



**승용 Turbo CNG 엔진을 위한
계층 구조 기반의 엔진 제어 알고리즘 설계**

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승용 Turbo CNG 엔진의 핵심제어 알고리즘 및 ECU 개발

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Seamless design process of turbo CNG engine management system (I)

Requirement

- Investigation of system requirements
 - Available sensors & actuators
 - Required control performance
- Documentation of design specification

Air system control

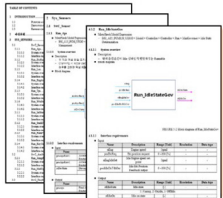
- Mass air flow
- Boost pressure
- CVVT

CNG injection control

- CNG pump pressure
- CNG MPI characteristics
- Injection timing and duration

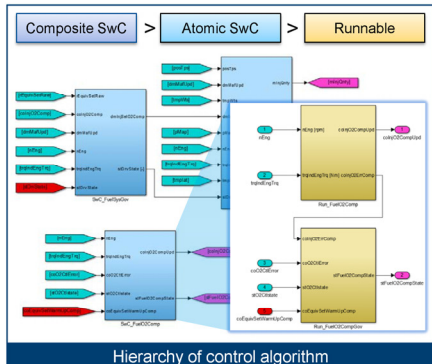
Spark control

- Maximum brake torque
- Spark timing

Algorithm design

- Model based design(MBD) of control algorithm
 - MATLAB Simulink
- Hierarchical application software



Hierarchy of control algorithm



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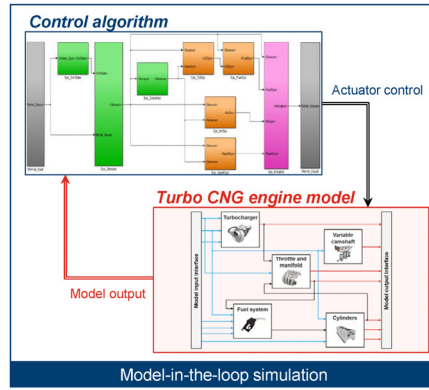


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Seamless design process of turbo CNG engine management system (II)

Unit test

- Model-in-the-loop simulation (MILs)
- Hardware-in-the-loop simulation (HILs)



Integration

- Auto code generation (Embedded coder)
- Software integration in AUTOSAR platform

