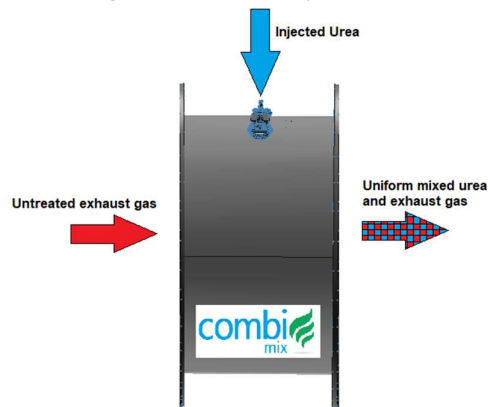




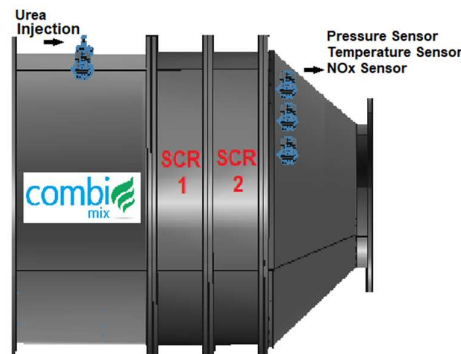
Selective Catalytic Reduction

The CatEMission **cemno_x** SCR system employs DeNO_x catalysts. These catalysts contain metallic substrates which have high abrasion with strong mechanical resistance and long operation life.

The SCR operating procedure of NO_x reduction takes place by injecting a solution of urea (typically at 33% or 40% for marine) into the gas stream at an optimum temperature between 270-400°C. In order to obtain the best distribution in the gases, the reagent is injected through CatEMission's proprietary non-fouling airless injector system delivering a very fine spray into the **combi_{mix}** system which is designed to obtain the complete evaporation and uniform mixing before the catalyst.

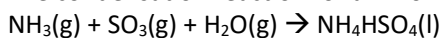


The gas containing the reagent then passes through a variable number of catalyst layers, as is appropriate for the required NO_x level at the outlet. The amount and positioning of the catalyst layers depends on the targeted NO_x removal level and on the maximum permissible ammonia slip.



Although sulfur is not a poison to conventional SCR catalysts at low temperatures, ammonia and sulfuric acid condenses as liquid ammonium bisulfate NH₄HSO₄, (ABS) in the catalyst pore structure, which inhibits the catalysts performance. ABS may also adversely affect engine operation by increasing exhaust backpressure.

The condensation reaction for ammonium bisulfate formation is written as:



In the SCR system the catalysts promote the following denitrification reactions between NO_x and Urea (already converted into ammonia) in the first part of the catalysts:

