



All That Eco-Friendly Gas Engine

EngineTech

ENGINETECH

www.korengine.com
www.dngv.com



»» INTRODUCTION

A Golden Age of Natural Gas!

The global energy industry is fast changing with the shale gas revolution in North America and sharp increase in energy demand, particularly in Asia. In a new golden era of natural gas, gas related industry will dominate the market in the next 20 years or more.

EngineTech Co., Ltd. was founded in 1999 by all board members with experiences more than 15 years specialized in research and development of engines in Hyundai Motors and Kia Motors. Ever since then, it has successfully focused on engines using eco-friendly alternative energy such as LPG, LNG, CNG and biogas. It has also extended its business to gas heat pump and power generation as well as natural gas vehicle in domestic and global market.

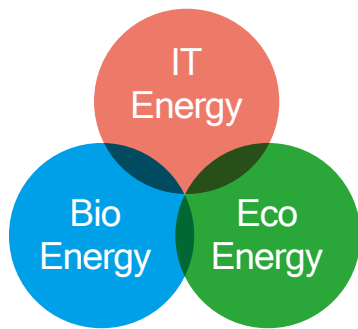
We have a capability of design, test, analysis, evaluation and production of the engine and its components for the customers. That means we provide total solutions related to the engine for the customers. We also provide engine management system for any kind of engine and its application.

Based on our competitive technologies, we develop and produce eco-friendly gas engines with optimized fuel economy and emission control. In fact, we get a Certificate of Green Technology from the Ministry of Environment of Korea.

EngineTech pursues the global leading energy company based on technologies of eco-friendly engine using natural gas and renewable energy. Furthermore, it will contribute to the reduction in CO₂ emission for the environment of earth.



»» Vision



The Global Leading Energy Company
Based On Technologies Of
Eco-Friendly Engine
Using Natural Gas & Renewable Energy

»» Main Business



CNG/LNG/LPG Vehicle Business

- More than 40,000 diesel engine vehicles were converted into CNG, LPG and LNG vehicles in Korea
- More than 10,000 diesel engine vehicles were converted into CNG & LNG vehicles in foreign country



Gas Generator Business

- Manufacture power generator using natural gas and biogas



GHP Engine Business

- Succeed in localization of GHP engine for the first time in Korea
- The sole provider of GHP engine for LG Electronics



Eco-Friendly Engine Research Institute

- Engine and vehicle development test
- Engine Management System(EMS) development test

»» Company History

- | | | | |
|------|---|------|---|
| 1999 | • EngineTech Co., Ltd. was founded | 2010 | • Appointed as the Sole Provider of Gas Heat Pump (GHP) Engine for LG Electronics |
| 2003 | • Appointed as a Venture Company by the Small and Medium Business Administration(SMBA) of Korea | 2011 | • Investment in CNG JVC with Korea Gas Corporation (KOGAS) in Uzbekistan |
| 2006 | • Certificate of a Diesel to LPG Engine Retrofit System for LD Vehicle from the Ministry of Trade, Industry and Energy(MOTIE) of Korea
• Invested by Korea Development Bank (KDB, a government-run bank) | | • Certificate of a Diesel to CNG City-Bus Retrofit in Turkey
• Appointed as a Retrofit System Supplier(OEM) by Mitsubishi and FUSO in Thailand |
| 2007 | • Certificate of a Diesel to CNG Engine Retrofit System for HD Vehicle from the Ministry of Trade, Industry and Energy(MOTIE) of Korea
• Certificate of ISO9001 from TUV SUD | 2012 | • Appointed as a Supplier of CNG Bi-Fuel Conversion Modifiers by Indonesian government |
| 2008 | • Appointed as a Supplier of Bi-Fuel(CNG/LPG) System by Hyundai Motors India(HMI)
• Founded a subsidiary in Bangkok of Thailand | 2013 | • Certificate of Green Technology for a Diesel to CNG Engine Retrofit System from the Ministry of Environment(MOE) of Korea
• Certificate of Green Technology for a Biogas Engine Generation System from the Ministry of Environment(MOE) of Korea |
| 2009 | • Appointed as a Retrofit Company for HD Diesel Truck to LNG DDF by the Ministry of Land, Infrastructure and Transport(MOLIT) of Korea | | |

