

Everllence

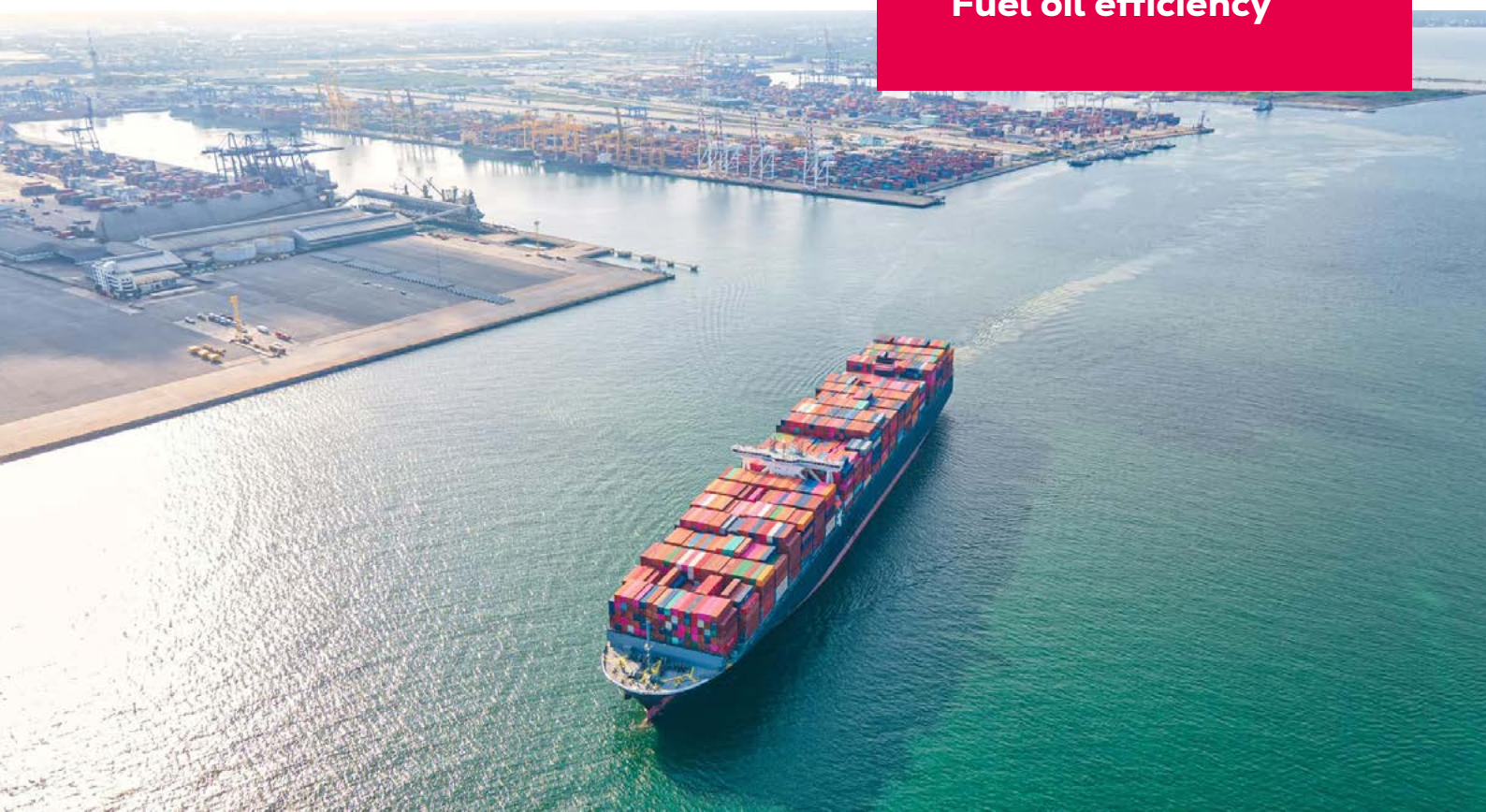
PrimeServ

Retrofit & upgrade



Products
portfolio

Fuel oil efficiency



Fuel efficiency

Your partner for retrofit solutions

Powerful fuel oil performance

Through comprehensive digital and mechanical engine, propeller, and propulsion upgrades, our retrofit products are designed to enable significant fuel oil savings across your existing fleet, enhancing your vessels' operational and competitive performance.

In addition to improving energy efficiency, these retrofit solutions support compliance with the latest environmental regulations and help position your fleet for future requirements connected to energy transition and decarbonization.

Whether your priority is upgrading existing engine systems, lowering total operating costs, complying with new environmental directives, or achieving significant fuel-saving gains, Everllence PrimeServ can help you with powerful solutions tailored to your existing fleet operation.



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AutoTorque

AutoTorque is a fully automatic engine control upgrade that optimizes engine speed in medium sea waves, reducing fuel oil consumption and eliminating manual governor mode selection.

At Everllence, we strive to support ship operators in meeting the demands of modern shipping by enhancing our solutions for greater efficiency, reliability, and sustainability. This is why we developed AutoTorque, a retrofit upgrade build on the proven EcoTorque system. With its new features, AutoTorque enables shipowners to further optimize fuel consumption.

Greater activation and automatic system

AutoTorque is an upgrade to the ME engine control system, designed to automatically deliver stable and efficient engine performance in medium sea waves. In such conditions, traditional engine control systems maintain a steady RPM, but the engine load varies as the propeller encounters resistance from waves, leading to increased fuel oil consumption.

Built on the EcoTorque system, AutoTorque includes all its benefits with a greater activation range across the entire engine load profile and a new automatic governor system. Unlike EcoTorque, which operates at maneuvering full, AutoTorque activates as soon as the engine reaches its minimum operating RPM. This ensures full optimization across the entire engine load profile, operating up to twice as often as EcoTorque.

As a result, fuel oil savings of 0.7 g/kWh can be achieved – and even up to twice as often thanks to AutoTorque's extended engine activation range.

Additionally, AutoTorque includes an automatic control feature, powered by a new governor system that continuously monitors engine conditions and automatically selects the optimal engine governor mode. When activated, the system transitions from RPM to Torque Mode via a two-stage gain control, allowing the engine to respond more smoothly to fluctuating propeller loads in medium sea waves.

Easy to use, easy to control

AutoTorque is integrated in the Main Operating Panel (MOP), providing operators with a clear overview of the current governor mode and helpful tooltips. From MOP, AutoTorque can be switched off at any time, reverting control back to RPM Mode.

Installing AutoTorque requires an ECS software upgrade performed by Everllence. This upgrade is compatible with systems that meet a minimum hardware specification, which we will verify during the pre-inspection to ensure a smooth installation process.

