

Sistema per accelerare la riduzione catalitica selettiva di NO_x nei gas esausti di processi di combustione

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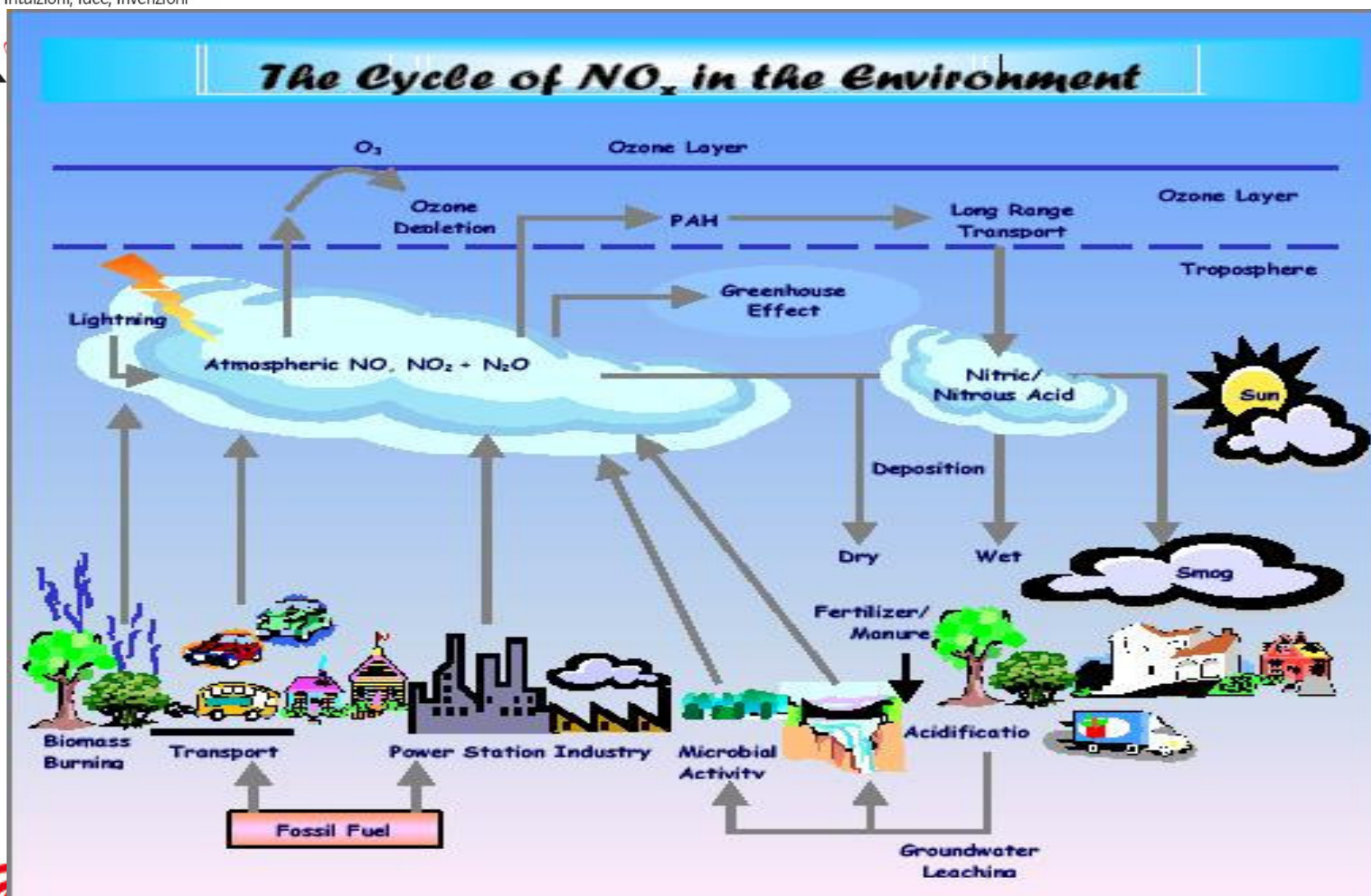


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NO_x, energy and the environment



Selective Catalytic Reduction (SCR)

