

EcoFlow Power Kit review: off-grid living made easy

There's never been a better time to become a digital nomad.

Many employers not named Elon Musk now offer flexible work-from-home arrangements, enacted during the pandemic and made permanent in 2022. Ironically, Musk's little Starlink RV service has been a boon to remote working by bringing relatively fast internet to great swaths of digital wilderness, even while driving. And for those looking to go truly remote, dozens of countries, like Spain, Barbados, Namibia, and Malaysia, now offer temporary residency permits to digital workers of foreign-based employers.

You can also take your nomadic existence off the grid thanks to advances in solar panels and batteries. High-capacity batteries now charge faster, last longer, weigh less, and offer improved safety thanks to the adoption of lithium iron phosphate (LFP or LiFePO₄) chemistry. That's good because you'll be needing lots of power if you want to live and work from the beach, forest, or mountain top comfortably.

But you can't count on the sun's power alone. For extended off-grid stays, you'll need the ability to replenish those batteries with whatever resources you have at your disposal, be it AC outlets at an RV park (aka, "shore power"), your van's alternator, and even a diesel generator or wind turbine in a pinch. That's where the new come in.

8Verge Score

EcoFlow Power Kit

\$ 4747

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The Bad

- Can be expensive
- Fans get very loud
- Overkill for smaller vans
- Could be buggy until the product matures

EcoFlow announced its expandable Power Kit series back in June as an all-in-one turnkey solution to easily bring power to remote cabins and RVs. It's meant to improve and simplify everything from planning and installation to operation compared to bespoke electrical systems sold today by industry stalwarts like Victron Energy.

In particular, EcoFlow claims that its Power Kits can fit "any van size" and be set up "five times faster" than traditional systems. So I put those claims to the test with the help of both novice and professional installers.

The novice installation was done in an old Ford Transit Westfalia Nugget – the van you rebuild because your parents sold it to you cheap – by Roel, a regular guy capable of installing a light switch or two. The professional installation was done in a Mercedes-Benz Sprinter – the gold standard for vanlifers – by Fabian van Doeselaar, the owner of Origin Travelvans.

Fabian came away so impressed that he's redesigning the Victron-based interiors of his custom adventure vans to accommodate the EcoFlow Power Kit. It's not a perfect system, especially for Roel's smaller van, but EcoFlow's solution has far more pluses than minuses.

Just make sure the employer that supports your dreams of escapism also pays well. EcoFlow Power Kits aren't cheap, with prices starting around \$4,000. And that's before you add any solar panels.

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gray-63">The EcoFlow Power Kit. From left
to right: one 5kWh battery, the battery
cable, and the Power Kit box. Below the
box is the console display and AC/DC
Smart Distribution Panel and cover. Then
you see the included Power Hub cabling,
and the Power Hub itself.

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white md: text-30">Power Kit

Specifications (US)

Power Hub:

- **48V system automatically steps down for 12V/24V systems**
- **Power Hub measures 11.8 x 18.9 x 5.5in (30 x 48 x 14cm); 31lbs (14kg)**
- **Supports between 2kWh and 15kWh of EcoFlow LFP battery capacity**
- **DC main output: 13.6V/70A, 1000W max; 26.4V/60A, 1600W max**
- **AC main output: Pure Sine Wave 3600W (Surge 7200W); it'll also power some appliances up 5000W with reduced performance**
- **Two solar inputs, each with support for up to 15-60V/30A, 1600W of power**
- **One combined alternator / solar input, supporting either 13V-60V/60A, 1000W max from the vehicle's alternator or 1600W of solar**
- **One AC input, supporting up to 3000W/30A from shore power (but most RV parks won't let you charge at 30A)**

- One AC output, supporting up to 2400W
- Two battery ports for EcoFlow's LFP batteries
- One combo port that works with both EcoFlow LFP batteries and the company's dual-fuel Smart Generator (for 1800W of emergency input)
- Comes with five plug-and-play cables that reach lengths of 15ft and 20ft and plug directly into the Power Hub
- Available in both EU and US configurations
- Power button, AC out on / off, DC out on / off, and five status lights showing AC out, DC out, PV (solar) in, alternator in, and AC in

LFP batteries:

- 2kWh battery is rated for 3,000 cycles before hitting 80 percent capacity
- 2kWh battery measures 11.2 x 13.7 x 7.8in (28.4 x 34.8 x 19.8cm) / 37lbs

(16.8kg)

