High Temperature Exhaust Gas Simulator and Soot/SOF Generator (Multi – purpose Hot Gas Test Rig)

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To satisfy the enforced exhaust gas regulation : Cooled EGR, DPF, SCR, LNT, DOC, TWC, Sensors and OBD
• Increase of cost & development period & reliability & durability problem

To develop and verify the performance of aftertreatment parts
• using real engine & engine dynamometer: requires a lot of time and cost

This multi-purpose hot gas test rig and soot/SOF generator can make up for the shortcoming of the engine dynamometer test
• high accuracy performance test of parts and simulation of the steady state engine test, GUI S/W(parts dedicated expert S/W)

This multi-purpose hot gas test rig and soot/SOF generator ~~~
• capability of characteristic test according to the variables such as precisely and independently controlled exhaust gas temperature and mass flow rate and O2 concentration and soot/SOF deposition
• capability of fast aging test and reliability test and the simulation test of steady state engine test to verify the requirements of OEM
• appraised as an instrument reducing the R&D period and cost from many Korean parts companies and Hyundai Motor
• having a parts dedicated expert S/W(GUI base Computer control)

Performance and Advantages
• Alternative Tool for Engine Dynamometer Test
• GUI and Expert S/W base Computer control Test Rig
• Independent Control of Temperature, Flow Rate, Soot/SOF, O2 and Regulated Gas Composition
• Verification Test Tool for Fast aging, Weak Point Detection and Failure scenario check

Operating Range
• Temperature : 100°C – 1,100°C
• Mass Flow Rate : 150~1,000kg/h
• O2 Concentration : 0.5~18%(Gasoline/Diesel engine)
• Toxic gas control : NO/NO2/CO/HC with MFC
• PM control by Diesel Soot/ISO Soot generator
• Aging Effects of Rub. Oil or High Sulfur Fuel

Application example and It’s Test Items
• EGR Cooler and Valve
• Pressure drop, effectiveness, thermal shock, reliability, fouling effects of soot/SOF, weak point detection and failure scenario check
• Catalyst(TWC, DOC, SCR, LNT)
• Conversion efficiency, thermal shock, durability, aging effects
• Particulate Filter(DPF, GF, PF, DPF)
• Pressure drop, oxidation rate of PM, regeneration, thermal shock, Durability
• High Temperature sensor(O2, NOx, T, P)
• Response time, interference, stability, resolution, thermal shock, durability, weak point detection and failure scenario check

Soot Generator
• Soot Particle size Control, Soot size and number Distribution Control and SOF(Soluble Organic Fraction) composition
• Evaluation of the Fouling Effects and Particulate Deposit Characteristics on the Cooler surface
• Evaluation of the Sulfur and Ash aging effects
• Evaluation of the Fouling Effects and Particulate Deposit Characteristics on the Cooler surface

Soot Generator: PM feeder
• Soot Particle size Control, Soot size and number Distribution Control and SOF(Soluble Organic Fraction) composition
• Pressure drop, effectiveness, thermal shock, reliability, fouling effects of soot/SOF, weak point detection and failure scenario check

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This system is a multi-purpose high temperature exhaust gas test conducted to the various aftertreatment parts. Having a long life, and having a high accuracy control of exhaust gas temperature and flow rate, GUI base computer control that gives a diverse and convenient test procedure.
• High accuracy multi-measurement hot gas test for ; Catalyst(TWC, DOC, SCR, LNT), EGR Cooler and EGR Valve, Particulate Filter(DPF, GF, PF, DPF)
• High temperature sensor(O2, NOx, T, P)
• GUI base Computer control test facilities

As a result, this system and technique is appraised as an instrument saving the R&D duration and cost from many parts companies and OEM.