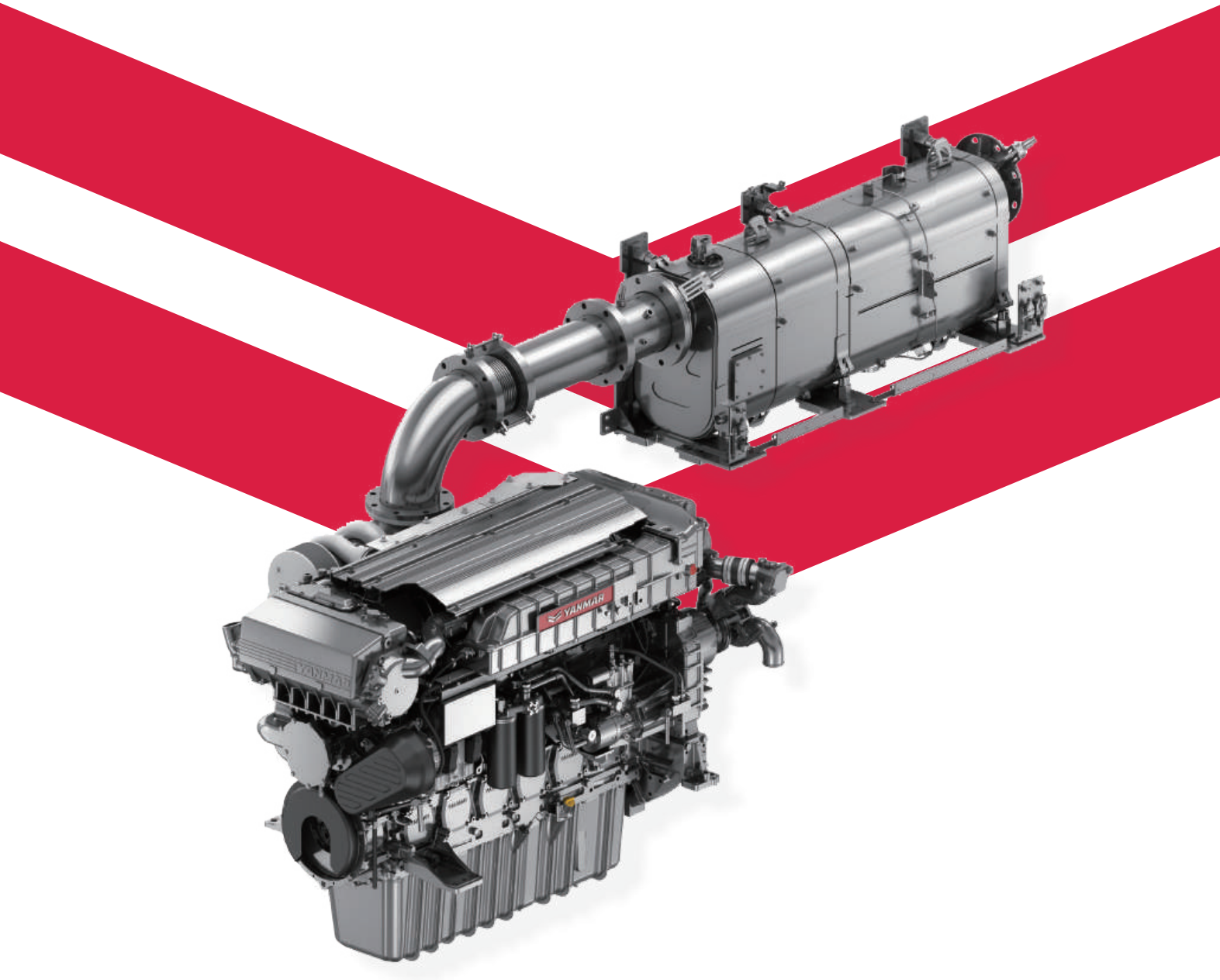
YANMAR

SCR EXHAUST GAS AFTERTREATMENT SYSTEM

Selective Catalytic Reduction



Benefits of Yanmar SCR

The in-house developed Selective Catalytic Reduction (SCR) solution from Yanmar is designed and optimised for easy integration with our engines. Our customers benefit from our long marine experience and highly accurate, high quality manufacturing production system.

