



# AVL EPOST™ NO<sub>x</sub> MODULE

## Emission monitoring for large-bore engines

The AVL EPOST™ NO<sub>x</sub> Module is the world's first model based expert system for emission monitoring (currently covering NO<sub>x</sub>, SO<sub>x</sub> and CO<sub>2</sub>) for 2-stroke and 4-stroke large-bore engines in all applications.

The system design is intended to comply with IMO MARPOL Annex VI, resolution MEPC 103(49) and the 'NO<sub>x</sub> Technical Code'.

The AVL EPOST™ NO<sub>x</sub> Module is based on AVL's expertise and long-term experience on large-bore engine combustion development and corresponding simulation know-how.

The open architecture of the system allows an easy integration into an existing vessel performance system.

Since current emission analyzers are

- expensive,
- sensible, and
- often unreliable in the difficult environment they need to operate (under long-term perspective),

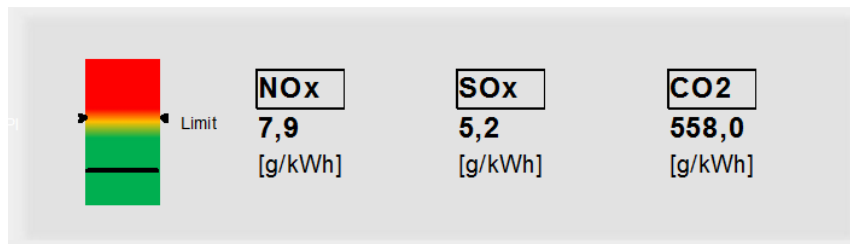
AVL's approach is to determine the NO<sub>x</sub> emission with the help of a physical model based on the cylinder pressure measurements and the derived combustion analysis.

In combination with the condition monitoring system AVL EPOST™, the user is able to analyze the root cause of a potentially deviant emission behavior and consequently to conduct an emission optimization of the engine.

## Reporting Capabilities

NO<sub>x</sub>  
SO<sub>x</sub>  
CO<sub>2</sub>

- Online monitoring
- Accumulated emissions during user-specified operation period
- History and trend analysis of emissions
- Emission tracking with timestamps



Reporting Capabilities of AVL EPOST™ NO<sub>x</sub> Module

The AVL EPOST™ NO<sub>x</sub> Module is built on AVL's widely utilized and long proven combustion analysis software.

It consists of a two zone thermodynamical model that derives the combustion related properties, such as temperature gradient and heat release, from the measured cylinder pressure curve. These cylinder individual values, together with the corresponding fuel and engine data, are the input to a reaction-kinetic algorithm, which computes the NO<sub>x</sub> formation and provides the accumulated emission results.

Additionally, to complete the emission report, CO<sub>2</sub> and SO<sub>x</sub> results are computed directly from the mass-balance calculation applied to the adjusted fuel consumption and air mass flow together with the combustion analysis.

An easy to use and clear to understand user interface allows untrained personnel a fast access to the most important information. Further, all measurement and calculation results are archived and can be made available onshore. Thus, the software allows a simple overview of the performance data of the entire fleet.

## YOUR BENEFITS AT A GLANCE

- Easy to use emission monitoring
- Fully automatic operation
- Online, history and trend data available
- Automated report functionality in Adobe® pdf quality
- No maintenance necessary (sensor lifetime more than 20.000 operating hours)
- No exhaust gas sampling necessary
- Easily extendable to AVL EPOST™ condition monitoring system

AVL EPOST™ NO<sub>x</sub> Module can be integrated as part of AVL EPOST™ or installed as a standalone system.

AVL EPOST™ is a scalable monitoring system for large-bore engines developed with respect to these challenges. It enables a permanent online monitoring and diagnosis of stationary and mobile engine installations – 2-stroke and 4-stroke – e.g. onboard a vessel. Continuous data evaluation with expert algorithms and fault diagnosis provides accessible information for optimum engine system performance and condition.

## FOR FURTHER INFORMATION PLEASE CONTACT:

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