

WÄRTSILÄ

Generating Sets

**WÄRTSILÄ AUXPAC
TECHNOLOGY REVIEW**





SHIP POWER TRADITION AND INNOVATION

THE SHIP POWER SUPPLIER

Wärtsilä provides ship machinery, propulsion and manoeuvring solutions for all types of marine vessels and offshore applications. The Wärtsilä offering is based on time-proven technological expertise, an unrivalled range of industry-leading products and close customer support.

Wärtsilä started its tradition of building reliable and innovative generating sets more than 40 years ago. Since then, the intensive research and the experience we have accumulated has resulted in a number of new power generation products that have also introduced ground-breaking features.

WÄRTSILÄ AUXPAC – RELIABLE AND COST-EFFICIENT POWER GENERATION

As the Ship Power Supplier, Wärtsilä is uniquely placed to offer a comprehensive range of medium- and high-speed generating sets with high reliability, top performance and outstanding total economy. The WÄRTSILÄ® Auxpac is supplied as a pre-commissioned

standard package that ensures the availability of electrical power in sufficient quantity as and when it is needed.

Wärtsilä Auxpac is designed to provide:

- Easy installation
- Easy operation
- Low operation costs.

When you choose a Wärtsilä Auxpac, you get a highly competitive, well-proven ship power solution with full support.

THE ADVANTAGES OF WÄRTSILÄ AUXPAC IN A NUTSHELL:

- High efficiency
- High reliability
- Shorter lead time
- Higher quality by using proven components
- Better documentation, engineering and manuals
- Easy to install – plug and play
- Improved mechanical and automation interfaces with shipyard systems.



Wärtsilä Auxpac 20



Wärtsilä Auxpac 26

TYPICAL INSTALLATIONS

GENERAL CARGO

Generating set size 520 kW - 875 kW.

Superior reliability and maintainability wherever the ship is trading in the world.

The generating sets must maintain a stable voltage, in all conditions.



CONTAINER VESSELS

Generating set size 520 kW - 2700 kW.

Superior operating economy for high-power installations.

Low fuel and lube oil consumption enhances the overall economy of the ship.



PRODUCT TANKERS

Generating set size 520 kW - 1600 kW.

Superior safety and loadability for any demanding installation.

Reliability, economy and safety are major considerations when selecting generating sets for new buildings.



TANKERS

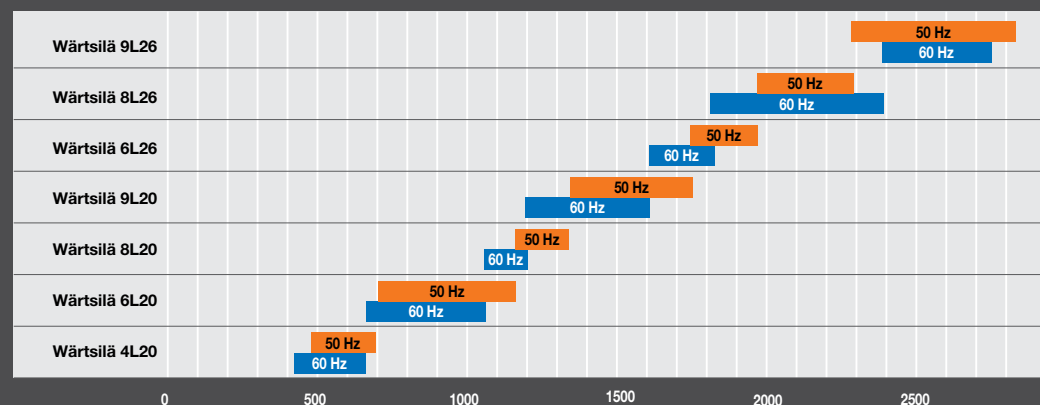
Generating set size 520 kW - 975 kW.

Superior performance with no unreasonable spare parts need.