Fully automatic engine control upgrade for better fuel savings

Key benefits

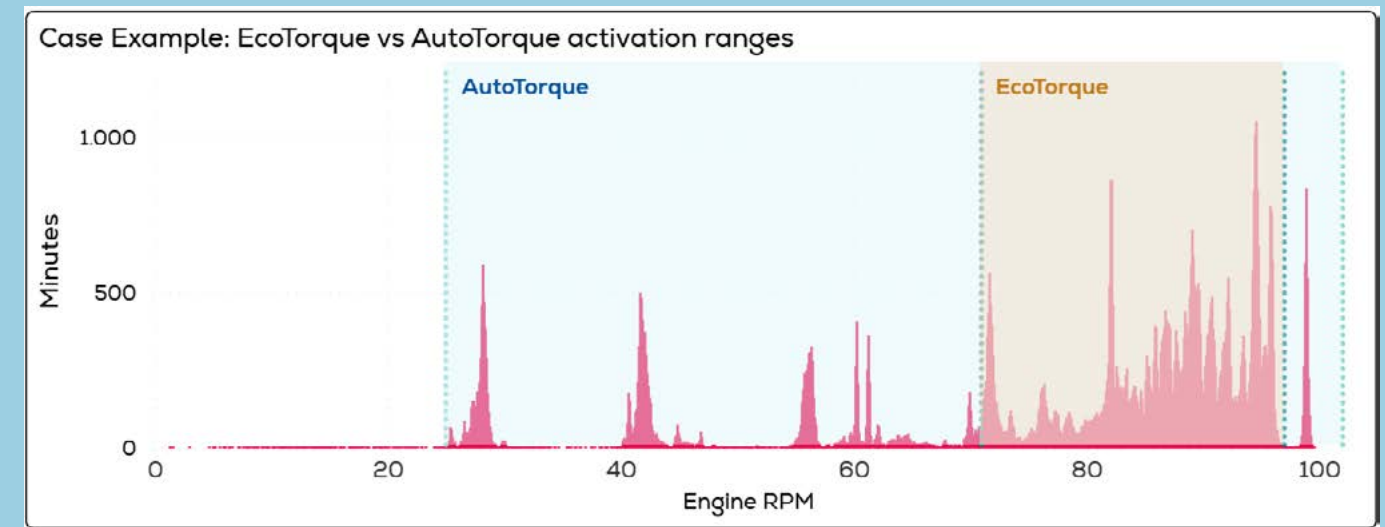
- Fuel oil savings of 0.7 g/kWh
- Fuel savings across the entire engine load range, operating twice as often as EcoTorque
- Automatic and adaptive governor system optimizes operation and minimizes manual crew interaction
- Improved environmental compliance gained from operational fuel oil savings
- Reduced wear and tear on the engine
- Easy monitoring via the Main Operating Panel (MOP)

Scope of supply

- Software update to the latest ECS version
- SPAF modification
- License activation key
- AutoTorque requires minimum hardware specifications, which we will verify during pre-inspection

Applicable to

- All Everllence B&W ME-C engines
- Everllence B&W ME-B Tier III



AutoTorque remains active across the entire engine load profile

EcoCam



The EcoCam provides a variable cam profile with no mechanical modifications. It improves the combustion and lowers specific fuel oil consumption (SFOC) during slow steaming.

EcoCam increases the cylinder pressure by adjusting the closing time of the exhaust valves according to engine load. This leads to more efficient combustion and results in fuel savings within the load range.

The automatic control activates the EcoCam when the engine load is below 60% of maximum continuous rating (MCR), and switches it off below 10% and above 60% of MCR.

Flexible cam profile optimized for slow steaming

The EcoCam is a simple, low-cost, fuel-saving product for mechanical engines with an exhaust cam profile. The system facilitates slow steaming thanks to the variable cam profile, which does not require any mechanical modification of the camshaft. A solenoid valve drains the hydraulic oil from the exhaust actuator to reduce the pressure and close the exhaust valve. The tachometer system governs the draining frequency.

Lower SFOC means lower emissions

Earlier closing of the exhaust valve increases the cylinder compression, which improves the combustion and lowers the fuel-oil consumption. Depending on the engine load profile, the EcoCam typically generates SFOC savings in the range of 2 to 6 g/kWh.

A technical file amendment is not required as changes, if any, in the relative differences of P_{comp} and P_{max} will be insignificant.

The simple installation contributes to a high return on investment.

Please contact your Everllence PrimeServ office for more details.

Save fuel, reduce CO₂ and improve combustion

Key benefits

- Fuel savings between 2 and 6 g/kWh
- CO₂ reduction in proportion to fuel savings, contributing to improved Carbon Intensity Indicator (CII) rating and lower EU Emissions Trading System (ETS) costs
- Slow steaming with operational flexibility
- Easy installation
- High return on investment
- Easy to operate (automatic)
- Effective between 10% to 60% load
- No exchange of exhaust cam required

Scope of supply

- EcoCam unit consisting of:
 - Distributor block
 - Oil cylinder
 - Drain system
- Control system
- Operating panel

Applicable to

Everllence B&W S50/S60/S70 MC-C engines with a wide cam profile

EcoNozzle

The EcoNozzle is a redesigned fuel nozzle for S50 MC-C, Mk.7 and 8 engines. It improves the fuel spray pattern, which optimizes the combustion across all engine loads.

Combustion optimization is a key factor in reducing CO₂ emissions. Improving the combustion reduces fuel consumption leading to lower CO₂ emissions.

Decarbonization effect with a short payback period

The EcoNozzle upgrades the fuel spray pattern to improve the flame formation and the fuel propagation. These enhancements reduce fuel consumption and CO₂ emission, while keeping NO_x emissions within the regulatory limits.

The EcoNozzle leads to fuel savings in the range of 2–7 g/kWh depending on the engine load, which can reduce the payback period to just 3–5 months.

Statement of reduced Specific Fuel Oil Consumption (SFOC) for classification

The scope of supply will include an SFOC statement containing a table of SFOC reduction by engine load. This will be a part of the classification documentation to improve the requirements for Carbon Intensity Indicator (CII) rating, Fuel EU, EU Emissions Trading System (ETS) and other upcoming regulations.

Your vessel crew can install the EcoNozzle during a regular overhaul or in port when the engine is not running.

Technical File amendment included

Everllence licensees have run several test bed trials that document performance and emissions for class approval.

The tests established that the EcoNozzle meets the requirements in MARPOL Annex VI and the NO_x Technical Code 2008.

The EcoNozzle is a complete retrofit solution. In addition to new EcoNozzles and spindle guides, you will receive a new cleaning tool and an amendment to the Technical File.

Please contact your Everllence PrimeServ office for more details.



EcoNozzle

Preventive solution that improves cleanliness of the hydraulic oil

Key benefits

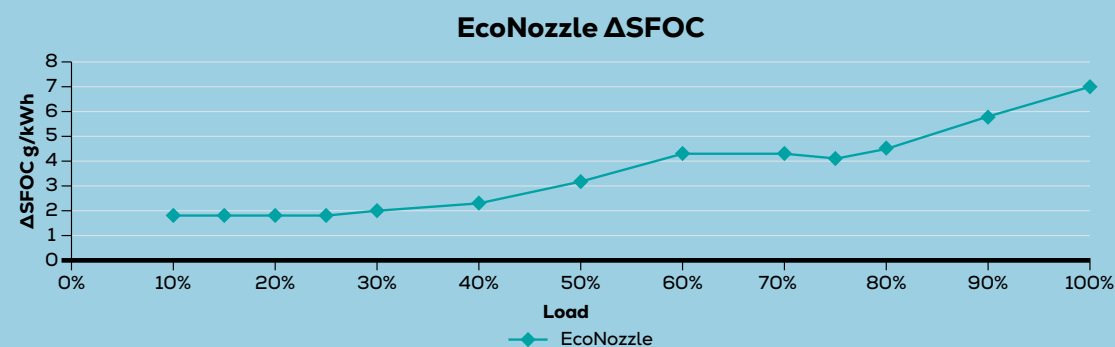
- Instant fuel savings in the entire load range – up to 7g/kWh at 100% load
- Easy installation – can be done by vessel crew
- High return on investment
- Full operational flexibility
- Lower CO₂ emission and NO_x emission within the regulatory limits
- Easy retrofit of original wear part
- Significant fuel savings
- A wise choice as an alternative to the previous fuel nozzle

Scope of supply

- Complete, new spindle guide with EcoNozzle
- New set of cleaning tools for the EcoNozzle
- Amendment to Technical File
- SFOC statement

Applicable to

Everllence B&W S50 MC-C Mk 7/8 engines



Engine Load

Flexible Turbocharger Cut-Out

The Flexible Turbocharger Cut-Out system disconnects one or more turbochargers during slow steaming (low-load operation) to reduce specific fuel oil consumption (SFOC) and consequently CO₂ emissions.

