

## Reducing maritime NO<sub>x</sub> emissions with STT Emtec's marine SCR system



### Meeting maritime demands

Commercial shipping is one of the major contributors to NO<sub>x</sub> emissions.

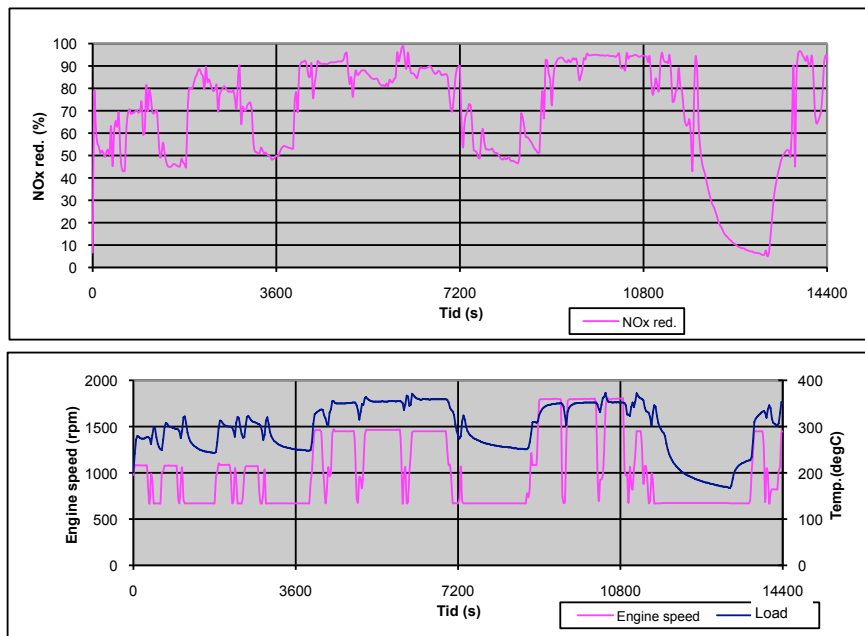
With NO<sub>x</sub> being one of the indirect greenhouse gases that the Kyoto Protocol has stated must be recorded, some ship owners and operators are now required by legislation to find ways to contribute to these reductions.

However, until now, this procedure has been both time- and cost intensive.

The partnership between STT Emtec and Volvo Penta brings an effective solution to reduce NO<sub>x</sub> emission for ship owners. The result is marine SCR for high speed engines. The collaboration has led to the development of a technology dedicated to the requirements of the shipping community, and can be fitted to HS diesel engines up to 650 (kW) to give NO<sub>x</sub> reduction of in excess of 90%.

STT Emtec's marine SCR is a product that can be installed in a short time by Volvo Penta or STT Emtec service engineers. With a tried and tested technology

and a professional installation service throughout the world, STT's marine SCR is the NO<sub>x</sub> reduction technology ship owners have been waiting for.



*Example of NO<sub>x</sub> reduction on a Volvo Penta D 12 as a function of engine speed and load.*

## The need for NO<sub>x</sub> reduction

As the world gets to grips with the realities of polluting emissions, the maritime sector is recognising its own responsibility to dealing with this challenge.

The International Panel on Climate Change reports that, along with carbon monoxide and volatile organic compounds, NO<sub>x</sub> acts as a significant indirect greenhouse gas that is influencing the ozone. NO<sub>x</sub> is the generic name for

the group of highly reactive gases that contain varying amounts of NO and NO<sub>2</sub>. There are two key reasons why legislation is in place to reduce NO<sub>x</sub> emissions – it's impact on health and the environmental. Health concerns are predominantly concerned with the respiratory system. NO<sub>x</sub> creates ground-level ozone, or smog, when it reacts with heat and sunlight.

NOx also reacts with moisture and other compounds to form nitric acid which acidifies oceans, lakes and forests. Nitrogen compounds derived from NOx causes over fertilisation in the same areas.

