The 4ON EV Container Charging Solution

The future of EV charging

T: 03333 444407 E: info@4on.co.uk 4on.co.uk

At 4ON, we believe British expertise and innovation can solve some of humanity's most pressing problems, across Europe and the world.

Renewables are the future of energy.

Renewable technology is here now and it's the UK's future.

We must stay ahead of the curve, accelerate our exports out of COVID-19 lockdown and help the UK meet its climate ambitions.

However, getting everyone onboard the journey to this panacea will require knowhow, planning, multi-stakeholder input and government support.

Certain schemes will remain controversial (think tidal schemes, for example) but, at 4ON, we've been building our own partnerships and working hard to make tomorrow's aims today's reality.

Our EV Container Charging Solution is just the start.

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The concept

Our EV charging container came about when a client, a leading Dutch engineering firm, repeatedly encountered the challenges and difficulties associated with powering building sites not yet connected to the grid.

While diesel generators could supply some of the power needed, the client wished to avoid an over reliance on non-sustainable power sources, as well as provide a charging facility for its staff fleet of EV vehicles during each working day.

As critical power specialists, we were briefed to design and supply a ‘green’, mobile, off-grid charging solution that would enable the running of a building site without any existing infrastructure.

The brief played to all our strengths and we knew this was the start of an exciting new chapter in the story of off-grid power.

The EV Container Charging Solution

Our highly-skilled team based in the UK has worked on the EV Container Charging Solution from conception to complete build, taking care of all aspects from research, planning and design to fabrication, testing and rollout.

The solution enables clients to operate sites and charge electric vehicles just as if the infrastructure has already been installed.

- **Enables efficient EV charging without the need for existing utilities.**
- **Uses green technology as much as possible to ensure it can provide clean power in remote or inaccessible locations.**
- **Cheaper than upgrading sites to plug into existing utilities.**

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How does it work?

The EV Container Charging Solution is effectively a green, mobile, large scale battery that can be deployed anywhere in the world to support projects as diverse as mines right through to extreme off-grid environments in the tundra or Hawaii.

It incorporates a 100kVA DC-Coupled UPS BESS to deliver power to six 22kW EV charge points and two 32a 3-phase sockets.

The system makes use of wind, solar, bio-diesel and grid power, intelligently utilising the energy sources available to charge the onboard battery array.

By continually topping up the stored energy buffer via renewables, it minimises requirements from bio-diesel generation or the national grid (if available).

The four roof-mounted wind turbines, along with the 300w/m² PV panels, feed directly into the batteries.

The UPS' inverter then converts this into 3-phase power for the sockets.

The UPS' rectifier handles the AC power from the mains and bio-diesel generator.

It's a completely autonomous solution and can be monitored via a 4G Network.

Usage data, fuel levels, security and issues are all reported.

The system also includes fire suppression, while auto-shutoff in the event of an incident ensures that the system is safe to use and performs optimally.

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Management information

The container uploads its data to the cloud for secure management.

It's fully autonomous and monitorable remotely, from wherever you happen to be or for whoever needs it.

If multiple sites are in operation, the owner is able to operate a fleet of containers.

Our software, developed by our in-house experts, ensures that the remote control system is able to measure all voltages and current flow.

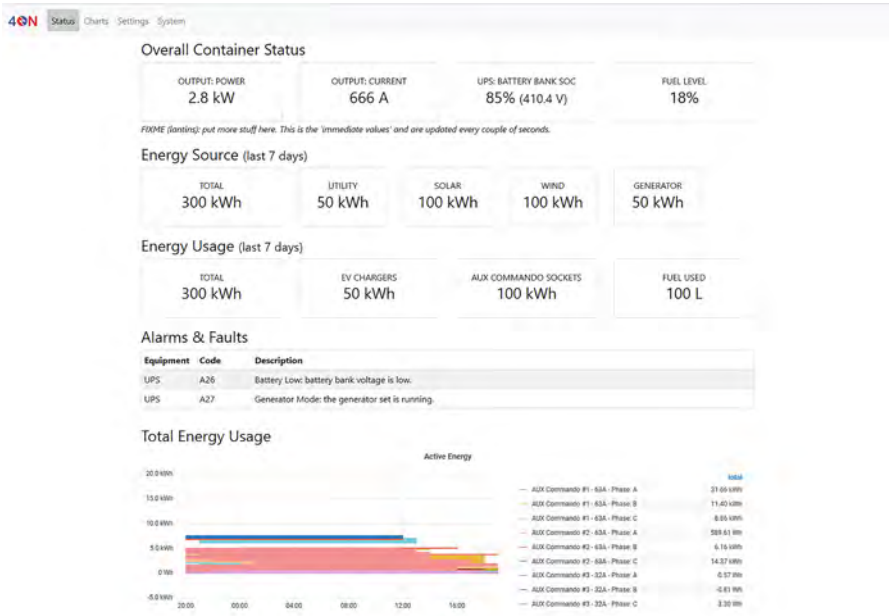
It also ensures that available power sources are able to provide input to the UPS, from a technical point of view, as well as instructing the system to use the best profile for the particular site it's being deployed at.