Speed reduction can pay off well in cost savings on fuel as well as lowering CO₂ emissions due to the relationship between speed, fuel consumption and emissions. However, the engines have been designed for optimal performance within specific parameters. Operating them outside these parameters will reduce the benefits of slow steaming.

Improved combustion without dependence on auxiliary blowers reduces CO₂
The Flexible Turbocharger Cut-Out increases the efficiency of the remaining turbochargers without depending on auxiliary blowers when slow steaming. This allows for significant savings in SFOC, and consequently CO₂ emissions, when the engines are running within the low load range.

Cutting out one or more turbochargers will return the operating levels of the remaining turbochargers to the usual parameters for optimal performance.

The activation of the Flexible Turbocharger Cut-Out system improves the scavenge air pressure significantly, optimizing the combustion and contributing to SFOC reductions at 4–6 g/kWh at low load. Moreover, this can reduce the heat load, especially on the exhaust valves.

The auxiliary blower activation will be moved to a lower load range to reduce the power consumption of the blowers.

Simple, cost-effective solution, widely used worldwide
The Flexible Turbocharger Cut-Out consists of two pneumatically operated swing gate valves – one at the turbine inlet and one at the compressor outlet of the turbocharger.

The Flexible Turbocharger Cut-Out has been very well received in the maritime world with more than 500 systems in operation worldwide.

Please contact your Everllence PrimeServ office for more details.



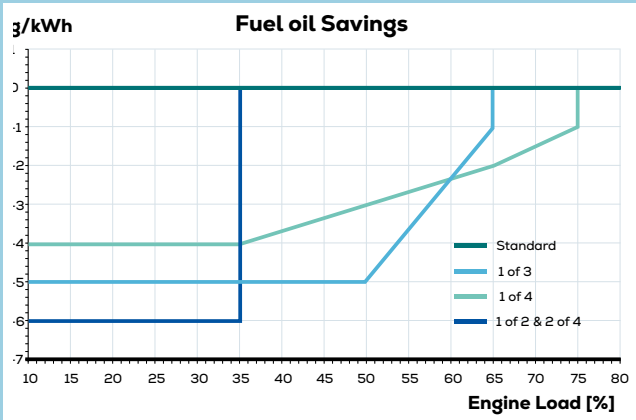
Turbocharger Cut-Out

Improved fuel oil consumption and slow steaming capabilities

- Key benefits**
- Improved performance of the remaining turbochargers
 - Improved combustion resulting in cleaner engine
 - Fuel savings up to 6 g/kWh SFOC
 - Potentially lower costs on fuel consumption for auxiliary blowers
 - CO₂ reduction will help cutting carbon costs within the EU Emissions Trading System
 - Short payback period
 - High flexibility

- Scope of supply**
- 2 x cut-out swing gate valves for the turbocharger turbine and compressor sides
 - Insulation for swing gate valves
 - Pneumatic system to control the turbocharger cut-out swing gate valves
 - Indicator panel for engine control room
 - Amendment to Technical File and emission measurements if needed
 - Engineering package:
 - Engine feasibility calculations
 - Torsional Vibration Calculations (TVC)
 - Gas Harmonics Calculations (GHC)
 - Sealing air modification if needed

Applicable to
All Everllence B&W MC/MC-C and ME/ME-C engines with two or more turbochargers



Fuel oil savings [g/kWh]

Obtainable SFOC reduction when turbochargers are cut out				
Load range	10-35% of MCR	10-66%	10-74% of MCR	10-35% of MCR
Turbochargers in total	2	3	4	4
Turbochargers cut out	1	1	1	2
SFOC reduction at 25% engine load	6 g/kWh	5 g/kWh	4 g/kWh	6 g/kWh

Load range in %

PMI VIT

Based on PMI sensors on each cylinder. Performance Measurement Indicator Variable Injection Timing (PMI VIT) automates the operation of the VIT system to facilitate reduction of fuel consumption.

New technology that has emerged in the last couple of decades has played a considerable role in the development of Everllence PrimeServ retrofit and upgrade products for MC engines. For instance the PMI VIT system, which uses PMI sensors and data about the actual cylinder pressure. PMI VIT automates the original mechanical or electronic VIT in the engine.

Better engine performance leads to reduction of SFOC and CO₂

PMI VIT optimizes the fuel injection timing via the electronic actuator on the VIT rack, based on pressure data from the PMI sensors. This increases the maximum cylinder pressure (Pmax) to improve the combustion, which can reduce the fuel consumption and, consequently, CO₂ emissions. The system displays various performance data on a screen, informing the crew of opportunities for additional engine tuning.

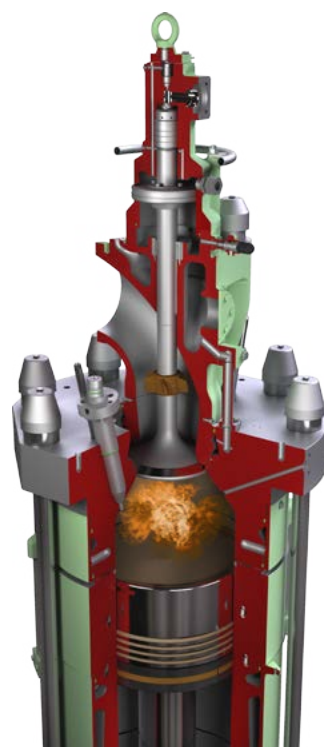
The engine tuning can lead to substantial fuel savings with service experience showing that you can typically reduce the specific fuel oil consumption (SFOC) by around 1–3 g/kWh compared with the mechanical VIT system. This is especially due

to the added opportunities to optimize the engine performance. The actual obtainable fuel savings will depend on the condition of the engine.

The CO₂ reduction will help improve your Carbon Intensity Indicator (CII) rating, and it will help cut your carbon costs within the EU Emissions Trading System (ETS).

In addition, the tuning will minimize unnecessary wear on engine components, which will lower the maintenance costs.

Please contact your Everllence PrimeServ office for more details.



Optimize engine performance while saving fuel

Key benefits

- Saves a substantial amount of fuel
- Improves performance and engine efficiency
- Lowers engine maintenance costs and increases reliability
- Adjusts the engine automatically in response to ambient conditions and fuel properties
- Simplifies operability to ease the workload and eliminate time-consuming manual adjustment
- Diminishes the risk of human errors thanks to automatic parameter adjustment
- Reduces SFOC leading to CO₂ reduction, which helps to improve the CII rating and bring down EU ETS carbon costs
- Reduces carbon particle emission

Scope of supply

- PMI sensors
- PMI VIT offline kit – depending on bore size
- VIT system package – electronic or mechanical
- Angle encoder – single or double

Applicable to

All Everllence B&W 50–98 MC/MC-C engines with a VIT rack installed

PMI Auto-tuning

With Performance Measurement Indicator (PMI) Auto-tuning, Everllence PrimeServ reduces the specific fuel oil consumption (SFOC) and the CO₂ emissions. PMI Auto-tuning uses cylinder pressure sensors to tune the engine.

