NEXT GENERATION SCR SYSTEM

THE TwintecBaumot B-NOx SYSTEM
Turbo Diesel engine 1, Exhaust System with PM- and NOx reduction 2, Ammonia (NH₃) Generator 4 and Mixing Unit 5.

DEF (Urea Solution) is injected via Urea Dosing System 3 into Ammonia Generator 4. NH₃ is generated inside and injected into Exhaust Mixing Unit 5.

The generator uses the heat sources from pre turbo exhaust gas 6 and electrically heated catalyst 7.

Partial flow is defined by tube diameter 8.

Injection control by ACU 8, Urea Dosing System 3, Temperature-10 and NOx Sensors 9.
CHALLENGES FOR THE AMMONIA FORMATION IN THE EXHAUST GAS WITH DIRECT DEF (ADBLUE®) DOSING

- Exhaust gas: variance of mass flow, exhaust temperature and pressure
- Temperature/hydrolysis: temperatures below 250° C, hydrolysis/evaporation path e.g. 700 mm
- Spray/atomization: angle, droplet distribution and size, wall contact
- Operational reliability: formation of deposits, nozzle clogging

TECHNICAL SOLUTION TO IMPROVE THE OVERALL DeNOx-PERFORMANCE OF THE SCR SYSTEM

**AdBlue® direct dosing**

- NOx conversion with NH₃ Generator (right) very high in wide operation range including low temperatures and by far superior to direct DEF (AdBlue®) dosing (left)
- Uniform mixture of NH₃ in Exhaust gas
- Ammonia gas dosing into main exhaust line
- Higher mixing efficiency due to gas - gas mixing
- Applicable for close coupled DeNOx
- Only 100 seconds until dosing readiness

**NH₃ direct dosing**

**Uniformity Measurement after Mixer**

Uniformity Index 0.98 with l/d-ratio = 0.25
ADVANTAGES AND PERFORMANCE OF THE B-NOx AMMONIA GENERATOR

- Highly efficient DeNOx performance, even at cold start conditions
- Independent of load level (mass flow, exhaust temperature and pressure)
- Optimized packaging of exhaust line, no hydrolysis- and evaporation path
- Applicable for close coupled DeNOx
- Mixing length < 250 mm from ammonia gas inlet to main SCR catalyst
- No deposit on catalysts and exhaust line from operating material and/or decomposition, intermediates
- SCR on DPF with less risk of failure due to deposits
- Less catalyst volume and length by SCRF
- High DeNOx efficiency of zone coated SCR
  - Zone A: SCR coating for high temperature sensitivity
  - Zone B: SCR coating for low temperature sensitivity

NOx - REDUCTION ON A SCHOOL BUS DURING SERVICE MORNING COLD START UP TO 80% NOx REDUCTION AT COLD START TEMPERATURES (>150 °C EXHAUST)

The tests demonstrate the exceptional DeNOx-performance in a wide range of first fit and retrofit applications
## AMMONIA GENERATOR CLASSIFICATION

### Section 1
Evaporation of $\text{H}_2\text{O}$ from DEF

### Section 2
Heating Catalyst

### Section 3
Hydrolysis Catalyst

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**Typ**

<table>
<thead>
<tr>
<th>Typ</th>
<th>max. AdBlue®/DEF dosing</th>
<th>reduction capacity for NOx (a=1)</th>
<th>Length</th>
<th>Diameter</th>
<th>Volume</th>
<th>Weight</th>
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<tbody>
<tr>
<td>I</td>
<td>ml/DEF/h</td>
<td>g/DEF/h</td>
<td>gal/DEF/h</td>
<td>m/DEF/h</td>
<td>g/NOx/h</td>
<td>mm (in)</td>
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<td>550</td>
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<td>3000</td>
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<td>4.36</td>
<td>39.7</td>
<td>5850</td>
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**Typ**

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<td>Pass. Car or LDV</td>
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<td>6L TDI/7L TDI</td>
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<td>NRMM, Industrial</td>
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</table>

*Two systems of size III are installed in parallel.*

Values may change during development progress.
TwintecBaumot - YOUR COMPETENT PARTNER
FOR SPECIALIZED EXHAUST AFTERTREATMENT PRODUCTS

TwintecBaumot is a leading supplier of environmentally friendly products and technologies for reducing exhaust emissions.

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