- 5kWh battery is rated for about 3,500 cycles before hitting 80 percent capacity**
- 5kWh battery measures 11.8 x 19.7 x 10.2in (30 x 50 x 26cm) / 90lbs (41kg)**
- Both batteries are IP54 water and dust resistant**
- Both batteries are auto-heated for continuous charging even in subzero temperatures**
- Batteries can only be connected to the Power Hub in parallel**
- EcoFlow provides a selection of brackets to securely stack the batteries or mount side by side**

AC/DC Smart Distribution Panel:

- 8.3 x 13.9 x 3.9in (21 x 35.3 x 9.9cm) / 5.7lbs (2.6kg)**
- DC output: 12 fused DC positions (six positions controllable via Power Kit**

- console and app)
- AC output: six AC positions, 20A max each
- IP21 dust and water resistance

The Power Hub is the brains of the system and provides a central point of connectivity for the batteries and all of the inputs and outputs. It combines several functions that would typically require their own boxes and external wiring. Inside the Power Hub, you'll find three MPPT solar charge controllers, an inverter charger, a DC-DC step-down converter, and a DC-DC battery charger. For many installations, this all-in-one approach is an advantage, but when space is severely limited, it can be advantageous to have multiple smaller devices that can be tucked into any available nook (more on that later).

Optionally, you can add both a and a \$349 wired seven-inch touchscreen console display for more granular control over

your vehicle's electrical devices. The console might be redundant for some since it just mimics functionality already included in the excellent EcoFlow app, but others will gladly pay to have a dedicated display mounted inside their van or tiny home.

Up to three batteries can be plugged into the Power Hub, but you can't mix 2kWh batteries with 5kWh batteries. The batteries are heated, allowing them to both discharge *and charge* when the temperature drops below freezing outside without affecting their performance or lifespan. Charge heating turns on automatically when temperatures fall below 32 degrees F (0 degrees C) and consumes power from the external charging source (such as solar panels), whereas the battery powers discharge heating, which is why it must be enabled manually to avoid unexpected battery depletion.

Power Kit bundles don't include any solar

panels. The Power Hub is designed to easily connect to any of EcoFlow's own rigid, flexible, or portable solar panels, but it also works with third-party panels (using standard MC4 connectors or adapters) so long as their maximum open circuit voltage doesn't exceed 150V. It supports up to 4800W of total solar input spread across three 1600W ports.

The Power Hub is a 48-volt system that uses a step-down DC-DC module to make it compatible with campers built around common 12V or even 24V systems. 48V has a number of advantages including lower current for the same power output, allowing for much thinner (and lighter) cables to be used throughout the vehicle.

The Power Hub inverter is capable of producing up to 3600W (7200W peak), which is enough to easily power just about any AC appliance you'd want to install inside

the van, including induction cooktops and air conditioners. (Yes, EcoFlow makes one of those, too.) The Power Hub can even power AC devices drawing up to 5000W thanks to EcoFlow's X-Boost tech, which lowers the output voltage, thereby reducing the performance of high-wattage devices. It's best to think of X-Boost as a safety net that could occasionally get you out of a jam.

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gray-63">The Power Hub is the central
point of connectivity. The EcoFlow Smart
Generator (5) can also be a third battery
like Fabian's setup.
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dark:[&a:hover]:shadow-highlight-franklin dark:[&a]:shadow-underline-white md:text-30">Installation

Both Roel and Fabian had the same comment upon receipt of their review units: "It's all very Apple-like." The experience starts with a gee-whiz unboxing that reveals great looking hardware and an app experience that overdelivers – all highly unusual in the world of van builders.

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`dark:[&a:hover]:shadow-underline-`
`gray-63">Simple touches like this paper`
`template were a big help with`
`installation.`

The installation benefits from easy to understand instructions available in many languages, quick and informative support videos on EcoFlow's YouTube channel, and a 1:1 scale paper template to help optimize placement and avoid any time-consuming mistakes.

"By comparison, Victron's manuals contain large amounts of information that elaborate on the whole system. That can get confusing, sometimes," says Fabian. "EcoFlow's manuals are small but explain enough to know how to install it. For many people I think it's better."

EcoFlow's cables are also well built and labeled to avoid any confusion. Screws and other small parts are bagged separately to keep things organized, and lock washers come fitted to bolts in a way that prevents them from coming loose and being lost. Such attention to detail was appreciated by both installers. "It's very hard to make a mistake," says Roel.