The main purpose of PMI Auto-tuning is to balance the engine and thereby reduce the SFOC, and consequently CO₂ emissions. But it also helps the crew to constantly monitor the real-time condition of each cylinder unit and find any abnormalities in time to minimize wear on engine components.

PMI Auto-tuning is an automated monitoring and tuning system for electronically controlled two-stroke Everllence engines (ME engines). Through a PMI sensor on each cylinder, the system measures the cylinder pressure (Pmax, Pcomp, and Pi) and tunes the engine accordingly. The tuning includes adjustment of fuel injection timing and exhaust valve opening. Various performance data are displayed on a screen, informing the crew of opportunities for additional engine tuning.

Better engine performance leading to reduction of SFOC and CO₂

PMI Auto-tuning enables automatic adjustment of the combustion pressure, resulting in an optimal combustion process to improve engine performance.

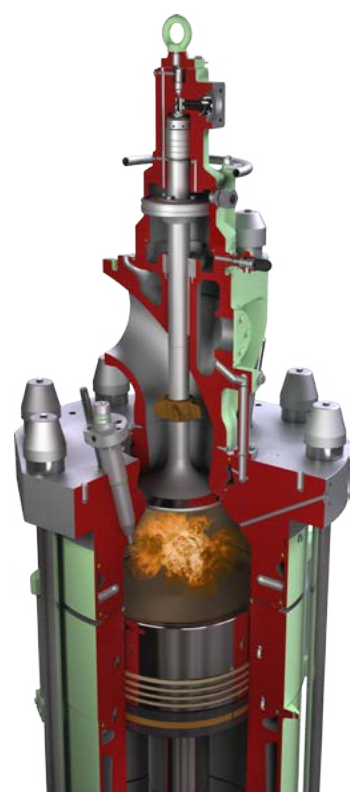
This engine tuning leads to substantial fuel savings with service experience showing that you can typically save around 2–4 g/kWh. This reduction in SFOC paves the way for a CO₂ reduction.

Lower CO₂ emissions help improve the CII rating and EU ETS carbon costs

The CO₂ reduction will help improve your Carbon Intensity Indicator (CII) rating, and it will help cut your carbon costs within the EU Emissions Trading System (ETS).

The scope of supply depends on the existing offline PMI installation.

Please contact your Everllence PrimeServ office for more details.



Improve engine performance and save fuel oil

Key benefits

- Fuel savings
- Improves performance and engine efficiency
- Lowers engine maintenance costs and increases the reliability
- Simplified operability eases workload and eliminates time-consuming manual adjustment
- Diminished risk of human errors thanks to automatic parameter adjustment
- Lowers risk of mechanical and thermal engine overload
- Reduces SFOC leading to CO₂ reduction and lower EU ETS carbon costs
- Reduces carbon particle emission
- Can be installed during normal service

Scope of supply

Cylinder sensors (Kistler), incl. new indicator cock. One for each cylinder.

- Cables, cylinder sensors to DAU

Data Acquisition Unit 12

- LAN connector module
- Scavenge air pressure transmitter
- LAN Hub (not applicable if purchased with EngineVault or other connectivity package)
- PMI Calibration Box
- Pressure Transducer for calibration
- Handle for pressure transducer
- Cables for calibration box
- Cable package

Applicable to

All Everllence B&W ME/ME-C/ME-B engines

PMI Adaptive Cylinder Control (ACCo)

With PMI Adaptive Cylinder Control, Everllence takes engine tuning to the next level. Using a new, patented algorithm, closed loop control ensures that each individual cylinder always operates at its optimal cylinder pressure. This gives you the best engine performance and lowest possible fuel consumption at all times.

The successor to PMI Auto-tuning, PMI Adaptive Cylinder Control is a fully automatic system that will constantly help you secure optimal engine tuning regardless of engine load, load range, load changes, and varying fuel calorific values.

The core of the system is the patented closed loop control algorithm, which monitors and controls the pressure rise, compression pressure and the mean indicated pressure for each cylinder. Using values from the engine's performance trial as reference, the algorithm adjusts the fuel index and exhaust valve operation of each cylinder for optimal performance.

With PMI Adaptive Cylinder Control, it is no longer necessary to enter the fuel's calorific value. The system continuously monitors each cylinder's pressure and automatically adjusts for any fluctuations or changes in the fuel.

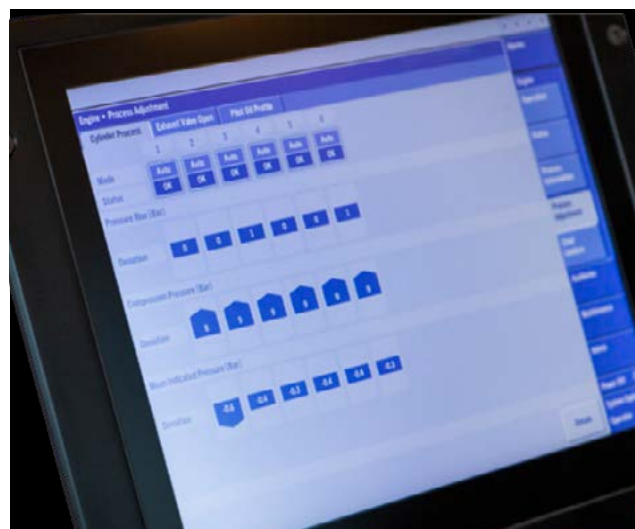
As a result, the PMI ACCo algorithm secure approximately 1 g/kWh in fuel savings. Additionally, service experiences show that Pmax deviations contribute about 0.25 g/kWh in savings per bar, creating potential for extra efficiency gains when deviations are minimized.

The reliability of the system has also improved: In the event that an individual PMI sensor should fail, the control for that specific cylinder will switch to manual mode, while the remaining cylinders continue automatic operation unaffected.

Especially slow steaming vessels will see a major improvement with the new functionalities, as the system will automatically activate from 10% engine load.

Fully automatic and working in all load ranges, PMI Adaptive Cylinder Control makes engine tuning easier than ever and ensures that you do not miss out on the benefits.

Please contact your Everllence PrimeServ office for more details



Lowest possible fuel consumption and improved engine performance at all times

Key benefits

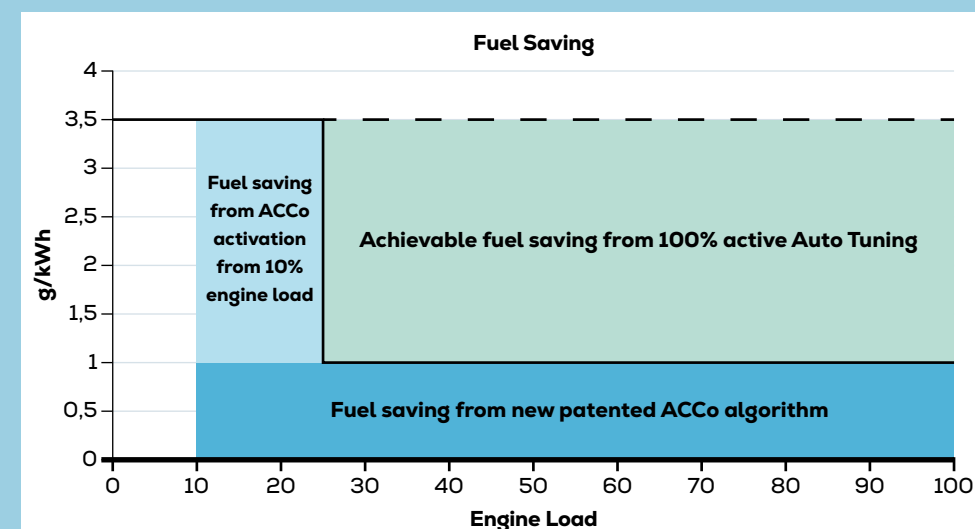
- Approx. 1 g/kWh in fuel savings
- Additionally, Pmax deviations contribute about 0.25 g/kWh in savings per bar
- Fully automatic system
- Lowest possible fuel consumption at all times
- Improved reliability and tuning of the engine
- Slow-steaming support
- Automatic adjustment for fuel variations
- Increased reliability
- Great return on investment

Scope of supply

- PMI Adaptive Cylinder Control software
- PMI ACCo requires minimum hardware specifications which we will verify during pre-inspection

Applicable to

- All ME-C engines
- All following ME-B engines: 8.3, 8.5, 9.3, and 9.5



Fuel saving

EcoTuning

EcoTuning is a tailor-engineered part-load tuning that reduces the engine's fuel oil consumption significantly, supporting your in-service fleet's decarbonization.

