

# On-Board SCR trial using low speed engine

JAPAN

## Test vessel with on-board SCR



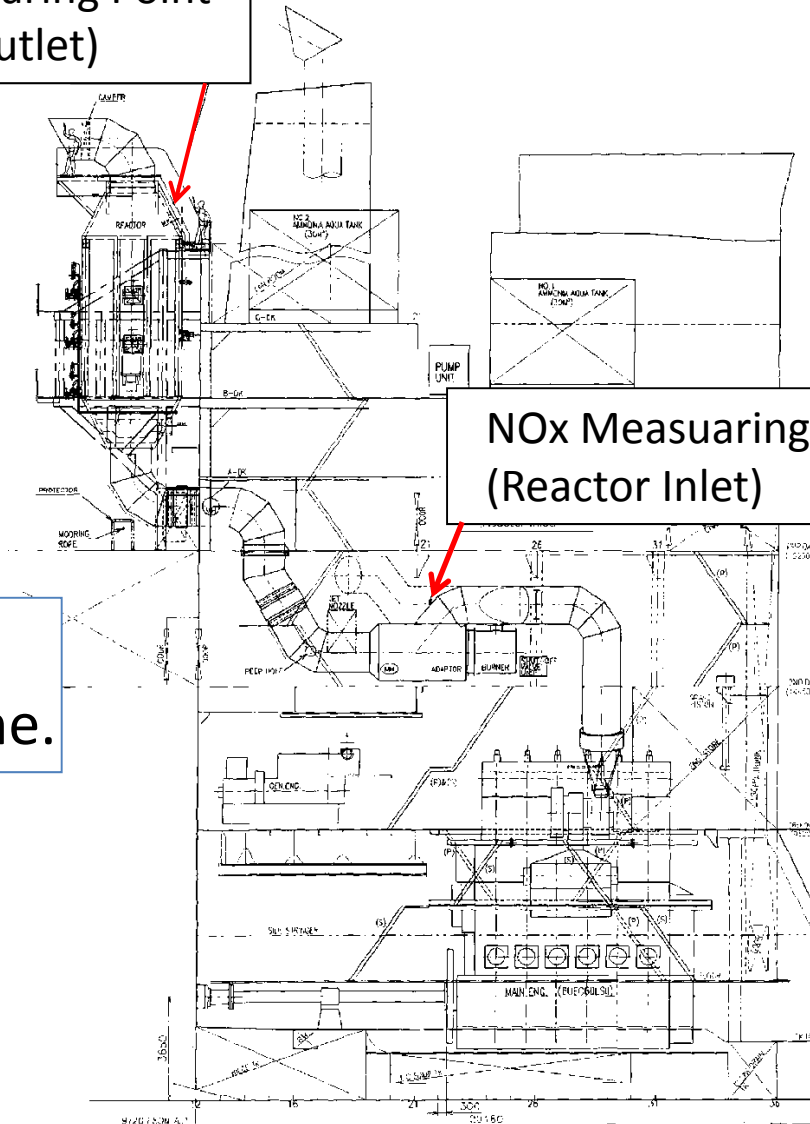
- Test Ship: 88,100DWT bulk carrier manufactured by Oshima shipbuilding Co., Ltd.
- Test Engine: “6UEC60LSII”, Power output of 11,910kW, Rated speed of  $105\text{min}^{-1}$ , 6 cylinders, bore diameter of 600mm, manufactured by Mitsubishi Heavy Industries Ltd.

# Layout of on-board SCR system

NOx Measuring Point  
(Reactor Outlet)

NOx Measuring Point  
(Reactor Inlet)

- Exhaust gas boiler located at bypass line.