It's very hard to make a mistake

The level of fit and finish on each Power Kit component is also unusual for systems that typically get installed inside cabinets or underneath seats. Even the monochromatic cables look nice compared to the mess of wiring spaghetti needed for other power systems. Both Roel and Fabian would have no problem leaving some, or all, of the components exposed in their builds. Mounting the Power Hub out in the open lets you see the status lights for charging and output while also providing quick access to buttons that

turn on and off the AC and DC outputs. That might come in handy if you don't feel like firing up the app or walking over to the Power Kit console display.

EcoFlow really nailed the rugged yet refined adventure van aesthetic, something Fabian had already adopted for his custom van builds.

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underline-gray-63">*Fabian working
inside one of his custom Origin
Travelvans Mercedes-Benz Sprinter***

builds with his brother's Dutch Van Parts accessories mounted on the roof and rear doors.

Fabian received the largest (and most expensive at \$15,000) 15kWh Power Kit system for installation in his Mercedes-Benz Sprinter L2H2, the workhorse panel van used throughout Europe. This custom six-meter (almost 20-foot) van is Fabian's personal test vehicle, where he can live with new technologies, components, and layouts before offering them to customers for prices that can exceed \$150,000.

His Sprinter van was already fitted with a power system from

Victron Energy, which had to be removed prior to installing the EcoFlow Power Hub, Smart AC/DC Distribution Panel, and batteries in the reclaimed space. What you see pictured, including all of the leftover red cabling, is not Fabian's final assembly, but it's a reasonable approximation to test EcoFlow's claim that the Power Kit can be set up and installed "five times faster" than competing systems.

Before making the Power Kit installation permanent, Fabian first needs to redesign his custom aluminum cabinets to optimize the fit of each EcoFlow component for easy access and

ventilation. See, after spending a few weeks with the Power Kit, Fabian is confident that his future Origin Travelvans will be built around EcoFlow systems, despite experiencing a few hiccups along the way (more on that later).

The AC/DC Smart Distribution Panel might be Fabian's favorite part of the Power Kit. First, it simplifies the installation and makes it safer by terminating all the wiring inside of a central box using quick-connect wire snaps, while isolating all of the DC and AC cable runs from each other. It has six AC positions and 12 fused DC positions, six of

which you can control and monitor independently from either the EcoFlow app or Power Kit console display. Other systems (like Victron) can do this, but it's more time-consuming and complex to set up since it requires multiple modules that have to be linked together with software and wiring.

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If you max out your Power Kit with three 5kWh batteries, then

you'd have enough capacity to power all of the following devices for the durations listed before needing a recharge, according to:

- Microwave: 1400W/25m**
- Crockpot: 250W/90m**
- Water heater: 1800W/30m**
- Air conditioner: 2400W/6h**
- Laptop: 120W/10h**
- Induction cooktop: 1800W/1h**
- Fridge: 200W/24h**
- Lights: 10W/12h**
- Starlink RV: 42W/10h**

The Power Kit is designed to charge off solar, your van's alternator, shore power, and even EcoFlow's dual-fuel Smart

Generator, so you can recharge those batteries and do it all again tomorrow.

Fabian currently standardizes his builds around a couple of Victron system configurations – one for medium power needs and one for high – to simplify his installation process. “But now the Power Kit system allows me to really quickly have new setups and new possibilities without having to completely redesign the distribution,” says Fabian. “And for me as a builder, it’s absolutely great. It simplifies everything. It’s a huge difference from Victron.”

The Smart Distribution Panel is also beneficial to the van owner. Seeing both historic and real-time power consumption for specific AC devices like air conditioners and induction cooktops and DC devices like fridges and lights can help users live more efficiently in order to maximize the time spent off-grid. It also brings many smart-home conveniences to vanlife.

The Power Kit is not a perfect system, however

The Power Kit is not a perfect system, however.

To start with, Power Hub

placement is limited by the length of the LFP battery cables, which measure just 1.5m (4 feet, 11 inches). That's not a problem for systems with less battery capacity, but Fabian's 15kWh config has three giant 5kWh LFP batteries to cable back to the Power Hub, each measuring 19.7in (50cm) wide. As such, the battery that is furthest away is going to determine the location of the Power Hub and vice versa. That's probably why EcoFlow is so fond of showing its three-battery systems stacked vertically inside vans. But that doesn't make much sense for Fabian's 4x4 vans that perform better with the interior

weight evenly distributed low to the ground.

