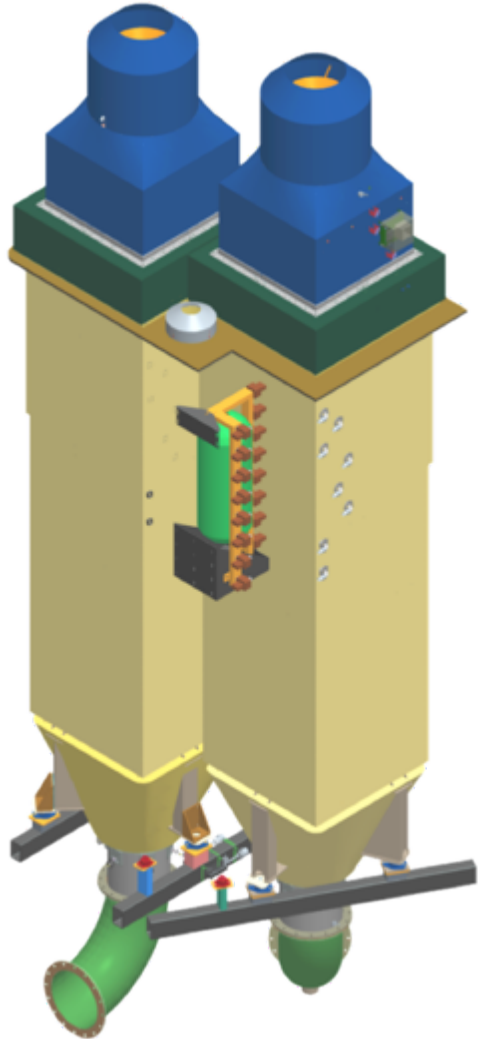


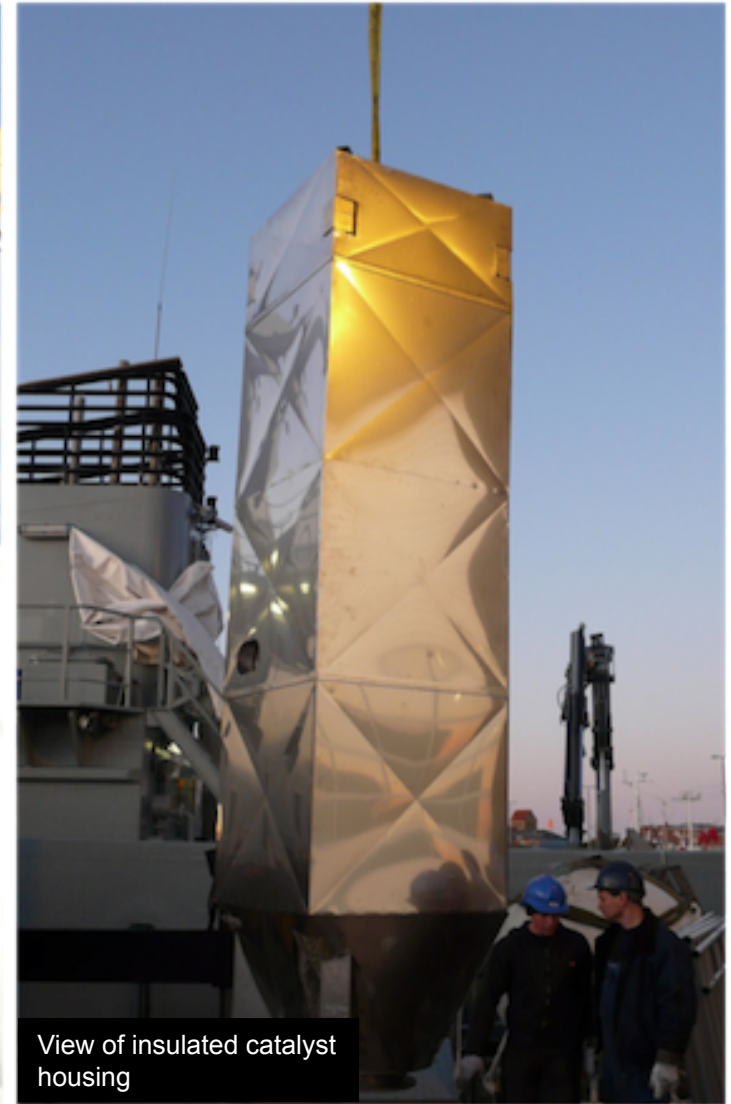
Installation at Shipyard: Catalyst Housings Replaces Existing Silencers



View of un-insulated catalyst housing



Bottom view of the two insulated catalyst housings inside casing



View of insulated catalyst housing

Results

- First vessel have completed more than 1 year of successful operation. Currently 4 vessels have completed installation
- By end 2011 all six patrol vessels will have BLUNOX SCR systems installed
- NOx-reduction up to 95%
- Airless design means a minimum of moving parts/electronics and a very compact system which is ideal for retrofit when space is limited
- Airless operation means no need for compressed air and no extra fuel consumption
- Existing 35 dB(A) exhaust silencer replaced by SCR System and same noise attenuation achieved
- The vessels comply with IMO requirements valid from 2016 and on



NOx Reduction Case: Norwegian Bulk Carrier M/V Norholm – SCR Retrofit

Engine Installation:	Caterpillar 3606 - 2030 kW
Fuel Type:	MGO - MDO
Exhaust Temperature:	270 –330°C
Original Exhaust Silencer:	35 dB(A)
Operating Hours:	5500 hr/year



Results

- Project received 75% funding of investment from Norwegian NOx Fund. Operational cost for urea also subsidised
- BLUNOX SCR system certified by Norwegian NOx Fund and vessel now exempt from Norwegian NOx Tax
- NOx-reduction up to 95% (weighted average: 92.5%)
- Airless design means a minimum of moving parts/ electronics and a very compact system which is ideal for retrofit when space is limited
- Airless operation means no need for compressed air and no extra fuel consumption. Compressor and exhaust gas mixer is eliminated.
- Very low back-pressure: 72 mm WG (7.2 mbar)
- Existing 35 dB(A) exhaust silencer replaced by SCR System with integrated silencing capability and same noise attenuation achieved
- The vessel comply with strict IMO requirements valid from 2016 and on

