



# PHEV Engine Cold Start Emissions Management

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**Poster Location P-05**



# PHEV Engine Cold Start Emissions Management

- **Test Set-up:**
  - Production engine, cooling loop and after-treatment
  - Open controller
  - Hardware-In-the-Loop emulating series PHEV
  
- **Series PHEV specific optimization:**
  - **Motored vs. conventional starts:**
    - *Up to 38% reduction in hydrocarbons emissions*
  - **Elevated idle speed and load:**
    - *22% faster catalyst light off*
    - *27% reduction in hydrocarbons emissions*
    - **Same Nitrogen Oxide emissions**

