MARITIME

EXHAUST GAS EMISSION MEASUREMENTS FROM DNV GL’S ENVILAB

Flexible on-site emission measurement support
Thanks to our experts from DNV GL’s accredited testing laboratory Envilab, you as an engine or system maker, ship owner or yard can profit from our state-of-the-art exhaust gas emission measurement services for marine engines and exhaust after-treatment systems – directly on-site, whenever and wherever you need them.

**Ever-stricter regulations require action**

Due to the recently tightened international regulations regarding exhaust emissions from marine diesel engines, the maritime industry today is facing challenges to ensure clean engine operation. The latest IMO regulations, entered into force in January 2016, limit the NOx emissions of engines to the Tier III level within Emission Control Areas (ECAs). For SOx emissions, stricter requirements for the sulphur content in fuels have been in place since January 2015 in ECAs. In October 2016, the IMO MEPC meeting agreed on a global fuel sulphur limit of 0.5% which will enter into force in 2020.

Showing compliance with the regulations for NOx and SOx requires special attention whenever a vessel sails in
- the Baltic Sea,
- The North Sea, incl. the English Channel,
- the US coasts or
- Puerto Rico and the US Virgin Islands.

Whenever emission measurements are part of the compliance strategy, DNV GL’s Envilab is your trusted partner.
Exhaust gas emission measurements from DNV GL Envilab

**THE SMART WAY**

**ECA**
- **2016**
  - Tier III
  - 0.5% SOx
  - SOx and NOx

**SECA**
- **2015**
  - 0.1% SOx

**IMO**
- **2020**
  - 0.5% SOx

**EU**
- **2020**
  - 0.5% SOx

**ECA**
- **2021**
  - Tier III
  - SOx and NOx
IN-HOUSE MEASUREMENTS CAN BE COSTLY

Whenever a new engine is to be certified or an existing engine is updated or substantially modified after installation, compliance with the applicable emission regulations must be shown. In most cases, a new emission measurement is needed.

It is best to have a measurement system on-site – however, performing measurements on your own can be more time-consuming and costly than you think. That's because the equipment always needs to be in line with the relevant regulations to make sure the measurements are accepted by authorities. This, in turn, means investments are necessary and in-depth expert experience is needed for fitting up the equipment to perform an accurate and precise emission measurement and provide reliable results.
FAST AND MOBILE EXPERT SUPPORT FROM DNV GL’S ENVILAB

Regardless of whether the measurement is required for initial certification, in-use modification of the engine or incentive programmes, or if it is voluntary for commercial purposes, DNV GL’s Envilab will provide customized measurement solutions based on your demand.

Our dedicated testing laboratory has more than 20 years of experience in exhaust gas measurements with mobile measurement equipment all around the world. You can rest assured knowing that our state-of-the-art measurement equipment, combined with our extensive knowledge of exhaust gas emissions and its certification requirements, will lead to reliable measurement results that will be accepted by the authorities. Our high integrity is demonstrated by our accreditation as a testing laboratory according to the ISO 17025 standard.

DNV GL’s Envilab service covers:

- Measurements of gaseous components, including NOx, CO, CO2, O2, HCs (THC and NMHC) and SO2
- Determination of particulate matter (PM), opacity or filter smoke number (FSN)
- Start-to-end measurement campaign guidance
- Test-bed and on-board measurements in accordance with:
  - IMO MARPOL Annex VI NOx Technical Code 2008,
  - ISO 8178,
  - RVIR Guideline 16,
  - Norwegian NOx tax regulation,
  - NRMM 97/68/EC, and
  - ISO 18854.

Mobility - another advantage of the Envilab

Our equipment is in line with the applicable regulations – and it is mobile! This means we can perform measurements directly on board any vessel or on-site at a manufacturer’s premises.
It’s good to have a partner at your side who you can trust. One who has the right equipment and knows the precise requirements. And one who is flexible for your needs. A partner like DNV GL.

- Everything from a single source, ensuring cost and time savings
- Reputable test results that build trust and confidence
- Worldwide availability, with minimum disruption to your operations thanks to mobile equipment
- Extensive know-how to reliably meet class and flag state measurement requirements
- Expert guidance throughout the process and beyond
- Flexibility when you need it for reduced downtime

Enjoy a quick, hassle-free measurement experience!
Being flexible also means having a fast, well-thought-through process of measuring the engine’s exhaust gas emissions on vessels or test beds:

**Preparation of emission measurement**
- Transportation of the emission measurement equipment, incl. customs declaration, and state entry permit guidance to prepare emission and performance measurements

**Measurement of engine emissions**
- Ensuring compliance with the applicable requirements during the measurement with our reliable measurement equipment, digital data acquisition and our experts on-site.

**Preparation of final test report**
- Comprehensive description of measurement, presentation of all relevant test results and calculation of ready-to-use final results for certification later.
DNV GL AIR POLLUTION PREVENTION

Besides our Envilab services, DNV GL’s air pollution prevention portfolio covers:

**Air Pollution Prevention Certification**

IMO
- IMO MARPOL Annex VI
- NOx Technical Code 2008

RVIR
- Rhine Vessel Inspection Regulation, Chapter 8a and 8b

NRMM
- Non-road mobile machinery according to Directive 97/68/EC and EU Regulation 2016/1628

RCD
- Recreational Craft Directive according to EU Directive 2013/53/EU

BSO
- Lake Constance Shipping Ordinance – Bodensee-Zulassung, Appendix C

Norway
- Norwegian NOx Tax System

EU MRV
- EU Monitoring, Reporting and Verification regulation accredited as independent MRV verifier

**Type Approval of exhaust emission-related equipment**

- according to statutory (IMO, MED) and class (DNV GL, IACS) regulations, guidelines and international standards

**Exhaust emission measurement devices**

- Exhaust gas monitoring systems

**Exhaust gas cleaning systems**

- SOx scrubber, SCR catalysts, particulate filter systems

360° exhaust emission services

We also offer a full-service solution for your engines, exhaust gas treatment systems, catalysts and all related products. Experienced experts are on hand to support you in all questions regarding compliancy and approval of exhaust gas treatment systems and measurement devices according to international regulations, supported by the latest technological knowledge as reflected in the DNV GL rules.
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DNV GL
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We also provide certification services to customers across a wide range of industries. Combining leading technical and operational expertise, risk methodology and in-depth industry knowledge, we empower our customers’ decisions and actions with trust and confidence. We continuously invest in research and collaborative innovation to provide customers and society with operational and technological foresight. With origins stretching back to 1864, DNV GL’s reach today is global. Operating in more than 100 countries, our professionals are dedicated to helping customers make the world safer, smarter and greener.

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