Electric mobility on the water

ENGLISH 2020

Naviwatt ZenPro 580

15 years of Torqeedo

Sea change – sustainable boating is the way ahead

Celebrating 100,000 systems in the field – from being a pioneer to making an impact

In 2020 we take a moment to celebrate 15 years at Torqeedo. But in a quickly changing world every passing moment is important and Torqeedo was never only about succeeding as a company. Torqeedo was, and is, about making a difference. Over the years, 100,000 boaters have chosen Torqeedo systems over higher-emission alternatives. Today, electric boating makes up around 2% of the marine market - similar to the market share in the automotive world and growing every year. This is what we are proud of. And as in 2005, Torqeedo is about pioneering - not walking in other people's footsteps. Creating solutions the world has never seen and making boating climate-neutral, while improving the quality of your time on the water.

Going climate-neutral is not a sacrifice – our partners show you how

We are not boatbuilders. We merely provide motor- and power-management systems for boaters and boatbuilders. Time and again, it delights us to see how our partners use our systems to create breath-taking boats, while protecting the air we breathe. We hope you enjoy the examples of our partners' projects, such as electric ferries providing "last-mile" commuter transport in Bangkok (p. 5). Explore how century-old oaken boats are refitted with electric motors, preserving historic maritime traditions for the post-carbon age on Heligoland (p. 12). Take a look at the next generation of sailing yachts, demonstrating how blue-water sailing goes climate-neutral (p. 50) and how race sailing is supported by Torqeedo technology (p. 18).

Keep pioneering – innovations 2020

In 2020, Torqeedo is launching two new motor models. Ultralight 1103 is the strongest and most efficient kayak motor on the market, designed for passionate kayak fishermen. Substantially stronger, the 20 HP-equivalent outboard Cruise 10.0 T is available in a tiller version, predominantly for commercial operations. Apart from these two new motors, system integration was the focus for innovation in 2020. Cruise system improvements include easier AC generator integration and an NMEA 2000 interface for incorporating drive system information on external marine displays. Fast chargers and a new solar charge controller for Power 48-5000 will also be available in 2020. Torqeedo's high-power Deep Blue system has been improved in several ways: quieter-than-ever outboards and seamless integration of joysticks, third-party throttles, and wireless controls.

We look forward to an exciting 2020.
See you on the water!

E-mobility on a global scale

From Colombia to Indonesia, together we're building tomorrow

Transforming how people move on the water – making it cleaner, safer and more sustainable – has always been Torqeedo's mission. Nowadays we operate in over 100 countries and work with more than 2,000 sales, service and boatbuilder partners to ensure our customers achieve their goals and reach their destinations.

The Deep Blue system powers large sailing yachts on their Atlantic crossings as well as fast foiling motorboats and passenger ferries in the metropolises of Asia. The Travel motor is boosting women's economic potential while conserving the environment in the mangrove swamps of South America – and powering dinghies and daysailers in most marinas.

Travel around the world with us to learn more.

E-boats in the rainforest Guapi, Colombia

Fisherwomen in the mangrove forests of Colombia use e-boats to collect mussels, eliminating fuel costs and pollution and preventing overfishing.

Journey for the future New York City, USA

Team Malizia and climate-activist Greta Thunberg crossed the Atlantic emission-free on the high-tech yacht Malizia II – and Torqeedo provided electric harbour support vessels on both sides of the pond.

Green is the new glam Monaco

The Yacht Club de Monaco is the nerve centre of the green yachting movement and Torqeedo is a proud technical partner of the Monaco Solar & Energy Boat Challenge, where emission-free racing boats are developed and tested.

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The eco-islands
Heligoland, Germany

Heligoland has converted the first of the legendary *Börteboote* passenger vessels for the future, replacing an old diesel with a clean, quiet Deep Blue system.

Electric revolution
Lake Victoria, Kenya

Every night, more than 200,000 people fish on Lake Victoria – most of them with combustion outboards that pollute both air and water. Solar-electric fishing boats with Cruise 4.0 outboards are the solution.

Urban transformation
Bangkok, Thailand

Thailand's first all-electric commuter ferry travels its 5 km route between Hua Lampjong and Thewes Pier. Twin Torqeedo Cruise 10 kW electric outboards make sure 40 passengers get there on time.

Fragility of nature
Raja Ampat, Indonesia

Coral reefs are being decimated by pollution and climate change. Cruise and Travel motors allow MahaRaja Eco Dive Lodge's visitors to ethically explore the most pristine and fragile diving sites in the world.

Contents

Sea stories

Turning the tide

Switching makes a difference. Electric boats are cleaner and healthier for you, your community, and our planet

If you spend time outdoors and on the water, you are likely to have noticed a change: Nine of the ten warmest years have occurred since 2005 and the five hottest years on earth were the last five years, according to a recent NOAA analysis of global temperatures. Ocean temperatures are rising, as fishermen report species that have sustained coastal communities for ages are vanishing. Coral reefs, so fragile and beautiful, so critical for aquatic life, are suffering from warming and ocean acidification.

The science is clear

Global temperatures are currently predicted to reach 1.5° C above pre-industrial levels between 2030-2052. The science is clear: We have to reduce our greenhouse gas emissions by 45% over the next 11 years to avoid further warming – and the most harmful impacts of climate change. Reaching this goal will require the reinvention of our lifestyle.

The good news: The technology for a carbon-neutral mobility is here – and getting more powerful every day.

Electric boats have lower climate impact

Boats with electric motors have a significantly lower climate impact than combustion-powered boats. Even when charged with electricity from a coal-fired power plant, CO_2 emissions are reduced by approximately 30%. When charged via renewables, there is an up to a 90% reduction in climate impact.

Until recently, little attention was paid to the air pollution caused by combustion engines on boats. They are allowed to use fuel that emits up to 100 times the level of harmful substances permitted in automotive diesels and include very little technology for filtering out pollutants. If you drive an 80 HP boat for one hour, it's like driving 350 new cars at highway speed for the same amount of time.* It's no wonder that in cities with a lot of boat traffic, air pollution from fine particles is up to 20 times higher than accepted levels. If you switch to an electric drive, you are not only reducing your carbon footprint, your local community and waters benefit as well.

Electric boats cause no water pollution because they don't discharge their exhaust underwater like combustion engines and there is no chance of fuel or oil spilling on the boat or fouling the water. They are quieter than fossil-fuel powered boats as well, with their noise disturbing the people on land and wildlife underwater. With electric the splashing of the water is often the only sound you hear.

For now and the future

Boaters are keen to preserve nature and enjoy clean air and unpolluted water – for today's enjoyment and tomorrow's generations. Torqeedo creates the products for the transition to sustainable boating. It's what we've been doing all along.

* Sources: United States Environmental Protection Agency, California Air Resources Board, Environmental Capital Group

Peace and quiet
Electric motors are quieter and cause less vibration on board than a typical combustion engine.

Healthier air and climate
Electric motors do not emit toxic substances and typically have a lower carbon footprint due to their superior efficiency and lightweight design.

Zero pollution
Even a drop of spilled petrol can contaminate thousands of litres of water. Electric drives eliminate the oily film that forms where combustion engines are used and don't vent their exhaust under water.

More energy onboard
With increased battery capacity, everything from the water maker to the tender can be powered by electric, further reducing climate impacts.

Convenient charging
Charging is quick and easy – most marinas are already equipped with shore power connections.

Abundant green power
Solar panels can help keep batteries charged and some electric motors can charge their own batteries - the spinning prop acts as a hydrogenerator and supplies free, clean energy while the boat is under sail.

Charting a new course

Digitalisation, electrification and autonomous vehicles are changing how we get around. Torqeedo is bringing new mobility onto the water – and you can profit from the new techology.

Life is movement. We are constantly on the go – travelling to work, meeting friends, making business trips around the world or boating on the weekends. But how we move people and products and with that our entire mobility culture is changing – and that is a good thing.

People used to travel from A to B on foot or by car, bike or train. Today, we navigate the ever-more-complex urban infrastructure with our smartphones, changing from rent-a-bike to Uber pool to subway travel in an instant. Digitalisation and connectivity are driving a mobility revolution not seen since the advent of combustion engines.

Waterways as a way out

These new, smart and interconnected mobility services are also extending onto the water. By 2050, the global population is projected to reach 10 billion, with 75% of people living in cities. Facing this rapid population shift and the resulting gridlock of land-based transportation, urban planners are looking to the waterways that grace many metropolises to ease the burden on the road and rail infrastructure.

Many old canals and rivers that had been covered by concrete for decades are being reopened and integrated into the public transport network. Thailand's first all-electric commuter ferry travels daily on a five-kilometre route between Hua Lampjong and Thewes Pier, powered by twin Torqeedo Cruise 10.0 electric outboards. Electric ferries are contributing to cleaner air in metropolitan areas and lowering the carbon footprint of on-water transport. Commercial vessels cover roofs and sunlit surfaces with solar panels to generate energy and reduce pollution, or even go completely emission-free.

Because of the focus on building a climate-neutral economy, electric mobility is growing exponentially year after year.

Solar ferry: This 59-foot, 120-passenger vessel runs on 100% solar-electric power from 40 kWp of roof-mounted solar panels, twin 50 kW Deep Blue inboards and eight high-capacity batteries.

Inside view Torqeedo drive system

A smart business choice

The mobility revolution goes beyond exchanging motors; the whole operational system is being reprogrammed. Amsterdam is the first large city to start trials of autonomous transport boats for goods distribution. Engineers are currently live-testing a Torqeedo-powered autonomous electric ferry for crossing a canal in Trondheim, Norway. Soon we will see autonomous ferries or water taxis on urban canals or rivers that will be ordered by smartphone. As 21st-century technology shouldn't be powered by 20th-century engines, electric motors are the propulsion technology of choice for this new application field.

Smart, connected electric mobility means the world's great cities can improve air and water quality, protect the climate, and simultaneously improve their citizens' quality of life. We're proud to be part of this global transformation.

But the switch to electric is also a smart business choice: reduce operating costs, improve user experience, and minimise your carbon footprint, while setting your company apart. Powering your business with environmentally friendly drive systems from Torqeedo may even provide a competitive advantage for funding, official permits, and for customers in the marketplace.

"Reduce operating costs, improve user experience, minimise carbon footprint"

Eyes on the coast: this autonomous vessel by Marine Advanced Robotics in California, USA maps shorelines and tracks sea level rise for Google Street View.

Now is the time

Torqeedo provides a complete, integrated and proven electric propulsion system for your commercial project. With an up to nine-year battery capacity warranty and worldwide service, now is the time to lower operating costs and your carbon footprint with a high-tech electric mobility system from Torqeedo.

It all adds up

Save 100% of your petrol or diesel costs and instead:

+ Spend a fraction on electricity and battery write-off
+ Reduce maintenance costs
+ Enjoy high reliability

= If you are out on the water 100 days a year or more, you may save money by going electric.

What we offer

Diagnostics and service: Torqeedo specialists can solve many hardware and software issues remotely.

24/7 telephone support with a Premium Service agreement.

On-site support: A Torqeedo technician will arrive at your place of business within 18–48 hours

We'll be pleased to provide you with a calculation customised to your requirements:

info@torqeedo.com

Sea stories: A really green island

Summer mornings in Heligoland start in the Börteboot skippers' room: The coffee is strong and smoking still allowed. The walls are full of black and white photos of deceased seamen. It's an old-school maritime atmosphere – but the future is here. "Let's see if the electric motors are strong enough for the northern waves," says Bridge Skipper Bernhard Wellnitz, a rose tattooed on one lower arm and a sailing ship on the other.

For hundreds of years Heligolanders have used Börteboote, traditional oak boarding boats, to pick up their visitors from ships too big to dock in the harbour. In 2019, the first electric Börteboot was introduced.

Built in 1962, the *Pirat* "was given a major overhaul," says Rainer Hatecke, who is the fifth-generation owner of the shipyard. Rotten planks were replaced and the *Pirat* was repainted in white, green and red, the colours of the island's flag. At the stern Hatecke made one fundamental change: he replaced the old diesel engine with a Torqeedo Deep Blue 50i. A new name is written on the bows: *ePirat*.

In August the *ePirat* arrived in Heligoland. A storm was coming. On the maiden voyage Rainer Hatecke was joined by Heligoland's Mayor Jörg Singer and Bridge Skipper Bernhard Wellnitz. The boat is tossing up and down, but the four men are unperturbed. Rainer Hatecke tells the others how well the conversion went. He left it to the Torqeedo specialists to connect the battery to the onboard system. He knows all too well how aggressive saltwater is.

Mayor Singer loves the "quiet and odourless" journey. He is a big champion of renewable energy. Three huge wind farms were recently built off the coast of Heligoland, bringing in new industry. By 2025, Singer wants Heligoland to be a climate-neutral island. The island's police car is electric-powered, and on the dunes there are two fully recyclable mini-bungalows made of cardboard. The refurbishment of the Börteboot fleet is just the next step. After all, Heligolanders are constantly aware of global warming. In the past 50 years, the

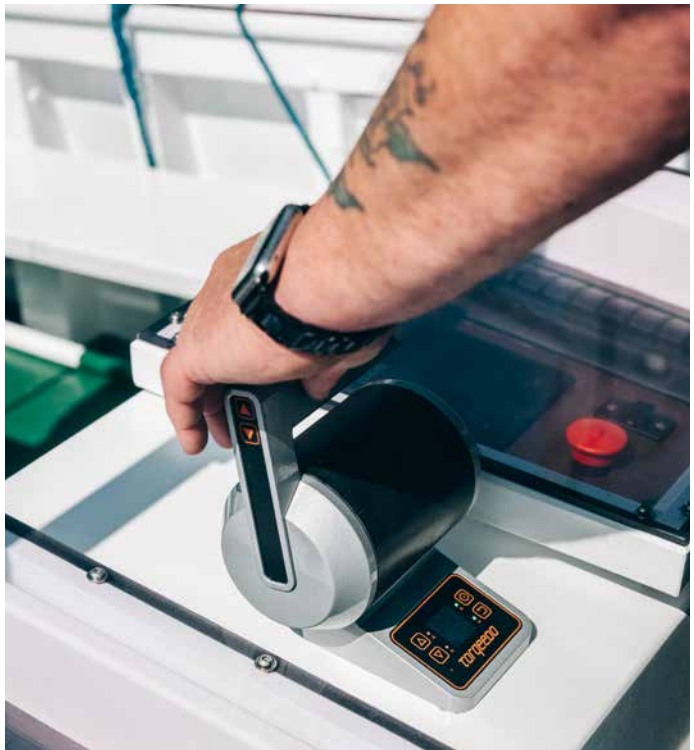
A storm is coming: Heligoland is Germany's only high-sea island and the conditions are often rough. But that's the beauty of it.

Maiden voyage: Bridge Skipper Wellnitz at the helm of the ePirat. The Torqeedo Deep Blue 50i powers the boat effortlessly through the high waves.

water temperature has risen by 1.6° C; the cod are gone and commercial fishing is no longer profitable. But the sustainability strategy has gone down well with the tourists. In 2018, nearly 400,000 visitors came to the island, an increase of around 30% over ten years.

And how did the *ePirat* fare in the high northern waves? Let's put it this way: Every August the fleet meets for the traditional Börteboot regatta. The *ePirat* came in first in its class.

