Note on handling the Lithium Polymer batteries of the hybrid versions

LiPo batteries are harmless as long as you maintain the proper handling of you.

Particularly critical are the states over- and undercharging. With an overload of 150%, ie approx. 72 volts, it comes to the breakthrough of the membrane between the energy sources and thus to Fire, which spreads around other cells. At underload to 75%, so about 36 volts it can come to the same effect.

Excessive currents heat the battery at about 150 ° C, the membrane evaporates and it comes to above effect.

First it comes to housing deformation and exiting very dense and foul-smelling Smoke. This consists of water and relevant amounts of toxic components.

If you can not immediately eliminate the cause, for example, by switching off the two 48 volts Main switch, you should leave the ship and call the fire department.

It is particularly important to inform the fire brigade that LiPo batteries are on board.

But it is also important to inform if you are sure that it is a smoldering fire on the LiPo, or possibly a component of the 12 volt system is cause. At a Greenline 33 Hybrid with standard hybrid equipment is eg only one battery on the port side. If so smoke rises to starboard under the sofa, it indicates a cause in the 12 volt network (there is the box with the main fuses and the battery separator) and with it All clear for the LiPo danger.

Existential basis for LiPos

On the LiPo housings are the controllers. These are not just about the cargo to ensure the batteries professionally, but monitor them constantly. Among other things, cares a load balancer to ensure that the cells inside have no different charges. If this does not work, cells would unequal unloaded and loaded.

Any manipulation from the outside, for example, to eliminate a mistake of charging with shore power or solar impossible (bridges of two wires on the controller) also leads directly to
Damage to the LiPo batteries.

It is also very dangerous to disconnect a LiPo battery from its controller. Without the Loadbalancer comes over time by self-discharge to the same effect as the undercharge <75%. It is enough if this is the case with a cell to trigger a chain reaction.

If a LiPo must be removed, then always together with its controller. It's necessary To remove the controller, the LiPo should always be removed and stored safely.

But it is also correct that a reaction does not occur immediately. So you can use a controller exchange.

LiPo in the cold

It has become common knowledge that LiPos should not get colder than -5%. That's true only insofar as that the LiPos can work up to this temperature. These can be stored, as on the Inscription on the battery can be seen, down to -50%. But then no more consumers should do it become. This can be done with the configuration on the Greenlines by switching off the BCU. This switches a load relay and the LiPo is "off the grid".

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Electric motor and LiPo

As is known, up to 130 amps flow to the electric motor in electric vehicle operation. When the clutch to the diesel engine no longer sufficient separates, the currents can until the release of the Shutdown by the HCU be even higher.

The electric motor is cooled with its own small cooling circuit. The responsible pump is located on the starboard side of the two seawater filters, in the technical room behind the stairs. It was in the Years very different pumps installed. Among other things, a very small of the Fa. Whale. There only a coarse filter is connected upstream, quickly silt etc. enters the pump. Because the blades are driven only magnetically, it quickly comes to a standstill. For other pumps it can to get stuck and shorted by a blocked shovel.
The most stable variant is the one with a Jabsco impeller pump. Without cooling the electric motor is closed hot. In the best case, the HCU then turns off, in diesel mode, however, the generator must be cooled. Lack of cooling will not lead to the connection! If the E Engine / generator is uncooled, it comes to "electric smell" in the cockpit area, in the episode

the engine burns through. The resulting currents all go through the power regulator. So it is very likely that a fault of the electric motor / generator also causes damage to the power regulator and / or LiPos. If then functions of the controller (eg loading with
Shore power or solar) are disturbed, must be responded!

Independent control

Some control functions are filled out by the HCU.

We have developed a small GSM device that can handle the temperatures of up to 2 LiPos at Monitored housing and detects the flow of water when the pump is switched on. Errors are via SMS and / or email to different addresses reported. The device is self-sufficient on the 12 Volt system installed and can not be turned off by eg main switch.

**This makes it possible for owners to draw conclusions immediately in the event of smoke development whether it is a problem of a LiPo, or "simple" in the 12 volt range
is defective. This information is extremely important to the fire department and can decide if anything is deleted!**