

Ammonia storage and delivery systems for NO_x aftertreatment

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Poster location: P-21

Key issue: Reductant storage for SCR

Ammonia is the active molecule

Urea is currently considered as “fuel” for SCR

But urea presents many challenges for LD/PC

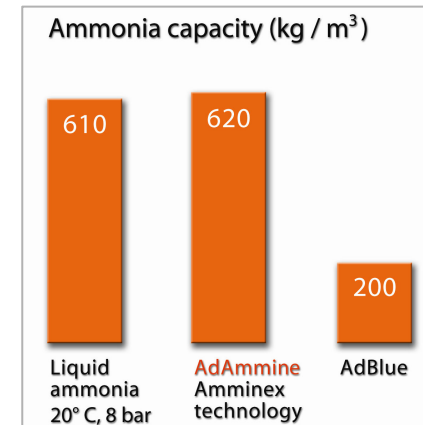
- Low capacity*
- “Issues” in both cold and warm climate*
- Conversion and mixing in exhaust line (deposits?)*
- Limitation on dosing at low load / urban driving*

Ammonia stored safely in AdAmmine™:

- $Mg(NH_3)_6Cl_2$ (>50 wt% NH_3 ; > 600g NH_3 /liter)
- No degradation; long shelf life
- 300% higher capacity than urea (AdBlue)
- Safe storage enables direct ammonia dosing for SCR



100g material sample

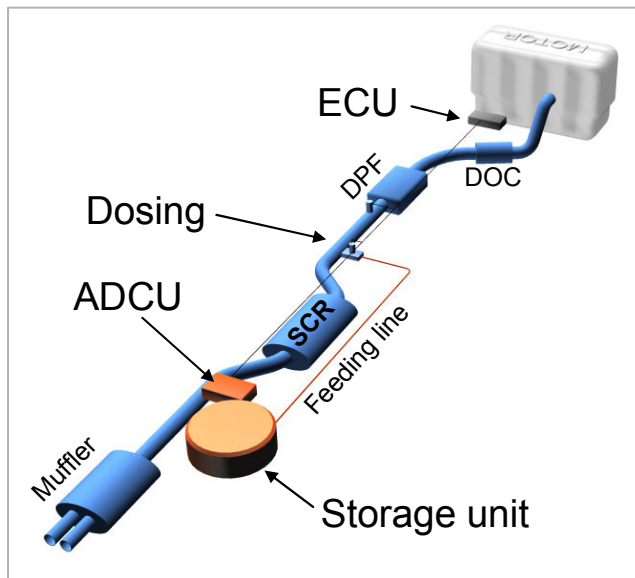
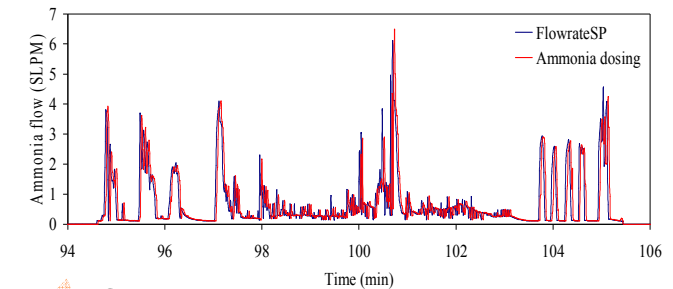


Release by controlled thermal desorption of NH_3 from cartridges:

- AdAmmine cartridge with heater, P-sensor, thermocouple
- Dynamic dosing from 3.5kg prototype demonstrated

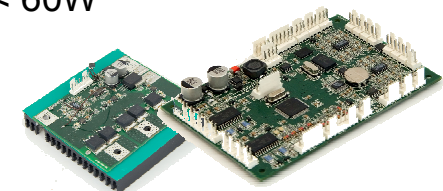


2500 liters NH_3 (STP)



System design and performance:

- Ammonia Storage and Delivery Systems – ASDS
- Power demand for US06/FTP75 < 60W
- Peak flows above 10 SLPM



Electronics and control:

- Algorithms for power minimization
- OBD functions