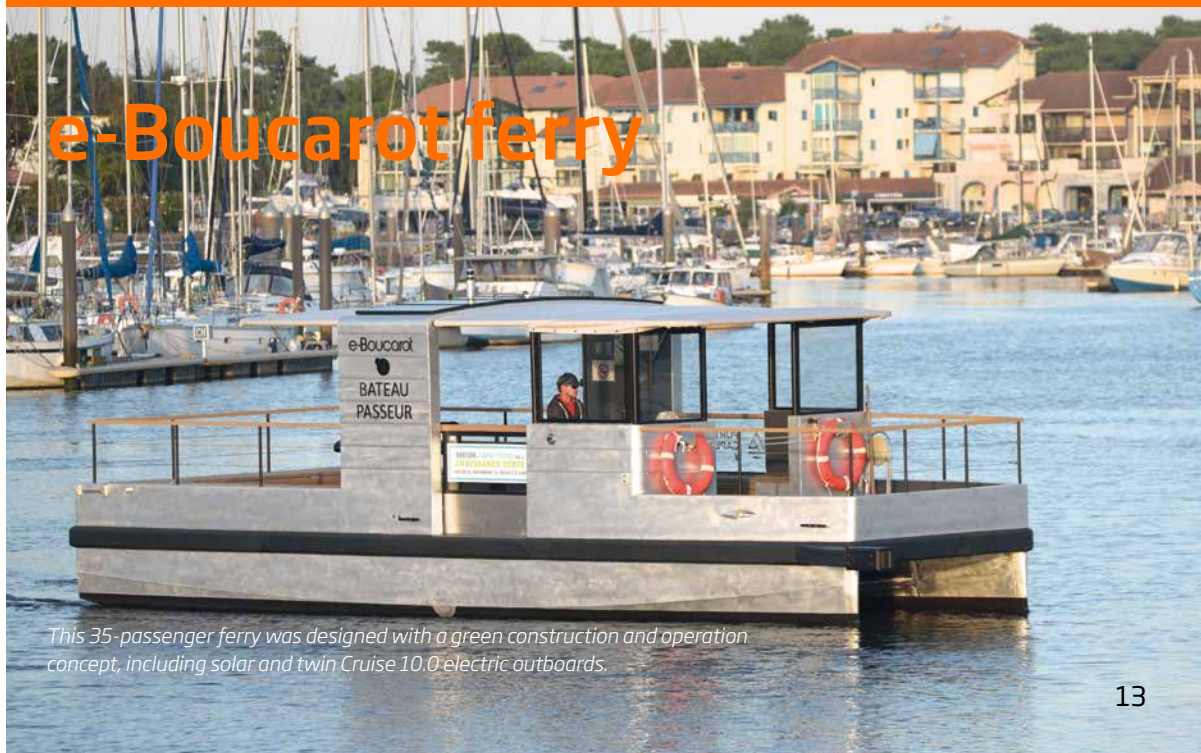
››› ***www.torqeedo.com/blog***



Electric freefall lifeboat from Verhoef

Professional-grade e-mobility systems for ferries, harbour support vessels, and lifeboats

e-Boucarot ferry



This 35-passenger ferry was designed with a green construction and operation concept, including solar and twin Cruise 10.0 electric outboards.

Superior efficiency and performance

Our focus on optimising propulsive power and overall efficiency

Measuring power and performance

The most meaningful performance indicator of a drive system is propulsive power, which indicates the power delivered by the motor to drive the boat, while taking all losses, including propeller losses, into account. This method has been used in commercial shipbuilding for nearly 100 years.

Manufacturers of combustion engines often advertise less informative measurements, such as the shaft power, input power, or even the static thrust. That wouldn't be so bad if the differences between power ratings were minimal, but that isn't the case: a gasoline outboard with an advertised shaft power of 5 HP actually provides a mere 1.4 HP of propulsive power.

The efficiency advantage

Torqeedo efficiency ratings not only refer to motor efficiency, but also disclose losses in motor, electronics, cables, gears, and propellers. Thanks to our focus on optimising the entire system, Torqeedo motors deliver the highest overall efficiency on the market. When combustion engines burn petrol or diesel, they primarily use the stored energy to produce heat; 5-15% of the supplied energy is used to propel the boat and the rest is lost due to inefficiencies. A Torqeedo drive converts between 44% and 56% of the available energy into propulsive power, extending range and runtime (see graph on p. 17). A Travel motor can propel a light boat more than 10 nautical miles and only consume the equivalent of 40 g of petrol.

Horsepower equivalent

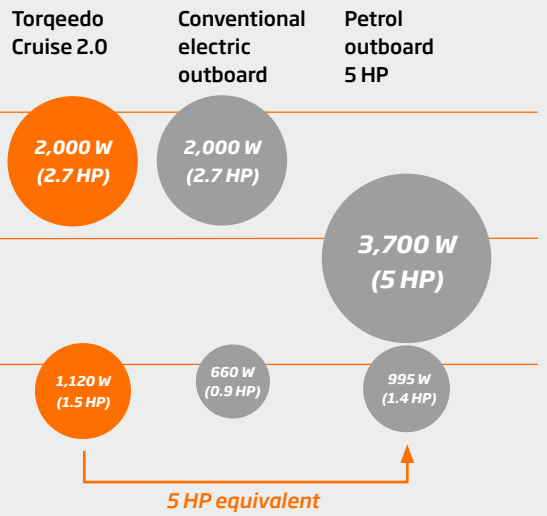
1 HP equivalent

Electric motors can achieve the same propulsive power as combustion engines with a significantly lower shaft power because of the different torque curves they produce. Electric motors deliver ample torque, which is available at any rotational speed. This characteristic allows them to turn large, efficient, high-pitch propellers that would cause an equivalent combustion engine to stall at startup.
At Torqeedo, we always compare the actual propulsive power of our motors with petrol engines. A Torqeedo motor specified as a "5 HP equivalent" provides the same power as a 5 HP combustion engine, even though its shaft and input power may be lower.

Input power: A performance indicator used for electric motors that doesn't take system losses into account.

Shaft power: A power rating used for combustion engines that doesn't take propeller losses in to account, which can be anywhere from 20% to 75% of total power.

Propulsive power: The performance indicator used by commercial ships and by Torqeedo, which takes all losses into account and indicates actual power delivered.



Convenience and value

What to expect when you switch to electric

Charging and handling are easy

An electric drive may simplify your onboard routines. Although charging batteries takes time, Torqeedo owners appreciate the simplicity of just plugging in at the end of the day – no need to find a fuel station or carry cans of fuel down the dock. Owners of Travel or Ultralight systems can charge on board via a 12 V supply or the Sunfold 50 solar panel, or bring the lightweight, portable lithium battery home to charge it using the mains charger that is supplied. Cruise and Deep Blue-powered boats plug in to shore power and charge overnight. Need a faster turnaround? The high-capacity batteries from these systems can also be equipped with fast chargers or multiple chargers.

Lightweight electric motors are also very easy to handle and store. Our best-selling Travel motors for dinghies, tenders, and small sailboats start at just 13.9 kg, including the battery. Motor, battery and tiller also come apart so one piece can be handled at a time. They never leak or stink so your hands and the lazarette stay clean.

The economics of electric mobility on the water

In recreational boating today, cleaner and more convenient electric propulsion systems demand a price premium. Depending on frequency of use, this may be offset by lower operating costs and lower maintenance and winterisation costs. Torqeedo offers full transparency on costs on its website. If you have any questions,please don't hesitate to contact us or your nearest Torqeedo dealer.

In commercial applications, electric mobility is often not only ecologically but also economically superior. Thanks to the substantially lower operating costs, electric propulsion systems often offer a lower total cost of ownership and help commercial operations improve their financial performance. Contact us to find out whether electric mobility will be economical for you.

Advanced engineering

No other electric boat motor manufacturer boasts such in-depth systems development, as many patents, or as much capacity for innovation as Torqeedo

Optimised components

A high-performance system requires high-performance components. Torqeedo employs in-house industrial engineering for all technologies required for electric mobility. All components are either developed by us or carefully selected to complete our systems.

A poorly designed propeller may only deliver 20% propeller efficiency, yet an outstanding one up to 75%. Torqeedo propellers are perfected over several thousand iterations by the same methods as those used when developing propellers for commercial ships and submarines. But that is not all: the propeller needs to be matched to the motor gear and the requirements of the application, a process known as drive train engineering. When combined with automotive-grade batteries and bespoke electronics and controls, you get superb building blocks for electric propulsion. But it's not a Torqeedo system yet.

12% of Torqeedo's turnover invested in research and development every year – a Silicon Valley level.

24,000 calculations per millisecond performed by the processor in the Torqeedo Travel 1103 motor. The computing power significantly improves motor response.

We still have to achieve an intelligent interaction between the individual components and create a system that is safe, does its job, and delights the user. Only then have we created a true Torqeedo product. This systems-based approach is at the centre of everything we do.

Seamless integration

Our software engineers ensure that all the high-tech features of Torqeedo's motors,such as real-time range calculations, smartphone integrations, adaptive charging and battery safety protocols, work properly. Coding can account for more than 30% of the development work for today's electric propulsion systems, depending on the system's complexity.

Torqeedo engineers develop data networks that allow different components to communicate with one another quickly and seamlessly. The system constantly exchanges status messages, integrates sensor data, and evaluates the appropriate course of action in a matter of milliseconds. Software stops the motor if it senses an impact to the propeller and manages battery charging safely. All Torqeedo motors, even the smallest kayak motors, have a GPS receiver built in that constantly measures speed over ground. With speed data combined with how much power the motor is using, the displays show real-time range and runtime estimates. When linked to a smartphone, the range remaining can even be displayed as a dynamic ring on a map. You never need to worry whether you have enough energy left to get home.

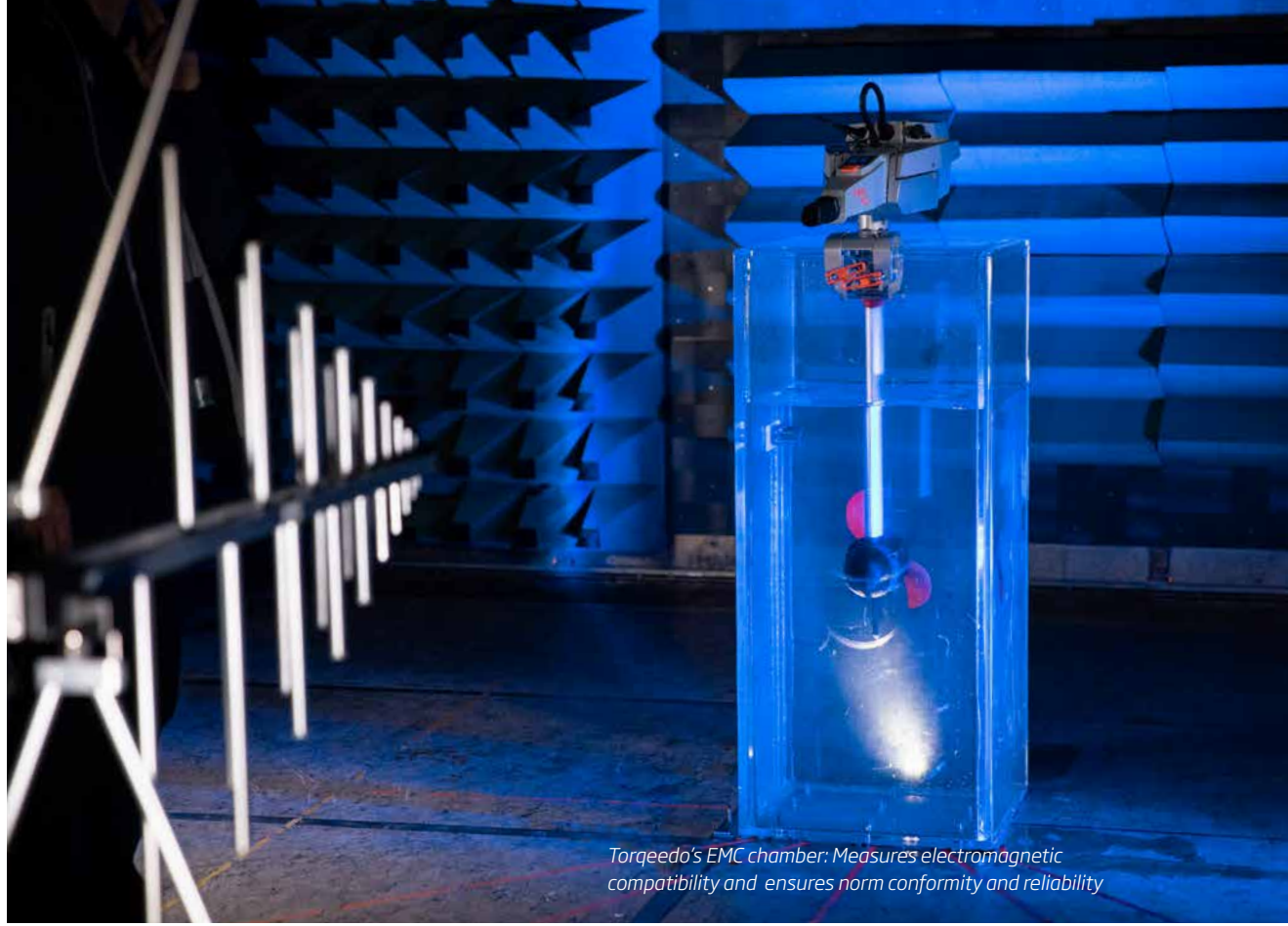
Propeller testing: a well-designed propeller may reach 75% efficiency, a critical step in optimising an electric drive train.

28 lab benches for endurance testing and certifying compliance with international standards located in the German Torqeedo headquarters alone.

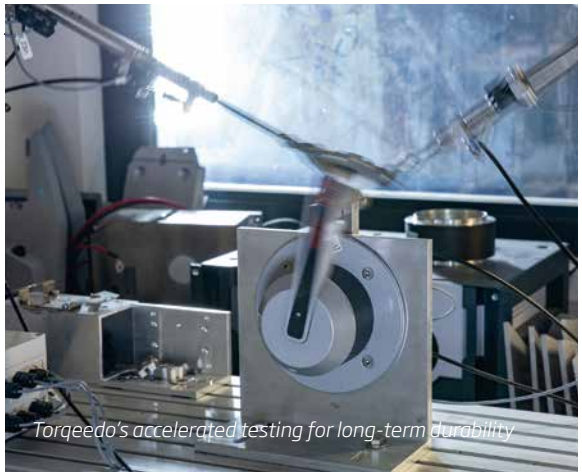
Prepared to drive the future

The most complex Torqeedo systems for large yachts or commercial applications simply wouldn't work without precisely manufactured components and painstakingly programmed software. With these bigger and more complex applications and as the world leader in marine electric drives, it is our responsibility to drive innovation and system development to the next level.

That's why we put so much effort into the development and preproduction process – from planning and design to final testing. Torqeedo's quality management system is ISO 9001-certified with DNV-GL and our 120 international patents for electric boating speak for themselves.



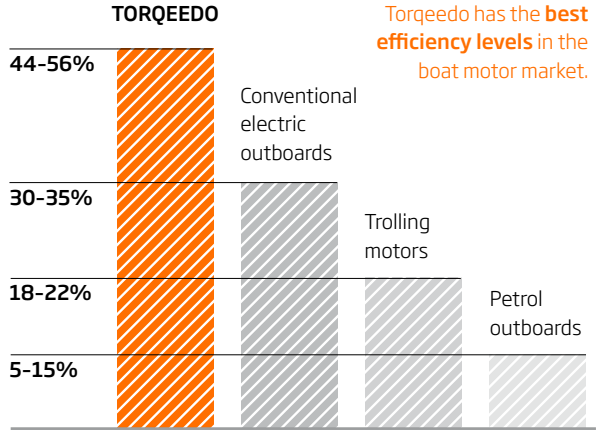
Torqeedo's EMC chamber: Measures electromagnetic compatibility and ensures norm conformity and reliability



Torqeedo's accelerated testing for long-term durability

Besides rigorous endurance tests and electromagnetic compatibility testing, Torqeedo has almost 30 test benches just in our German headquarters outside Munich. These benches perform comprehensive and long-term testing, as well as specific tests for gaining additional product- and project-specific approvals,thus achieving or surpassing the highest quality standards in the maritime sector.

130 international and multinational patents held by Torqeedo and covering all components and systems of electric boat motors.



Torqeedo has the **best efficiency levels** in the boat motor market.

Overall efficiency levels of various outboards

Clean mobility inspired by racing sailing

Torqeedo technology powers the America's Cup and hydrofoil technology makes electric boats go faster and further than ever before

Racing sailing revolutionised by hydrofoil technology

Foiling entered the world stage in 2012 with Emirates Team New Zealand's revolutionary AC72 yacht, *Aotearoa*. This "flying" sailboat utilised wing-like hydrofoils attached to the hull, a design which triggered a wave of foiling tech in racing sailing and that continues to influence the marine industry as a whole. At first, foils slightly increase drag but as speed increases, hydrofoils start to lift the boat out of the water. Once the resistance of the hull moving through the water is reduced, or even eliminated, the boat can go much faster – and needs far less energy. Prior to the use of hydrofoils, the average America's Cup sailing speed hovered around 10 knots. Now it is over 40 knots.

Power 48-5000

Torqeedo powers America's Cup foiling cant system

In the upcoming 36th America's Cup, a Power 48-5000 battery by Torqeedo will power the AC75's foiling cant system, which controls the 40 tonne hydraulic cylinders that position the composite foil arms and wings. While racing, the system controls speed, lift, and stability, and ultimately the safety of the yacht and its crew. In 2021, all competing yachts will be fitted with the same system. It is a great pleasure for Torqeedo to work so closely with the engineers and designers responsible for building the most technologically advanced boats on the planet. We will proudly be watching the races in New Zealand, rooting for our respective teams and for Torqeedo.

