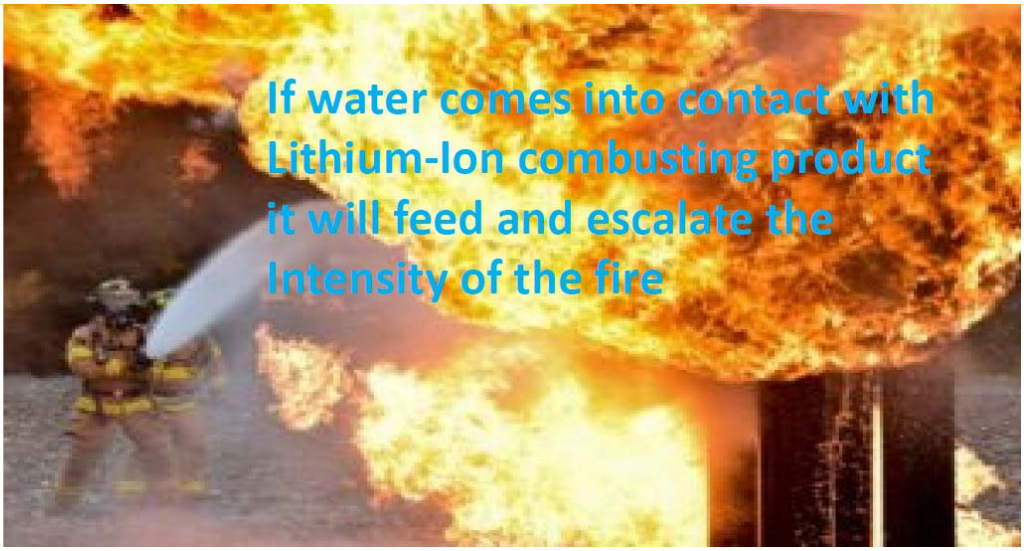
An increase in the amount of lithium-ion battery yacht fires has prompted The UK's Maritime and Coastguard Agency (MCA) to release new fire safety and storage guidelines of small electric powered craft on yachts.

Engineers Australia's Society of Fire Safety is currently developing guidelines for mitigation and controls for Battery Electric Vehicle fires and one of the prime issues is that rupture of the battery containment expels some very toxic materials and it is imperative that this remain separated from human contact.

One of the big issues is that water may react with some of the exposed materials in this chemical fire and become a reactive fire where the water can increase the fires intensity, becoming a reactive fire.



Industry groups have estimated 16 total losses due to fire between August 2021 and August 2022, with the source of around half of these fires yet to be known. One potential source for the fires, among many others, could be lithium-ion battery fires. There has been an increase in ownership of electric tenders, jet skis, eFoils, and other watercraft, which are powered by lithium-ion batteries rather than fueled by petrol. The MCA's new guidelines have taken into consideration that the fire prevention, detection, and suppression measures of the petrol generation are not always viable for lithium battery powered crafts.

The new guidelines for storage and charging detail that craft should be stored in spaces that, as a minimum, comply with requirements of Part A of the REG yacht code. Keeping track of humidity limitations, temperature ranges, and maintenance requirements while storing crafts and batteries is pertinent as well. Any damaged craft or batteries should be handled with extreme caution, and damaged batteries should not be charged again.

See the UK guidelines here

https://www.gov.uk/government/publications/mgn-681-m-fire-safety-and-storage-of-small-electric-powered-craft-on-yachts/mgn-681-m-fire-safety-and-storage-of-small-electric-powered-craft-on-yachts #

New technologies help detect issues with batteries before a fire starts.

Fires aboard large yachts are not new, but what is changing is the types of fires and struggles to put them out. The latest year for which reliable data exists is 2018. During that year there were 39 fires on board large yachts, with 32 of those on board vessels under 500 gross tons; of the 39 fires, 37 were on motor yachts. There is a growing concern within the industry with the number of lithium-ion battery devices on board and the fire danger those devices present.

The International Superyacht Society's Leadership Series explored many issues affecting the industry. The "hot" topic that everyone was interested to hear about was fire safety — specifically, the concern over lithium-ion battery fires. The number of lithium-ion batteries in the world is increasing exponentially. Obviously, everyone carries a cellphone, at the bare minimum. However, yachts are particularly affected due to the increased number of toys and other devices on board that use lithium-ion batteries. There is also a big push within the industry to go green, which means increases in the size of batteries on board to run hotel and propulsion systems.