In a time where shipowners and operators are challenged by increasing fuel costs and emission regulations such as the Carbon Intensity Indicator, the Emissions Trading System (EU ETS), and the FuelEU Maritime directives, EcoTuning offers a proven solution to save fuel oil and support the regulatory compliance of your fleet.

EcoTuning is a powerful retrofit part-load tuning, tailor-engineered for each individual engine system, and specifically designed for Everllence B&W two-stroke ME and ME-C engines. This engine tuning solution secures significant fuel oil savings, resulting in reduced CO₂ emissions and fuel costs.

Using engineering calibration, EcoTuning increases engine efficiency. This is achieved through software-based fine-tuning of the maximum combustion pressure across the entire load range. As a result, the combustion pressure will match the load profile of your specific vessel.

EcoTuning provides an optimized engine performance layout and includes a NO_x recertification. As a result, the NO_x Technical File must be amended to ensure compliance across all relevant IMO NO_x regulations. And as the engineering analysis behind EcoTuning is based on correction factors, no sea trials or service tests are needed.

The EcoTuning, installation and commissioning process is easy. An update of the engine performance parameters is all that is needed, and there is no need for hardware component modifications or replacements. This means no operational downtime.

Ask your Everllence PrimeServ office for more details.



Optimizing your fleet's fuel savings and decarbonization

Key benefits

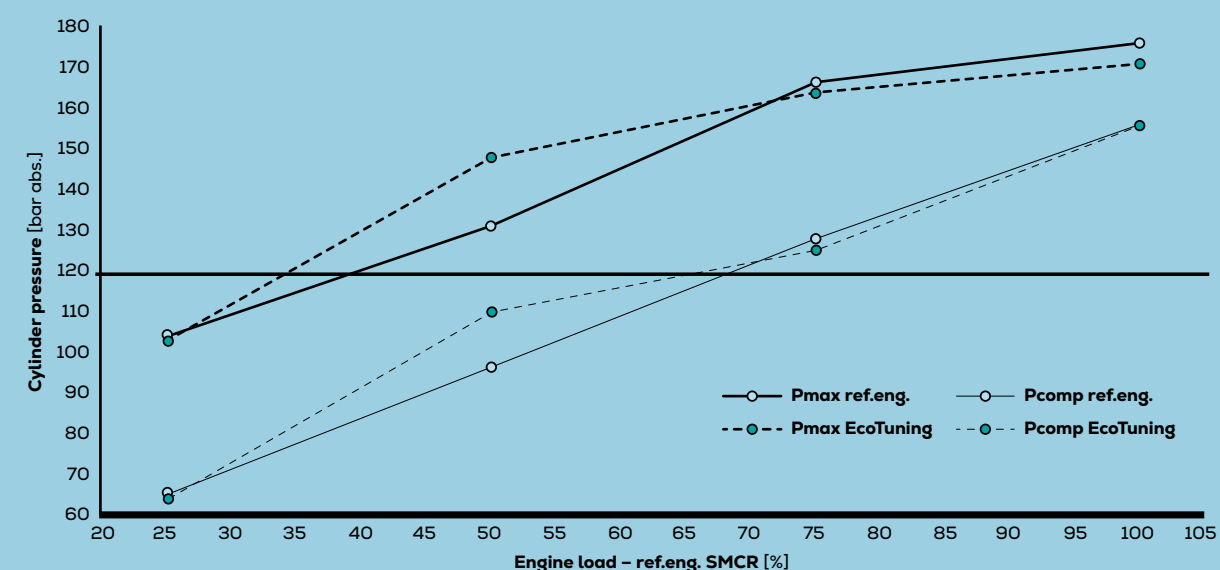
- Significant fuel oil savings up to 7 g/kwh, depending on the desired load profile
- Substantial emission reductions support higher Carbon Intensity Indicator ratings and stronger decarbonization regulatory compliance
- Simple installation with no operational downtime
- No requirement for sea trials or service tests
- EcoTuning can be updated if your vessel's operations pattern change, ensuring peak performance

Scope of supply

- The optimized performance layout for the engine
- An updated torsional vibration calculation for the engine
- Amendment of the IMO NO_x Technical File

Applicable to

- All Everllence B&W ME/ME-C engines
- EcoTuning is not applicable for vessels fitted with Turbocharger Cut-Out or vessels limited (EEXI) to a power below 75% MCR



EcoTuning cylinder pressure vs. engine load

Propulsion Optimization Study

Explore your vessel's propulsion optimization potential and get comprehensive suggestions on power and emission improvements. The comprehensive propulsion optimization study uncovers potentials and enables powerful decarbonization and fuel oil savings.

Uncover the optimization potential of your vessel

Everllence PrimeServ is dedicated to supporting decarbonization in the maritime industry. Therefore, we have introduced the Propulsion optimization study to uncover the potential emission and power savings by introducing various optimization solutions and methods, for example in terms of improving your current CII rating.

Our product range is constantly under review, being developed and improved according to present and future requirements and conditions. Operating at vessel speeds lower than the original design speed often offers a relatively high optimization potential. When exploited, further significant power and fuel savings can be gained.

Fair and reliable comparison

Based on your current operating profile and possible EEXI OPL (Overridable Power Limitation) Everllence PrimeServ will support you in uncovering the potential of optimizing your current propeller configuration, propulsion control system and aft ship.

Among others, the Propulsion optimization study includes a comparison between the existing propeller blade design and a new optimized propeller blade geometry. All based on the actual opera-

tional profile of your vessel. In this way, you will have a fair comparison proposal, when considering various optimization measures.

Improve your CII rating

Upgrade your CP propeller with the latest technology and hydrodynamic know-how. CP propeller optimization often provides substantial fuel savings, allowing your vessel to meet stricter emission levels and CII requirements.

Furthermore, it offers the potential to improve your energy class while optimizing your operational economy, thereby providing a short return on investment.

Depending on the existing propulsion control configuration, the Propulsion optimization study will also uncover the optimization potential by improving the existing combinator mode software. A feature that often goes very well in hand with a reduced vessel optimization speed.

The Propulsion optimization study requires a number of operational details, hence a specific questionnaire will be shared when ordering the study.

Please contact your Everllence PrimeServ office for more details.

