



Air Pollution Prevention

Proof of clean engines

A challenge to your business

Recent developments in engine technology have brought extremely high levels of efficiency. But in combination with the use of cheap, low-quality fuels, this has resulted in significantly higher emissions of nitrogen oxides (NO_x), sulphur oxides (SO_x) and particulate matter. This led the International Maritime Organisation (IMO) and various national and local administrations to issue regulations to prevent and control maritime air pollution. This is a particular challenge to anyone in the shipping business, especially when all the legal and administrative aspects are taken into consideration. And that is why Germanischer Lloyd (GL) provides comprehensive services that take you through all the steps required for air pollution-related issues.

The solution you need

Our experts start by evaluating the regulation applicable in your case and estimating the resultant needs of your engine. We also guide you through preparation of the mandatory documentation and are authorised to issue a variety of engine air pollution prevention certificates on behalf of more than 90 flag states – even for engines to be installed on ships not classified with GL. On request, our experts conduct the relevant exhaust gas emission measurements on a test bed or on board ship. Our accredited laboratory has more than 20 years of experience in exhaust analysis.

GL – your best partner

Why choose GL for air pollution prevention services? Engine manufacturers, ship owners and operators, national administrations, insurers and underwriters know they can trust our experience and expertise – and they also appreciate our fast and efficient first-class service. Moreover, we offer from a single source everything that is needed to meet all the requirements of present-day and future regulations on maritime air pollution and exhaust after-treatment technology.

Benefits that make all the difference

- Diesel engine expertise, exhaust emission measurements, certification and advice from a single source
- Fast and flexible worldwide assistance in maritime environmental issues
- Evaluation of your needs in meeting present-day and future anti-air pollution regulations
- Access to an accredited laboratory with more than 20 years of experience in exhaust emission measurement and chemical analysis
- A greener image

Our air pollution prevention portfolio covers the following services:

"Air Pollution Prevention Certification"

according to statutory regulations (IMO, EC or other authorities)

- **IMO**
MARPOL 73/78 Annex VI and NOx Technical Code,
Revised MARPOL Annex VI and NOx Technical Code 2008
- **RVIR**
Rhine Vessel Inspection Regulation, Chapter 8a
- **NRMM**
Non-Road Mobile Machinery according to EU Directive
97/68/EC as amended by 2004/26/EC
- **RCD**
Recreational Craft Directive according to EU Directive
94/25/EC as amended by 2003/44/EC
- **BSO**
Lake Constance Shipping Ordinance - Bodensee-Zulassung
- **Swedish Maritime Administration**
Decree on Swedish fairway dues and harbour fees
- **Norway**
Norwegian NOx Tax System
- **Other EC regulations**

"Exhaust emission measurement" (test bed and on board)

according to ISO 8178

- **IMO NOx Technical Code 2008**
- **RVIR Guideline 16**
- **Swedish Maritime Administration Regulations**
- **Norwegian NOx tax regulations**
- **97/68 EG as amended by 2004/26/EC for diesel engines**
(off-road applications including engines for locomotives,
railroads and inland waterway vessels)
- **Other legislation and international standards** if applicable

Physical engine parameters

(together with emission
measurements)

- Engine torque and speed
- Temperatures and
pressures
- Other emission-relevant
engine parameters
- Fluid mass flow

Pollutant particle emissions

- Particulate matter (PM)
- Dust
- Opacity
- Smoke number (FSN)
- Organic and inorganic

Gaseous components

- NO_x, SO_x, CO, CO₂, O₂, HC

"Chemical analyses"

Services will be performed by the GL Analysis Technolog testing
laboratory, accredited according to DIN EN ISO/IEC 17025:2005

Chemical analyses of particulate components

- **Ion chromatography:** sulphate, ammonium, etc.
- **Atomic absorption spectroscopy:** nickel, vanadium,
calcium, antimony, tin, etc.
- **Soot analysis:** elemental and organic carbon

Chemical analyses of anti-fouling paints

- Verification of non-existence of tributyltin (TBT) in
anti-fouling paints

"Type Approval of exhaust emission-related equipment"

according to statutory (IMO, MED) and class (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

One-stop shopping at GL

By combining our air pollution prevention services with other GL services such as **type approvals for engines and certifications** conducted in accordance with **ISO 9001** you can save yourself both time and money.

Please take an information tour on our homepage www.gl-group.com/supplyindustry for more one-stop shopping opportunities.

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