION BATTERY

POWER AS A SERVICE (PAAS)

An interesting thing about ConFlow Power's battery-generator is that it comes with an in-built payment processing capability.

This enables the device to automatically charge the user as it charges the generator to provide power.

ConFlow's power-as-a-service (PaaS) model is like the software-as-a-service (SaaS) payment model that software companies now use to charge users for cloud computing services.

You'll probably have to link your debit or credit card to the battery-generator for the PaaS arrangement to work smoothly.

Since by using PaaS you'll automatically pay for your power consumption, you'll never forget to pay your electricity bills.

So far, the battery-generator has been tested only in the laboratory. Field tests were scheduled for the first quarter of 2020.

ConFlow intends to use a licensing strategy to bring its suite of products, including the battery-generator, to market.

Licensing is a much faster way of bringing a new product to market than in-house distribution.

CONFLOW BATTERYWARE

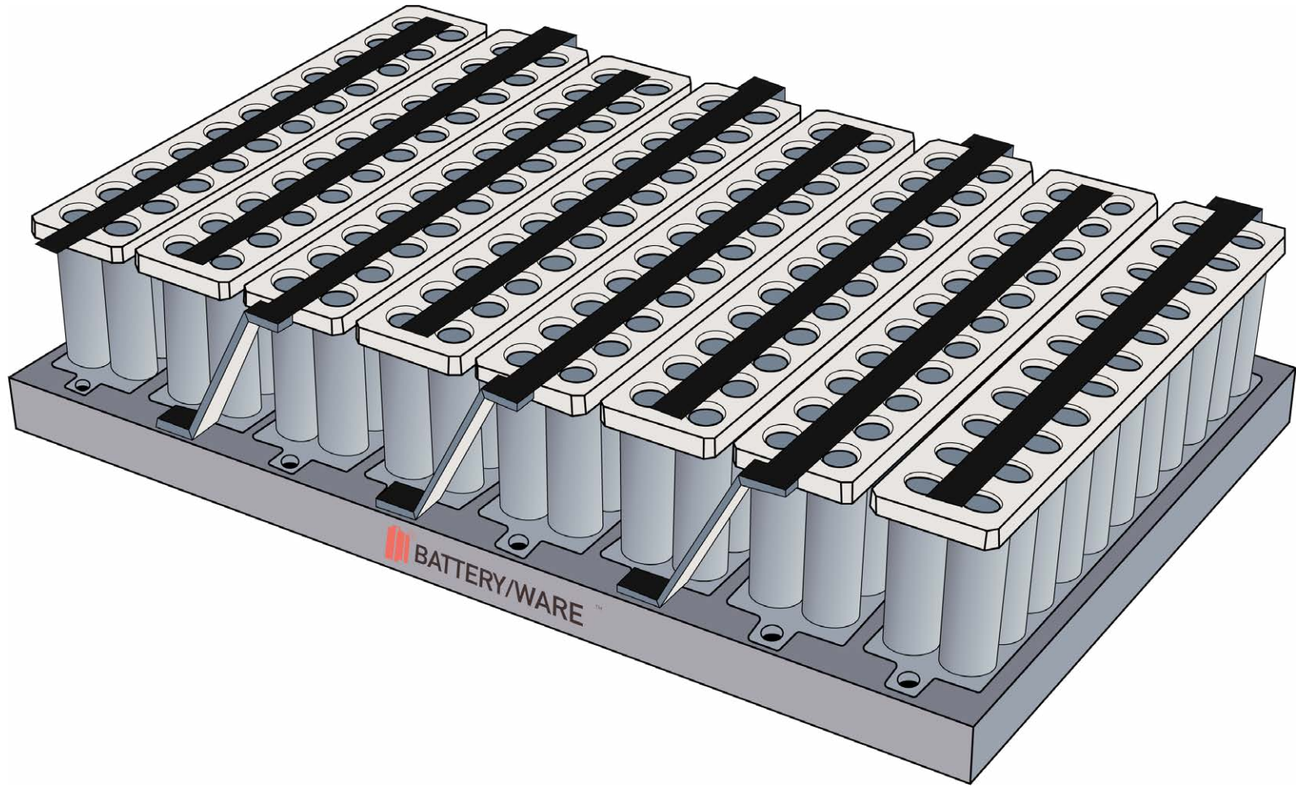
In October 2019, ConFlow Power acquired battery testing technology it intended to integrate with the battery-generator.

Currently, most battery testing is done in the laboratory.

However, ConFlow's approach is to primarily test the battery in the field as it's being used in a device or appliance.

According to ConFow, the BatteryWare is "an onboard testing device that will test batteries as they are used in the field and transmit the data in real time".

By integrating a low-cost live battery monitoring technology with the battery-generator, ConFlow will increase the functionality of the device and make it more appealing to users.



CONFLOW LIGHTING

ConFlow Power seems to be a company extremely focused on innovations for the power sector.

In March 2020, it announced it was shifting its attention to street lighting.

The first ConFlow Lighting product will be a Smart Street Light (SSL).

CONFLOW POWERED SMART STREETLIGHT[4]

The SSL will use both the battery-generator and the BatteryWare.

Interestingly, ConFlow said the streetlight could be both off-grid and on-grid. This suggests that an "on-grid" version will not use the battery-generator because in this set-up the streetlight will be powered by the grid.

Or, the on-grid streetlight will still use the battery-generator, but as a back-up to the grid power.

According the company, "the first demonstration streetlights are scheduled to be available Q1 or early Q2 2020 with multiple locations throughout the U.S., Canada, Thailand and the U.K.".

FINAL THOUGHTS

ConFlow power is undoubtedly a company immersed in power innovations, especially sustainable, clean technology power solutions that can be integrated with complementary technologies.

Also, their business model is unique in the sense that their products will generate revenue for the company even while undergoing testing.

Unfortunately, all their products are currently undergoing field testing and are not yet commercially available.

Therefore, it's difficult to say how reliable or robust these products are until they come to market.

If all goes well though, ConFlow Power could become the Apple Inc. of the sustainable energy power sector.

[4]. This streetlight design is for visual purpose only; the final streetlight will depend on the requirements of the client.