Explore your in-service vessel's propulsion power savings

Key benefits

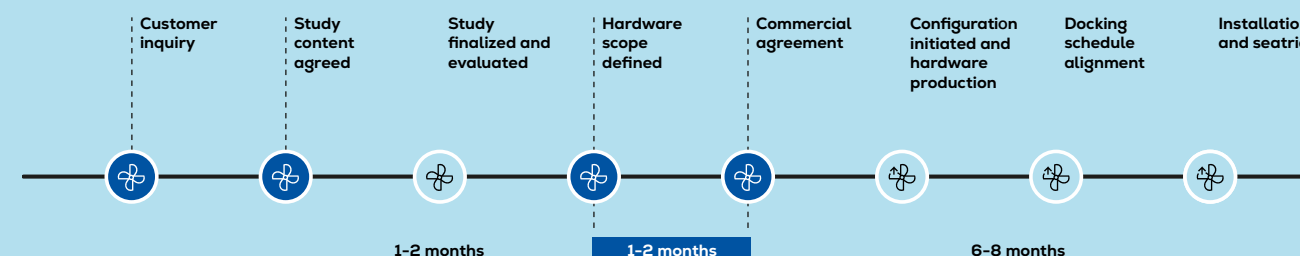
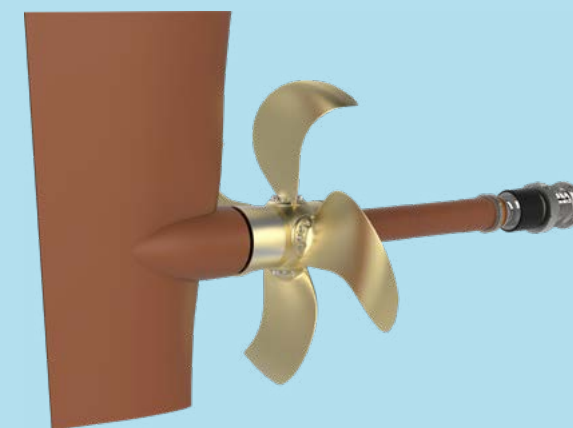
- Uncovers your potential propulsion power savings
- Transparent comparison that enables you to decide your next steps
- Possible improved CII ratings
- Transparency regarding short return of investment

Scope of supply

- Propulsion optimization study
- Preliminary propeller blade design
- Comparison between the existing and the optimized configuration
- EcoBulb rudder bulb performance
- Alphasonic propulsion control optimization suggestions
- Speed and power predictions

Applicable to

- Alphasonic propulsion control systems: AT2000 and AT3000
- Propeller types: Full portfolio of Alpha controllable pitch propeller configurations



Controllable pitch propeller optimization

Upgrade your CP propeller with the latest technology and hydrodynamic know-how. This provides a great fuel-saving, allowing your vessel to meet stricter emission levels, CII requirements and potentially improving your energy class.

Based on your current operating profile and possible CII Rating, Everllence will support you, uncovering the potential of optimizing your current propeller configuration.

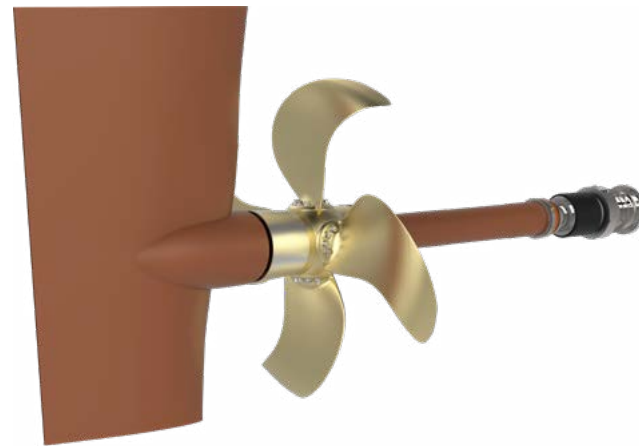
Leveraging state-of-the-art CFD (Computational Fluid Dynamics) analysis, design, and optimization tools, Everllence can provide an controllable pitch propeller optimization solution for your existing fleet.

Achieving perfect hydrodynamic propeller integration involves optimizing the propeller with the ship's hull and incorporating any flow-guiding and efficiency-enhancing devices, such as high-efficiency rudders and rudder bulbs.

Our solution is tailor-made for your specific vessel, featuring an optimized propeller blade design combined with other Everllence efficiency improving devices such as EcoBulb rudder bulb, fairing cone solutions and new combinator mode software.

Get more information

Learn more about our products and how our upgrade solutions can improve your propulsion performance. Do not hesitate to contact your local Everllence PrimeServ office for more information on possible upgrades.



System solution upgrade

Key benefits

- Increased propulsion efficiency
- Reduced power requirement, fuel consumption and emissions
- Scrap value of existing propeller blades can be included in the business case
- Short installation time for propeller blades and EcoBulb – normally less than one week
- Installation during normal overhaul can be carried out in connection and propeller maintenance / PMC
- Optimization supporting your Carbon Intensity Indicator (CII) targets
- Quick return on investment

Scope of supply

For propeller hub:

- Optimized controllable pitch propeller blades
- Slide and sealing rings
- Corrosion anode, if required

For propulsion control system:

- Review and optimization of existing combinator mode software

For rudder system:

- Steel EcoBulb, including all parts, for installation to existing rudder profile
- Stainless steel fairing cone for attachment to propeller hub

Classification:

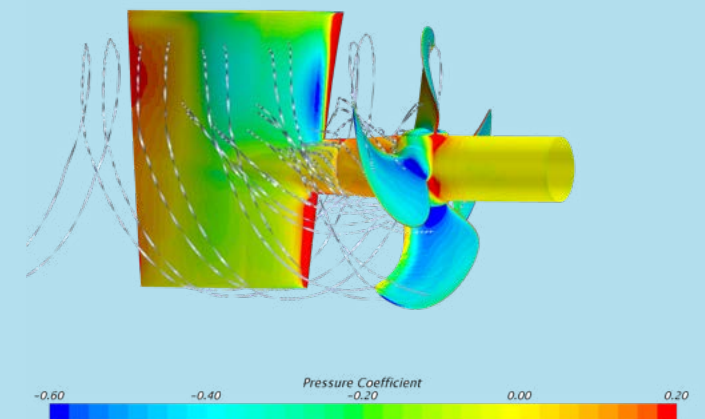
- Including class approval of propeller blades and EcoBulb

Applicable to

Available for Alpha controllable pitch propeller configurations and V28/32S

Reference list

More than 100 vessels have optimized their Alpha controllable pitch propeller configurations with new and improved aft ship solutions



CP Propeller upgrade + Propeller nozzle

For optimizing the propeller thrust and pulling performance of specialized vessels, customized Alpha High Thrust (AHT) nozzle designs are offered.

The AHT nozzle designs offer superior performance compared to the '19A' propeller nozzles, which have been common standard in the marine industry.

The increased bollard pull achieved when using the AHT nozzle is not only a result of the CFD-optimized nozzle profile, which is double-curved on both the inner and outer surface. Other contributing factors are e.g., nozzle length/diameter optimization, nozzle built-in support, and aft ship lines adaption.

