Future Breathing System Requirements for Clean Diesel Engines

**Motivation**
- Understand engine air system requirements to reduce NOx
- Identify interactions between components
- Develop new products to commercialize system
- Reduce emission controls costs to assure diesel market viability

**Results**
- Clean Hybrid EGR System (CHES)
- High Pressure & Low Pressure Loop EGR system
- New Enabling Products and Controls

Poster Location P23
**Clean Hybrid EGR System - Key Results**

- Moderate LP-EGR Rates (identical to HP-EGR Euro 4/5 Baseline)

  ![Graph showing performance](image)

  - BSFC improvement up to 3.5% in most operating conditions using CHES
  - NOx reduction over 30% at constant soot achieved with LP EGR

- BorgWarner sees CHES as the most efficient way to achieve NOx reductions to meet tighter emission standards

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Robert S. Czarnowski

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