In-house design

By designing the system in-house with our own technology we optimise the performance of both the engine and SCR right from the start of the design.

- **One simple solution from a single supplier**
- **Integrated control and monitoring system for the engine and SCR**
- **Complies with IMO NOx Tier 3 Regulations**

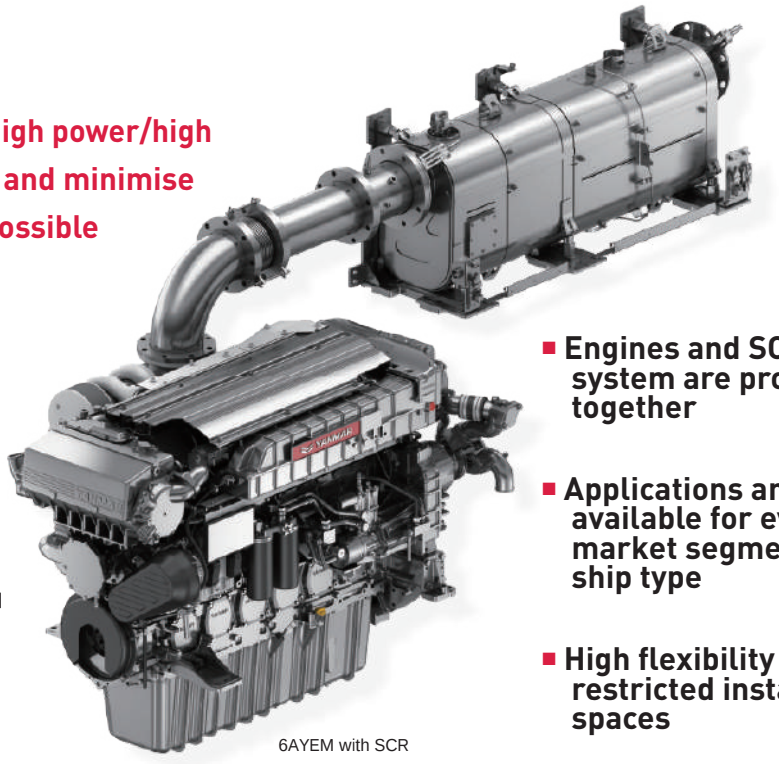
Exhaust Aftertreatment IMO TIER 3

Strike a balance between high power/high performance (555-749kW) and minimise emissions for the lowest possible environmental impact.

Our SCR system is designed to match a wide variety of engine outputs and to fit in all engine rooms.

Two types of SCR installations

Installation space is always limited in an engine room, so to overcome this challenge we offer two types of SCR installations: EIEO (End In End Out) and SIEO (Side In End Out). This offers increased flexibility where space is restricted.



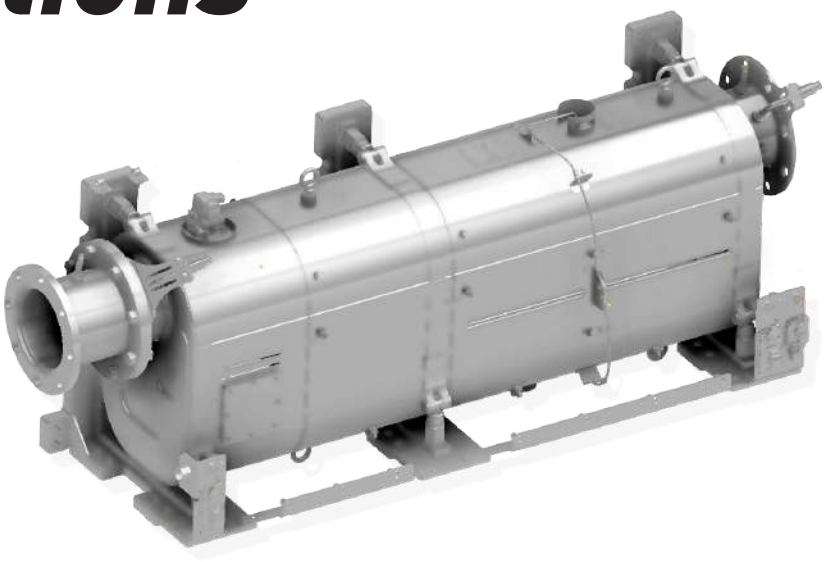
6AYEM with SCR

- **Engines and SCR system are provided together**
- **Applications are available for every market segment and ship type**
- **High flexibility in restricted installation spaces**

Specifications

Dimensions EIEO (End In End Out)		
Overall length	mm	2155 mm
Overall width	mm	612 mm
Overall heigth	mm	805 mm

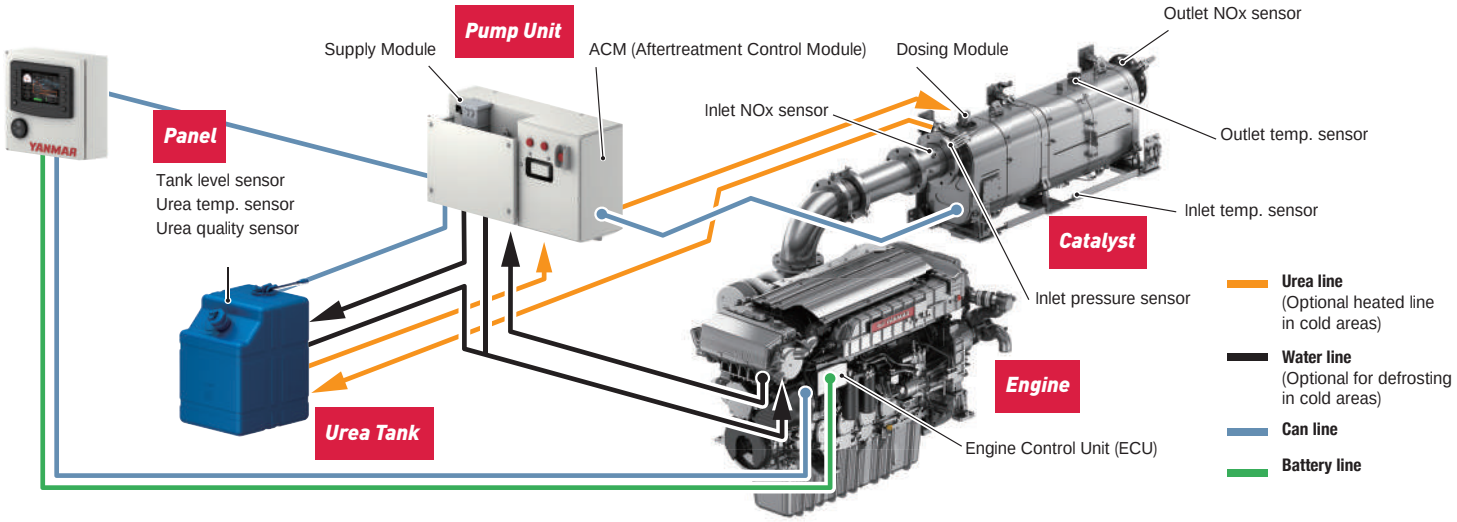
Dimensions SIEO (Side In End Out)		
Overall length	mm	1885 mm
Overall width	mm	856 mm
Overall heigth	mm	805 mm



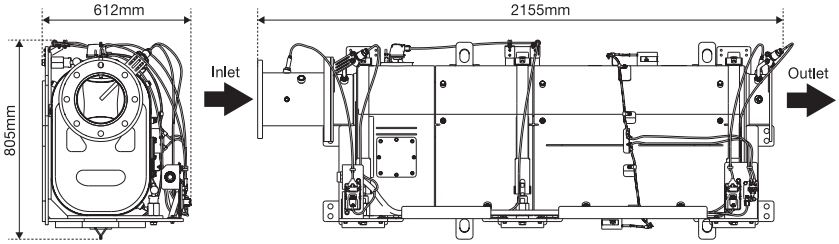
Specifications - IMO Tier 2 | IMO Tier 3						
Model		**SI Unit**	**6AYEM**			
Type		-	In-line, water cooled, 4-cycle diesel engine			
Combustion system		-	Direct Injection			
Number of cylinders		-	6			
Bore X Stroke		mm	155x80			
Displacement		L	20.38			
Rating		-	S	L	M	Continuous
Rated Power (at flywheel end)		kW	749	670	610	555
Rated engine speed		Min¹	2000	1938	1900	1840
Brake mean effective pressure		MPa	2.20	2.04	1.89	1.78
Mean piston speed		m/s	12.00	11.60	11.40	11.00
Power rating (PV value)		Mpa • m/s	26.40	23.70	21.60	19.60
Emissions			IMO Tier 2 | IMO Tier 3			
Specific fuel consumption	IMO Tier 2	g/kWh	206 +5%	201 +5%	204 +5%	201 +5%
(without marine gear)	IMO Tier 3	g/kWh	208 +5%	203 +5%	206 +5%	203 +5%
Turbocharging system			Turbocharging with charge air cooler			
Size of flywheel housing			SAE #0			
Size of flywheel			18 inch			
Dimensions	**Overall length**		2000 mm			
	Overall width		1306 mm			
	Overall height (Standard oil pan)		1531 mm			
	Overall height (With optional Shallow oil pan)		1431 mm			
Engine dry mass (engine only)			2418 kg			

SCR System Outline

Selective Catalytic Reduction (SCR) is a proven and advanced active emissions control technology system that injects a liquid-reductant agent through a special catalyst into the exhaust stream of a Yanmar diesel engine.



Installation Layout



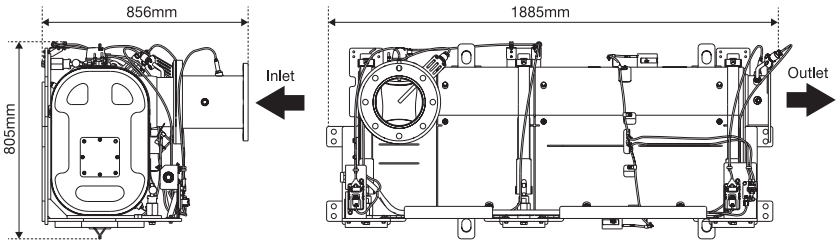
EIEO (End In End Out)

Maximum flexibility

As installation space in the engine room is always limited, the system has been designed with flexibility in mind. We offer engineers and vessel designers the possibility of an EIEO or SIEO lay-out.

Utilise the space in the engine room

This design enables designers to better utilise the available space. This user-friendly approach is one of the reasons why designers specify Yanmar time and time again.



SIEO (Side In End Out)

Reliable Quality & Support

Installation in a high-tech Norwegian vessel

The newest Geological Survey of Norway vessel is currently under construction and it is being fitted with two Yanmar 6AYEM-GTWS and SCR units, rated at 670kW (911hp). It is arranged as two independent propulsion systems with full redundancy.

IMO TIER III Compliant

The units are compliant with IMO Tier III emission levels and in addition, it is a hybrid drive boat. The new vessel is multi-purpose and specially built for marine research and training both in shallow archipelago waters as well as in the open seas.

Research and development

Yanmar continues to research and develop environmentally friendly technology with an emphasis on cleaner emissions, low fuel consumption, and reduced vibration and noise.

The company has been a leader in its field for a century. During this time, we consistently invest in R&D in a never-ending effort to improve. This philosophy encompasses all aspects of engine manufacture, including how suppliers are vetted.

Total after-sales service

From the very start in the engineering phase and from delivery onwards, complete support is given to your engines and SCR system. We have a wide network of dealers and dealer service agents able to offer the right servicing at the right time. Staff training is a high priority for Yanmar and this has yielded unrivalled expertise.

This is backed up with a wide range of original equipment parts and spares. Buying an original Yanmar part means it's been rigorously tested and approved for use with Yanmar engines. This guarantees long-lasting performance and lower total cost of ownership.

Engines and SCR system provided together

Developing the SCR and engine in-house side-by-side provides many advantages. It means that the technical details, such as the trade-off between exhaust temperature, pressure loss and durability can be optimised to offer the very best combination of features.

Yanmar is committed to delivering the highest quality and value over the lifetime of the engine, with minimal environmental impact.

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