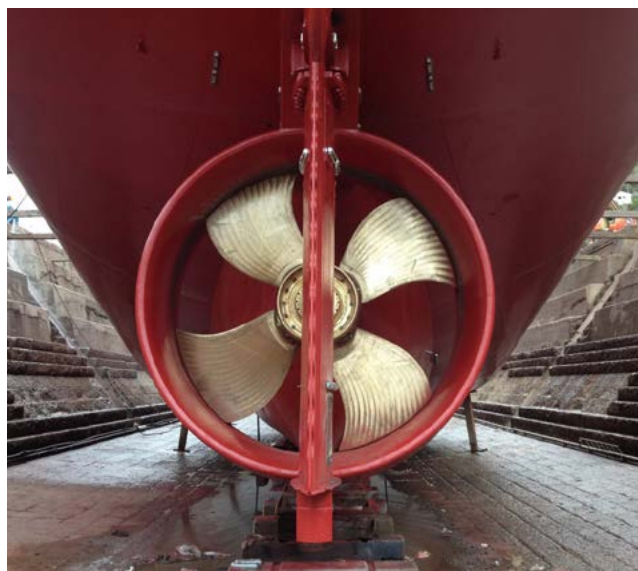
High-thrust and speed customized AHT nozzle installations are popular for vessels requiring

increased pulling power and still limited free-sailing resistance.

Our range of ducted propellers and AHT nozzles are the thrust boosters for high performance vessels enabling bollard pull and towing force at very high levels.

The propeller blades are specifically designed and tailor-made for optimized operation with the AHT nozzles – customized into the aft ship vessel designs.

Please contact your Everllence PrimeServ office for more details.



Tailor-made AHT nozzle design for improved pulling power and fuel savings

Key benefits

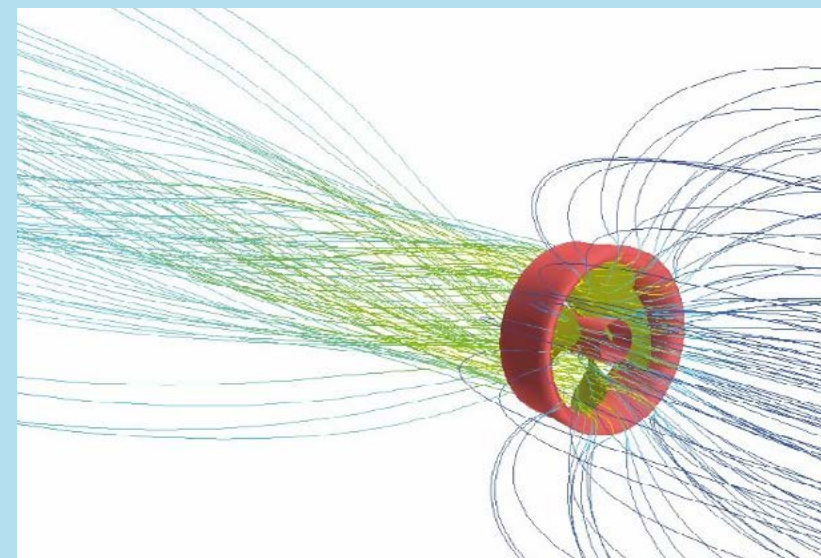
- More pulling power thanks to the increased propeller thrust especially at lower ship speeds
- Reduced fuel consumption – A specific bollard pull or towing force can be delivered at a reduced power output and engine rating
- Individual customization, balanced to application and aft ship design
- Retrofit potential gain exceeding 20% increased bollard pull when upgrading older nozzles to the AHT design, combined with state-of-the-art Alpha propeller blades

Scope of supply

- AHT nozzle
- State-of-the-art Alpha propeller blades optimized for the actual vessel operational profile
- All relevant propeller sealing and slide rings

Applicable to

Applicable for Alpha controllable pitch propellers operating in nozzle



EcoOptimizer

As part of our continuous development and constant strive to improve design, operational performance and economy – our optimized combinator-mode-software is now offered for propulsion solutions with Alpha controllable pitch propellers and Alphasonic control systems.

The total fuel oil consumption is determined by the power required for propelling the ship and the corresponding SFOC of the main engine. Comparing the runs of the optimum propeller and engine curves will reveal that they do not coincide. That is, one curve is optimum for the propeller, and another one for the engine.

Thus, if for each ship speed the required propulsion power and SFOC is calculated along each constant ship speed, the optimum setting of propeller shaft speed and propeller pitch setting can be determined.

This is considered when generating the third and final optimized combinator mode curve that will result in minimum fuel oil consumption.

Installing the optimized combinator mode software requires an Everllence superintendent with expert knowledge of the propulsion configuration.

If you have maintenance planned in the near future, it would be preferable to order the optimized combinator mode software, and have the service engineer install it when on board already.

Please contact your Everllence PrimeServ office for more details.



Fuel savings from optimized combinator-mode software

Key benefits

- Order now, install when convenient
- Fuel saving potential
- Overall economy-optimization and operational mode setting considering ship speeds, propeller pitch settings and individual main engine SFOC mapping
- Short payback time
- Performance and consumption display via Alphasonic 3000 and Alphasonic 2000

Scope of supply

- Optimized combinator mode software
- Everllence superintendent for installation and testing

Applicable to

Applicable for remote control systems types AT2000 and AT3000 from Everllence

Product overview

Two-stroke solutions

Benefits	AutoTorque	EcoCam	EcoNozzle	Flexible Turbocharger Cut-Out	PMI VIT	EcoTorque	PMI Auto-tuning	PMI Adaptive Cylinder Control	EcoTuning
Save fuel oil	✓	✓	✓	✓	✓	✓	✓	✓	✓
Slow steaming	✓	✓	✓	✓				✓	
Save lubricating oil					✓		✓		
Flexible operation	✓	✓	✓	✓	✓	✓	✓	✓	
Reduce emissions	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reduce maintenance	✓				✓	✓	✓	✓	
Increase TBO	✓				✓	✓	✓	✓	
Improve performance	✓	✓	✓	✓	✓	✓	✓	✓	✓
Improve safety					✓		✓	✓	

Applicable for									
MC/MC-C		✓	✓	✓	✓				
ME/ME-C	✓			✓		✓	✓	✓	✓
ME-B	✓					✓	✓	✓	
All engine types									

Two-Stroke Fuel oil efficiency
Increase your vessel's sustainability profile, save fuel oil, and support your decarbonization compliance.

Product overview

Four-stroke propulsion & propeller solutions

Benefits	Controllable pitch propeller optimization	CP Propeller upgrade & Propeller nozzle	EcoOptimizer	Propulsion Optimization Study
Save fuel oil	✓	✓	✓	✓
Slow steaming	✓		✓	✓
Flexible operation	✓	✓	✓	✓
Reduce emissions	✓	✓	✓	✓
Reduce maintenance				
Improve safety				
Reduce downtime				

Applicability

Please refer to the details under each individual section

Four-Stroke Fuel oil efficiency
Increase your vessel's sustainability profile, save fuel oil, and support your decarbonization compliance.

Retrofit solutions

Upgrade your fleet's competitiveness with powerful retrofits

From mechanical and digital upgrades to comprehensive dual-fuel conversions, we specialize in advanced retrofits and upgrades for your vessels.

Keep your engine systems and equipment competitive

Our portfolio of upgrade products and tailored retrofit solutions offers a vast selection of innovative options to optimize your fleet's reliability, efficiency, decarbonization, safety, and compliance. This supports your operation's competitiveness in an ever-evolving market with increasing environmental standards.

Our portfolio offers:

- **Two-Stroke Engine Solutions:** Optimize your two-stroke engine operations with powerful PrimeServ upgrades. Achieve fuel oil savings, improve decarbonization, boost reliability, reduce maintenance costs, and secure crew safety with advanced retrofit equipment. Keep your operations competitive and compliant.
- **Four-Stroke Propulsion & CP Propeller Solutions:** High power and increased efficiency for mechanical and electric propulsion. Maintains fuel flexibility, compliance with environmental standards, and reliable performance.

