Electric Boats and Ships 2017-2027

Description:

This brand-new report looks at this fragmented but often highly profitable and growing sector. There are already over 100 manufacturers of electric boats and ships. The report finds that the market for hybrid and pure electric boats and ships will rise rapidly to over $20 billion worldwide in 2027 for non-military versions. Recreational boats is the largest and fastest growing electric marine market in sales number, followed by underwater leisure and autonomous underwater vehicles.

On-water commercial marine category is currently the largest marine EV value market. Leisure craft on inland waterways, notably in the USA and Europe, will become the largest sector as more places from Germany to India ban internal combustion engines or, as with SunMoon Lake in Taiwan, the operators unanimously agree to go clean and quiet.

Dirty ships

The decade will end with huge environmental pressures making owners of industrial and commercial seagoing craft clean up more rapidly. Long life of a ship will no longer be an excuse. One large ship can emit the global warming carbon dioxide of 70,000 cars, the acidic nitrogen oxides of two million cars and the carcinogenic particulates of 2.5 million cars. Volkswagen dieselgate is not the only scandal!

Long history: all to play for

Hybrid and pure electric marine vessels (EVs), with electric propulsion some or all of the time, have been around for over 100 years. The electric boat Lady Lena dates from 1890. Currently, the market for electric and hybrid watercraft is still significantly low with about 1-2% of the addressable market.

Profusion of examples

All-electric systems consist of an electric motor being powered by a battery pack. Hybrid electric systems consist of a fuelled engine and energy storage used to propel the craft sometimes (parallel hybrid) or to charge the battery (series hybrid). The report, "Electric Boats and Ships 2017-2027" gives a profusion of examples today and planned - the sweet spot being small to medium craft. Traditional "electric drive" where there is no substantial battery and therefore no pure electric mode or even downsized engine is mainly suited to large craft: it is seen in diesel-electric and nuclear-electric ships and submarines not covered in the report.

Add retrofit and electric outboard motors

Beyond new electric craft, there is already a substantial and growing business in retrofit of hybrid electric ferries and other ships with pure electric or hybrid electric powertrains. There is also potential to sell hundreds of thousands of pure electric outboard motors yearly as they become more affordable and more energy harvesting is provided on the craft to charge the batteries, improving range. Cost of ownership plummets due to due to cheap electricity, energy harvesting and reliability. The report explains the many new forms of energy harvesting delivering on-board electricity.

New things possible with EV craft are:

- Autonomy is easier.
- River boats: silent study of wild life.
- Ski boats, record breaking: best acceleration.
- Leisure submarines: fun, independence for anyone.
- Military: little or no heat or sound signature attracting missiles.
- Energy independence by harvesting sun, waves, tide, wind etc is easier.
- Workboats: provide electricity at destination for equipment and disaster recovery.
- Tugboats: maximum power from stationary and holding position more precisely. Lowest up front cost for small vessels and potentially lowest cost of ownership for most vessels.
- Saving planet, reducing deaths & sickness of humans and wildlife from local air and water pollution.
Battery needs and roadmap: Steady improvement in battery performance and price will drive demand upwards as will faster charging. “Electric Boats and Ships 2017-2027” gives a particularly thorough coverage of the batteries and explains supercapacitor and other system evolution. Although the marine market is not the largest addressable market for Li-ion batteries, it is expected to be a major secondary value market due to the battery typically being unusually large, one MWh not being unusual.

Technical limitation facing such Li-ion batteries include energy and power density, life, charge rate, size, and weight. Other factors hindering the fast adoption of electric and hybrid marine technology is the ability to maintain and find replacement components for such propulsion systems. The report is therefore essential reading for all in the marine craft supply chain plus legislators and investors seeking latest infograms, forecasts and data in easily grasped form - commercial rather than academic.

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