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 **Calculation of NOx emission from ships with SCR systems**

The NOx Fund experiences a large variation and uncertainty among companies and ships on how to calculate NOx emission from ships with SCR systems. The NOx Fund therefor wishes to inform on how to calculate NOx emission from such unites.

Companies that does not already use this given method (or a method that gives the same result) are requested to use this method for future reports. Previous reports will not be corrected.

NOx emission = Consumption fuel \* NOx factor without SCR – (Consumption urea / Urea factor)

Where

* NOx emission is given in *kg* for the time of reporting
* Consumption fuel is given in *tonne* consumption for the time of reporting
* NOx factor without SCR is given in *kg/tonne* fuel. The value without or before the SCR system is given in the measurement report. In cases with different values for different engines, these shall be weighted to a common factor for the ship according to yearly normal distribution of fuel on the engines.
* Consumption urea is given in *liter* for the time of reporting. By conversion from kg urea to liter urea, use specific urea weight on 1.1 kg/liter (given urea solution 40 % urea, 60 % water).
* *Urea factor* = 1.5 and is given in *liter urea/kg NOx reduced*. This is the theoretical highest NOx reduction that can be achieved with this technology.

**Use NOx factor without SCR**The formula above does not use measured emission factor with SCR (or after SCR). Many therefor wonder why there is a demand to measure emissions for vessels with SCR systems that are granted support from the NOx Fund. The explanation is that the measured factor is used to quality-assure that urea is not overdosed to achieve a higher cleaning efficiency than what the system is designed for.

Calculation of the NOx emissions are not recommended based on emission factor with SCR, because the urea dosing may change over time, or be completely turned off. Correspondingly, the cleaning efficiency will also change and affect the emission factor with SCR. Emission calculations based on measured value with SCR will therefore not give a correct picture over time.

**Test of the calculations**As a test to ensure that the calculations are correct, estimated NOx emission should not be lower than:

Consumption fuel \* NOx factor with SCR

If such cases should occur, please contact the NOx Fund.

The NOx Fund will undertake reviews of the basis for calculation for reporting of NOx emission on request. This might also occur on the Fund's own initiative.