- **Four-Stroke GenSet Solutions:** Reliable, compact power for auxiliary and main power supply in diesel-electric propulsion. Maintains operational efficiency, meets regulatory requirements, and saves space.
- **Dual-Fuel Retrofit Conversions:** Significantly optimizes engine emissions, fuel oil consumption, and the decarbonization profile by converting to dual-fuel systems. This complete retrofit conversion enhances environmental compliance and operational flexibility, allowing switching between traditional fuel oils and e-fuels.

For more information, please visit our website to explore our retrofit brochures or contact us to learn more.

Everllence

PrimeServ

Dual fuel conversion



For marine systems with two-stroke applications



Everllence

PrimeServ

Retrofit & upgrade



Four-stroke propulsion & propeller solutions



Everllence

PrimeServ

Retrofit & upgrade



Four-stroke GenSet solutions



Everllence

PrimeServ

Retrofit & upgrade



Two-stroke engine solutions



PrimeServ Service with passion

Everllence PrimeServ is the dedicated Everllence service brand. Via a network of over 100 service centers worldwide, Everllence PrimeServ provides 24/7 service across the globe. Our range of services includes technical support, consulting and OEM spares, as well as maintenance, repair and comprehensive individualized service plans.

24

hours a day

365

days a year



BABCOCK BORSIG

SULZER
TURBO

B+V Industrietechnik



Everllence

Alpha
PROPULSION SYSTEMS

S.E.M.T.
PIELSTICK

Ruston

Paxman

**Mirrlees
Blackstone**

HOLEBY
GENERATING SETS

**B&W
MOTOR**

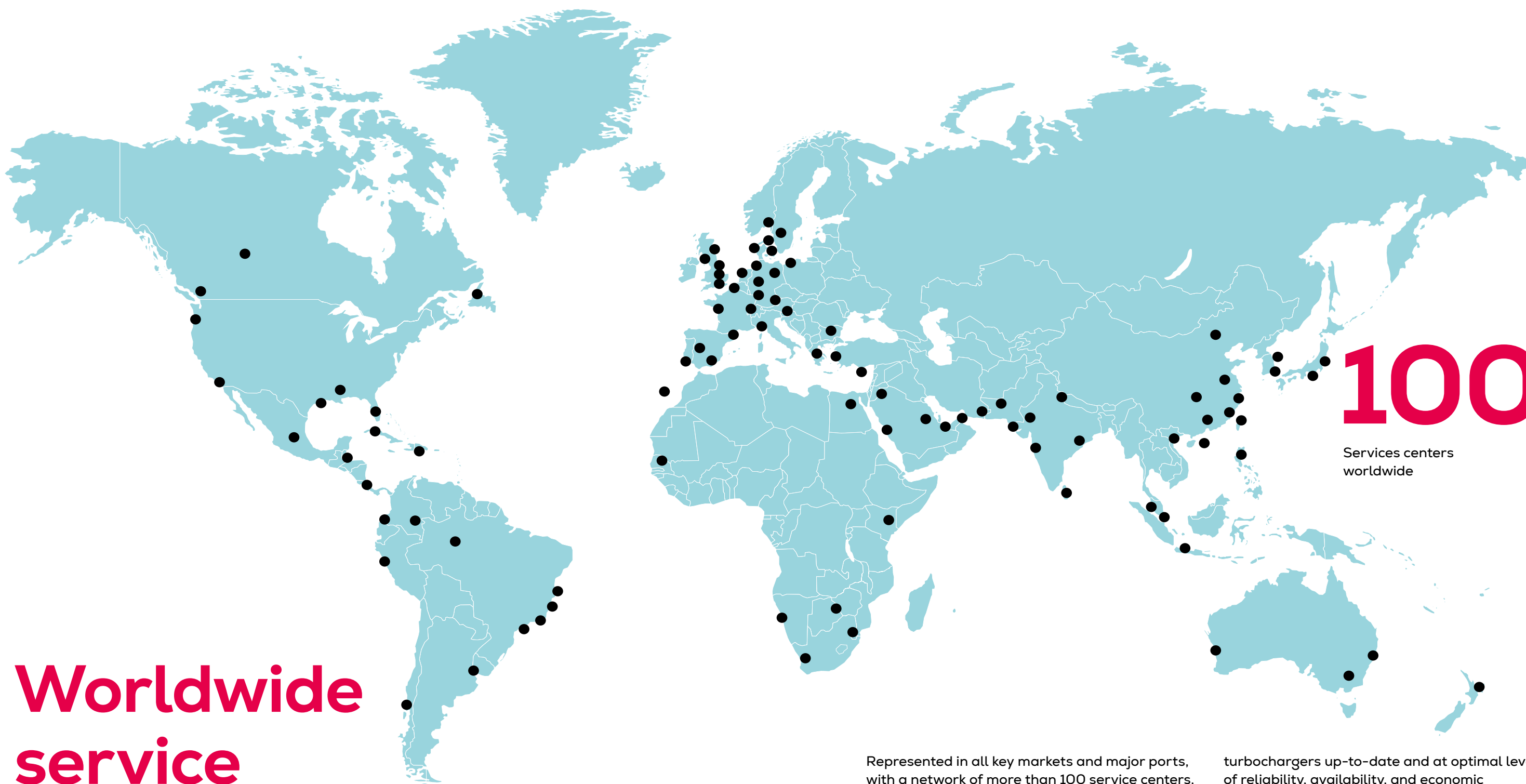


Everllence and legacy brands

Everllence PrimeServ is our brand name for high-quality aftersales support for the entire Everllence product portfolio. Through refinements to our products and repair techniques, we ensure and enhance our technological leadership and technical expertise as an original equipment manufacturer (OEM) for the brands united under Everllence.

Everllence PrimeServ's aim is to provide

- Prompt delivery of high-demand OEM spare parts within 24 hours
- Fast, reliable and competent customer support
- Individually tailored O&M contracts
- Ongoing training and qualification of operators and maintenance staff
- Global service, 24 hours a day, 365 days a year
- Diagnosis and troubleshooting with our high-performance online service



Worldwide service

We offer retrofitting and upgrade services to bring engines and turbochargers already in service up to the very latest standards of performance and efficiency.

Represented in all key markets and major ports, with a network of more than 100 service centers, and with skilled field service managers at the ready to provide first-class technical support, Everllence PrimeServ is fully primed to provide 24/7 service, wherever you are. In power plants, marine engines & systems and turbomachinery, offering reliable technical support when you need it most, our service solutions include OEM spare parts, engine and machinery maintenance and repairs, customized service agreements, and individual consulting.

For existing equipment, our holistic retrofit and modernization solutions keep your engines or

turbochargers up-to-date and at optimal levels of reliability, availability, and economic efficiency. Through cutting-edge digital technology we are able to enhance performance and minimize downtimes, while our remote connections enable live data analysis, ensuring quick, and effective solutions. Everllence PrimeServ Academies provide expert training courses around the world, developing the operational and maintenance skills required.

For more information please visit www.everllence.com/services

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MAN Energy Solutions SE has been renamed to Everllence SE and its products are being rebranded from "MAN" and/or "MAN Energy Solutions" to "Everllence". As this is an ongoing process, any reference to "MAN" and/or "MAN Energy Solutions" is actually a reference to "Everllence".

All data provided in this document is non-binding. This data serves informational purposes only and is not guaranteed in any way. Depending on the subsequent specific individual projects, the relevant data may be subject to changes and will be assessed and determined individually for each project. This will depend on the particular characteristics of each individual project, especially specific site and operational conditions.

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