From racing sailing to clean motorboats

Building on the experience from cutting-edge racing sailing, foiling technology is progressing quickly and is now available for sustainable motorboating. In combination with lightweight lithium battery technology, foiling electric motorboats can meet most owners' speed and range requirements and will transform recreational and commercial boating over the next few years. And it's already happening: 2020 will see the serial production and delivery of foiling speedboats into the hands of forward-thinking customers around the world, as well as the launch of innovative new foiling vessels powered by Torqeedo technology.

Every innovation in foiling technology means larger, heavier boats like passenger ferries can partially foil, which increases efficiency and reduces their overall climate impact. Torqeedo is advancing research and development in this field by supporting Foiling Week's Multi-Purpose eFoiler Design Challenge. This design competition aimed at professional naval architects, engineers, and amateur designers hopes to inspire the creation of a revolutionary electric hydrofoil concept and to encourage and promote energy-efficient passenger transportation using eco-friendly electric engines and hydrofoils. At Torqeedo, we are dedicated to supporting the development of foiling technology, advanced hull design, cutting-edge green construction techniques, and other developing technologies that will make our on-water experiences eco-friendly, safe and fun for years to come.

Hydrofoils substantially reduce drag compared to even the most efficient hull designs. Passive foils create lift and self-stabilise simply as a function of their shape. In contrast, active foils, like those used in the America's Cup, use sophisticated flight controllers to vary lift and stability by adjusting the foils' angle of attack to the water for ultimate efficiency.

Ultralight

Quieter and more powerful
New for 2020

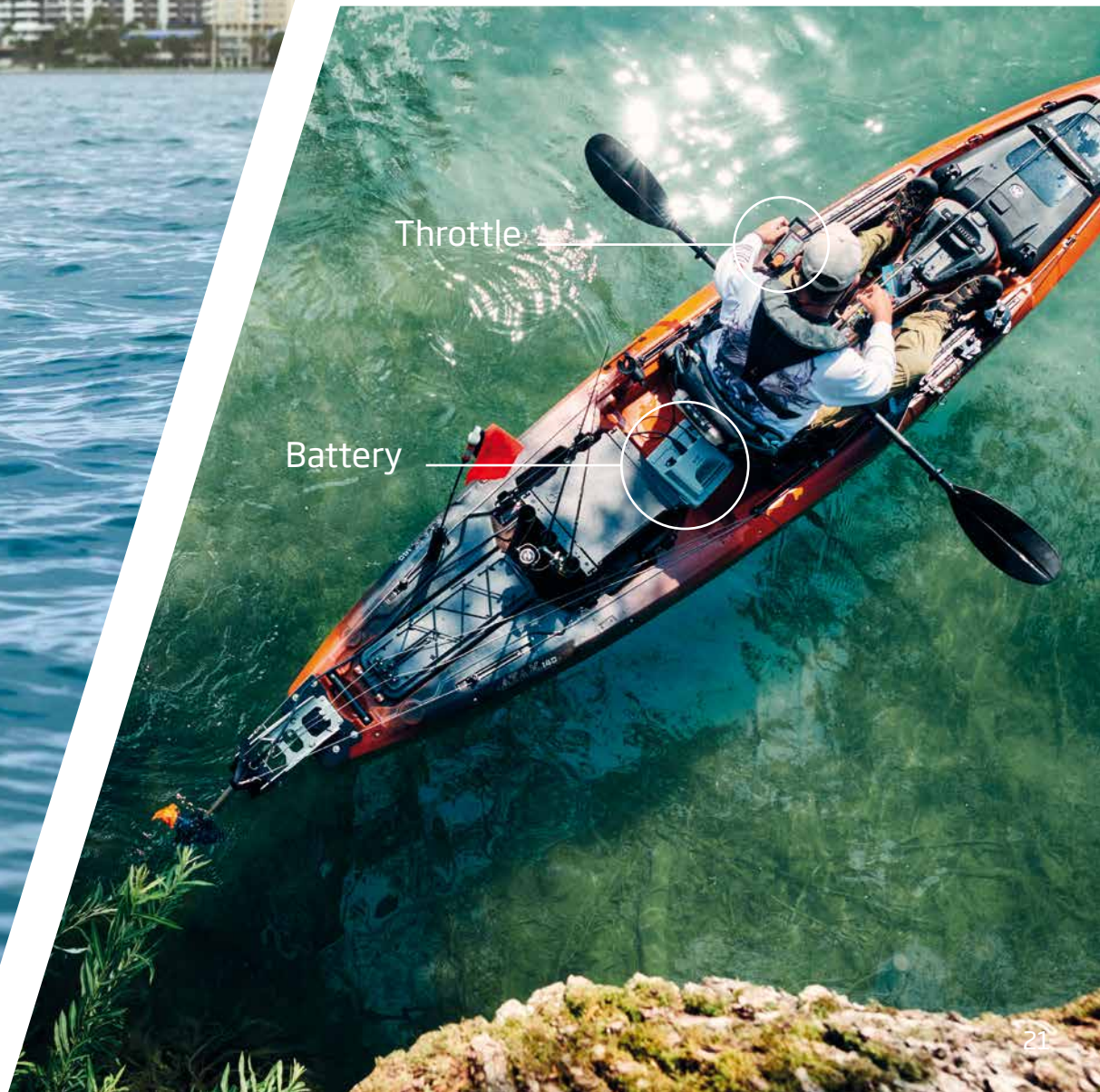
The Ultralight family just got a new big brother

- Ultra-quiet direct drive
- 3 HP equivalent
- Easy to mount on fishing kayaks
- Heavy-duty design

1 HP
equivalent

3 HP
equivalent

Kayaks
Canoes
Very light boats



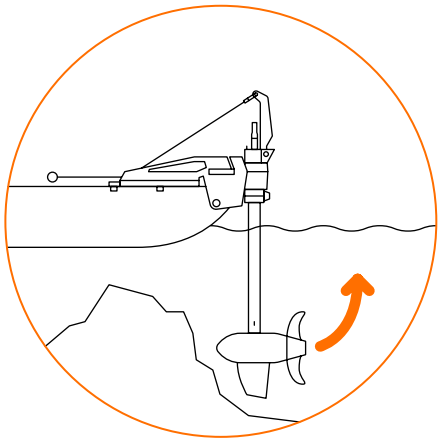
Less fuss, more fish

The Ultralight 403 and 1103 not only take you where the fish are, they deliver hands-free kayak fishing, making them the preferred choice of professional anglers for years now. With a durable, practical and versatile mount for fishing kayaks, the Ultralights allow kayakers to go farther and fish longer, with motors that are **easier to mount, easier to use, and faster to store and stow.**

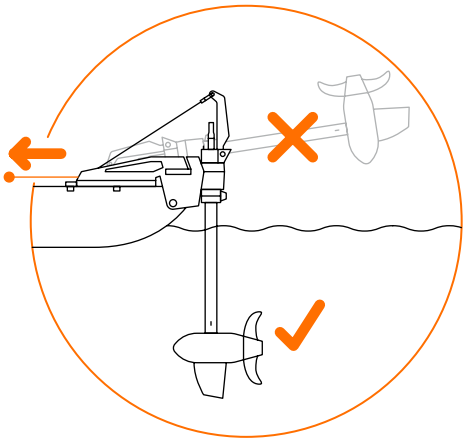
Anglers can choose the motor power that fits their needs, their kayak, and their waterways: either the extremely lightweight and efficient Ultralight 403 or the professional-grade, 3 HP-equivalent new Ultralight 1103 C. Both motors come with a mounting system that offers a host of practical features, including easy motor depth adjustment and a lightning-fast way to safely stow the motor for transport (Ultralight 403) or remove it altogether (Ultralight 1103). Simply pull and secure a cable to tilt the motor up when fishing in shallow waters or near the shoreline. The reverse lock cable allows the motor to be locked down for motoring in reverse (see description below) and then released so the automatic kick-up feature is activated again. Integration with the kayak's steering system is quick and easy, and the onboard computer delivers real-time range and run-time data. Both Ultralights include a tilt sensor and magnetic kill switch, which automatically cuts the power if the kayak capsizes.

The Ultralight 403 with the optional mounting ball system may be installed on touring kayaks, or kayaks without the four standard stern mounting points.

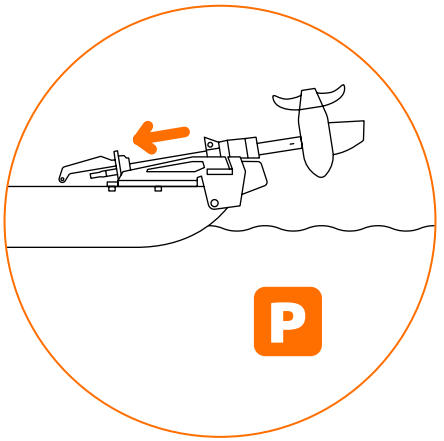
Raising, locking, and parking the smart way



No problem with obstacles
The mount allows the motor to kick up toward the stern of the kayak when it encounters an underwater obstacle, thus minimising damage.



Reversing with one simple action
Pull the reverse cord and simply hold tension or secure it in the included cleat. Release the cord when moving forward to enable the automatic kick-up feature.



Handy park position
Safely stowing the Ultralight 403 for transport is quick and easy. Simply pull up and secure with the included elastic cord. To transport the Ultralight 1103, use the quick-release to remove the motor and stow.

Ultralight: facts and figures

100 km
Max range for the Ultralight 403 AC

12.5 km/h
Top speed for the new Ultralight 1103 AC

5 *ms*
How quickly the Torqeedo emergency magnetic kill switch cuts the power supply and stops your motor in case of capsize.

Ultra-powerful. Ultra-efficient. Ultra-stealthy. The new Ultralight 1103 AC

Professional kayak anglers don't hit the water without their Ultralight, and neither should you. With the new Ultralight 1103 AC, you can now beat the crowd and get to that coveted spot more than 30% faster. The whisper-quiet, direct-drive Ultralight 1103 AC comes with the **innovative angler mount** and all the high-tech features you've come to expect: GPS built-in, real-time range and runtime display, solar charging, superior safety and performance, and the latest lithium battery technology. The 1103 AC is almost three times more powerful than the Ultralight 403 for the ultimate in acceleration and pulling power, and adds instant throttle response for improved manoeuvrability and a heavy-duty construction with more resistance to impact damage.

New for 2020

1 HP equivalent

3 HP equivalent

Ultralight 1103 AC

Ultralight 403 A/AC

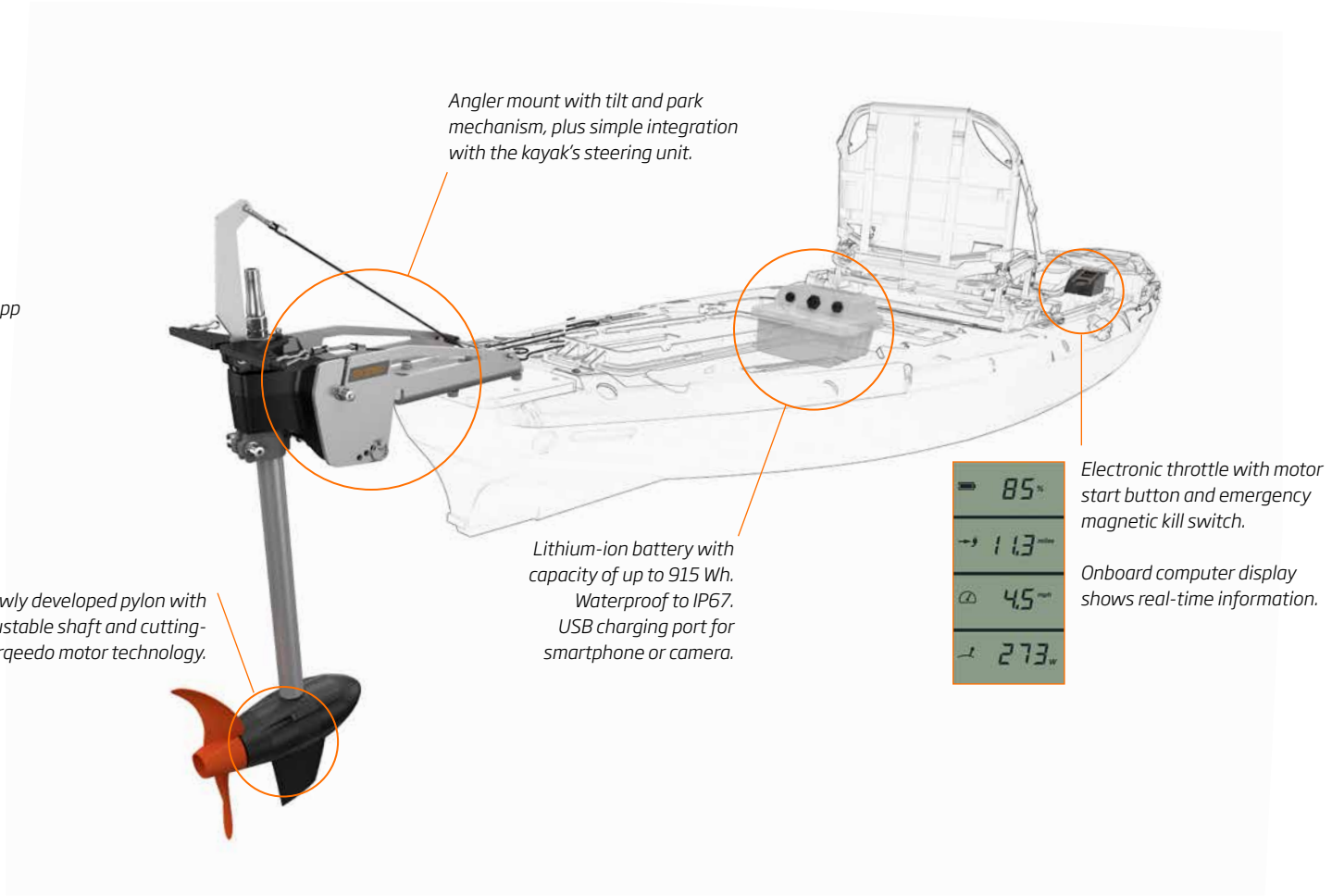
Mounting, control and charging accessories

Like all products from Torqeedo, Ultralight motors are offered with a full suite of high-tech accessories. The Ultralight 403 can be mounted onto a wide range of kayaks with the **optional mounting ball** instead of the standard angler mount. Add a **spare battery** for a quick and simple way to extend range. An optional cable connection with built-in Bluetooth module transmits all relevant boating and positioning data to the **Torqeedo TorqTrac app**.

A summary of the Ultralight accessories can be found starting on page 58 or online at www.torqeedo.com

These well-known kayak brands have developed custom Ultralight mounts.

Optional TorqTrac app



PERFORMANCE
Speed and range*

Ultralight 403 A with integrated battery (320 Wh/29.6V/11 Ah)
Wilderness Systems ATAK 140 (4.3 m/43 kg)

	Speed in km/h	Range in km	Running time in hh:mm
Slow	5.3	17	03:20
Half throttle	7.2	11.5	01:36
Full throttle	9.1	7.2	00:48

Ultralight 403 AC with integrated battery (915 Wh/29.6V/31 Ah)
Wilderness Systems ATAK 140 (4.3 m/43 kg)

Speed in km/h	Range in km	Running time in hh:mm
5.3	48.5	09:09
7.2	32.9	04:34
9.1	20.7	02:16

Ultralight 1103 AC with integrated battery (915 Wh/29.6V/31 Ah)
Wilderness Systems ATAK 140 (4.3 m/43 kg)

Speed in km/h	Range in km	Running time in hh:mm
5.8	53.3	09:11
10.9	15.9	01:28
12.5	10.4	00:48

* Dependent on factors such as type of boat, load, propeller and ambient conditions.
Figures for speed and range are indicative only and are not a guarantee of performance.

Travel

From the featherweight Travel 503 to the whisper-quiet Travel 1103 C, these clean and convenient electric outboards make motoring easy and carefree.

1.5 HP equivalent

3 HP equivalent

- Most lightweight outboards in their power class, from 13.9 to 17.3 kg complete
- Highest overall efficiency
- Most silent electric outboard (Travel 1103)
- Most dynamic motor response
- Onboard computer with GPS, remaining range, charge status, and additional functions
- Easy handling, fast battery swaps, simple to transport

Tenders
Dinghies
Daysailers

Travel 503: boats up to 750 kg
Travel 1103 C: boats up to 1.5 tonnes

The freedom to Travel powerfully, efficiently and quietly

Since the original Travel motors debuted 15 years ago, they have been delighting boaters with their outstanding efficiency, useful technology, and easy-to-use design. All Travel motors are the most light-weight outboards in their respective power classes and come with a **high-performance lithium-ion battery** and a built-in onboard computer with GPS, remaining range, and charge status – everything you need to know at a glance. The Travel 1103 C is the quietest outboard in its class and boasts a durable, direct-drive motor, industrially engineered to provide superior efficiency and the most dynamic motor response. It comes with a **high-capacity 915 Wh battery** but is still easy to handle at just 17.3 kg complete. Racing yachts and other weight-sensitive applications may prefer the Travel 1003 at just 14.9 kg or the Travel 503, suitable for boats up to 750 kg.

Travel 503/1003/1003 C

Travel 1103 C

USB adapter

Motor accessories

Like all products from Torqeedo, Travel motors are offered with a full suite of high-tech accessories. It's easy to add **a spare battery or a remote throttle** for operating the motor from the helm instead of the tiller, or choose the **TorqTrac smartphone app**. With the optional Bluetooth dongle installed, TorqTrac turns your compatible smartphone into a bright, easy-to-read onboard computer with a number of useful motor and battery readouts. The app is available from the App Store (iOS) or Google Play Store (Android).

The convenient Travel bag set protects the motor, tiller and accessories and includes a separate, easy-to-carry battery bag. Further details can be found online at www.torqeedo.com or on page 58.

Travel: facts and figures

11.3 kg

The heaviest weight you'll ever have to lift when you own the lightest electric outboard in its class, the Travel 1003. The battery and tiller easily disassemble for easy handling and storage.

To fully recharge the Travel 503's 320 Wh battery using the standard charger.

3:50 hrs

33 km

Range at 5.5 km/h with the Travel 1103 C. More power and durability, yet barely audible on the water.

PERFORMANCE
Speed and range*

Travel 503 with integrated 320 Wh battery (29.6 V/11 Ah)
Inflatable, dinghy, daysailer up to 750 kg

	Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
Slow	approx. 2.0 (3.7)	approx. 12.8 (23.7)	06:20
Half throttle	approx. 3.0 (5.5)	approx. 6.4 (11.9)	02:08
Full throttle	approx. 4.0 (7.4)	approx. 2.8 (5.2)	00:42

Travel 1003 with integrated 530 Wh battery (29.6 V/18 Ah)
Inflatable, dinghy, daysailer up to 1.5 tonnes

	Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
Slow	approx. 2.0 (3.7)	approx. 21.0 (39.0)	10:30
Half throttle	approx. 3.0 (5.5)	approx. 10.5 (19.3)	03:30
Full throttle	approx. 5.0 (9.2)	approx. 3.2 (5.4)	00:35

Travel 1103 C with integrated 915 Wh battery (29.6 V/31 Ah)
Inflatable, dinghy, daysailer up to 1.5 tonnes

	Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
Slow	approx. 2.0 (3.7)	approx. 40.0 (74.0)	20:00
Half throttle	approx. 3.0 (5.5)	approx. 18.0 (33.0)	06:00
Full throttle	approx. 5.5 (10.0)	approx. 4.6 (8.3)	00:50

* Dependent on factors such as type of boat, load, propeller and ambient conditions. Figures for speed and range are indicative only and are not a guarantee of performance.

Cruise outboards

Proven, reliable motors with upgraded lithium batteries are the ultimate power packs for sailing or motorboats

- Minimum weight with maximum performance
- Onboard computer with GPS
- Durable and extremely robust design
- Effective corrosion protection for fresh and salt water
- Extended range thanks to very high energy density batteries

5 HP equivalent

8 HP equivalent

20 HP equivalent

**Motorboats, dinghies, sailboats,
water taxis, passenger ferries,
and commercial applications up to 10 tonnes**

Fuel-free, durable, and perfectly integrated

5 HP equivalent | 8 HP equivalent | 20 HP equivalent

Since their premiere in 2006, Cruise motors have been delighting users with power requirements between 5 and 20 HP equivalents. The outboard motor of choice for motorboats, dinghies and commercial users, the two smaller units (below left, 5 HP/8 HP equivalents) come with a choice of a tiller or an electronic throttle lever and can be fitted quickly and easily with minimal tools.
Cruise motors have a **built-in GPS with on-board computer and display** of information such as speed and input power, state of charge and remaining range, even with third-party batteries. They have a **robust, wear-resistant design** thanks to features such as a housing that is waterproof to IP67, pylons made from aluminium, and a specially reinforced fin. They team up with the purpose-developed propellers and additional Torqeedo components to create a highly impressive package.
The flagship model in the Cruise series (below right, 20 HP equivalent) delivers 12 kW of peak output and a continuous output of 10 kW, which can propel efficient boats up to a maximum speed of 30 km/h. **This powerful motor will also be available as the tiller-equipped Cruise 10.0 T in 2020**.

Cruise 2.0/4.0 R

Cruise 2.0/4.0 T

Cruise 10.0 R

Cruise 10.0 T

Motor accessories

Like all products from Torqeedo, the Cruise motors combine perfectly with the safest lithium batteries on the market today (see page 38), and a broad choice of **propellers** that deliver either more thrust or more top-end speed. **Premium throttles**, which come with built-in **Bluetooth** for easy integration with the **TorqTrac app**, are another standout accessory for the Cruise lineup.

The Torqeedo throttle controls are available for either side or top mounting. More information can be found on page 58 or online at www.torqeedo.com.

Side-mount motor and display

Top-mount single

Cruise: facts and figures

39 cars

Off the road. A new, 5 HP petrol outboard emits as much toxic pollution* as driving 39 cars at 95 km/h. Electric outboards are emission-free at the point of use and help keep our air and water clean.

26.5 km

Range at full throttle. The Cruise 10.0 with two Power 48-5000 batteries gets you moving at a top speed of nearly 27 km/h or 14 knots.

2 hours

To recharge a Power 48-5000 battery using the optional fast charger.

PERFORMANCE
Speed and range*

Cruise 2.0 with 1 x Power 24-3500
(26 V, 3500 Wh, battery weight 25 kg)
Motorboats and sailboats up to 3 tonnes

	Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
Slow	approx. 2.7 (5.0)	approx. 21.0 (40.0)	08:00
Full throttle	approx. 6.0 (11.0)	approx. 10.5 (19.0)	01:45

Cruise 4.0 with 1 x Power 48-5000
(44.4 V, 5000 Wh, battery weight 37 kg)
Motorboats and sailboats up to 4 tonnes

	Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
Slow	approx. 2.7 (5.0)	approx. 27.0 (50.0)	10:00
Full throttle	approx. 7.0 (13.0)	approx. 9.0 (16.0)	01:15

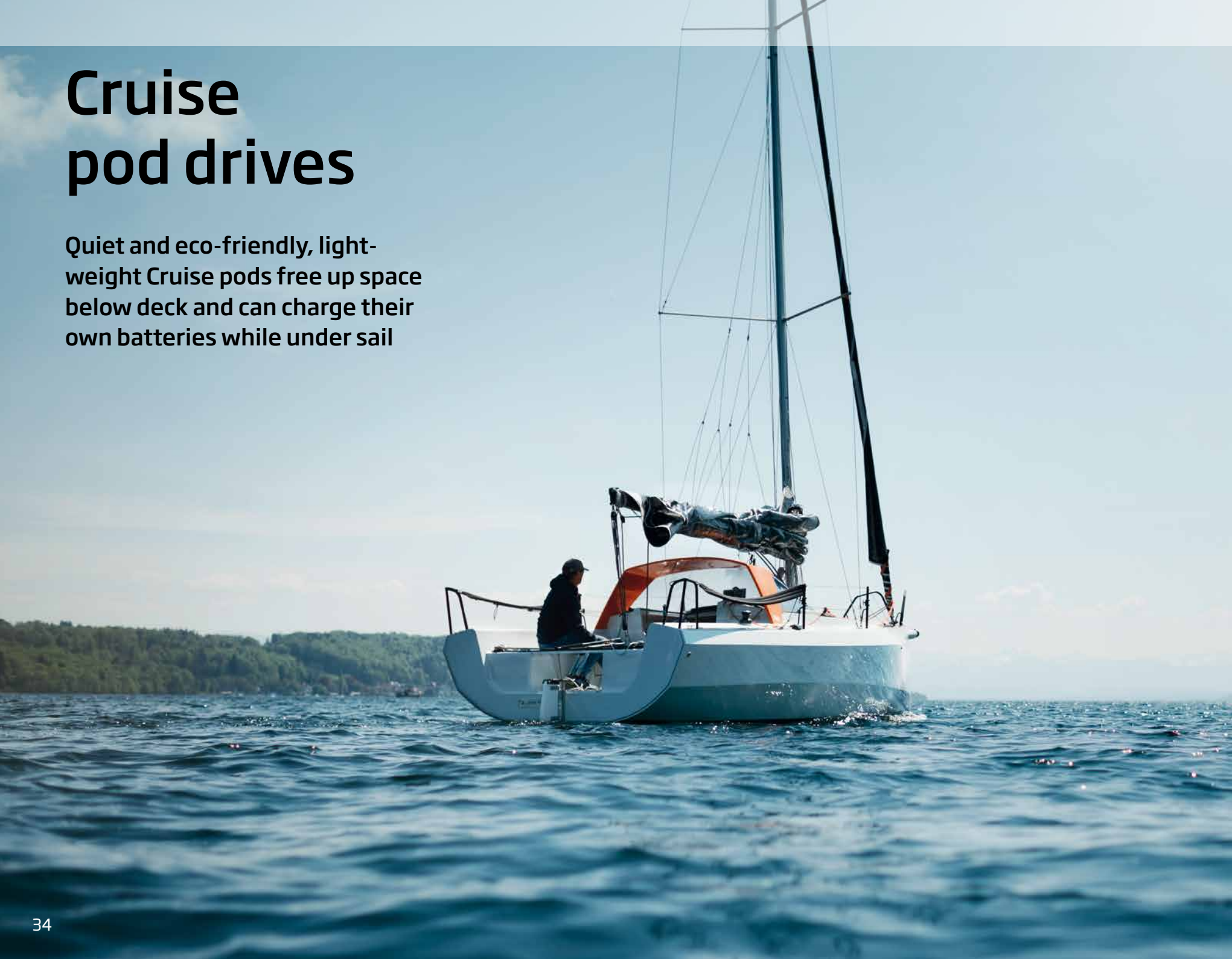
Cruise 10.0 with 2 x Power 48-5000
(44.4 V, 2 x 5000 Wh, battery weight 74 kg)
Motorboats and sailboats up to 10 tonnes

	Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
Slow	approx. 4.2 (7.8)	approx. 32.0 (60.0)	06:00
Full throttle	approx. 14.0 (26.5)	approx. 14.0 (26.5)	01:00

* Dependent on factors such as type of boat, load, propeller and ambient conditions. Figures for speed and range are indicative only and are not a guarantee of performance.

Cruise pod drives

Quiet and eco-friendly, light-weight Cruise pods free up space below deck and can charge their own batteries while under sail



5 HP equivalent

8 HP equivalent

20 HP equivalent

Sailboats up to 10 tonnes
Commercial application up to 10 tonnes

- Smaller and lighter than combustion saildrives
- Virtually silent while in use
- No fuel or oil to leak or stink
- Powerful lithium batteries provide long-range motoring
- Minimal impact on sailing speed
- Durable design and excellent corrosion protection for fresh and salt water

Long-lasting, robust, and efficient

For sailboats up to 10 tonnes, the advantages of electric pod motors are stunningly clear. Beautifully quiet and clean-running, Cruise pods deliver highly impressive performance and long range when paired with Torqeedo's lightweight lithium batteries (see page 40 ff), and take up minimal space below deck.
The built-in GPS, onboard computer and display take all motor, battery and charging data into account and display them clearly, providing a perfectly harmonised drive system.

5 HP equivalent

8 HP equivalent

20 HP equivalent

Cruise 2.0/4.0 FP

Cruise 10.0 FP

Cruise 10.0 FP SD

PERFORMANCE
Speed and range*

Cruise 2.0 FP with 1 x Power 24-3500
(26 V, 3500 Wh, battery weight 25 kg)
Sailboats up to 3 tonnes

	Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
Slow	approx. 2.7 (5.0)	approx. 21.0 (40.0)	08:00
Full throttle	approx. 6.0 (11.0)	approx. 10.5 (19.0)	01:45

Cruise 4.0 FP with 1 x Power 48-5000
(44.4 V, 5000 Wh, battery weight 37 kg)
Sailboats up to 4 tonnes

Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
approx. 2.7 (5.0)	approx. 27.0 (50.0)	10:00
approx. 6.0 (11.0)	approx. 7.5 (13.5)	01:15

Cruise 10.0 with 2 x Power 48-5000
(44.4 V, 2 x 5000 Wh, battery weight 74 kg)
Sailboats up to 10 tonnes

Speed in knots (km/h)	Range in nm (km)	Running time in hh:mm
approx. 3.0 (5.5)	approx. 30.0 (55.0)	10:00
approx. 7.0 (13.0)	approx. 7.0 (13.0)	01:00

* Dependent on factors such as type of boat, load, propeller and ambient conditions. Figures for speed and range are indicative only and are not a guarantee of performance.

Accessories

Torqeedo Cruise motors work flawlessly with the specially developed **premium throttles, chargers and TorqTrac app.**

2900 W fast charger for Power 48-5000

Specifically developed for fast charging the Power 48-5000, this 2,900 W charger can fully charge a single battery in just under two hours, and a bank in less than four hours.

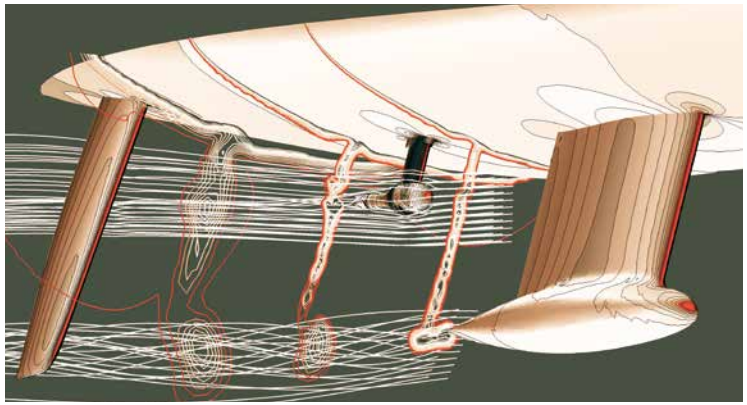
Folding propeller

The optional Torqeedo folding brass propeller minimises flow resistance, has negligible impact on sailing speed, and offers the possibility of hydrogeneration at high sailing speeds.

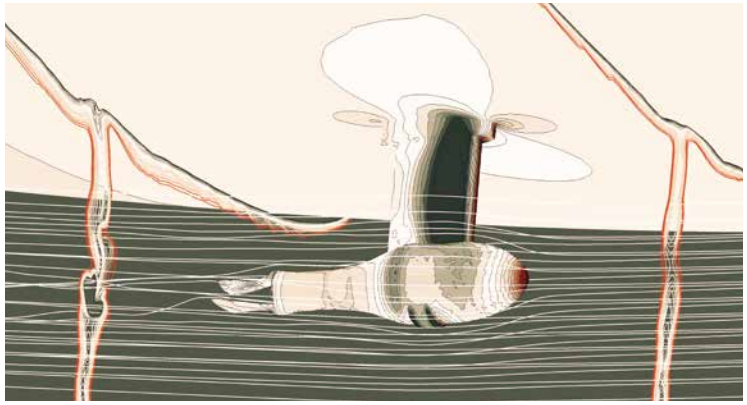
More information:
www.torqeedo.com and on page 58.

Test results: does a pod motor make sailboats slower?

As efficiency is a core principle at Torqeedo, we calculated the flow resistance of a 30' Dehler yacht with a pod motor. The impact on performance of a Cruise 2.0 or 4.0 pod motor is minimal, with a decrease in speed of less than 0.04 knots compared to the same boat with no motor installed.



The flow pattern recorded during the measurements factors in variables such as heeling and drift.



The uniform flow lines around the Torqeedo pod motor demonstrate its minimal impact on resistance while sailing.

Sea stories: Sunshine sailing on a Pogo 30

Mark Johnson loves everything about sailing: the thrill of piloting a heeling yacht, the sound of a bow wave, trimming sails – he lives for it all. But he could do without the hassle of a diesel engine.

"Not so nice, is it? The smell, the noise, the fuel," says Johnson, who is Leader of Marine Innovation for electronics manufacturer Raymarine. When the young family started shopping for a cruiser, he knew he wanted to ditch fossil fuels.

"We have the benefit of a pure family cruising programme without tough time or place constraints, and we can adjust our plans to suit the weather and the wind. We looked at every fast, lightweight, planing sailboat at La Rochelle Boat Show," says Johnson. "The Pogo 30 had a spacious, open interior, a nice cockpit and, most importantly, a manufacturer open to installing an electric propulsion system."

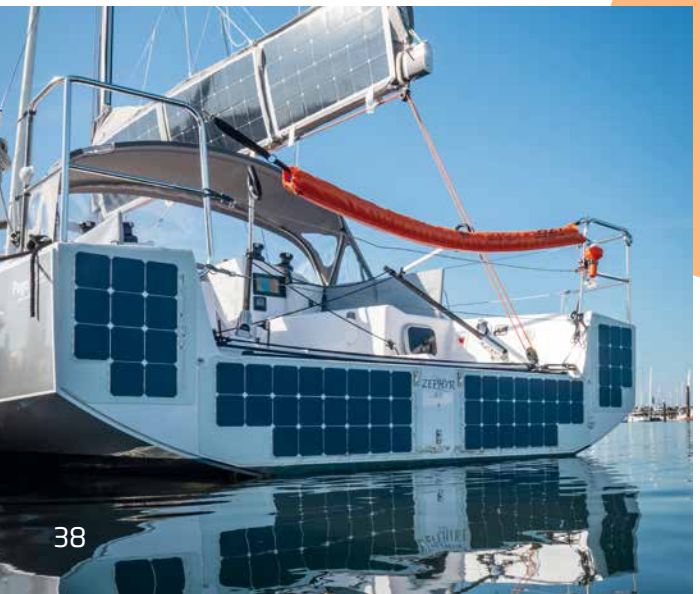
Pogo Structures, the 30's manufacturer, specifies either a 12 or an 18 hp diesel auxiliary engine for the 2.8 tonne, 30-footer, or a Torqeedo electric pod drive and lithium batteries. Johnson opted for the Cruise 4.0 pod, a 8 hp equivalent, with two Power 48-5000 lithium batteries. The Torqeedo system saves 200 kg of weight and frees up space in the engine room, while propelling the yacht at 5 knots for 5 hours or 3 knots for 20 hours for a maximum range of 60 nautical miles.

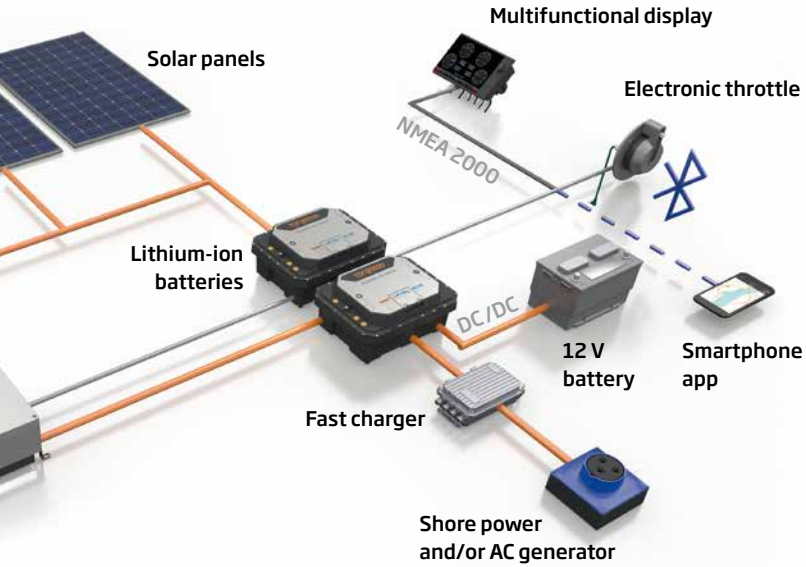
Electric yachts can be charged through plugging in, hydrogeneration, a diesel generator, or solar power. "We go sailing when it's nice weather, and solar gives us clean, quiet power in the conditions we're likely to be sailing in."

The yacht was fitted by Solbian Solar with 1 kWp of panels and Genasun chargers in a transom-mounted array and a unique fold-out installation on the boom. Panels are attached to a fibreglass backing and zipped to the mainsail cover.

"People ask if the mainsail cells work. They're more efficient extended but even in their vertical orientation, they're charging the system," says Johnson. Johnson integrated data from the Torqeedo propulsion system, hotel loads, and the solar arrays into Raymarine's innovative Axiom touchscreen multifunction navigation display. As a result, the overall energy flow of the yacht is now available at a glance.

Electric pod motor





"Going fully solar requires planning, sunshine, and a destination that's appropriate to the wind, but those are the conditions in which we prefer to sail. There's plenty of power for everything on board, it's quiet, it doesn't smell, and it takes care of itself. There is less servicing, less weight, it saves space, and is generally less intrusive. A better fit, overall, for our sailing boat."

>>> www.torqeedo.com/blog

Tofinou

Classic lines on top, zero-emission and high-tech inside. Come aboard the Tofinou 9.7

Domani S30

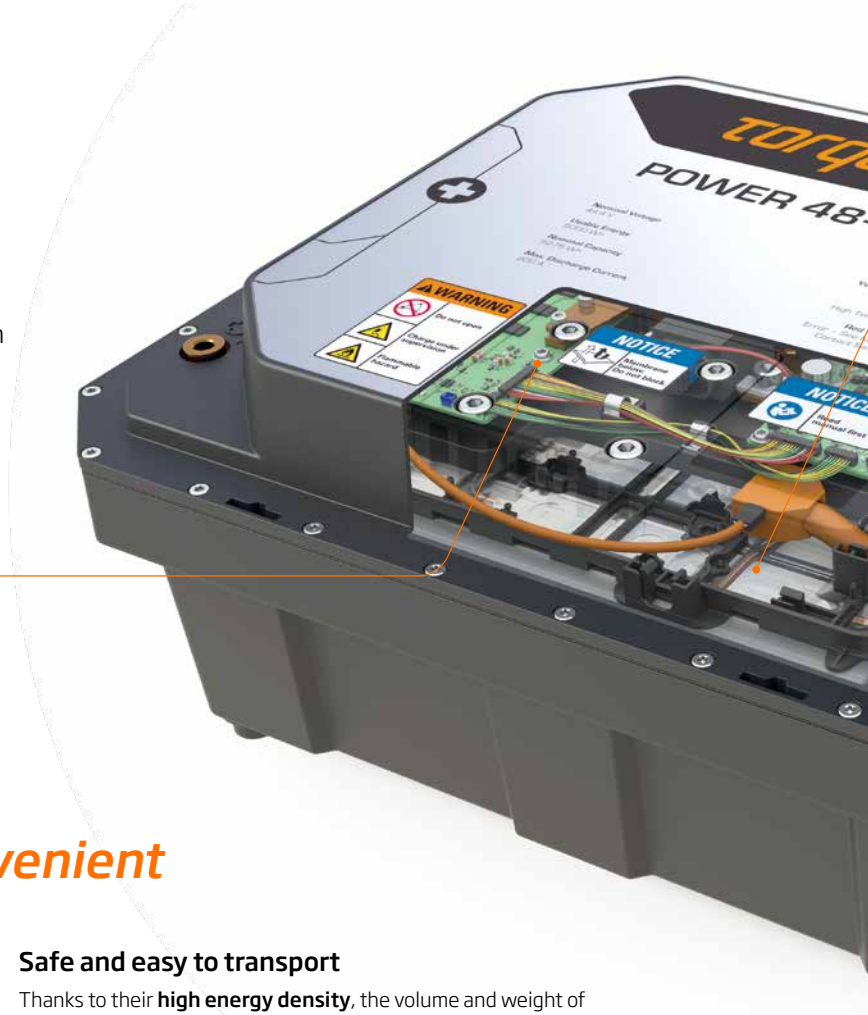
This European Yacht of the Year award-winner is only available with Torqeedo electric propulsion. Read our interview with founder of Domani, Michael Goddaert, to find out why.

Superior battery technology

Safe, powerful, and easy to use, Power batteries are the ultimate energy source for Cruise motors or hotel loads

Lithium-based batteries are the technology of choice for electric mobility applications. They store significantly more energy than all other batteries, maintain a high current (a major advantage for electric drive systems), do not lose their charging capacity, supply power reliably even in cold weather, and have no memory effect. They also provide many more cycles than lead-based batteries.

Torqeedo has been a pioneer in the development of lithium batteries for marine applications for more than a decade. Since we make our batteries just a little bit better each year, we offer the most comprehensive and integrated protection and safety concept for lithium batteries on the market – coupled with performance and convenience.



Intelligent battery management system (BMS)

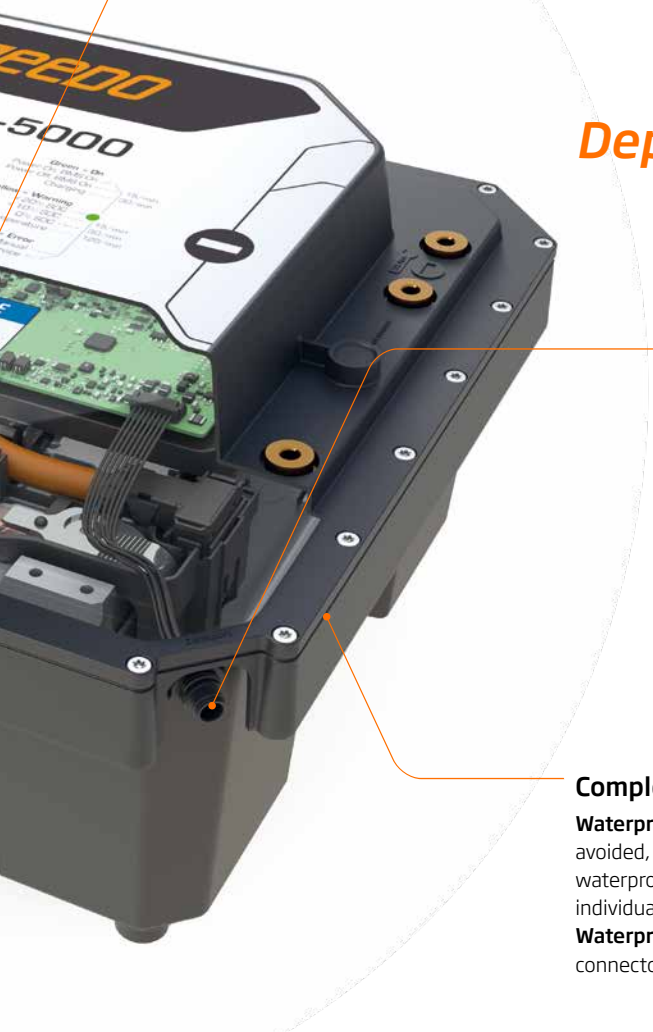
The BMS **monitors and protects** Torqeedo batteries against overcharging, overcurrent, deep discharge, short-circuiting, and overheating. The battery has comprehensive safety features, and each safety-relevant component is duplicated with a backup component should it fail. In addition to these safety features, the BMS safeguards the battery's life expectancy with balancing and deep-sleep functionality.

Convenient

Safe and easy to transport

Thanks to their **high energy density**, the volume and weight of lithium batteries are more than 70% lower than comparable AGM or lead-gel batteries. This makes our low-voltage batteries simple to handle and light to carry. On top of that, Torqeedo Power and Deep Blue batteries can be switched on and off, allowing them to be safely **transported and installed** and protecting them against unintentional discharge.

Powerful



High-quality safety cells

Several hardware mechanisms in every single cell provide additional safety. Torqeedo only uses cells based on lithium (Li-NMC) sourced from the **clean, precision production processes** of reputable manufacturers. In the case of the Power 48-5000, the modules are produced by BMW i.

Dependable and efficient

System communications

The battery electronics continuously communicates all the details of the battery status to the onboard computer.

Completely waterproof

Waterproof housing (IP67): While battery immersion should be avoided, all Torqeedo batteries are, without exception, completely waterproof. The waterproof characteristics of each battery are individually tested prior to delivery.
Waterproof connections: Whether connected or not, all cable connectors are completely waterproof to IP67.

Safety of lithium batteries

Besides performance, safety plays an important role for lithium batteries. In our view, five factors need to be considered in order to ensure that safe really means safe:

1. **Safe battery chemical engineering**, such as LiNMC (lithium nickel manganese cobalt oxide).

2. **Safe cell packaging:** Torqeedo only uses individually welded safety cells – either steel cylindrical or assembled into modules and equipped with multiple safety mechanisms. Other forms of packaging offer a lower standard of safety as they afford less effective protection against short-circuiting within the cells.

3. **Clean, precision production processes** on the part of the cell manufacturers: Torqeedo only uses cells and modules sourced from the world's most reputable brands.

4. **Battery management system (BMS) with redundant safety features:** Unlike lead-based batteries, lithium batteries always need a BMS to perform balancing and safety functions. If electronic components of the BMS fail, it may itself become a safety risk for the battery. That's why there is hardware backup for all safety-relevant components in Torqeedo batteries. Incidentally, this is also stipulated in the automotive industry, in aerospace, and for medical technology.

5. **Waterproof to IP67:** Water in lithium batteries can lead to various problems, such as corrosion of the BMS hardware or generation of electrolytic gas. Lithium batteries on board a boat should therefore be waterproof.

Power play

The 24-volt Power 24-3500 delivers 3.5 kWh of power in just 25.3 kg for an impressive energy density of 138 Wh/kg. With the 1,700 W fast charger, you can fill up the Power 24-3500 in just under two hours, making this lithium pack perfect for the Cruise 2.0 motor or to power hotel loads on board. For boats powered by Cruise 4.0 or 10.0 motors, choose the 48-volt Power 48-5000.

Power 24-3500

Power 48-5000

Technical data

	Power 48-5000	Power 24-3500
Useable energy	5,000 Wh	3,500 Wh
Nominal voltage	44.4 V	25.9 V
Weight	37.0 kg	25.3 kg
Energy density (weight)	135 Wh/kg	138 Wh/kg
Maximum discharge rate	200 A (8,880 W at nominal voltage)	180 A (4,500 W at nominal voltage)
Dimensions	506 x 386 x 224 mm	577.5 x 218.5 x 253.5 mm
Battery chemistry	Li NMC	Li NMC
Cycle lifetime	> 3,000 cycles at 80% depth of discharge at 25°C results in approx. 20% capacity loss	800 cycles at 100% depth of discharge at 25 °C results in approx. 25% capacity loss
Annual capacity loss	<3%	4%
Max. connections	2P	2S8P or 1S16P
Price-performance	1 EUR/Wh	0.86 EUR/Wh

Glas 45er National Cruiser

Batteries: facts and figures

5 ***stage***

Safety system includes safe chemistry, packaging, production, high-tech BMS, and hardware backups for redundancy.

IP67

As batteries on boats should be fully water-proof, all Power batteries have individually-tested waterproof housings and connections.

Deep Blue

The complete solution for powerful electric drive systems - a fully integrated propulsion and energy management system

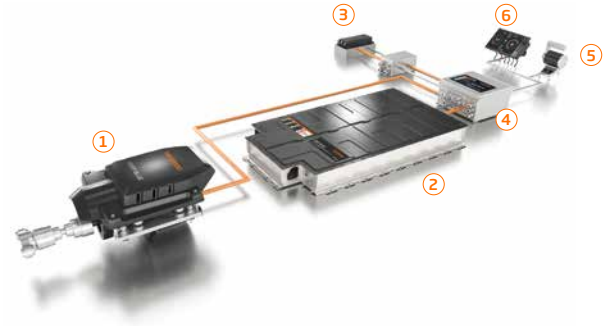
25 kW 50 kW 100 kW

Yachts up to 120 feet
Large motorboats
Boats in nature reserves
Boats for commercial use, such as water taxis, ferries, and tour boats

- Motors up to 100 kW are available in a high-RPM version for planing boats and low RPM for displacement vessels
- Upgraded 40 kWh batteries deliver the latest in automotive technology, adapted for marine use
- Sets industry standards for production quality and safety systems
- Clean, renewable energy generation with automatic generator backup

The modular, scalable, single-source solution

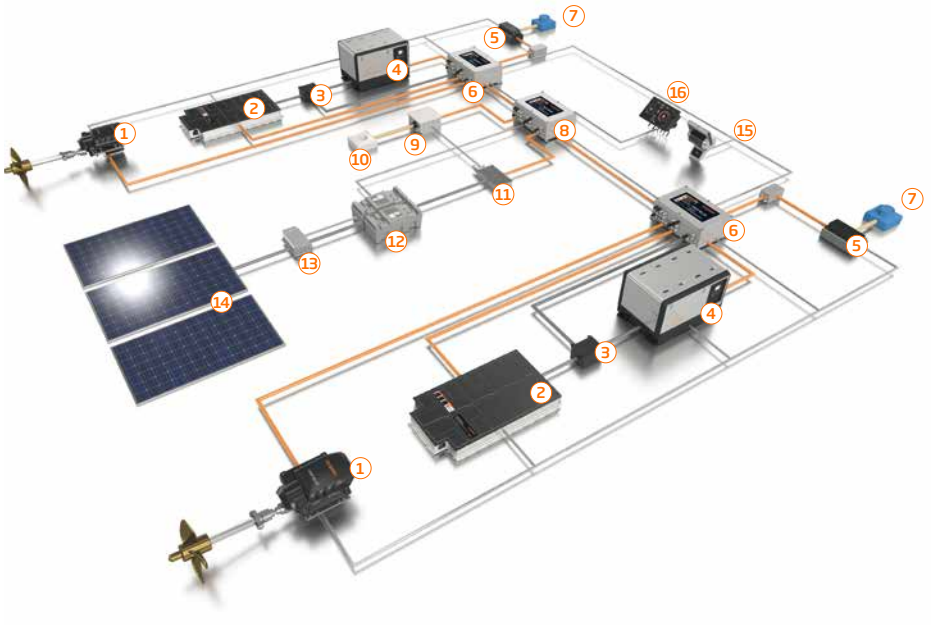
More than just a battery-powered electric motor, Deep Blue is a fully integrated propulsion and energy management system – customisable with modular components and industrially engineered to meet the highest demands. The result: exceptional performance and safety, compliance with international standards at the system level, and highly intuitive operation. This single-source turnkey solution is available as an outboard, inboard or saildrive for recreational boats and commercial applications.



Deep Blue system

The essential Deep Blue configuration is suitable for vessels with access to shore charging and a priority on propulsive power. The system components, from propeller to high-tech user interface, are perfectly matched and integrated to provide emission-free, quiet, and powerful propulsion.

1 Powerful electric motor
2 360 V high-capacity lithium battery system
3 Onshore power chargers
4 Drive connection box
5 Electronic throttle
6 Display with onboard computer



Deep Blue Hybrid system

This integrated, modular system is suitable for larger vessels, oceangoing yachts or commercial vessels with complex onboard energy requirements. Deep Blue Hybrid provides comprehensive energy management. Each component's energy demands are monitored and managed by the central system, ensuring economical collection and distribution of clean, renewable energy with automatic generator backup when necessary.

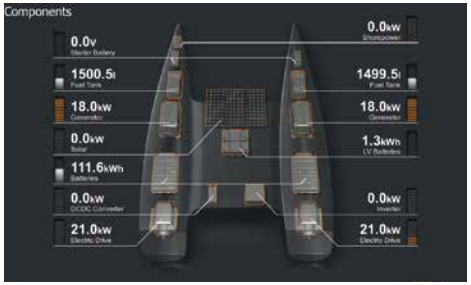
1 Powerful electric motor
2 360 V high-capacity lithium battery system
3 12 V batteries
4 Efficient state-of-the-art diesel generator
5 Shore power chargers
6 System management unit
7 Shore power connection
8 System connection box
9 AC inverter
10 Isolated AC power system (120/240 V AC current, 50/60 Hz)
11 Bi-directional DC/DC converter
12 24 V on-board batteries
13 Solar charge controller
14 Photovoltaic modules
15 Electronic throttle
16 Display with onboard computer

Always in control

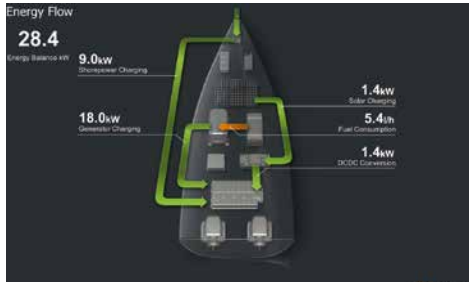
Deep Blue Hybrid offers intuitive operation presented on the multifunctional display, providing a complete overview of the entire system and access to all control functions. The software keeps an eye on everything and prevents issues like deep-discharging batteries. An easy-to-understand graphical user interface is available as either multihull or monohull and delivers complete, up-to-the-minute system visualisation.

Main menu: Navigate easily between different categories.

Drive screen: All important information needed while motoring. You can choose to display or hide the information line at the top.



System management: Provides status data on all system components. Select individual components for more detail.



Energy flow: Understand your system's power balance and energy flow at a glance.

Throw off the bowlines

25 kW 50 kW 100 kW

When designing a new sailing yacht or contemplating a refit, each component must be evaluated to be sure it does its job, works well with the rest of the onboard systems, and provides the best possible user experience. Deep Blue and Deep Blue Hybrid, with powerful electric motors available up to 100 kW, make yachting more convenient and more environmentally friendly, while reducing dependence on shore supplies through onboard generation of clean, renewable power. Add in worldwide service, 24-hour support, a 9-year limited battery warranty, and the peace of mind that comes with choosing the world leader in electric mobility on the water and this choice couldn't be clearer.

Deep Blue 25 SD

Deep Blue 25/50 i

Deep Blue 100 i 900

Technical data

Inboards	Deep Blue 25i 1400	Deep Blue 50i 1400	Deep Blue 100i 900
Max. propeller speed	1,400 rpm	1,400 rpm	900 rpm
Shaft power (continuous)	25 kW	50 kW	100 kW
Shaft power (peak)	30 kW	60 kW	-
Torque	343 Nm	350 Nm	1060 Nm
Weight (incl. electronics)	85 kg	85 kg	465 kg

Saildrive	Deep Blue 25 SD
Max. propeller speed	2,340 rpm
Shaft power (continuous)	25 kW
Shaft power (peak)	29 kW
Torque	215 Nm
Weight (incl. electronics)	125 kg

Deep Blue 100i 900

Suitable for yachts up to 120 feet long, this robust direct-drive motor delivers the low rotational speeds necessary to efficiently power large sailing yachts and other heavy displacement vessels. The Deep Blue 100i delivers 100 kW of continuous, emission-free power, ultimate torque, low maintenance, and is powered by high-capacity batteries with technology by BMW i.

Leave a clean wake

25 kW 50 kW 100 kW

The first and only high-power electric drive system for motorboats from industrial production, Deep Blue offers exceptional performance, professional safety, and easy operation. Motorboats and fast yacht tenders can choose from our high-tech inboard or outboard models up to 100 kW and from two lithium battery models. The 40.0 kWh i3-type battery is the ultimate standalone energy source, while the 10.0 kWh i8-type battery offers a smaller footprint and more flexibility for boats with limited space. With a 9-year limited battery capacity warranty, outstanding efficiency, and a proven long service life, Deep Blue is the exclusive solution for powerful electric motorboats.

Deep Blue 25/50 R

Deep Blue 25/50 i

Deep Blue 100 i 2500

Technical data

Outboards	Deep Blue 25 R	Deep Blue 50 R
Max. propeller speed	2,400 rpm	2,400 rpm
Shaft power (continuous)	25 kW	50 kW
Shaft power (peak)	30 kW	60 kW
Torque	198 Nm	198 Nm
Weight (incl. electronics)	from 139 kg	from 139 kg

Inboards	Deep Blue 25i 1800	Deep Blue 50i 1800	Deep Blue 100i 2500
Max. propeller speed	1,800 rpm	1,800 rpm	2,700 rmp
Shaft power (continuous)	25 kW	50 kW	100 kW
Shaft power (peak)	30 kW	60 kW	120 kW
Torque	280 Nm	280 Nm	437 Nm
Weight (incl. electronics)	85 kg	85kg	195 kg

Deep Blue 100i 2500

This 100 kW motor was specifically constructed to power fast, planing motorboats. With a reliable, low-maintenance, direct-drive design, the Deep Blue 100i delivers extraordinary performance, with up to 2,500 RPM and a torque of 390 Nm.

Sea stories: The self-sustaining yacht

From a distance, the trimaran looks spectacular, shooting past the shores of the Balearic Islands with inflated sails and a strong heel. But the closer you get to the boat, the more fascinating it becomes.

"I really love sailing," says Wolf, skipper of the *Noos*. "But this is really about raising awareness to tackle the problems of our times." Wolf believes that global hazards like climate change are not inevitable – and he is out to prove it.

"Mankind acquired so much knowledge, but doesn't use it," says Wolf. He wanted to make his boat "totally and truly self-sustainable". *Noos* is a Neel 51 trimaran, 51' long and 29' wide, and walking on the deck, you feel like you might be on a small island. Permaboat has three sources of green energy: solar, wind and hydrogeneration, backed up by a diesel generator. The energy powers the Deep Blue 50 kw electric motor and the hotel loads: lighting, kitchen, air con, and instrumentation. Torqeedo installed six Deep Blue batteries (i8-type) and set up the whole energy management system.

But energy is just the first step towards independence. Rainwater is collected and stored in tanks, backed up by a small electric desalinator. Wastewater from the shower and kitchen is recycled and reused, and "black water" from the toilets is composted and used as fertilizer for the on-board garden. "We are able to cover the needs of four people," Wolf says.

The Permaboat is a proof of concept for fellow boat owners, naval architects, and shipyards. But Wolf thinks bigger. "If it's possible on a boat, it is possible elsewhere – in cities."

"I am sailing the whole day and generating energy. In the evening," he says, "we are cooking with this energy. " Wolf collaborated with Torqeedo because he sees a complete alignment of values and vision. But also because Torqeedo has 15 years of experience and "works on a industrial level. If I am 3,000 miles out at sea I need to rely on my systems," says Wolf.

He believes that electric mobility has reached a point of maturity: "We can now not only replace engines, but make them better. The Torqeedo motor is so silent, I have to look on the display to see how fast we are going." The more people see his boat and join him, the more the message spreads.

The reason why people love the sea, the painter Robert Henri once remarked, is that "it makes us think". This is certainly true on *Noos*.

Neel 51

>>> www.torqeedo.com/blog

Privilège Series 5

The luxurious Privilège Series 5 catamaran is known as "the ultimate liveaboard." *Le Penseur*, an owner's version with the complete Deep Blue Hybrid electric propulsion and energy management system, lives up to this superlative with its stunning owner's suite and spacious galley and salon. *Le Penseur* is powered by twin 50kW Deep Blue inboards and high-capacity lithium batteries with BMW technology (i8-type). The hybrid control system automatically harvests clean energy from a 2.4 kWp solar array and through hydrogeneration while under sail. The owner can enjoy all the amenities on board without noise and exhaust fumes because all hotel loads, including climate control, watermaker and the galley, are supplied through a 24 V Torqeedo battery bank, kept charged by the high-voltage system. An efficient DC diesel generator serves as a backup to the renewable energy sources. Clean, quiet and well-appointed, the Series 5 with Deep Blue Hybrid takes living aboard to a new level of luxury and sustainability.

Spirit 111

One of the most environmentally friendly superyachts on the water today, the 33.9 metre Spirit 111 charges its own batteries while under sail.

Sea Stories: The Engineers of Emotions

Located on the pristine waters of Lake Traunsee in Austria, the Frauscher Shipyard has been building some of the world's most luxurious yachts since 1927.

"My grandfather wanted to build perfect boats for special people. So did my father, and that is what we are still doing," says Michael Frauscher, Co-CEO (Production & Development) of Frauscher Shipyard.

Frauscher Shipyard is known for its professional, industrial production that has not lost the beauty and heart of the handcrafted. Its fully electric 740 Mirage Air further enhances this tradition with high-tech features and eco-friendliness.
"At Frauscher Shipyard we see ourselves as 'Engineers of Emotions' and we always want the owners of our boats to have a great time on the water. With the powerful 100 kW drive system we are entering an entirely new dimension of electric mobility on the water," says Frauscher Shipyard's Stefan Frauscher, Co-CEO (Strategic Management).

The 7.47-metre yacht's dynamic lines are suggestive of supercar design but inside you'll find all the creature comforts one could desire: a silent, environmentally friendly electric drive, refrigerated compartment, high-tech yet easy-to-use controls and displays, a large sunbathing area, electric windlass, and a bow thruster for foolproof docking.

The whisper-quiet Deep Blue 100i 2500 used in the Frauscher 740 Mirage Air is specifically designed and constructed to power planing motorboats. The system's reliable, easy-to-maintain direct-drive design delivers extraordinary performance at its full power range, with up to 2,500 rpm and incredible torque delivered at low rpm. The 40 kWh Deep Blue batteries installed in the 740 Mirage Air bring the

Frauscher 740 Mirage Air

latest in automotive-grade lithium-ion technology from BMW.

With an industrially engineered, fully integrated electric drive system and the extraordinary crafts-manship of Frauscher Shipyard, this electric yacht is attracting the eye and the emotions of discerning owners worldwide.

Mission accomplished.

>>> www.torqeedo.com/blog

Kaiser Custom Boats

The Kaiser 6.25 powered by Deep Blue 100 i 2500 silently reaches a top speed of more than 60 km/h. This runabout features advanced wood-epoxy composite construction, a sleek, timeless design, and sporty performance.

Greenline 45 Fly

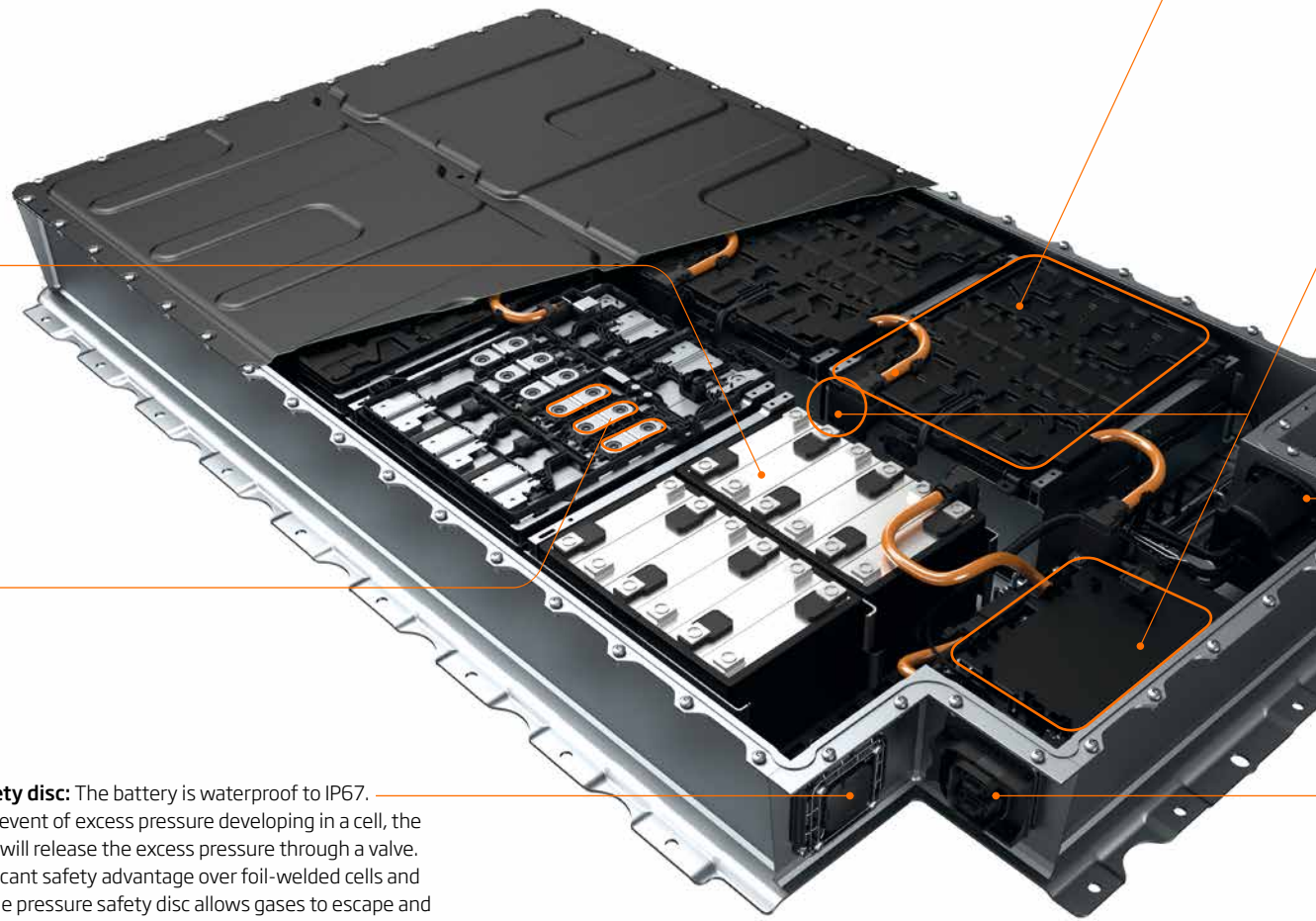
A fresh perspective on emission-free yachting with an elegant design and extremely comfortable interior.

The power of Deep Blue: High-capacity lithium batteries with technology by BMW i

Industry-leading energy density, the latest automotive technology, and highest safety standards

BMW i high-capacity batteries are available for boats. This technology, proven in thousands of BMW's innovative i3 and i8 automobiles, has been integrated into the Deep Blue system by Torqeedo. The BMW i8 battery is ideal for boats where space is at a premium.

The latest generation of automotive battery cells:
- Very high energy density
- Prismatic cell design allows efficient cooling, a compact form, even temperature distribution within the battery, and an extremely rugged structure
- Robust protective aluminium housing with safety vent
- From the automated production process of Samsung SDI, a leading manufacturer of lithium battery cells



Laser-welded cell connections:
Over a larger surface and therefore stronger and more powerful than conventional spot-welded cell connections.

Pressure safety disc: The battery is waterproof to IP67. In the unlikely event of excess pressure developing in a cell, the prismatic cells will release the excess pressure through a valve. This is a significant safety advantage over foil-welded cells and pouch cells. The pressure safety disc allows gases to escape and ensures the battery stays waterproof in normal operation.

Automated module production:
- Prismatic cells have many advantages. However, they must be assembled extremely accurately in a very robust frame for a long service life. Otherwise charging and discharging would, over time, lead to the cells expanding and collapsing very slightly and cause them to age prematurely.
- The fully automated module production at BMW in Dingolfing has set the standard in high-precision and extremely robust battery modules.
- The very rugged design is ideal for boat applications that place high demands on shock resistance.

Battery management system (BMS) at module and battery levels:
- State-of-the-art BMS technology
- Developed to ASIL C standards as used in the automotive industry for maximum safety
- Qualification and acceptance testing at a far higher level than is typical in the boating industry

Compressor cooling: Cools the battery to ensure high performance and a long service life, even in high ambient and water temperatures – in all climate zones anywhere in the world.

Power and data connections from the battery to the Deep Blue system

Professional safety

The **insulation monitor** constantly monitors that the voltage from all 360 V components is completely isolated from the boat – not just for individual system components but for all of them. If damage is detected, e.g. to the cable insulation, the system will issue an alert. In the event of dangerous insulation failure, the system will be shut down.

The **pilot line** monitors all 360 V cable connections on the Deep Blue. It will shut off the system immediately if it detects exposed high-voltage contacts in order to avoid any risk. Pilot lines have been mandatory for high-voltage equipment in other industries. They are not typically found in high-voltage, made-to-order boat drives.

Automotive industry-level battery safety: The first lithium batteries for the marine industry with the advanced quality standards of the automotive sector are the result of Torqeedo's collaboration with established battery manufacturers. Integrating a battery into a drive system and the associated safety concept alone requires considerable effort that can only be achieved by working together with the battery manufacturer.

All components are waterproof: Components that were not specifically developed for boats are not always waterproof. All the components of a high-power system on a boat must be waterproof to guarantee safe operation. That is why all of our components are waterproofed and, in some cases, are further protected by water sensors.

Battery venting: In the unlikely event that the redundant safety mechanisms of the battery fail, the battery cells can reduce their temperature and pressure via a pressure valve. While batteries are installed in electric cars in such a way that they can discharge battery gases directly onto the road, on electric boats the gases must be channelled safely off the vessel. We developed the first safe venting system for boats for the Deep Blue system.

Battery damping: All components on fast and seagoing boats are subject to constant high levels of shock that exceed shock levels on the road – in some cases over 12 g of acceleration force. The same holds true when trailering the boat. Since batteries and battery electronics are not designed for these constant impacts, they need their own damping system on boats (in addition to the damping mechanisms within the battery). Torqeedo is the only company in the world that provides this for maritime use.

Two powerhouse options

Deep Blue battery (i3-type)

The latest battery technology from the BMW i3 series: high energy density, long service life, robust, and built to the highest standards of quality and safety.
With 40 kWh of usable capacity, the i3-type Deep Blue battery provides plenty of power for a full day on the water and paves the way for all sorts of new Deep Blue applications.

Deep Blue battery (i8-type)

A single 10.0 kWh Deep Blue battery can power a 25 kW Deep Blue motor, bringing system weight to under 250 kg – perfect for smaller vessels or those with narrow hulls. Thanks to special cell technology, many applications do not require active cooling.

Technical data

	i3-type	i8-type
Nominal voltage	360 V	355 V
Max. continuous performance	55 kW	25 kW
Capacity	40.0 kWh	10.0 kWh
Weight	278 kg	97 kg
Dimensions	1660 x 964 x 174 mm	1460 x 305 (240) x 330 mm

Choose the right genset

Economical auxiliary power

Torqeedo's 25 kW HVDC converter generator supplies DC power directly to the Deep Blue system without the inefficiencies that limit standard AC generators, thus providing long-range motoring and efficient backup power for serial hybrid systems. This heavy-duty converter generator eliminates the fixed ratio between rotational speed, power and voltage output, and produces any required combination of voltage and power, adapted to individual settings. The 25 kW range extender is the gold standard for the most demanding Deep Blue Hybrid applications, but the flexibility of the Deep Blue Hybrid system means sailing yachts that only use the generator for emergency backup, vessels with space constraints, or commercial applications with less-demanding range and runtime requirements may size down to a smaller, lighter range extender with a lower output rating. By planning hand in hand with your boatbuilder, we're sure to find the right genset for your project and then seamlessly integrate it into Deep Blue Hybrid's information, safety and energy management system for the ultimate in reliability, safety, and convenience on board.

Technical data

	Deep Blue generator 25 kW
Continuous power	25 kW
Max. rpm of diesel engine	2,200
Weight	480 kg
Dimensions	1107 x 748 x 704 mm
Benefits	Low noise High efficiency Less vibration

The 25 kW HVDC range extender is the best choice for Deep Blue Hybrid systems that need to run on generator power for extended periods. For example, an average 20-tonne luxury catamaran can achieve a continuous 5-knot cruising speed at approximately 20 kW consumption. The genset for your Deep Blue Hybrid system may be sized up or down depending on your individual boat and range requirements.

Accessories

From bag sets to batteries, enhance your boating experience with Torqeedo accessories

+ Add a spare battery for additional range
+ Charge via solar, 12 V onboard supply or plug in to shore power
+ Upgrade to a practical, ergonomic and Bluetooth-equipped throttle
+ Efficient propellers for high speed or more thrust

The full range of Torqeedo accessories is available at www.torqeedo.com

Controls and data integration

Premium throttles (top-mount twin as shown here)

Our premium throttles offer the right solution for every application, whether for sailboats or on motorboats – ergonomic, strong and functional. All premium throttles come with Bluetooth built in for simple integration of Torqeedo's TorqTrac smartphone app.

Remote throttle

Instead of using the tiller, you can control your Travel or Cruise motor with the throttle located 1.5 or 5 metres away. This remote throttle comes with an onboard computer display, fully variable forward and reverse, and two different lengths of data cable.

Chartplotter gateway

Link external devices to Torqeedo drive systems. The small gateway plugs in quickly and easily, and allows NMEA-2000 devices to access and display key motor and battery information.

Power supply

Spare Ultralight batteries

Extend your range with a second battery on board. Available in 320 Wh or 915 Wh capacity.

Spare Travel batteries

Extend your range with a second battery on board. Available in 530 Wh or 915 Wh capacity.

Charging

Sunfold 50

This lightweight solar panel delivers lots of clean solar energy and can be easily folded for storage. Suitable for all Travel models from 2015.

Solar charge controller for Power 24-3500

Integrated MPPT controls solar charging, maximising energy yield and overall efficiency.

Fast Charger 2900 W for Power 48-5000

Specifically developed for fast charging the Power 48-5000, this 2,900 W charger can fully charge a single battery in just under two hours.

Propellers

Spare propeller

Choose a spare standard prop or a version with higher top-end speed or more thrust at low RPM.

Folding propellers for Cruise 2.0/4.0/10.0 FP

Low drag when under sail, powerful propulsion while motoring.

You can find more information about all our accessories and a detailed propeller guide on our website

www.torqeedo.com

Outboards and pods ≤ 20 HP equivalent

	ULTRALIGHT 403 A/AC	ULTRALIGHT 1103 AC	TRAVEL 503	TRAVEL 1003 (C)	TRAVEL 1103 C	CRUISE 2.0 T/R
Input power in W	400	1,100	500	1,000	1,100	2,000
Propulsive power in W	180	540	240	480	540	1,120
Comparable petrol outboard (shaft power)	1 HP	3 HP	1.5 HP	3 HP	3 HP	5 HP
Comparable petrol outboard (thrust)	2 HP	4 HP	2 HP	4 HP	4 HP	6 HP
Comparable diesel inboard (shaft power)	-	-	-	-	-	-
Comparable diesel inboard (thrust)	-	-	-	-	-	-
Maximum overall efficiency in %	45	49	48	48	49	56
Static thrust in lbs*	33	70	40	68	70	115
Integrated battery (Li-Ion)	320 (A) / 915 (AC) Wh	915 Wh	320 Wh	530 / 915 (C) Wh	915 Wh	-
Nominal voltage in V	29.6	29.6	29.6	29.6	29.6	24
Final charging voltage in V	33.6	33.6	33.6	33.6	33.6	-
Total weight in kg	8.8 (A) / 11.0 (AC)	15.3	13.1(S) / 13.7 (L)	Travel 1003: 14.2(S) / 14.8(L) Travel 1003 C: 14.9 (S) / 15.5 (L)	17.3 (S) / 17.7 (L)	T: 17.5 (S) / 18.6 (L) R: 15.3 (S) / 16.2 (L)
Motor weight without battery, in kg	5.0	9.3	8.9 (S) / 9.5 (L)	8.9 (S) / 9.5 (L)	11.3 (S) / 11.7 (L)	-
Weight of integrated battery, in kg	3.8 (A) / 6.0 (AC)	6.0	4.2	5.3 / 6.0 (C)	6.0	-
Shaft length in cm	48	51	62.5 (S) / 75 (L)	62.5 (S) / 75 (L)	62.5 (S) / 75 (L)	62.4 (S) / 74.6 (L)
Standard propeller (v = speed in km/h at p = power in W)	v10/p350	v10/p1100	v9/p790	v9/p790	v10/p1100	v13/p4000
Alternative propeller options	-	v10/p1100 weedless	v8/p350	-	v10/p1100 weedless	v19/p4000 v20/p4000 v30/p4000
Maximum propeller speed in rpm at full load	1,200	1,450	875	1,125	1,450	1,300
Control	Throttle	Throttle	Tiller	Tiller	Tiller	Tiller/throttle
Steering	Connects to kayak steering, lockable	Connects to kayak steering, lockable	360° lockable	360° lockable	+/-60° lockable	360° lockable
Tilting device	Manual, with impact protection	Manual, with impact protection	Manual, with impact protection	Manual, with impact protection	Manual, with impact protection	Manual, with impact protection
Trim device	Manual, 4-step	Manual, 4-step	Manual, 4-step	Manual, 4-step	Manual, 4-step	Manual, 4-step
Stepless forward/reverse drive	yes	yes	yes	yes	yes	yes
Integrated onboard computer with display	yes	yes	yes	yes	yes	yes

*Torqeedo static thrust measurement is based on internationally accepted ISO standards. Static thrust figures for conventional trolling motors are typically measured differently, which results in higher values. To compare Torqeedo static thrust data with conventional trolling motors, add approximately 50% to the Torqeedo static thrust values.

	CRUISE 4.0 T/R	CRUISE 10.0 T/R	TWIN CRUISE 2.0 R	TWIN CRUISE 4.0 R	CRUISE 2.0 FP	CRUISE 4.0 FP	CRUISE 10.0 FP
	4,000	10,000	4,000	8,000	2,000	4,000	10,000
	2,240	5,600	2,240	4,480	1,120	2,240	5,600
	8 HP	20 HP	8 HP	15 HP	-	-	-
	9.9 HP	25 HP	12 HP	20 HP	-	-	-
	-	-	-	-	5 HP	8 HP	20 HP
	-	-	-	-	6 HP	9.9 HP	25 HP
	56	56	56	56	56	56	56
	189	up to 405	230	378	115	189	up to 435
	-	-	-	-	-	-	-
	48	48	24	48	24	48	48
	-	-	-	-	-	-	-
	T: 18.3 (S) / 19.4 (L) R: 16.1 (S) / 17.0 (L)	T: 60.3 (S)/61.8 (L)/63.0 (XL) R: 59.8 (S)/61.3 (L)/62.5 (XL)	31.0 (S) / 33.1 (L)	32.5 (S) / 34.5 (L)	15.4	15.8	33.5
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	62.4 (S) / 74.6 (L)	38.5 (S)/51.2 (L)/63.9 (XL)	62.4 (S) / 74.6 (L)	62.4 (S) / 74.6 (L)	-	-	-
	v20/p4000	v22/p10k	v13/p4000	v20/p4000	v13/p4000	v13/p4000	v15/p10k
	v13/p4000 v19/p4000 v30/p4000	v32/p10k v15/p10k	v19/p4000 v20/p4000 v30/p4000	v13/p4000 v19/p4000 v30/p4000	v13/p4000 (folding propeller)	v13/p4000 (folding propeller)	v15/p10k (fold. prop.) v22/p10k v32/p10k
	1,300	1,400	1,300	1,300	1,300	1,300	1,400
	Tiller/throttle	Tiller/throttle	Throttle	Throttle	Throttle	Throttle	Throttle
	360° lockable	+/-45°	Provision to connect to standard remote steering; lockable	Provision to connect to standard remote steering; lockable	-	-	-
	Manual, with impact protection	Power tilt	Manual, with impact protection	Manual, with impact protection	-	-	-
	Manual, 4-step	Manual, 4-step	Manual, 4-step	Manual, 4-step	-	-	-
	yes	yes	yes	yes	yes	yes	yes
	yes	yes	yes	yes	yes	yes	yes

(S) short version
(L) long version
(XL) extra-long version

Drives and batteries

Ultralight

Part No.	Product	Description
1405-00	Ultralight 403 A	Ultralight outboard, 1 HP equivalent, with 320 Wh high-performance lithium battery, including charger, throttle, onboard computer, GPS-based range calculation and emergency magnetic kill switch
1407-00	Ultralight 403 AC	Ultralight outboard, 1 HP equivalent, with 915 Wh high-performance lithium battery, including charger, throttle, onboard computer, GPS-based range calculation and emergency magnetic kill switch
1408-00	Ultralight 1103 AC ***NEW***	Ultralight outboard, 3 HP equivalent, with 915 Wh high-performance lithium battery, including charger, throttle, onboard computer, GPS-based range calculation and emergency magnetic kill switch
1416-00	Spare battery Ultralight 403 (A), 320 Wh	High-performance lithium battery with integrated GPS receiver, 320 Wh, 29.6 V, 11 Ah. For all Ultralight models (1404-00, 1405-00, 1406-00, 1407-00)
1417-00	Spare battery Ultralight 403 (A/AC), 915 Wh	High-performance lithium battery with integrated GPS receiver, 915 Wh, 29.6 V, 31 Ah. For all Ultralight models (1404-00, 1405-00, 1406-00, 1407-00)

Travel

Part No.	Product	Description
1140-00	Travel 503 S	High-efficiency outboard with integrated 320 Wh high-performance lithium, 1.5 HP equivalent, including onboard computer with GPS-based range calculation, charger, emergency magnetic kill switch, short shaft
1141-00	Travel 503 L	As part No. 1140-00, but with long shaft
1142-00	Travel 1003 S	High-efficiency outboard with integrated 530 Wh high-performance lithium, 3 HP equivalent, including onboard computer with GPS-based range calculation and charger, emergency magnetic kill switch, short shaft
1143-00	Travel 1003 L	As part No. 1142-00, but with long shaft
1149-00	Travel 1003 CS	High-efficiency outboard with integrated 915 Wh high-performance lithium battery, 3 HP equivalent, including onboard computer with GPS-based range calculation and charger, emergency magnetic kill switch, short shaft
1150-00	Travel 1003 CL	As part No. 1149-00, but with long shaft
1151-00	Travel 1103 CS	High-efficiency outboard with integrated 915 Wh high-performance lithium battery, 3 HP equivalent, including onboard computer with GPS-based range calculation and charger, emergency magnetic kill switch, short shaft
1152-00	Travel 1103 CL	As part No. 1151-00, but with long shaft
1147-00	Spare battery Travel 1003/503, 530 Wh	High-performance lithium battery with integrated GPS receiver, 530 Wh, 29.6 V, 18 Ah. For all 503/1003 models
1148-00	Spare battery Travel 1103/1003/503, 915 Wh	High-performance lithium battery with integrated GPS receiver, 915 Wh, 29.6 V, 31 Ah. For all 503/1003/1103 models

Cruise

Part No.	Product	Description
1234-00	Cruise 2.0 TS	High-efficiency outboard, 5-6 HP equivalent. With tiller steering, integrated onboard computer with GPS-based range calculation, 25 mm^2 cable set (3 m) including fuse and main switch, short shaft version
1235-00	Cruise 2.0 TL	As part No. 1234-00, but with long shaft
1236-00	Cruise 4.0 TS	High-efficiency outboard, 8-9.9 HP equivalent. With tiller steering, integrated onboard computer with GPS-based range calculation, 25 mm^2 cable set (3 m) including fuse and main switch, short shaft version
1237-00	Cruise 4.0 TL	As part No. 1236-00, but with long shaft
1230-00	Cruise 2.0 RS	High-efficiency outboard, 5-6 HP equivalent. Includes connection to remote steering, throttle, integrated onboard computer with GPS-based range calculation, 25 mm^2 cable set (3 m) including fuse and main switch, short shaft version
1231-00	Cruise 2.0 RL	As part No. 1230-00, but with long shaft
1232-00	Cruise 4.0 RS	High-efficiency outboard, 8-9.9 HP equivalent. Includes connection to remote steering, throttle, integrated onboard computer with GPS-based range calculation, 25 mm^2 cable set (3 m) including fuse and main switch, short shaft version
1233-00	Cruise 4.0 RL	As part No. 1232-00, but with long shaft
1240-00	Cruise 10.0 RS	High-efficiency outboard, 20 HP equivalent. Includes connection to remote steering, throttle, integrated onboard computer with GPS-based range calculation, 70 mm^2 cable set (4.5 m) including fuse and main switch, plug connector, short shaft version
1241-00	Cruise 10.0 RL	As part No. 1240-00, but with long shaft
1242-00	Cruise 10.0 RXL	As part No. 1240-00, but with extra-long shaft
1243-00	Cruise 10.0 TS	High-efficiency outboard, 20 HP equivalent. With tiller steering, integrated onboard computer with GPS-based range calculation, 70 mm^2 cable set (4.5 m) including fuse and main switch, plug connector, short shaft version
1244-00	Cruise 10.0 TL	As part No. 1243-00, but with long shaft
1245-00	Cruise 10.0 TXL	As part No. 1243-00, but with extra-long shaft
1250-00	Cruise 2.0 FP	High-efficiency pod motor (fixed position), 5-6 HP equivalent. Includes throttle, integrated onboard computer with GPS-based range calculation, 25 mm^2 cable set (3 m) including fuse, main switch and propeller

Part No.	Product	Description
1251-00	Cruise 4.0 FP	High-efficiency pod motor, fixed position, 8-9.9 HP equivalent. Includes throttle, integrated onboard computer with GPS-based range calculation, 25 mm² cable set (3 m) including fuse, main switch and propeller
1252-00	Cruise 10.0 FP	High-efficiency pod motor (fixed position), 20 HP equivalent. Includes throttle, integrated onboard computer with GPS-based range calculation, 70 mm² cable set (4.5 m) including fuse and main switch, plug connector and propeller
1253-00	Cruise 10.0 FP SD-Mount	As part No. 1252-00, specially for the mounting on a saildrive foundation
1905-00	Anode set Al Cruise 2.0/4.0 R/T/FP, Ultralight 1103 AC and Travel 1103 C	Anode for operating Cruise 2.0/4.0, Ultralight 1103 AC and Travel 1103 C models with standard propeller (with part No. 1915-00, 1916-00, 1923-00, 1933-00, 1953-00). Attachment to motor shaft, made from aluminium, for use in fresh water
1939-00	Anode set Zn Cruise 2.0/4.0 R/T/FP, Ultralight 1103 AC and Travel 1103 C	Anode for operating Cruise 2.0/4.0, Ultralight 1103 AC and Travel 1103 C models with standard propeller (with part No. 1915-00, 1916-00, 1923-00, 1933-00, 1953-00). Attachment to motor shaft, made from zinc, for use in salt water
1964-00	Anode set Al Cruise 2.0/4.0 FP	Anode set for Cruise 2.0/4.0 FP models with folding propeller (part No. 1932-00). Consists of 2 ring anodes for attachment to the propeller and 1 anode for attachment to the pylon, made from aluminium, for use in fresh water
1965-00	Anode set Zn Cruise 2.0/4.0 FP	As part No. 1964-00, but made from zinc, for use in salt water
1935-00	Anode set Al Cruise 10.0 R/T	Anode set made from aluminium for use with Cruise 10.0 R/T in fresh water, consists of 1 shaft anode, 2 half-ring anodes, 2 ring anodes
1936-00	Anode set Zn Cruise 10.0 R/T	As part No. 1935-00, but made from zinc, for use in salt water
1947-00	Anode set Al Cruise 10.0 FP	Anode set for Cruise 10.0 FP models with folding propeller (with part No. 1945-00). Consists of 2 anodes for attachment to the propeller, 2 ring anodes and 1 anode for attachment to the pylon, made from aluminium, for use in fresh water
1948-00	Anode set Zn Cruise 10.0 FP	As part No. 1947-00, but made from zinc, for use in salt water

Part No.	Product	Description
Power		
2106-00	Power 24-3500	High-performance lithium battery, 3,475 Wh, rated voltage 25.2 V, weight 25.3 kg, with innovative battery management system including numerous protective functions, waterproof to IP67; includes: cable for communication with Cruise system
2104-00	Power 48-5000	High-performance lithium battery, 5,000 Wh, rated voltage 44.4 V, weight 37 kg, with innovative battery management system incl. safety functions; waterproof to IP67; includes: cable for communication with TQ- CAN
2213-00	Charger 750 W for Power 48-5000	Charge current 13 A, charges the Power 48-5000 from 0% to 100% in a maximum of 10 hours, waterproof IP65
2206-20	Charger 350 W for Power 24-3500 (Power 26-104)	Charge current 10 A, charges the Power 24-3500 (Power 26-104) from 0 to 100% in a maximum of 11 hours, waterproof to IP65
2210-00	Fast charger 1,700 W for Power 24-3500 (Power 26-104)	Charge current 60 A, charges the Power 24-3500 (Power 26-104) from 0 to 100% in < 2 hours, waterproof to IP65
2212-00	Fast charger 2900 W for Power 48-5000	Charge current 50 A, charges the Power 48-5000 from 0 to 100% in < 2 hours, waterproof to IP65
2304-00	On/off switch for Power 24-3500 (Power 26-104)	Switch for activating/deactivating the Power 24-3500, IP65, with LED on/off status display; the on/off switch is required when the Power 24-3500 (Power 26-104) is used without a Cruise system
2215-00	On/off switch for Power 48-5000	Switch for activating/deactivating the Power 48-5000 in usage without a Torqeedo motor
1934-00	Spare cable bridges Cruise models	Cable set for connecting 2 additional Power 24-3500 (Power 26-104) to a battery bank; includes 1 series bridge cable, 40 cm, 35 mm² with post terminal connector, 4 parallel bridge cables, 40 cm, 35 mm² with ring terminal connectors and M12 nuts, 2 data cables, 1.5 m with waterproof data plug connectors
2207-00	Solar charge controller for Power 24-3500 (Power 26-104)	Enables the Power 24-3500 (Power 26-104) to be charged with solar energy. (Solar modules not included.) Integrated MPPT maximises the energy yield of the solar modules during charging, very high level of efficiency. Maximum output power 232 W (8 A, 29.05 V)
2211-00	Fast solar charge controller for Power 24-3500 (Power 26-104)	Enables the Power 24-3500 (Power 26-104) to be charged with solar energy. Solar modules not included. Integrated MPPT maximises the energy yield of the solar modules during charging, very high level of efficiency

Accessories

Extras

Part No.	Product	Description
1925-00	Travel bags (2-piece)	For transporting / storing Travel 503/1003/1103 models. Includes 2 bags – one bag for the motor (including tiller and accessories) and one bag for the battery.
1926-00	Travel battery bag	For transporting and storing Travel 503/1003/1103 batteries.
1931-00	Protective cover Travel	For Travel 503/1003/1103 Protects the motor cable from UV fading and the shaft head from dirt. Water-resistant and breathable
1924-00	TorqTrac	Smartphone app for Travel 503/1003/1103, Cruise T/R as well as Ultralight models. Allows larger display of the onboard computer showing range on map and with many other benefits. Requires a Bluetooth Low Energy®-capable smartphone

Charging equipment

1132-00	Sunfold 50	Foldable 50 W solar panel, convenient size, highly efficient, plug & play connections for waterproof charging of the Travel 503/1003 models and Ultralight 403 and 403 A/AC, only compatible with battery part No. 1146-00, 1147-00, 1148-00, 1416-00 and 1417-00
1133-00	Charger 90 W for Travel and Ultralight batteries	90 watt charger for electric sockets rated 100- 240 V and 50-60 Hz. For use only with batteries part No. 1146-00, 1147-00, 1148-00, 1416-00 and 1417-00
1127-00	Charger 40 W for Travel and Ultralight batteries	40 watt charger for electric sockets rated 100-240 V and 50-60 Hz. For use only with Travel 503/1003 and Ultralight 403 batteries
1128-00	12/24 V charger cable for Travel 503/1003/1103 and Ultralight 403	Allows the Travel 503/1003/1103 models and the Ultralight 403, 403 A/AC to be charged from a 12/24 V power source

Propellers and fins

1912-00	Spare propeller v10/p350	For Ultralight models 40, 403 and 403 A/AC (Ø 200 mm)
1972-00	Spare propeller v10/p1100	For Travel 1103 C and Ultralight 1103, weedless
1973-00	Spare propeller v10/p1100	Standard propeller for Travel 1103 C and Ultralight 1103
1917-00	Spare propeller v9/p790	For models Travel 1003 (C) and Travel 503 from 2014 (Ø 292 mm)
1915-00	Spare propeller v8/p350	For Cruise 2.0/4.0 models manufactured from 2009 onwards, slower speed, lower effectiveness, greater thrust (Ø 300 mm).
1916-00	Spare propeller v19/p4000	For Cruise 2.0/4.0 models manufactured from 2009 to 2016, faster, more effective, weedless (Ø 300 mm)
1923-00	Spare propeller v30/p4000	High-speed propeller for Cruise 2.0/4.0 R/T models manufactured from 2009 to 2016, for planing with light boats (Ø 320 mm)
1953-00	Spare propeller v30/p4000	High-speed propeller for Cruise 2.0/4.0 models manufactured from 2017 onwards, for planing with light boats (Ø 320 mm)
1954-00	Spare propeller v13/p4000	For Cruise 2.0/4.0 models manufactured from 2017 onwards, slower speed, greater thrust (Ø 300 mm)
1955-00	Spare propeller v20/p4000	For Cruise 2.0/4.0 models manufactured from 2017 onwards, faster, more efficient, weedless (Ø 300 mm)
1961-00	Spare propeller v22/p10k	For all Cruise 10.0 models, medium speed for planing and displacement
1962-00	Folding propeller v13/p4000	For use with Cruise 2.0/4.0 FP models on sailboats
1937-00	Spare propeller v15/p10k	For all Cruise 10.0 models, optimised for high thrust, weedless
1938-00	Spare propeller v32/p10k	Speed propeller for all Cruise 10.0 models, optimised for planing
1945-00	Folding propeller v15/p10k	For use with Cruise 10.0 FP model on sailboats
9145-00	Fin for Travel 503/1003 (C)	Protects the outboard when running aground
9234-00	Fin for Cruise R/T	Protects the outboard when running aground, for Cruise models with part No. 1209-00 to 1223-00
9258-00	Fin for Cruise R/T	Aluminium fin coated in polyurethane (PU) foam for Cruise models with part No. 1230-00 to 1237-00. Better protection when running aground
9259-00	Fin for Cruise 10.0 R / T	Protects the outboard when running aground

Cable, control, steering

1970-00	Ultralight Kayak bracket	Optimised kayak mount for Ultralight models 403. For part No. 1404-00 to 1407-00
1971-00	Ultralight mounting ball	Mounting ball for Ultralight models 403 A/AC. Only for part No. 1404-00 to 1407-00
1918-00	Throttle for Travel 503/1003/1103 (C) (Spare part for Cruise and Ultralight models)	Enables operation with throttle instead of tillers for models Travel 503/1003/1103, including integrated display with information on battery status, GPS-based speed and remaining range calculation, including 1.5 m and 5 m connecting cables between motor and throttle. Can also be used as a spare part for Cruise and Ultralight models

Part No.	*Product*	*Description*
1921-00	Cable extension for throttle, 1.5 m	Extension cable for Travel 503/1003/1103, Ultralight and Cruise models, allows a greater distance between throttle / tiller and motor
1922-00	Cable extension for throttle, 5 m	As part No. 1921-00, 5 m length
1949-00	Throttle Sail side mounting	Electronic throttle for sailboats, with on/off switch, emergency magnetic kill switch and 1.28" display
1950-00	Throttle side mounting	Electronic throttle for motorboats, with power trim and tilt, key switch, magnetic kill switch and 1.28" display
1951-00	Throttle top mounting	Electronic throttle, with power trim and tilt, key switch, magnetic kill switch and 1.28" display
1952-00	Dual throttle top mounting	Electronic throttle, with power trim and tilt, key switch, magnetic kill switch and 1.28" display
1956-00	Cable extension for throttle, 3 m	Extension cable for a longer distance between the components. Only for part No. 1949-00, 1950-00, 1951-00 and 1952-00. 3 m length
1957-00	Cable extension for throttle, 5 m	As part No.1956-00, 5 m length
1958-00	Cable extension for throttle, 0,5 m, angled-end	90° angled-end extension cable for rigging in tight spaces. Only for part No. 1949-00, 1950-00, 1951-00 and 1952-00. 0.5 m length
1919-00	Long tiller arm	60 cm tiller tube extension, for all Travel and Cruise T models
1920-00	Motor cable extension for Travel and Ultralight	Cable connection extension between battery and motor for the models Ultralight 403, 403 A/AC and Travel 503/1003/1103, allows a greater distance (2 m) between battery and motor, with waterproof plug connections
1204-00	Motor cable extension Cruise	Extension for Cruise cable set (between motor and battery), 2 m long, with plug connector
1914-00	Emergency magnetic kill switch	Emergency stop key and immobiliser for Travel, Cruise and Ultralight models
1927-00	Spare parts set Travel	Set for Travel consisting of emergency kill switch, battery attachment pin and steering fixing pin
1940-00	Cable bridges for AGM/gel batteries	Cable bridges for running Cruise 10.0 with AGM/gel batteries. Consists of: 4 cables, 40 cm, 35 mm² with post terminal connector
2217-00	Gateway-Set	Gateway from TQ-Can to TQ-Bus, On /Off switch for Power 48-5000, Extension cable TQ-Bus, 5m

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3D renderings:	Modus X (39 / 46)
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