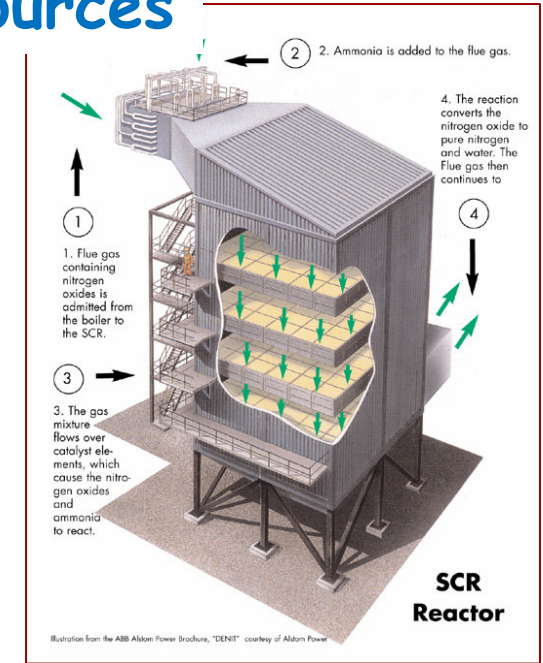
SCR process for stationary sources

Standard SCR

T = 300 - 400 °C



Need: low T activity to lower volumes ,
decrease energy consumption, develop new
applications



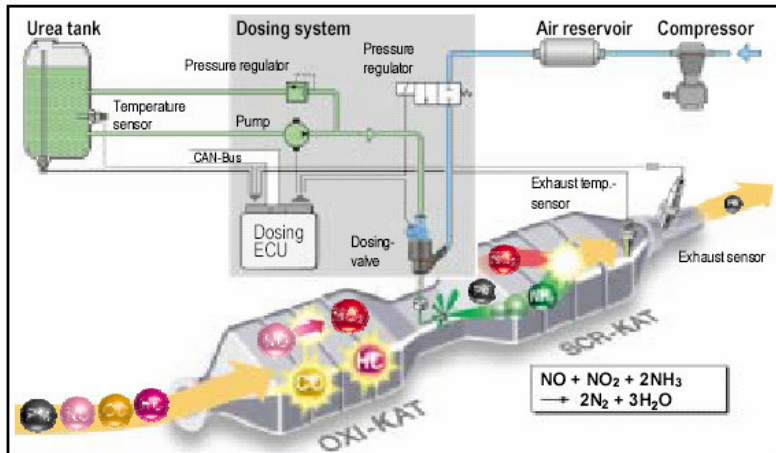
SCR process for mobile sources

Std SCR & Fast SCR



NO → NO₂ thanks to a DOC catalyst (Pt/Pd)