The system includes configurable settings such as 'input current limit' and 'UPS output voltage', as well as visibility and control of system performance:

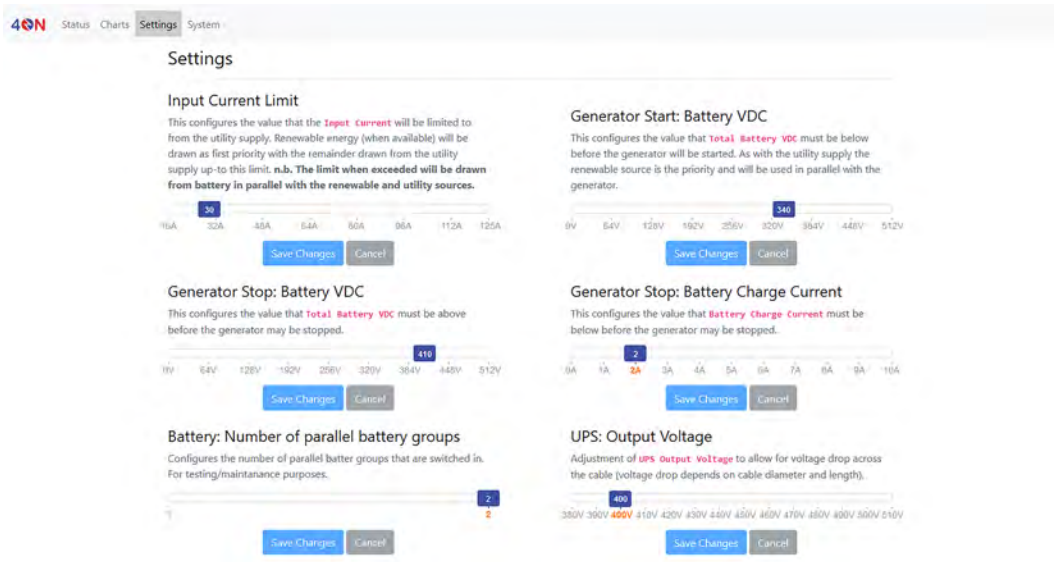
- container status, energy source, energy usage, alarms and faults
- load, power factor, apparent power
- battery current, backup time, temperature and voltage
- input and output current, voltage and frequency
- maximum power point tracking (MPPT) current, voltage and power

These graphs illustrate the management information and control available.

System status



Settings




e-CO2tainer
Kaart voor lezer houden
ALFEN

Power and battery charts

Output, input and MTTP charts

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Enhancements

Having developed the EV Container Charging Solution, we're now looking into developing further charging containers.

Improving and enhancing our original concepts where we can, our view is to perhaps franchise for manufacture in overseas markets.

Initially deployed as a design prototype, the client has requested additional models with a few notable changes:

- the battery system will be replaced by lithium-ion
- the footprint of the container will be shrunk as the generator will now be external
- the capacity will be doubled, meaning additional high-density PV panels and turbines can be installed.

The same mobile approach will be deployed, so that it can be easily transferred to different locations as and when required.

The future

We're also planning additional containers that increase the energy store as well as using hydrogen-powered generation to replace the bio-diesel, ensuring zero carbon footprint.

In the UK, we're well placed to exploit hydrogen fuel cell technology, and it's the right time to make this work and help to meet the Government's climate ambitions.

We believe that the future of energy generation and usage lies with the ability to manage utilisation and generation.

With multiple small sources of power that won't always be available when required, having an architecture that can provide critical and dependable power whatever the requirement, location or season, is the only viable way forward.

At 4ON-365, we're taking our experience and proven track record of designing and building critical power solutions to the next stage, meeting the requirements of the modern world.

The traditional model of just plugging in a building won't scale, nor will it ensure the lights stay on as costs rise.

The solution is dynamic power.

"Renewable technology, coupled with sensible government support – not subsidies – is the key to getting UK engineering exports going again and improving our own domestic electricity network.

Like it or loathe it, UK knowhow and robust battery technology is becoming a key national asset."

Lee Gibbins
CEO, 4ON-365 Ltd

Get in touch

We'd love to talk about your next dynamic power project.

We're creative and never take no for an answer. We'll listen to your challenges and aims, and work with you to create and build a solution that meets all your objectives.

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