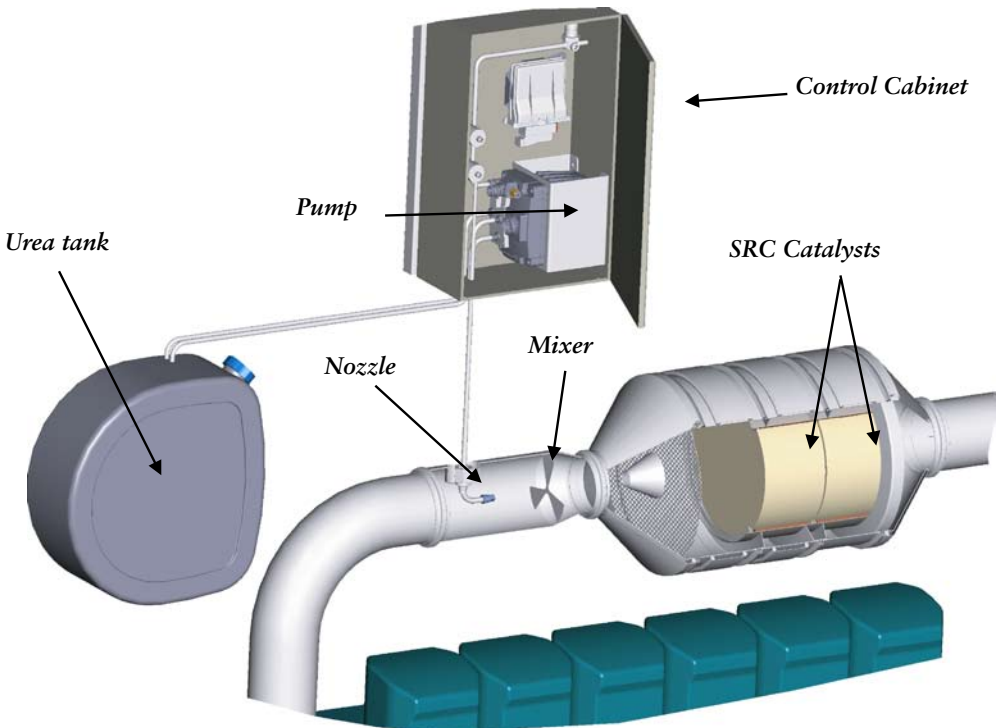
### Maritime SCR technology

The launch of STT's marine SCR product is a direct result of STT Emtec's knowledge of NOx reduction technologies in the automotive sector, but has been tailored to the specific needs of trawlers, ships and offshore vessels.

SCR is a well known and effective method for reducing NOx from diesel engines.

By injecting urea into the hot exhaust stream the urea decomposes to ammonia. The ammonia enters a catalyst where it reacts with NO and NO<sub>2</sub> (NOx) and reduces these to pure nitrogen N<sub>2</sub>. NOx emissions can be reduced up to 95%. Together, STT Emtec and Volvo Penta have taken this SCR technology one step further and are now introducing SCR for marine high speed applications.

STT's SCR system comprises of a sophisticated control system, a urea tank, a urea pump with an injection module, and a catalyst.



*The STT Emtec marine SCR system for high speed engines up to 650 (kW)*

## A tradition of excellence

STT Emtec is committed to providing ship owners with the best products and services. That's why research & development (R&D) is at the heart of STT Emtec's maritime activities, realising that great products stem from getting things right from the start. More staff have been assigned to R&D than any other discipline in bringing the STT marine SCR system to market.

Much of the work in developing marine SCR has been conducted in STT Emtec's own modern engine testing laboratories. Tasks have included everything from verification of legislated emissions tests through to simulation of SCR on marine engines, as well as performance and endurance tests prior to sea trials.

## An illustrious history

The history of STT Emtec, headquartered in Sundsvall, Sweden, goes back to 1981. Originally involved in land based diesel engine technologies, the vision has always been to establish the company as one of the world's leading technology providers in the field of emissions and engine performance systems, many of which have been developed in house.

As well as providing after-market systems STT Emtec is a key component supplier to the world's automotive, marine and industrial engine manufacturers.

The move into emissions control systems for the maritime sector is a natural progression from the automotive experience. It is obvious that the STT Emtec SCR technology will be a considerable contributor to the shipping industry's NOx reduction efforts.



*M/S Sandhamn equipped with STT Emtec marine SCR installed by Rindö Marine, Stockholm*