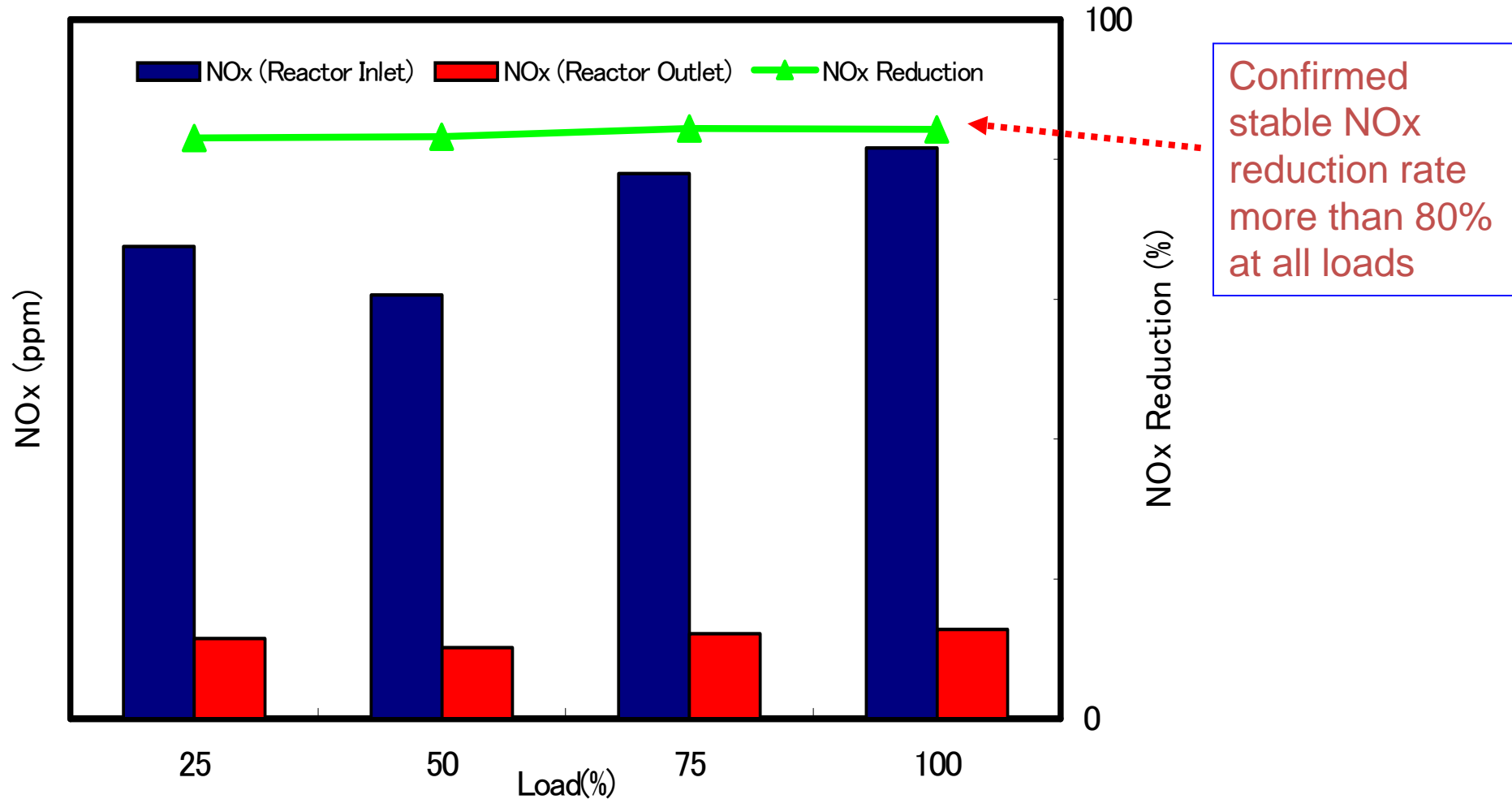


# Service course and Operation time



# SCR developments; Test result (on-board)

Reducing agent: Aqueous ammonia (25%)



SV number was kept between 2500 and 2600 which is within the harmless level to the function of SCR system.

# SCR Performance

- In this on-board trial, exhaust temperature was around 250 degrees Celsius. Marine fuel containing sulfur less than 0.1% was used.

- Urea and Ammonia, respectively, was used as reductant under the same condition. Denitration rate measured in urea case was slightly lower than that of ammonia case.

- In using urea as reductant, denitration performance could possibly be lower compared to ammonia because urea needs to be hydrolyzed to ammonia to reduce NO<sub>x</sub>. Besides, anti-clogging measure such as diffusion technology should be considered.