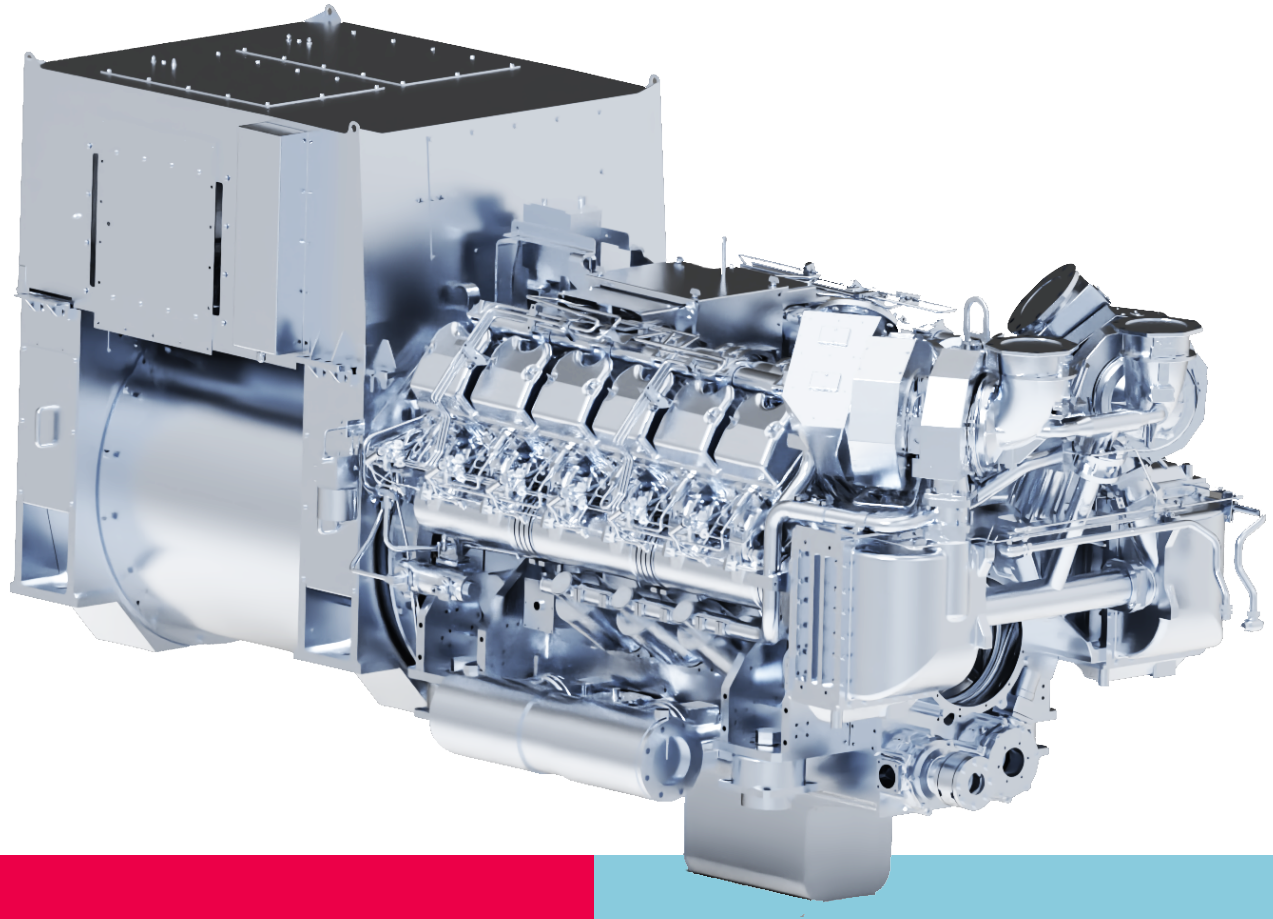
Four-stroke
marine
systems

PA4 Diesel GenSets for submarines



Design concept

- 12V and 16V PA4 GenSet for submarine power generation
- High power above 2,000 kWe under snorkel conditions
- Electrical power generation designed to meet submarine operating constraints, including next-gen battery systems

Benefits at a glance

- High level of reliability & resilience by design
- Sea-proven engine for nuclear (emergency GenSet) and conventional submarines
- Qualified for naval standards
- Extreme operating conditions (shock, snorkel operation)
- Black start capability

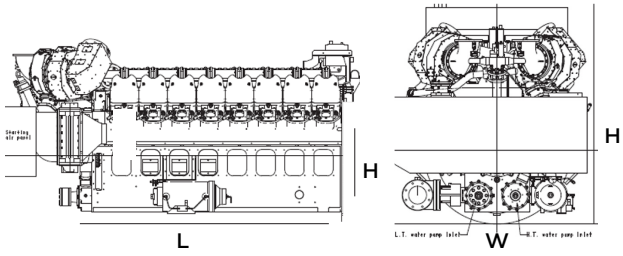
Everllence

S.E.M.T. Pielstick PA4 200D Sub

GenSet

Engine dimensions

Cyl. No.	12V 200D	16V 200D
L (mm)	3,145	3,750
H (mm)	1,840	1,840
W (mm)	1,920	1,920
Dry mass (t)	10.5	12.5



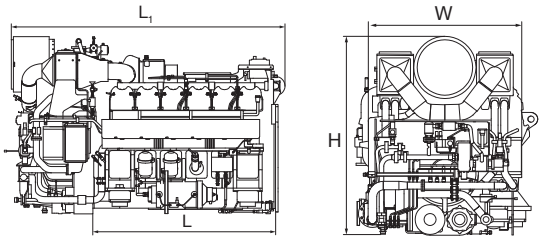
All dimensions and masses are approximate and subject to change without prior notice.
For detailed information, please contact Everllence.

S.E.M.T. Pielstick PA4 SM & SMDS

GenSet

Engine dimensions[1)]

Cyl. No.	8V 200 SM	12V 200 SMDS
L (mm)	1,514	2,140
L_1 (mm)	2,350	3,120
H (mm)	1,785	2,085
W (mm)	1,470	1,670
Dry mass (t)	8	10



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[1)] Without generator

The PA4 GenSet offers an optimal balance of reliability, availability, performance, operational benefits, and ease of integration. It builds on decades of worldwide operational experience in transoceanic operations, cold and rough seas, and coastal conditions.

General

- Proven technology: 180 PA4 engines in operation on submarines, 8,000 engines delivered for commercial and naval applications
- Conservative Brake Mean Effective Pressure (BMEP) resulting in a low mechanical stress fatigue and consequently a high reliability factor
- Engine base qualified for nuclear applications
- Ability to deliver high power under snorkel conditions in demanding sea states, including Arctic and tropical environments
- Starting capability: PA4 engine can start without EL power available
- Simple mechanical design that is easy to operate and allows maintenance to be performed in situ by local mechanics

Fuel & Lube oil

- Tolerant of seawater contamination in fuel oil
- Conventional injection system, less sensitive to seawater content in fuel oil, compared to common rail system
- Engine fuel distillate according to ISO 8217: DMX / NATO F-76 & F-75
- Lube oil: SAE40 & MC30 (NATO code 0278)

Military specific features

- Engine driven compressor (SMDS)
- Low noise emission
- Variable-geometry chamber to reduce acoustic signatures
- Safe and reliable operation
- A sea-proven design tested by numerous naval operators and selected for all French nuclear submarines

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S.E.M.T. Pielstick

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