

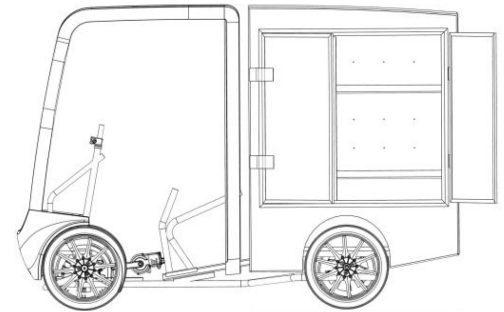
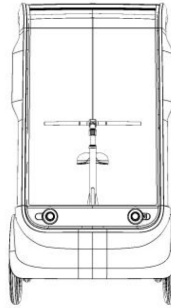
Fuel Cell Cargo Pedelec

User Manual



Bike

This bike is an EAV 2Cubed. The bike uses a SBS battery and has a load capacity of 120kg to account for the hydrogen tanks. The maximum recommended rider weight is 100kg. Please ensure you read the user [manual](#) and complete the pre-ride checks before riding. As per the EAV user manual and the operator's agreement, regular bike maintenance is required and is the responsibility of the user. Any fuel cell and hydrogen maintenance will be organised by Aberdeen City Council.



Battery, Energy Box, Hydrogen Fuel Cell

The bike contains a battery which powers an electric motor. When the bike is in operation the fuel cell will continually charge the battery, therefore, under normal operation there will be no requirement to charge the battery separately. However, it is possible to charge the battery separately if needed.

The fuel cell requires airflow to work so it's important to ensure all the energy box vents are unobstructed at all times. To clean the bike, use a damp cloth only. When cleaning, do not spray water directly on to the energy box.

Should there be any suspected issues with the energy box or fuel cell, do not attempt any maintenance. Contact Aberdeen City Council for assistance by email to h2aberdeen@aberdeencity.gov.uk

Energy Box Display

On the energy box there is a display with the following information:

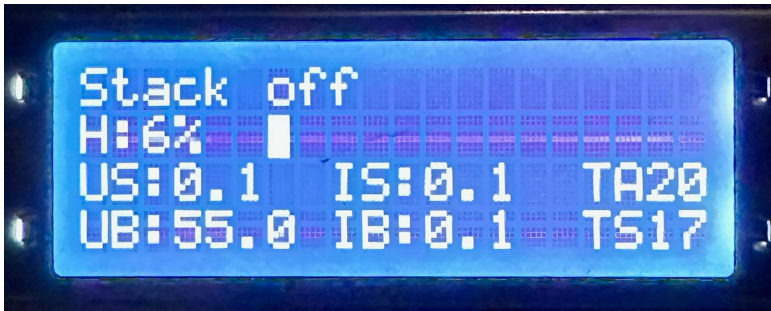
First Line: Status of the Energy Box (Stack off, Start up, Charging, Shut down, Error + Number)

Second line: H2 in % and Bar Graph (one box is 10%)

Third line: Fuel Cell Voltage, Fuel Cell Current, Ambient Temperature

Fourth Line: Battery Voltage, Battery Charge Current, Fuel Cell Temperature

Error codes and user responses can be found later in the manual.



Hydrogen

The information in this section provides information and practical steps to ensure the safety of users operating the bike fitted with a hydrogen system.

Hydrogen gas is inherently a safer fuel than diesel or petrol. Hydrogen is an odourless, colourless gas. It is fourteen times lighter than air and will rapidly disperse upwards.

In case of Accident

If the bike is involved in a collision, turn off the ignition as quickly as possible, move away from the bike to a safe distance and contact the emergency services if required. It's important to notify any responders that it is a hydrogen fuelled vehicle.

Contact Aberdeen City Council h2aberdeen@aberdeencity.gov.uk so they can arrange for an authorised service provider to inspect and service the vehicle after any incident that affects the fuel system.