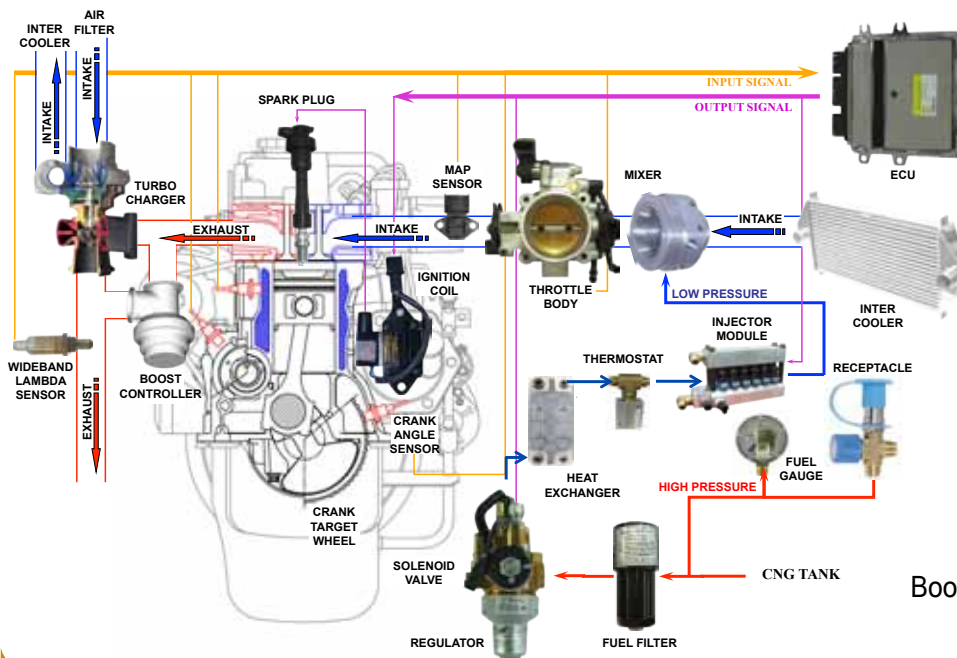
»» Overview of Main Business

1. CNG/LNG/LPG Vehicle Business

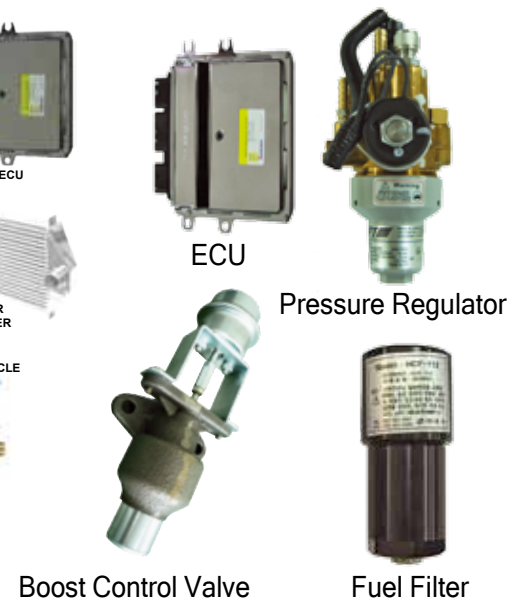
- High performance : Equivalent power compared to diesel engine
- High durability
- Turbo boost pressure control system and lean-burn technology
- Temperature control of exhaust gas for high reliability

- ▣ OEM : Mitsubishi(Thailand), FUSO(Thailand), NAZA Motor(Malaysia) and HMI(Hyundai Motors India)
- ▣ After Market : Thailand, China, Uzbekistan, Malaysia, Dominica, Bolivia, Kazakhstan, etc.

System Diagram



Products



Applied Vehicles



2. Gas Generator Business

- Gas generator set for natural gas and biogas : 25kW~550kW
- Co-generator system of CHP for natural gas and biogas : 25kW~550kW
- High efficiency
- High durability and reliability
- Competitive price

Products



EG26 BGS/NGS (25kW)



EG100 BGS/NGS (180kW)



EG220 BGS/NGS (380kW)

References



Gimje (25kW)



Damyang (150kW)



Gumi (300kW)



Changwon (300kW)



Gwangyang (640kW)



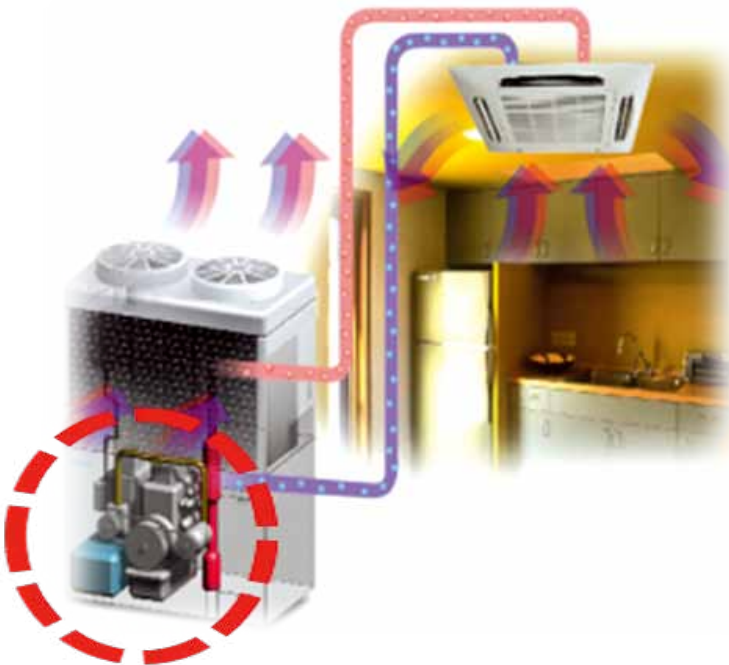
Pocheon (1MW)

