Study of On-Board Ammonia (NH$_3$) Generation for SCR Operation

(Non-Urea Source of NH$_3$)

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Rationale: Reduce complexity and cost of urea (NH₃)-SCR and LNT

Objective: Explore feasibility of on-board ammonia generation

(a) Does it work?

(b) Influence of temperature, flow, composition, catalyst on NH₃ kinetics

(c) Comparison between computed kinetics and data

Results: Systematic detailed data on NH₃ generation with synthesized exhaust compositions:

- Significant NH₃ can be generated
- Rich-lean cycling required
- Customized reformer catalysts produced required H₂ > stock LNT catalyst
- Optimal temperature window observed
- Space velocity, brick dimensions important
- NO/NO₂ ratio less influential
- Model predicts NH₃ generation trends
- Other effects observed…

![Graph showing NH₃ generation versus gas temperature](image)