Fuel System

The working pressure of the hydrogen system is 350 bar (35 MPa, 5000 psi). Compressed hydrogen gas is stored in one 28-litre (0.7 kg) tank, located in the rear bike box inside the hydrogen containment unit. This gives the bike a range of up to 600km (370 miles).

Storage Precautions

- Do not bring a bike with an audible leak into an enclosed storage location or workshop.
- If small amounts of hydrogen are released, ensure the area is ventilated.
- Keep the bike away from naked flames or other ignition sources.

Service Intervals

Any maintenance to the hydrogen system should be carried out by a qualified, hydrogen technician. Aberdeen City Council will contact operators to arrange periodic inspections (this will include inspection of the hydrogen cylinders every three years).

Refuelling

You can refuel the bike at one of Aberdeen's two hydrogen refuelling stations:

- Aberdeen Hydrogen Centre (ACHES), Langdykes Rd, Cove Bay, Aberdeen AB12 3FU
- BOC Hydrogen Refuelling Station, Kittybrewster, Aberdeen, AB25 3BJ

The bikes are to be refuelled at 350 bar pressure. A video is available online showing how to [refuel a vehicle](#) and the bikes can be refuelled in the same way. To refuel you need to be registered onto the system (Appendix 1). Once registered you will receive a fob and fuel card which provides access to the two stations.

Data

The cargo bikes were bought as part of an Interreg Europe project and data collection will be used for research purposes and, if necessary, to help with troubleshooting or required bike maintenance. No personal data will be collected.

When the bike is in operation data will be transmitted remotely via the energy box to Unicorn Energy. The following information will be collected: approximate location of bikes every twenty to thirty seconds and data of the fuel cell (voltage, tank level, current) every twenty to thirty seconds.



Troubleshooting

Bike is not coming on



If you have tried to restart the bike more than three times and it is still not coming on, contact Aberdeen City Council.

Display on energy box is not going off when the bike is turned off



It may take up to five minutes for the energy box display to shut down.

Display is not showing anything



If the bike is on and the display is not showing anything then there may be a problem with the fuel cell. Contact Aberdeen City Council

Error Codes that may appear on display box



Error + No (see table with error codes)

If you are having any problems and you have tried all the troubleshooting options, please contact Aberdeen City Council at: h2aberdeen@aberdeencity.gov.uk

Error Codes

ERROR	USER RESPONSE
1 – SD card is not inserted	The SD card is inside the energy box and should not be removed. If it has slipped out, contact Aberdeen City Council.
2 – Stack voltage was too low in charge mode	Restart bike. If the error code is repeated three times, contact Aberdeen City Council.
4 – H2 empty	Fill up with hydrogen at 350bar.
8 – Stack temperature is high	The bike should switch off automatically in this situation. If it has failed to do so, switch off the bike manually. Check and remove any obstruction to the vents on the energy box. Wait 5 minutes for fuel cell to cool before restarting the bike.
16 – Ambient temperature is high	Switch off the bike, check for, and remove, any obstruction to the vents on the energy box before restarting the bike.
32 – H2 Error	Contact Aberdeen City Council.
128 – Fan fault	Switch off the bike, check for, and remove, any obstruction to the vents on the energy box before restarting the bike.
255 – Short circuit in battery side	Switch off the bike. Conduct a visual check to see if cabling has become unsecured and if there are any obvious issues. If no problems found, switch bike on. If error code is repeated, contact Aberdeen City Council.

Refuelling Registration

Name of customer (fob registered to this name)	
Customer or invoice address	
Customer telephone number	
Customer email address (for invoicing)	
Vehicle registration	
Driver name	
Driver telephone number	
Rating and capacity on the vehicle hydrogen tank (eg 350Bar, 6kg)	
Vehicle type	

Complete with your information and email to h2aberdeen@aberdeencity.gov.uk

Once we have received this, you will be added to our system.

We invoice monthly for your hydrogen usage.

No payment is taken at the point of service; payment of invoices should be via BACS transfer.