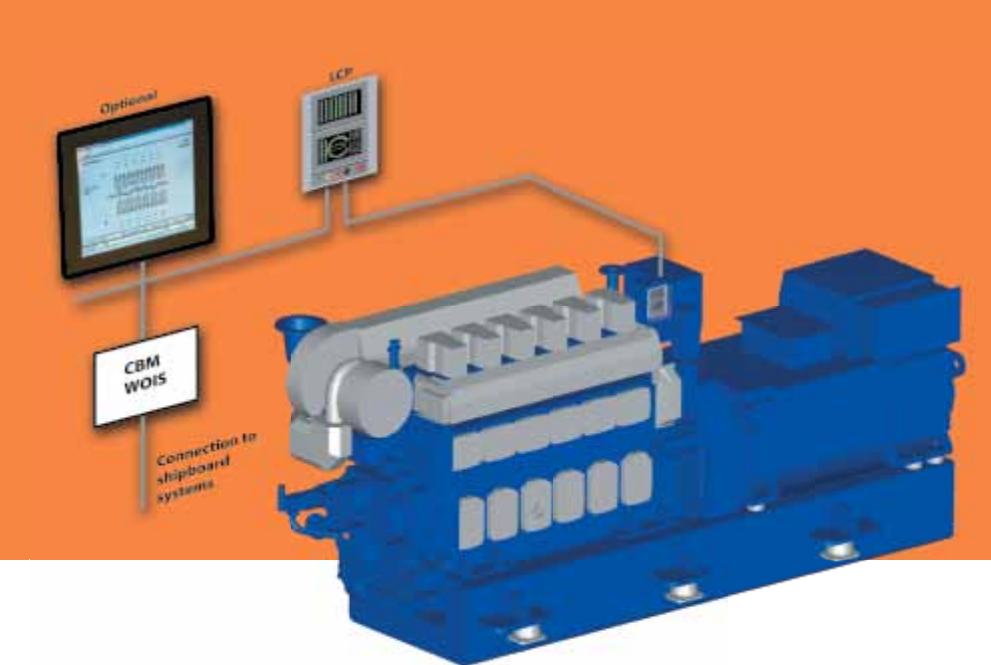
The Wärtsilä generating sets provide the required reliability for auxiliary power in tankers.



OUTPUT RANGES FOR WÄRTSILÄ AUXPAC GENERATING SETS



Wärtsilä Auxpac medium speed generating sets cover a power range of 500-2850 kW.



SCOPE OF SUPPLY

- Heavy-duty 4-stroke marine diesel engine: turbocharged, intercooled, capable of starting and stopping on heavy fuel as well as running on heavy fuel at any load
- Heavy-duty marine-design alternator: air cooled, highly efficient, brushless
- Optimized common baseframe
- Digital control and safety system built into the generating set
- Material for flexible mounting of the generating sets
- Complete FAT of the generating sets.

The functionality can be further expanded with optional equipment.

OPTIONAL EQUIPMENT

- Water-cooled alternators, IP 44
- Material for flexible connections
- Maintenance platforms

TECHNICAL ADVANTAGES

Wärtsilä Auxpac generating sets are all equipped with a built-in, multi-functional, digital automation system with an integrated electronic governor to ensure smooth control and fast response to load transients.

All Wärtsilä Auxpac generating sets are designed to be installed resiliently to the ship's hull. The resilient installation method enables easy installation and alignment of the generating set in the ship. Compared to traditional mounting methods, it also gives a clear advantage in the reduction of structure-borne noise transmitted from the generating sets to the ship's hull, thus improving comfort onboard the ship.

THE IDEAL CHOICE OF YARDS AND OWNERS

Wärtsilä Auxpac generating sets are designed to fulfil the requirements of shipyards and shipowners.

FOR SHIPOWNERS

- A reliable, market-proven HFO design operating in numerous ships – high reliability
- Low fuel consumption – low operating costs
- Low lube oil consumption – low operating costs
- Very maintenance friendly – saves time
- Long maintenance intervals – less outage
- Minimal need for consumables – saves costs
- Resilient mounting – higher comfort in the ship
- Complies with IMO Tier II legislation for NO_x.

FOR SHIPYARDS

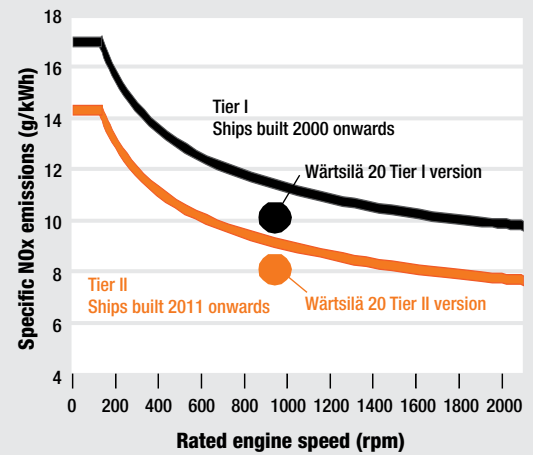
- Very compact design, giving the best power-to-space ratio on the market. The Wärtsilä Auxpac generating sets are the most compact in their class, enabling a very compact design for the engine room
- High power-to-weight ratio – easy to install and saves valuable weight in the ship
- Flexible mounting of the generating sets – fast and easy installation
- Built-in factory-tested automation – less cabling and fast commissioning
- Common fuel system with main engines – saves costs and installation time
- Good motor starting capability – simpler electrical system in the ship
- Accepts a wide variety of fuels – can be used in different types of ship
- Generating sets are parallel run at the factory – saves commissioning time.



The Wärtsilä Auxpac generating sets are the most compact and lightweight generating sets available on the market. The compact design of the generating set simplifies the engine room design and allows for easy location of the generating sets in the engine room, freeing valuable space in the ship for other purposes. The low weight of the generating set simplifies the installation and saves valuable weight in the ship.



IMO GLOBAL MARINE LEGISLATION



Spares OnLine is a fast, easy-to-use online service from Wärtsilä that gives you full control over your parts ordering and delivery processes.

Wärtsilä is continuously developing its products to achieve high environmental performance. The Wärtsilä Auxpac generating sets comply with IMO Tier II MARPOL Annex VI regulations and are supplied with an EIAPP Statement of Compliance.

DELIVERY SUPPORT

INSTALLATION PLANNING INSTRUCTIONS

Wärtsilä as the supplier and the shipyard as the contractor need to exchange information about the individual installation so as to build an installation that is both reliable and economical in use. Every delivery of a generating system built around Wärtsilä Auxpac generating sets is supported by an individual Installation Planning Instruction (IPI). Because of the high degree of pre-engineered solutions, the first version of the IPI can be supplied immediately after receiving the technical specification for the order, in either electronic or paper format.

TYPICAL CONTENTS OF AN IPI:

- Definition of project and delivery scope
- Generating set main data and performance properties
- Recommendations for functional design of all related systems
- Main data for supplied components and recommendations for selecting other components
- Installation instructions and test and commissioning procedures.

ENGINEERING SUPPORT

Design collaboration is one of the keys to successful shipbuilding projects.

The full series of Wärtsilä Auxpac generating sets are available in the most common Tribon® formats as in other 2D and 3D formats.

TESTING AND COMMISSIONING

Wärtsilä Auxpac generating sets are built from components of proven and tested design. In addition to the original type tests, every single delivery is given a Factory Acceptance Test (FAT) under the surveillance of a class representative, as required. Full factory testing ensures simpler commissioning. Agreed commissioning instructions are part of the total delivery scope and included in the project documentation.

WÄRTSILÄ OFFERS COMMISSIONING SERVICES INCLUDING:

- Planning of the complete commissioning process, including training of commissioning teams
- Commissioning supervision by certified service engineers
- Commissioning service including installation pre-checks, first start, tests and sea trial support
- Commissioning report including performance test and evaluations. This report (like all reports from Wärtsilä) can also be accessed online.

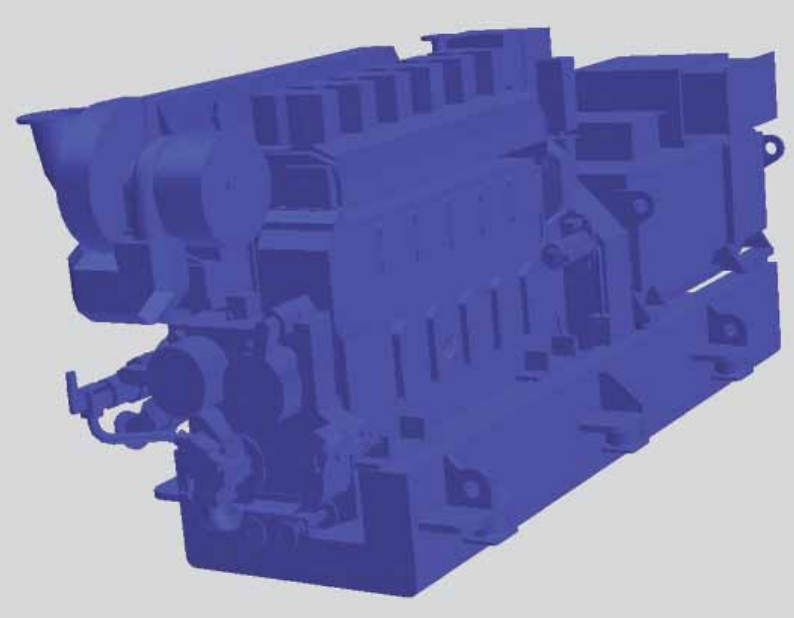


The instructions included in this document are for this specific installation and based on Wärtsilä's long experience as a generating set supplier.

