

Inland Waterways Association

Sustainable Boating Group



Presentation to the IWA AGM
September 20th 2026

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LITHIUM BATTERY SAFETY

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ALL BATTERIES ARE DANGEROUS!

LITHIUM BATTERY RISKS

LITHIUM BATTERIES CAN CAUSE FIRES OR EVEN EXPLOSIONS IF SUBJECTED TO:

- **Mechanical damage**
- **Water Intrusion**
- **Overcharging or over-discharging**
- **Manufacturing defects or component failure**
- **External heat sources**



**Power banks and vapes
now the biggest fire risk
on planes**

BBC News, 10/8/26



WHY DO LITHIUM BATTERIES CATCH FIRE?

THEY DON'T!

- They get hot
- They then can emit large quantities of flammable and poisonous gases
- The gases can catch fire or explode
- The fire spreads

DO WE NEED TO WORRY?

YES, AND NO!

We have other dangerous systems
on boats:

- Petrol Tanks
- Gas cylinders and systems
- Solid fuel stoves
- Electrical systems, 12V and 240V

We manage these risks!

WE MANAGE THESE RISKS BY:

- Using appropriate, approved equipment
- Installed to recognised and accepted standards
- Having mitigation measures in place should the worst happen
- **Lithium battery systems should follow the same principles!**

MODERN BOAT ELECTRICS ARE COMPLEX

- **They may have a variety of charging sources**
 - Mains powered chargers
 - PV Panels
 - Engine driven alternators
 - Independent generators
- **Usually incorporate 240 AC and low voltage DC systems working together**
- **Usually driven by high-capacity battery storage**
- **Often have large inverters drawing high currents**
- **May include electric propulsion systems**

LITHIUM Ion VS LFP

- All Lithium batteries can overheat and gas off.
- The gases are flammable, poisonous and are discharged in large quantities
- Lithium ion batteries can reach a sufficiently high temperature to ignite the gases
- Lithium ion batteries can therefore 'ignite' and promote a fire
- LFP batteries do not reach a sufficiently high temperature to ignite the gases.
- They need an external source of ignition to ignite the gases
- In certain circumstances the gases can then explode

THE BATTERY MANAGEMENT SYSTEM (BMS)

- The BMS is a computer equipped with various sensors and software
- The BMS monitors temperature, voltage, charging and discharge rates
- Each Lithium cell will normally have its own BMS
- The 'system' must have a supervisory BMS which monitors all the cells, keeping them in balance. It also monitors the other components in the system
- The BMS must provide appropriate alarms when faults occur

HOW SHOULD WE MANAGE LITHIUM BATTERY RISKS?

- Use Lithium Iron Phosphate (LFP) cells
- Use high-quality, compatible equipment
- Consider the whole system, not just the batteries
- Use a 'Competent Person' to design and install (or inspect) the system
- Ensure that batteries are installed in an appropriate place with suitable ventilation
- Understand the faults that can occur and what actions to take if they do
- Maintain the system properly

SUMMARY OF RECOMMENDATIONS

- Use LFP Batteries
- Consider the complete system, not just the batteries
- Use a 'Competent Person' to design and install (or at least inspect) the system
- Ensure that the batteries are in an appropriate location with a suitable ventilation
- Understand the alarms, what they mean and what steps to take
- Maintain the system properly

**There is no such
thing as a 'drop in'
Lithium battery!**



IWA/CA GUIDE TO INSTALLING LITHIUM BATTERIES FOR DOMESTIC POWER ON LEISURE CRAFT



- First published in August 2026
- Aimed at the 'ordinary boater'
- Prepared by a qualified group of experienced boaters drawn from the IWA Sustainable Boating Group and the Cruising Association Regulatory & Technical Services Group
- Describes the make-up and complexities of an LFP system and current good practice
- Provides a check-list to inform users of what questions to ask an installer when specifying, installing, commissioning and maintaining an LFP system
- Not a Standard or a Regulatory document
- Available here:

[Sustainable boating - The Inland Waterways Association](#)

Or Here:

