

# Advancing the future of marine electrification





# Next-generation electric powertrains for marine applications.

Building on a history of delivering revolutionary electric powertrains to premium automotive clients, Helix is extending its expertise to the marine and aerospace industries. At the heart of this sea change lie commitments to space efficiency, reduced weight and heightened performance, principles embedded in our DNA.

As part of MiddleGround Capital, Helix combines cutting-edge motor and inverter technology with marine transmission design (Xtrac and Zoerkler), and with advanced control software (New Eagle), further strengthening our capability in marine electrification.



The maritime industry is at a turning point. With decarbonization no longer optional, marine electrification has evolved from trend to necessity—driving sustainability, slashing operational costs, and unlocking superior vessel performance. Helix delivers the electrified powertrain solutions that boat owners, naval architects, operators, shipyards, powertrain integrators and manufacturers need to navigate this transformation.



# Why Helix?

## Power comparison:

Helix's electric motors redefine power standards, offering significantly higher continuous power density than equivalent internal combustion engines, providing instant acceleration and robust performance.

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## Range:

Our power-dense electric drives ensure extended range and reduced energy consumption, unlocking new possibilities for marine architects and longer journeys.

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## Motor selection:

Helix offers a range of ultra-compact and lightweight electric drives providing tailored solutions for applications where space and weight are critical. Our motors also deliver instantaneous torque for significantly reduced time to plane and improved vessel efficiency.

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## Economic viability:

Transitioning to electric with Helix motors is straightforward for many outboard and inboard applications. Our motors also significantly reduce maintenance costs, featuring only one moving part – the rotor.

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## Cost comparison: Electric vs Petrol

Helix's advanced motor technology requires a higher initial investment, but delivers significant long-term savings through reduced maintenance costs compared to traditional petrol engines over their operational lifetime.

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## Advantage: Helix

Electrifying the future of marine propulsion with revolutionary powertrains that deliver cleaner, smarter, and more powerful vessels.

# Innovation on the water

## Helix in action

Where theory meets reality, Helix electric powertrains are making waves across the marine industry. From the adrenaline-fueled world of competitive racing to luxury yacht innovation, our technology is proving that electric propulsion isn't just the future—it's delivering exceptional performance today. These groundbreaking projects showcase how Helix pushes the boundaries of what's possible on the water.

## E1 Racing Series: Electric Speed Redefined

In the high-octane world of E1 racing, there's no room for compromise. As a key technology partner in this revolutionary electric powerboat series, Helix powertrains face the ultimate test—delivering explosive acceleration and unwavering reliability under the most demanding competitive conditions.

But our involvement goes beyond pure speed. E1 represents a proving ground where we push marine electrification to its absolute limits, demonstrating that sustainable propulsion can match and exceed traditional performance benchmarks. Every race is a showcase of what the future of high-performance boating looks like—and Helix is powering that transformation.

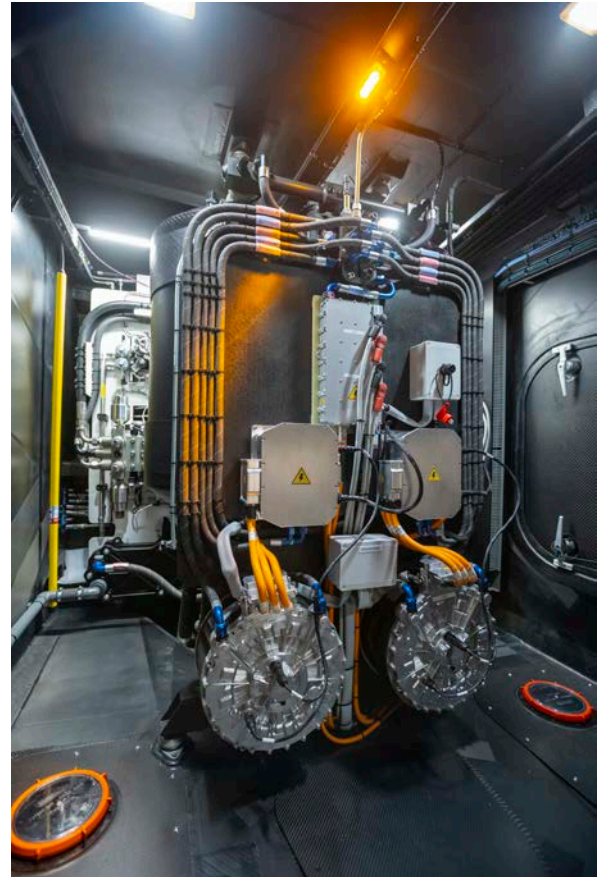


## Magic Carpet e: Luxury Meets Innovation

When former L'Oréal CEO Sir Lindsay Owen-Jones envisioned the Magic Carpet e, he demanded nothing less than perfection—a series hybrid yacht that would redefine luxury sailing without compromise. Helix rose to the challenge, delivering a sophisticated multi-motor system that seamlessly integrates electric propulsion with hydraulic power and generator capabilities.

Working the Magic Carpet team, Helix's own X-Division team developed three bespoke SPX330 motors, each engineered for specific performance demands. The propulsion motor delivers 180kW with over 1,395Nm of torque, while twin hydraulic pump motors provide 195kW each with more than 900Nm of torque—all powered by our patented rotor cooling technology and ultra-lightweight silicon-carbide inverters.

The result? A 101kWh battery-powered yacht that proves electric doesn't mean compromise. It means the future of sustainable luxury on the water.



# Electric drive outboard

Conventional internal combustion engine outboard motors have long dominated the market for smaller vessels, valued for their rotational and trim control, compact size, and ease of maintenance.

Electric outboard technology now delivers instant torque, whisper-quiet operation, and zero emissions while maintaining the maneuverability that boat operators demand.

Helix electric drives maximise the performance of outboard motors while minimising weight and size, delivering the compact footprint essential for smaller vessels. With fewer moving parts than conventional engines, maintenance requirements drop dramatically, while eliminating fuel, oil, and exhaust systems creates cleaner, safer boating experiences.

## Electric drive outboard benefits:

- Zero carbon operation and competitive range
- 30% lighter and smaller than ICE equivalents
- Silent operation, instant responsiveness and minimal maintenance
- Greater design flexibility and easier handling



Helix Motor Platforms	Continuous Power kW	Continuous Torque Nm	Speed Range rpm*
SPC242, SPC330	150-600	161-1,267	6,000 -17,000

\* Use transmission with appropriate gear ratio to support a propeller speed of 1,750rpm. Representative product data for reference only. Consult Helix for precise data for your specific application.

# Electric stern drive

Stern drives have long offered easier access to the water for pleasure craft and working vessels. This is because the boat's internal engine powers an external propeller and outdrive, which leaves the back of the boat clear. Now electric power is enhancing and optimising those traditional advantages.

Combining a Helix motor with a stern drive unit delivers the best of all worlds: traditional stern drive benefits are enhanced by the instant torque, quiet operation, and zero emissions of electric power, and if the motor is integrated in to the drive itself then the engine bay could be eliminated, the break through the transom blanked, and the whole unit could readily be removed for maintenance or swap to another vessel.



Our compact, power-dense motors and inverters integrate seamlessly with existing outdrive systems, offering a straightforward path to electrification without sacrificing performance and versatility.

## Electric stern drive benefits:

- Ideal for smaller vessels and recreational boats
- Frees up significant space for leisure or cargo
- Enables fold-down transom for direct loading
- Reduced structural requirements and flexible ballasting
- Eliminates engine bay and improves service access
- Significantly reduced noise, vibration, and fumes
- No break through required near the waterline



Helix Motor Platforms

SPC177, SPC330

Continuous Power kW

98-600

Continuous Torque Nm

60-1,267

Speed Range rpm\*

6,000 -17,000

\* Use transmission with appropriate gear ratio to support a propeller speed of 1,750rpm. Representative product data for reference only. Consult Helix for precise data for your specific application.

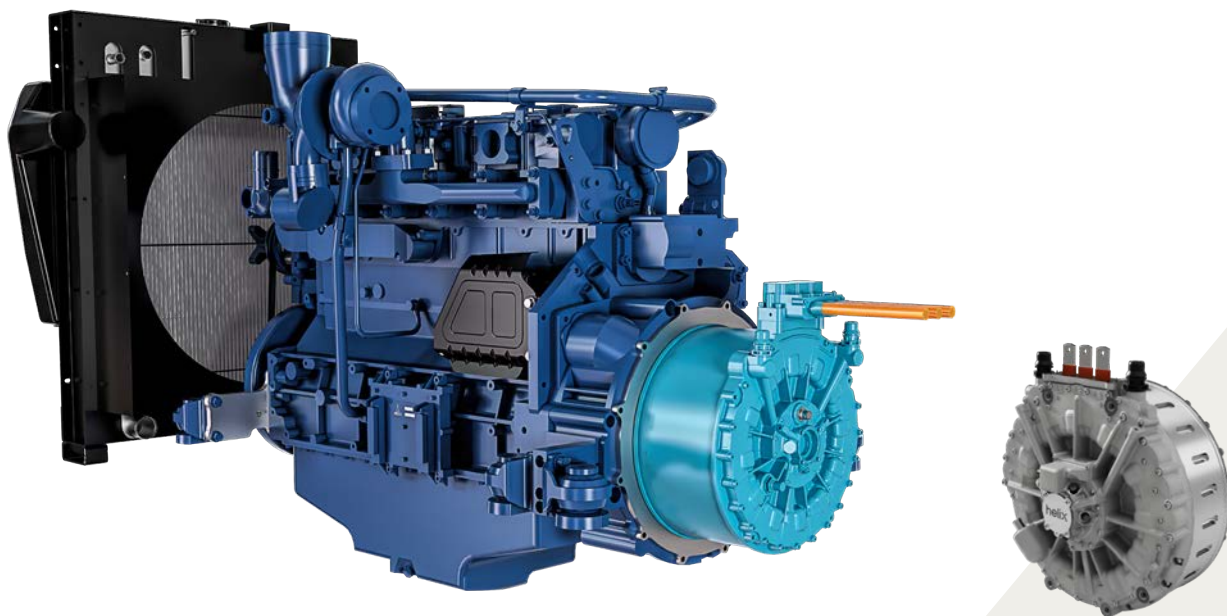
# Hybridised generator sets

Hybridised generator sets combine electric and conventional ICE power sources to create flexible propulsion systems offering improved efficiency and reduced emissions compared to ICE alone.

Highly versatile, hybridised generator sets may be tailored to suit specific vessel requirements. Seamlessly transitioning between electric and traditional power, they deliver the best of both worlds, reducing emissions and overcoming challenges in energy storage for the most demanding applications.

## Benefits of a Helix hybridised generator set

- High efficiency, contributing to overall fuel efficiency in a hybrid generator set
- Instantaneous torque
- Reduced noise and vibration compared to ICE alone
- Precise power control, enhancing the overall performance and reliability of the hybrid system
- Integration with energy storage systems, allowing energy storage during low load or surplus power conditions
- Reduced emissions
- Flexible configurations
- Enhanced redundancy
- Fuel efficiency
- Extended ICE life
- Hybrid systems can help vessels meet stringent emission standards



Helix Motor Platform	Continuous Power kW	Continuous Torque Nm	Speed Range rpm*
SPC330	150-590	645-1267	6,000

\* Use transmission with appropriate gear ratio to support a propeller speed of 1,750rpm. Representative product data for reference only. Consult Helix for precise data for your specific application.

# Marine pod or hydrofoil-integrated drive

## Introducing Helix's next-generation marine pod drive

The future of marine propulsion is here. Building on our expertise in power-dense electric motors, Helix is set to launch an innovative marine pod drive that delivers unparalleled integration, efficiency, and maneuverability for a new era of vessel design.

This groundbreaking solution provides naval architects, boat builders, and powertrain manufacturers with unprecedented flexibility in vessel layout and performance optimization. By integrating the motor and transmission directly into the propulsion unit or hydrofoil, our pod drive eliminates traditional drivetrain constraints, opening up new possibilities for innovative hull designs and improved space utilisation. The result is a propulsion system that doesn't just meet today's performance standards—it defines tomorrow's possibilities.

*Coming Soon: Contact Helix to learn more about integrating our revolutionary pod drive into your next vessel project.*



# Helix ultra-compact scalable core technology motors for inboard and retrofit applications

Helix's Scalable Core Technology Motors deliver industry-leading performance through a modular platform architecture.

Space and mass is always at a premium on board vessels, and nowhere is this more evident than during powertrain retrofits. The requirement for reduced emissions and enhanced performance often leads to the introduction of hybridisation and the inverter drives, generators, propulsion motors, and energy storage that it needs. At best this increases the vessel mass and reduces available space, but in some applications it's simply not possible to add all of this extra hardware into the available space, leading to

compromise or even scrap of a significant capital asset. By taking advantage of Helix's ultra-compact powertrains the equipment can be reduced in size and mass by 10x, or even more, compared to traditional hardware, opening up the opportunity to refit new classes of vessels.

These ultra-high-performance radial flux motors offer peak power from 150kW to 650kW, torques up to 2000Nm, and speeds reaching 23,500RPM with >98% efficiency. Manufactured in-house, they have powered record-breaking applications including Formula E, VW's ID.R Pikes Peak champion, and hypercars like the Lotus Evija, Available in off-the-shelf and customer-specific variants, this scalable approach ensures rapid access to the latest more technology.

## Current core technology platforms

Series	Model	Peak Power [kW]	Continuous Power [kW]	Peak Torque [Nm]	Continuous Torque [Nm]	Mass [kg]	Max Speed [rpm]
SPX	177-45	150	120	120	77	13.7	23,500
	177-80	250	200	200	135	19	23,500
	242-50	250	203	250	165	23.2	17,000
	242-94	400	300	470	286	31.3	17,000
	242-175	400	300	925	566	51	8,700
	330-75	210	210	670	600	48	6,000
	330-95	400	300	1000	615	51.4	6,000
	330-150	250	208	1670	1268	67.8	2,000

## Latest core technology platforms\*

Series	Model	Peak Power [kW]	Continuous Power [kW]	Peak Torque [Nm]	Continuous Torque [Nm]	Mass [kg]	Max Speed [rpm]
SPC	177-40	150	79	105	59	14	23,500
	177-80	250	159	210	127	20	23,500
	177-160	357	300	400	260	31	23,500
	242-50	250	204	270	159	27	17,000
	242-100	400	300	500	325	39	17,000
	242-175	600	482	975	587	57	17,000
	330-75	340	300	800	677	50	6,000
	330-150	650	585	2000	1380	74	6,000

\* Due for market release Q2 2026

# Advanced inverter technology

Sitting between the energy store and motor, the inverter is an essential component in any electric propulsion unit.

Helix has developed its own high efficiency inverters. With high-performance water cooling and proprietary control software, they deliver optimised output. Combined, Helix motor and inverter technology delivers reliability, dynamic performance and extended real world battery range.

## Features

- 1200V Silicon Carbide power stage
- Proprietary inverter & motor control algorithm
- High velocity direct water cooling
- Aluminium housing
- Peak Power >550kW
- Peak Phase Current >750 Arms
- Mass 10.5kg



Our latest CTI-4 800V Silicone Carbide inverter

# Quality & Reliability

## Engineering Excellence for Marine Environments

Marine electrification represents a fundamental shift toward sustainable, efficient, and high-performance vessels. Beyond reducing carbon emissions and operating costs, electrification unlocks unprecedented design possibilities through advanced propulsion systems—from electric outboards and submerged drives to hybrid generator sets—giving naval architects the freedom to create truly innovative, environmentally responsible vessels.

The marine environment demands uncompromising reliability. Salt water, extreme weather, and continuous operation create some of the harshest conditions any powertrain will face. That's why Helix engineers every component to exceed marine-grade standards, ensuring consistent performance when it matters most

Our commitment to excellence is validated through rigorous DNV certification\*, confirming that our electric powertrains meet the most stringent international regulations for maritime safety, reliability, and quality. This certification isn't just a credential—it's your assurance that Helix powertrains are built to withstand the demanding realities of marine operation while delivering the performance your vessels require.

From coastal cruising to commercial operations, Helix quality means confidence in every voyage.



\*Certification due end 2026

# X-Division

## Beyond Scalable Core Technology

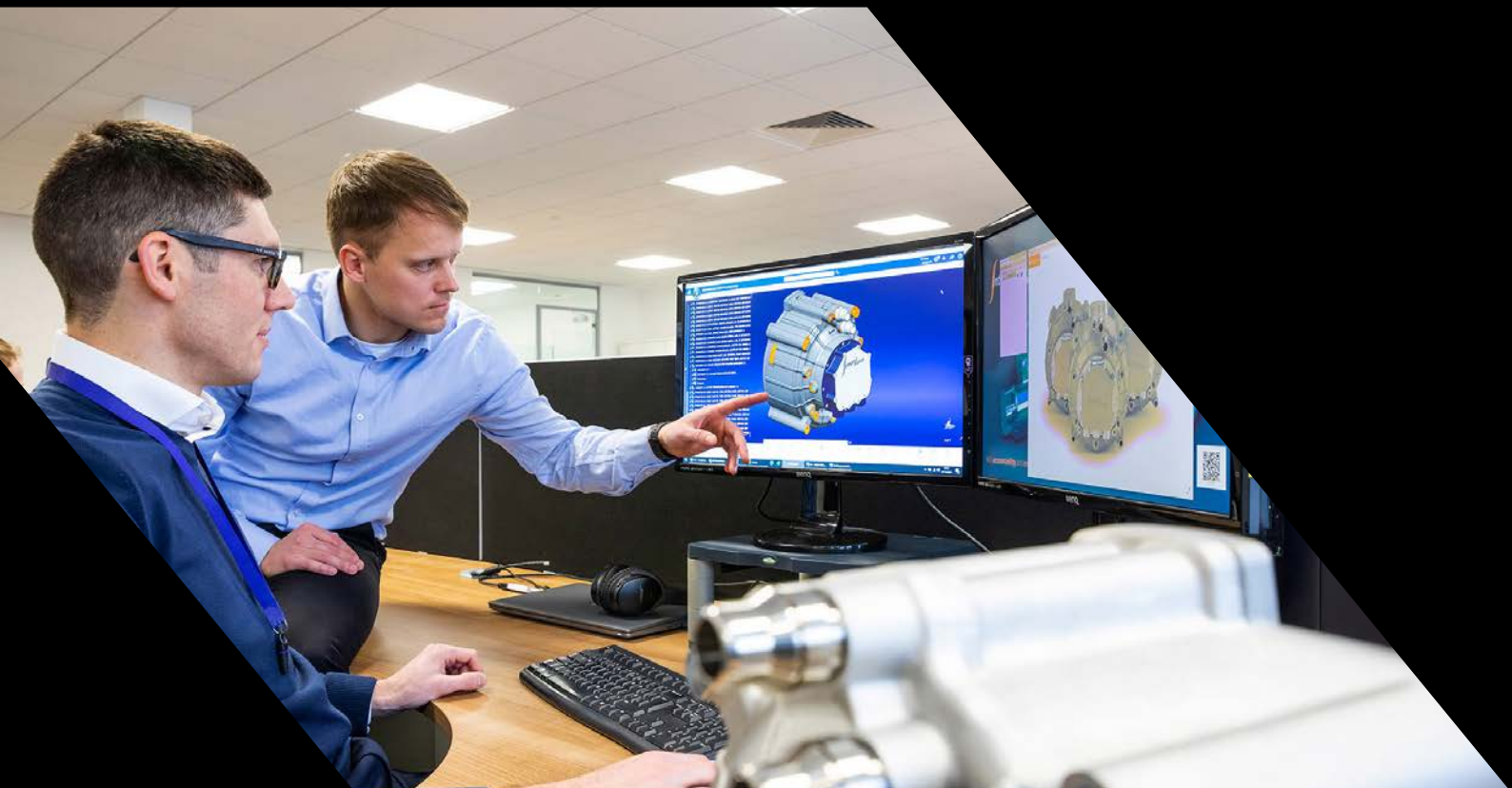
With Helix X-Division, you're not just acquiring a powertrain; you're gaining an undeniable edge.

We engineer bespoke, cutting-edge electric powertrain solutions that push the absolute limits of performance, enabling you to confidently launch products that lead the future of marine and redefine industry benchmarks.

- **Unmatched Technology:** Developing cutting-edge electric powertrain technology, including advancements in Scalable Integrated Motor and Inverter (SIMI).

- **Tailored Collaboration:** From complex integration to compatibility with extreme environments, we partner with you to meet your toughest challenges.
- **Flawless Precision:** Achieving ultimate control mastery through innovative techniques like Dynoless testing.
- **Competitive Edge:** Maintaining and advancing technological leadership through internal projects and partnerships with forward-thinking clients.

Partner with us to transform your vision into market-leading reality, knowing your solutions are powered by the pinnacle of innovation.



Helix: Marine Performance Electrified

helix

Powertrain Advantage

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