FUTURE-SAFE SERVICE

GLOBAL SERVICE

From the smallest component to total ship power solutions, all Wärtsilä products come with global support. This is what makes the difference in day-to-day operation. The Wärtsilä Total Service organization – with 6,000 service-minded professionals worldwide – enables us to provide unsurpassed field service support – anywhere, anytime. Our philosophy is proactive – involving operation support and predictive and



Tribon Solutions has taken several steps towards the next generation of shipbuilding systems and continues to strengthen its position as the leading integrated design, information and manufacturing system for the shipbuilding and offshore industries.

preventive maintenance. Our technical support solutions can also incorporate remote monitoring, diagnostics and Condition Based Maintenance (CBM).

LIFECYCLE SUPPORT

Effective lifecycle support starts with user-friendly manuals and global availability of spare parts information. Wärtsilä Auxpac generating sets are supported by complete generating set manuals and spare parts books which can all be supplied in conventional paper format and in state-of-the-art interactive Eldoc format. Maintenance planning information can be supplied in Mama format, which is compatible with Amos® PMS data.

ONLINE SERVICES

Support is also provided through our advanced Online (e-business) Services. The complete spare part order process can be conducted through the Spares OnLine web-based service available anywhere, anytime and always up-to-date for the installation it is supporting.

CONDITION BASED MAINTENANCE (CBM)

The Wärtsilä CBM concept has been developed by experts to support users in their daily operation to ensure safety and lowest possible operation costs. All the measured values from the generating set are processed regularly using specially developed analyzing tools, and a report with recommendations is sent to the customer through the online service Reports OnLine. Wärtsilä Auxpac generating sets are designed to support CBM with a minimum of additional investment.

Wärtsilä Auxpac generating set is “future-safe”.

WÄRTSILÄ Generating Sets

Fuel specification

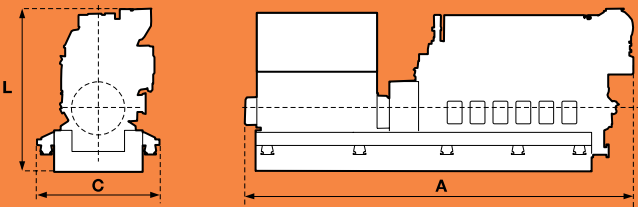
Fuel oil 730 cSt/50°C. 7200 sR1/100°F
ISO 8217. category ISO-F-RMK 55

Output table for the Wärtsilä Auxpac generating sets

60 Hz - 900 rpm					
Type	Output kWe	Weight wet (t)	Length A (mm)	Width C (mm)	Height L (mm)
520W4L20	520	14.0	4407	1920	2248
645W4L20	645	14.7	4537	1920	2248
760W6L20	760	17.9	5062	1920	2248
875W6L20	875	17.9	5062	1920	2248
975W6L20	975	18.3	5062	1920	2248
1050W6L20	1050	18.6	5212	1920	2248
1200W8L20	1200	23.0	5932	1920	2373
1400W9L20	1400	25.5	5897	2070	2373
1600W9L20	1600	26.0	6567	2070	2455
1800W6L26	1800	33.1	6571	2150	3080
2100W8L26	2100	41.7	7911	2300	3090
2400W8L26	2400	42.6	7911	2300	3090
2700W9L26	2700	46.9	9191	2300	3190

50 Hz -1000 rpm					
Type	Output kWe	Weight wet (t)	Length A (mm)	Width C (mm)	Height L (mm)
520W4L20	520	14.0	4407	1920	2248
670W4L20	670	14.0	4407	1920	2248
790W6L20	790	16.9	5007	1920	2248
860W6L20	860	17.5	5137	1920	2248
1000W6L20	1000	18.4	5212	1920	2248
1140W6L20	1140	18.6	5212	1920	2248
1350W8L20	1350	22.6	5932	1920	2373
1550W9L20	1550	25.9	6567	2070	2455
1700W9L20	1740	26.5	6647	2070	2455
1950W6L26	1950	35.9	6836	2300	3080
2250W8L26	2250	41.5	7881	2300	3090
2550W9L26	2550	44.9	8971	2300	3190
2850W9L26	2850	45.7	9071	2300	3190

Weight and dimensions are based on standard configuration.
All data subject to change.



Wärtsilä enhances the business of its customers by providing them with complete lifecycle power solutions. When creating better and environmentally compatible technologies, Wärtsilä focuses on the marine and energy markets with products and solutions as well as services. Through innovative products and services, Wärtsilä sets out to be the most valued business partner of all its customers. This is achieved by the dedication of close to 19,000 professionals manning 160 locations in 70 countries around the world. Wärtsilä is listed on the Nordic Exchange in Helsinki, Finland.

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