What makes these fires so dangerous is the nature in which they combust. The process in which they burn is called thermal runaway – an entire thesis could be written on the subject. As it stands, there are no regulations covering detection or suppression of such fires. In fact, industry experts disagree on the correct ways to handle these incidents. Further, most crews and first responders lack the proper training on how to handle these types of fires.

"Fire, in itself, is a scary topic to insurers. There is no such thing as a good fire," said Laura Sherrod of Newcoast Insurance. "Our biggest concern is the aging of our yachts and how we prevent losses from chafe, electrical, and lack of maintenance issues."

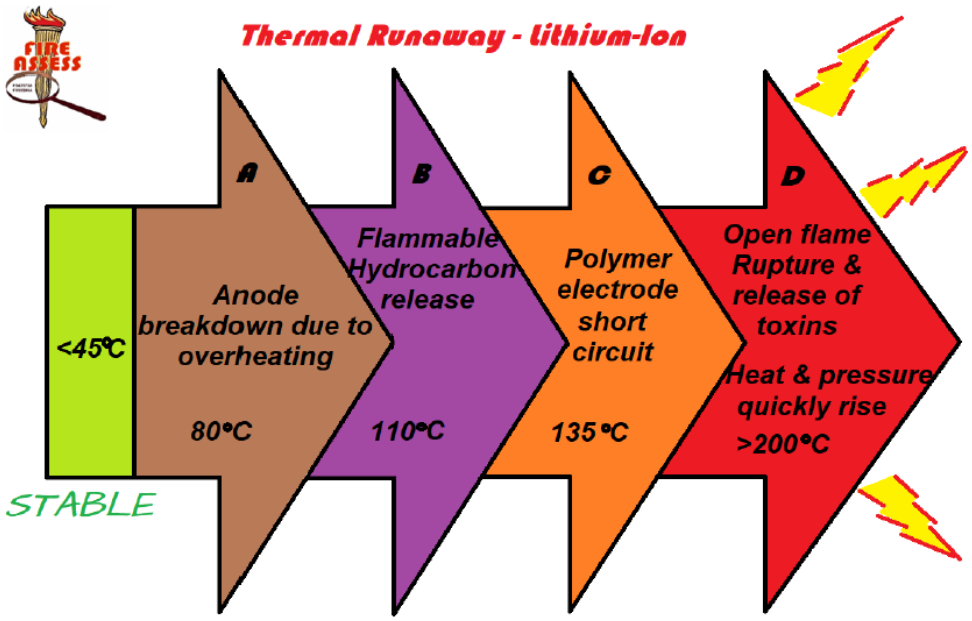
However, it's not all doom, gloom, and boom. There are currently available technologies that can significantly improve the detection of potential issues with batteries and warn crew up to 20 minutes ahead of thermal runaway. This early detection is a substantial advantage in

mitigating risk to the vessel. Aspirating smoke detectors actively monitor the air and use lasers to analyze the particulate matter, which can reduce detection time up to five times sooner than traditional ones.

This will continue to be a "hot" button issue within the industry. The regulators, insurers, and manufacturers are working towards solutions. Industry experts are also working to provide the necessary education and training for crew. This issue won't be extinguished anytime soon.

My own take on this is that battery manufacturers need to manufacture cells which have a thermal sensor integrated into the battery cell anode (each and every cell) which isolates upon reaching a nominated temperature (say 50 ·C) the battery, and this should obstruct thermal runaway.

Engineers Australia's Society of Fire Safety is currently developing guidelines for mitigation and controls for Battery Electric Vehicle fires and one of the prime issues is that rupture of the battery containment expels some very toxic materials and it is imperative that this remain separated from human contact. I would suggest that this is an even greater issue for such a fire on a vessel.



Remember that an ICE (petrol/diesel) fuel fire burns at approx.. 435 ·C whereas a Lithium-Ion battery fire burns at 2,760 ·C that's over 6 times the heat of the petrol fire and then there is the toxic vapour cloud to consider.