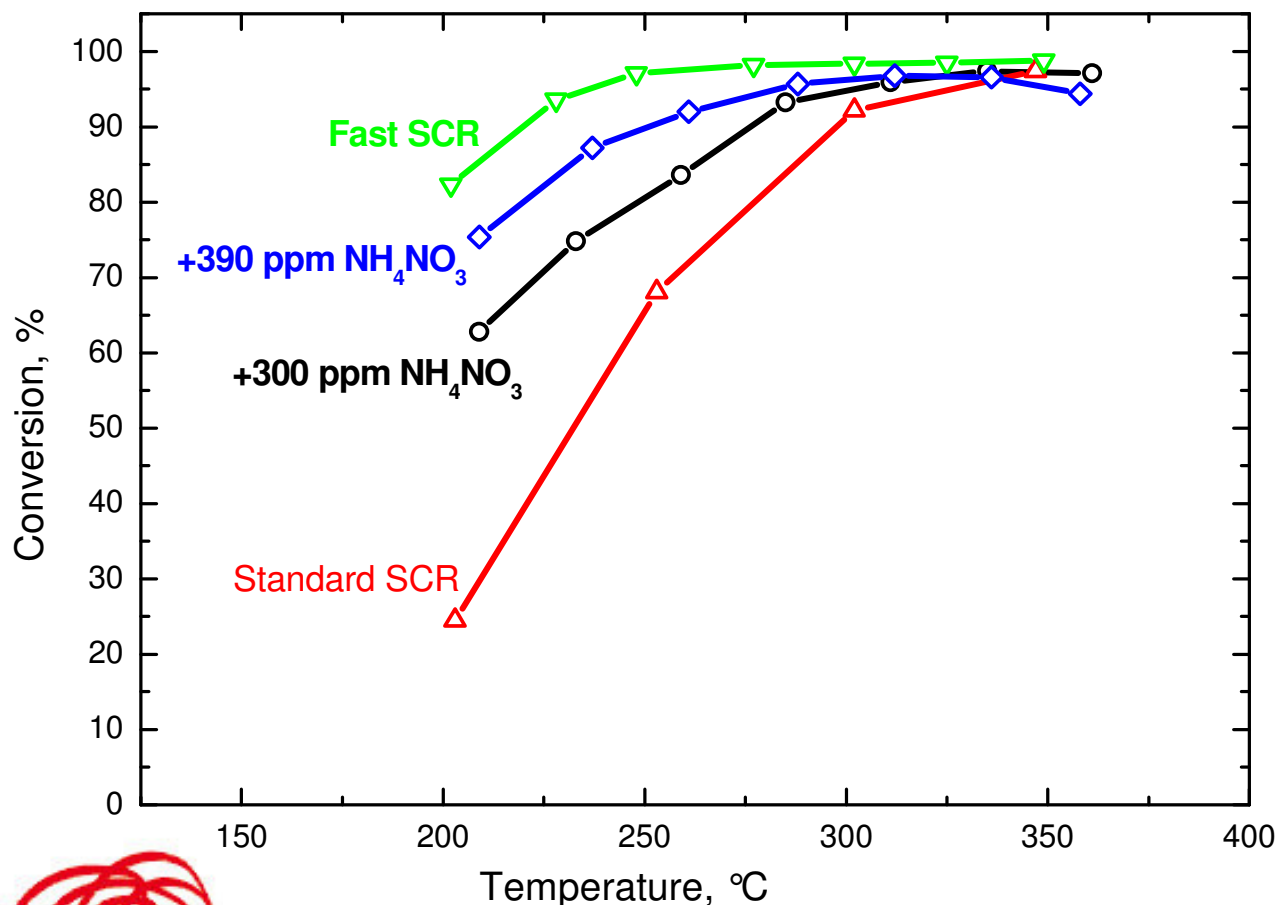
Need: low T activity for cold start, to assure stable performances, to reduce DOC volumes & costs



Std, Fast & Enhanced SCR reaction



NO Conversion vs temperature



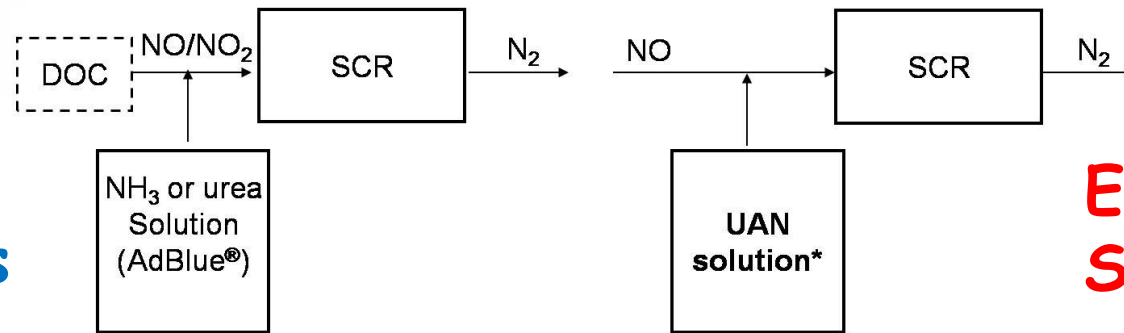
Commercial V₂O₅-WO₃/TiO₂ catalyst

GHSV = 33000 [h⁻¹]
 NH₃ = 1000 ppm
 NO_x = 1000 ppm
 O₂ = 2%
 H₂O = 1%



The Enhanced SCR system

Conventional
SCR process



ENHANCED
SCR process

* commercial urea –
ammonium nitrate solutions

Future developments

Cooperation with industrial partners for reaction/system/process optimization:

- definition of operating procedures
- injection system(s) & dosing strategy
- improvement of system design & engineering
- tailoring to specific applications
- new and improved catalyst formulations

