



MARINE NO_x REDUCTION SYSTEM

READY FOR IMO TIER III EMISSION REGULATIONS



DAMEN

Facing a sustainable future with confidence. Damen is preparing the new generation tugs for upcoming IMO Tier III regulations with the introduction of the Damen marine NOx reduction system. Enabling our customer to stay competitive and flexible whatever the future brings, on every sea on the world.



FOR THE SAKE OF OUR ENVIRONMENT

The NOx emission limits for marine diesel engines >130kW has become more stringent for vessels operating within NOx emissions control areas. The development of the Damen marine NOx reduction system gives the possibility to easily upgrade the tug from IMO Tier II to IMO Tier III NOx emission limits, simply by installing additional equipment.



IMO TIER II ENGINE

Every Damen tug is equipped with an IMO Tier II engine meeting the global minimal NOx emission requirements.



PREPARED SILENCER

The 45 dB(A) exhaust silencer is prepared for an easy extension with the Damen marine NOx reduction system.



OPTIONAL IMO TIER III EQUIPMENT

If NOx emission reduction is required, the optional equipment is added. The choice is for the customer, Damen tugs are prepared.

A DAMEN STANDARD SOLUTION

- Preparing your vessel for future legislation with a standard optional solution.
- Operational flexibility for tug operators.
- Higher re-sale value.



- In-house designed, developed and tested. Maintained and serviced by Damen.
- A standard, reliable, compact and robust product, easy to retrofit.
- Suitable for multiple types of marine diesel engines.

- NOx reduction of 80% compared to IMO Tier II.
- IMO Tier III certified solution.

Document reference: NOx2018/078P rev.1

Certificate of Compliance for Engine Air Pollution Prevention (EAPP Certificate)

This Certificate shall be supplemented by the attached form of Declaration

Subject to full compliance with the provisions of the Protocol of 1997, as amended by resolution MEPC.176(58) in 2008 and resolution MEPC.176(58) in 2013, as modified by the 2014/14/Regulation TADA.

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STATEMENT OF COMPLIANCE
ENGINE INTERNATIONAL AIR POLLUTION PREVENTION

Issued under the provisions of the Protocol of 1997, as amended by resolution MEPC.176(58) in 2008 to attest the compliance of the vessel 'BIS VIRIDIS' with the provisions of the Protocol of 1997, as amended by resolution MEPC.176(58) in 2008 and resolution MEPC.176(58) in 2013, as modified by the 2014/14/Regulation TADA.

by BUREAU VERITAS

Engine Manufacturer	Model number	Serial number	Test Cycle	Rated Power (kW) and Speed (RPM)	Engine Approval number
Damen (Shanghai Shipyard, Jiangsu-Weizhuo)	MEL SCR	62714632	E2 E3 E2	2200kw x 1800rpm	W077676034

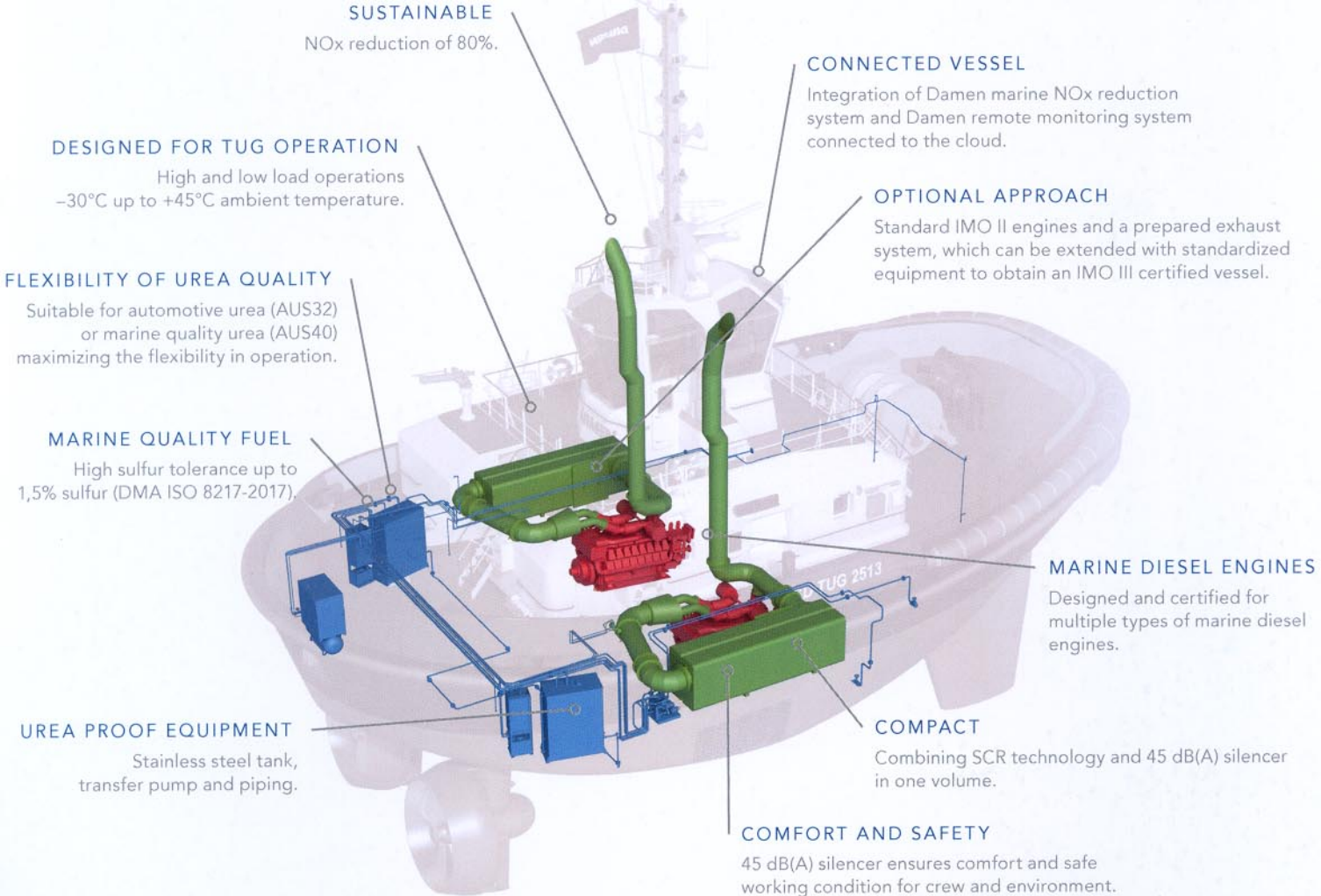
This is to certify:

- That the above-mentioned marine diesel engine has been subjected to pre-verification in accordance with the requirements of the revised Technical Code on Control of Emissions of Nitrogen Oxides from Marine Diesel Engines (2008) made mandatory by Annex II of the Convention.
- That the pre-verification service shows that the engine, its components, adjustable features, and Technical File, prior to the engine's installation and/or service in board a ship, fully comply with the applicable regulation 13.6 Annex I of the Convention.

This Declaration is valid for the life of the engine subject to our work in accordance with regulation 5 of Annex II of the Convention, issued in accordance with the authority of this Government.

PARIS - LA DEFENSE, le 30 May 2014

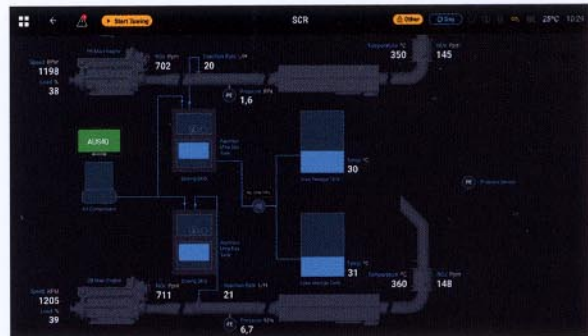
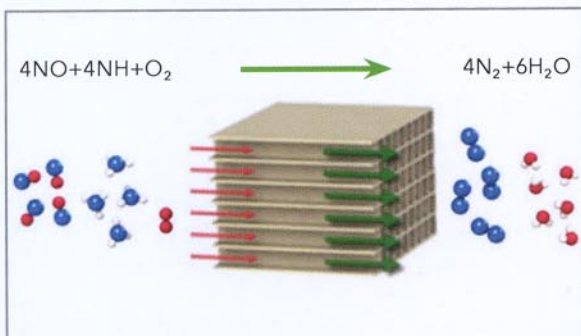
By order of the Secretary,
G. CARTIER



MARINE NO_x REDUCTION SYSTEM

RELIABLE, SUSTAINABLE, EFFICIENT

The Damen marine NO_x reduction system is an advanced active emissions control system using SCR technology for NO_x reductions up to emission standards according to IMO Tier III, suitable for marine diesel engines and fuels. Limiting the emissions of NO_x and noise contributes to a healthier and more sustainable environment.



MEETING NO_x REGULATION

SCR technology uses a catalyst to react with injected urea to chemically reduce NO_x emission. SCR technology is an effective and robust NO_x abatement technique.

REMOTE MONITORING SYSTEM

Continuous monitoring to control and optimize the cleaning efficiency of the catalyst, control ammonia slip and provide data for emission reporting, including the possibility to connect to the cloud.



PREPARED FOR IMO TIER III

THE POWER OF INNOVATION

The Damen marine NOx reduction system is the result of three years in-depth innovation and close cooperation with Emigreen BV. Joining 20 years of knowledge, R&D and experience of after treatment systems with 90 years of experience with designing and building tugs.



DAMEN.COM

DAMEN

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