» Overview of Main Business

3. GHP Engine Business : The Sole Provider for LG Electronics

- High efficiency by means of the Miller Cycle
- New developed cylinder head & piston for gas engine to get high efficiency with optimized combustion chamber shape
- High efficient and durable engine control system

Gas Heat Pump(GHP)



Products



EH23N

- Displacement(cc) : 2311
- Maximum Output(Hp/rpm) : 40/2200
- Maximum Torque(kg.m/rpm) : 13.5/1600
- Efficiency(%) : 35



EH26N

- Displacement(cc) : 2607
- Maximum Output(Hp/rpm) : 57/2600
- Maximum Torque(kg.m/rpm) : 15.7/2000
- Efficiency(%) : 35~37

Production Line of GHP Engine



4. Eco-Friendly Engine Research Institute

- Engine Development & Test : HMC, SMC, Doosan, LS Emtron, etc.
- Engine Dynamometer Test : HMC, GMDAT, Ssangyong, etc.

Design and Analysis

- Software
 - CATIA, Pro/Engineer, Pro/Mechanica, In-house analysis software, etc.
- Technology
 - Design of engine and engine room packaging(gasoline, diesel, CNG, LNG, LPG)
 - Design of fuel system components



Engine and Vehicle Test

- Facility
 - 9 engine test laboratories with AC/EC dynamometers(25kW~500kW)
 - 1 vehicle test laboratory and CVS emission analyzer
 - INCA, EMS2000(ETAS) , rig test laboratory, etc.
- Technology
 - Engine performance, fuel system and durability evaluation development
 - Vehicle performance, emission development and EMS calibration (EURO5, TIER4)



Engine Control Unit(ECU) Development

- Facility
 - Mechatronic test laboratory : EMS test and emulation rigs
 - ECU emulator and simulator
- Technology
 - Design, development and evaluation of ECU hardware and software
 - ECU data mapping and optimization

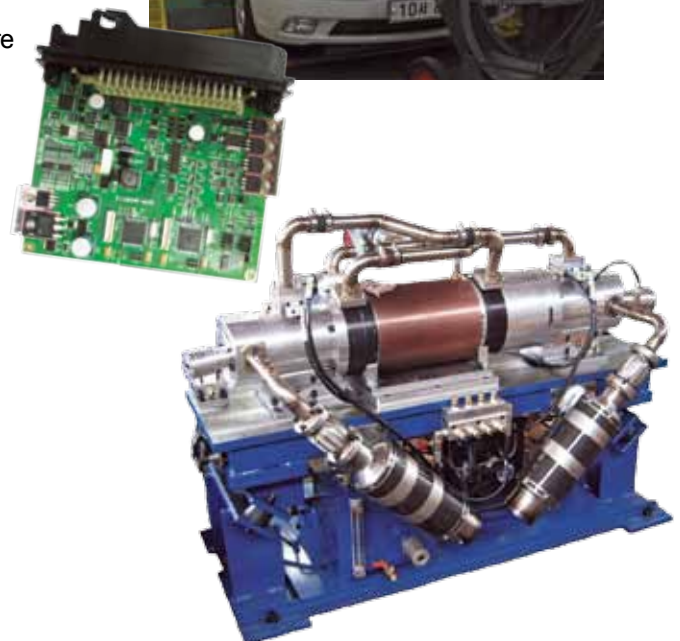


Other Development

- Engine Combustion Optimization
 - Low emission, high fuel Economy, power improvement and optimization
- Engine Component Procurement
 - Cylinder head and block, crankshaft, etc.

R&D Project

- Research and Development of Hydrogen Engine
 - 1kW and 5kW linear hydrogen free piston engine development
 - Range extender development of plug-in electronic vehicles
 - Research and development of engine heat recovery system to improve vehicle fuel economy
- Hybrid Engine Development



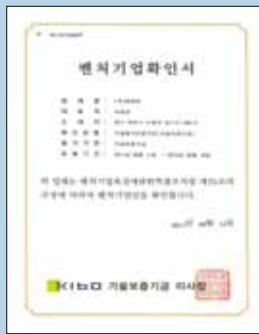
Global Network of Overseas Business



Main Certificates



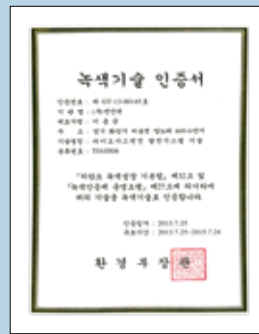
ISO 9001



Certificate of Venture Company



Small and Medium Enterprise of Technology Innovation



Certificate of Green Technology

