

Trend Report marine e-mobility

Developments in marine e-mobility 2018

The technology for every-day use is already available!

There is a new ferry commuting between the towns of Wasserbillig and Oberbillig on the Moselle, but it was anything but cheap as the names of the two towns may suggest in German: it cost around 1.3 million euros. Nevertheless, this investment should be worthwhile after a few years, because the operating costs à la longue are simply much lower than they were with the old diesel ferry. All because the new ferry is electric. Quiet, completely without smoke or fumes and also clean in many other respects - there are no greasy oil changes anymore.

The ferry was built by boot Düsseldorf exhibitor Ostseestahl from Stralsund (Hall 10 / G78). The electric drive comes from the Austrian company Kräutler Elektromaschinen (also Hall 10 / G78). The ferry supplies some of the electricity it needs itself, thanks to the modern, efficient solar panels on deck, and the rest of the energy is recharged at the berth overnight. The ferry can store enough power in its batteries for two days of continuous operation.

This is state-of-the-art technology in marine e-mobility: The technology suitable for everyday use is already there, even if it is still being improved almost on a daily basis. E-drives are not cheap, but also not so expensive anymore that only eccentrics and idealists are willing to afford it. On the homepage of Torqeedo at torqeedo.de there is a table documenting how many operating hours per year are needed to make an E-drive to be even financially worthwhile. Even if that does not always translate one to one to individual situations, it still gives a good indication where you stand.

The fact that electric drives, at least during operation, are greener than any internal combustion engine is indisputable. The sprawling and not always completely fact-based discussion about the overall environmental performance, for example, if one takes into account the production of batteries, is another topic. To say just this about it: it can hardly be worse than the environmental incompatibility of oil, its production and its associated wars and environmental disasters or its subsequent processing



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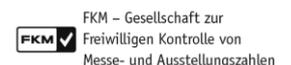
Messe Düsseldorf GmbH
Postfach 10 10 06
40001 Düsseldorf
Messeplatz
40474 Düsseldorf
Germany

Telefon +49 (0) 2 11/45 60-01
Telefax +49 (0) 2 11/45 60-6 68
Internet www.messe-duesseldorf.de
E-Mail info@messe-duesseldorf.de

Geschäftsführung:
Werner M. Dornscheidt (Vorsitzender)
Hans Werner Reinhard
Joachim Schäfer
Bernhard Stempfle
Vorsitzender des Aufsichtsrates:
Thomas Geisel

Amtsgericht Düsseldorf HRB 63
USt-IdNr. DE 119 360 948
St.Nr. 105/5830/0663

Mitgliedschaften der
Messe Düsseldorf:



Öffentliche Verkehrsmittel:
U78, U79: Messe Ost/Stockumer Kirchstr.
Bus 722: Messe-Center Verwaltung

and combustion. And electricity generation is also making tremendous progress, even with renewable and sustainable energies. This is a development that goes hand in hand with the spread and evolution of electro-mobility, or at least parallel to it.

However, electric drives have even more advantages, even if you leave environmental issues out of the discussion. In combination with batteries that get better and better as well as constantly improving ways to generate electricity on board and on the go, electric drives are becoming increasingly attractive as part of a complete package. And not least because it is also about comfort during operation, freedom from maintenance, reliability, the lack of noise on board and outside. Even in spite of still large battery banks, modern electric drives are often lighter than diesel engines and full tanks, they are also significantly less space-consuming - two important arguments especially on boats.

Particularly interesting in this regard are the new pod drives which can even be fitted on the outside of the hull. Hanse-Yachts, for example, has fitted them in the rudder blade in some models. Or install them below the hull of a sailing yacht where they are barely larger than the traditional sail drive units by now. These are astonishingly practical drives, some of which can even do without a conventional propeller on a shaft. FMT Floren Marine Technik from Kempen on the lower Rhine (fmt-kempen.de, at boot 2018 in hall 11, D74.8) builds such hub-less drives, about which the manufacturer says: "Since a synchronous motor is a synchronous machine acting as a motor, our drive unit also acts as a generator and produces electricity when it is passively drawn through the water or placed stationary in a stream. Due to the design of the ring motor, the propeller blades are mounted on the outside of the rotor, not on the centre. As a result, it is possible to dispense of the hub known from conventional drives. The external mounting of the propeller allows the centre of the drive to remain free. Trapped lines or other objects blocking the propeller are now a thing of the past. And should a propeller blade break, individual blades can be changed quickly and easily."

The current market leader Torqeedo already offers a whole range of such products: "We started with two product lines and now cover the power range from 0.5 kW to 50 kW. At the beginning, it was just a small outboard. Today,



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our ability to install the engines to the boat has grown significantly: starting with out- and inboards, to sail drives and up to pod drives that can be fitted underneath the hull," explains Torqeedo-CEO Christoph Ballin.

No wonder that the first manufacturers of serial yachts are beginning to rely on electric drives. The latest example: the luxury catamarans from Privilege Marine. Privilege Marine's first Series 5 hybrid catamaran is equipped with a 2 x 50 kW inboard engine system. The Deep Blue Hybrid System provides green energy for the zero-emission electric boat drive as well as all other onboard consumers through power generation with solar modules and hydrogeneration.

Torqeedo's modular combination of standard components makes it easy to tailor the system to individual needs. For long distance journeys, a 22 kW HV / DC converter generator is integrated into the system, offering a similar range as a yacht equipped with a conventional combustion engine. The generator provides sufficient energy to power the engines and, if necessary, charge the batteries at the same time. When the batteries are fully charged, the generator shuts down. This makes it possible to sail under power at a moderate speed for a few hours a day – almost without making a sound.

The combination of renewable energy, generator power and high-capacity BMW i high-voltage batteries allows boat owners to use a whole range of energy sources. Even the air conditioning can be operated at night without a generator. The fully charged system allows for 20 nautical miles of silent motoring at a speed of 5 knots.

Gilles Wagner, CEO of Privilege Marine, says Torqeedo's remarkable industrial development was the key to choosing Deep Blue Hybrid at the shipyard: "Torqeedo has brought hybrid technology to an industrial level by delivering an integrated system all from one hand."

About boot Düsseldorf:

boot Düsseldorf is the biggest boat and water sports trade fair in the world and is the place where all of the industry meets in January every year. Nearly 1,900 exhibitors, 50 per cent not from Germany, from more than 60 countries apart from Germany, will be presenting their interesting innovations, attractive developments and maritime equipment again from 20. to 28. January 2018. This means that the whole of the global market will be coming to Düsseldorf, to provide an exciting insight into the entire water



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sports world for the nine-day exhibition in 16 different halls. The trade fair is open from 10:00 to 18:00 every day. Admission tickets can be ordered online at www.boot.de and printed out conveniently at home. As an additional feature, they entitle ticket holders to use the Rhine-Ruhr public transport system free of charge up to price level D / South Region.

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Press Department boot Düsseldorf 2018

Tania Vellen/Cathrin Imkampe/Tim Feldmann

Tel.: +49 211/4560-518/589/995

vellent@messe-duesseldorf.de

imkampec@messe-duesseldorf.de

feldmannt@messe-duesseldorf.de



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