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underline-gray-63">Fabian working
from his van with the EcoFlow
console showing charge status
behind him.
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There's also the issue of bugs. After installation, Fabian discovered that the batteries

were draining despite all of his AC and DC devices being shut off, with two of his batteries discharging faster than the third. These issues were resolved through a series of firmware updates over a period of about four weeks. EcoFlow has a reputation for being quick to squash bugs. That's good, but you have to wonder how such obvious issues allowed the product to ship in the first place and what new problems will be discovered over long-term testing.

Fabian's final issue is a minor one. Unlike the LFP battery cables, most of the cables that ship with the kit are simply too

long. Fabian specializes in building lightweight adventure vans in order to avoid European restrictions that kick in above 3.5 metric tons – so every gram counts. As such, he eventually plans to shorten the cables that run from the Power Hub to the starter battery and Smart Distribution Panel. That's no problem, though, as the connectors are designed to be opened in order to cut and reconnect the internal wires. And that work pales in comparison to all of the cables Fabian had to create from scratch for the Victron systems he's been using.

With regard to EcoFlow's claim

that the Power Kit can be installed “five times faster” than competing systems, that’s true, according to Fabian. His installation took less than five hours and included a deep dive into the manuals. Fabian notes, however, that the speed claim is only true for fully spec’ed systems like the one he installed. If your needs are simple and therefore don’t require a lot of cabling and configuration, then the Power Kit won’t save a ton of time, he says.

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dark: [>a: hover]: shadow-underline-gray-63">Roel
installing his entry-level Power Kit in his small Ford Westfalia campervan.

Roel received the smallest 2kWh Power Kit (\$4,000) to

install in his 16-year-old Ford Westfalia Nugget. When EcoFlow says its Power Kit can fit “any van size,” well, this is the campervan to prove it.

To fit the Power Hub and single 2kWh battery, he had to first make room by removing his gray water collection tank, which stores runoff from the sink. He wasn't using the tank, so it wasn't much of a sacrifice – but not

every small van owner will have that kind of flexibility.

The cabinet where everything is installed doubles as storage during the day and supports part of the bed at night. That means the space will be covered by a solid shelf or mattress for long periods of time. The tight space required Roel to get creative with the mounting brackets since there

wasn't enough room to follow EcoFlow's exact mounting instructions. Fortunately, that work only required drilling a few holes and attaching some bolts.

Space for the EcoFlow components was further infringed upon by the spools of long cable that had to be tucked into the area between the battery and Power Hub. Roel plans to shorten the cables to

free up more space for ventilation. He did cut some ventilation holes into the surrounding cabinetry, but he's not within the 10cm tolerances EcoFlow recommends for proper ventilation.

Fortunately, Roel lives in the Netherlands, which has a very mild climate. But it remains to be seen how well the Power Hub holds up over time, especially on long family trips to

southern Europe during the summers.

To his dismay, Roel didn't have enough room to install the optional AC/DC Smart Distribution Panel. Instead, he tapped into his Nugget's existing distribution point. He hopes to eventually find some extra space for it because he really wants the per-device management that Fabian is enjoying.

EcoFlow's system is roughly twice the price

Like Fabian, Roel also discovered a few bugs with the system. He suffered from the same battery drain issues but also discovered a cold weather charging issue that was patched during testing. A noncritical bug whereby Roel's system showed 600W constantly flowing from his alternator to the battery stuck at 99

percent full was
unresolved by the time
this review was
published.

In total, Roel's novice
installation took a bit
more than 13 hours: one-
and-a-half hours to unpack
and read the manuals, six
hours to figure out his
van's wiring, four hours
to figure out how to
remove the gray water tank
and fashion a Power Hub
mount, and about two hours

to install the Power Kit and troubleshoot.

Roel made some price calculations on the Power Kit versus a comparable Victron Energy system that would have made better use of his van's limited space. EcoFlow's system is roughly twice the price.

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Power Kit can also be
monitored and managed with
the excellent EcoFlow app.*

Still, Roel is enjoying
the EcoFlow app and what
it's teaching him about
his power-hungry

appliances and lights. “Normally, I have no idea how long I can stay off the grid,” he said after everything was connected. “I have AC power now. It’s great. Overall, if I would start with a new van, then I would score it a 9 plus. But for a retrofit, it’s easier to use separate elements that you can scatter around the van in different locations. So for retrofits in a small

van like mine, maybe 7.5 out of 10.”

With regard to EcoFlow’s claim that the Power Kit can “fit any van size,” Roel had this to say: “It’s big. I would say it could be a bit smaller, but that’s also because it has nearly 5,000 watts of solar power that can be connected, and you can put up to 15kWh of battery and I’m using only 2kWh. So it’s made for bigger

**installations. But it does
fit.”**