

# EControls®

by **ENOVATION** CONTROLS



## **NATURAL GAS ENGINE CONTROL SYSTEMS**

*For Heavy-Duty Trucks & Buses*

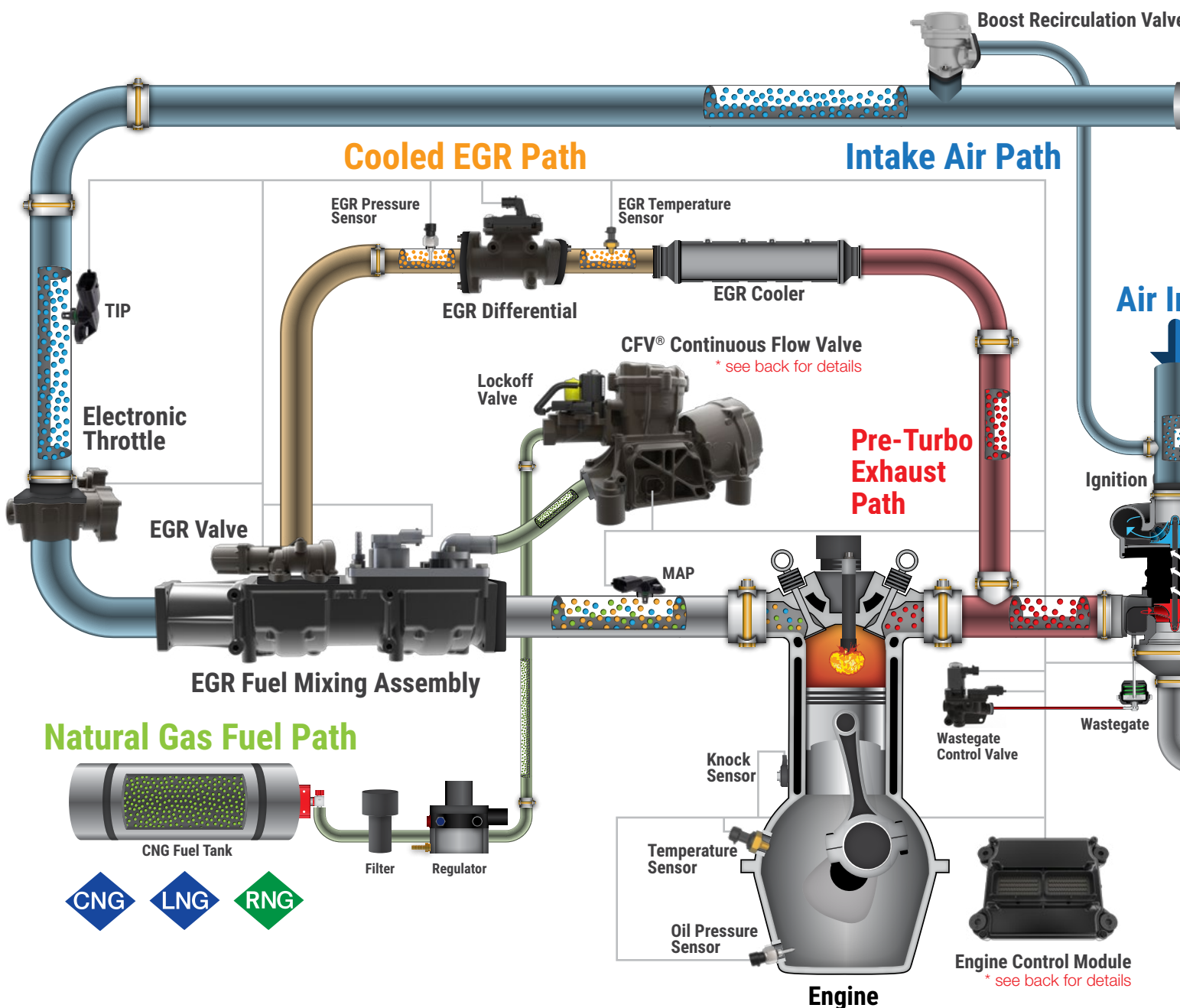
- Natural-gas fueled trucks and buses are the best alternative to traditional diesel vehicles
- Worldwide growing refueling infrastructure supports natural gas vehicles
- OEMs can seamlessly switch to EControls' systems for the best alternative to diesel fuel



# SYSTEM CONTROL EXPERTS

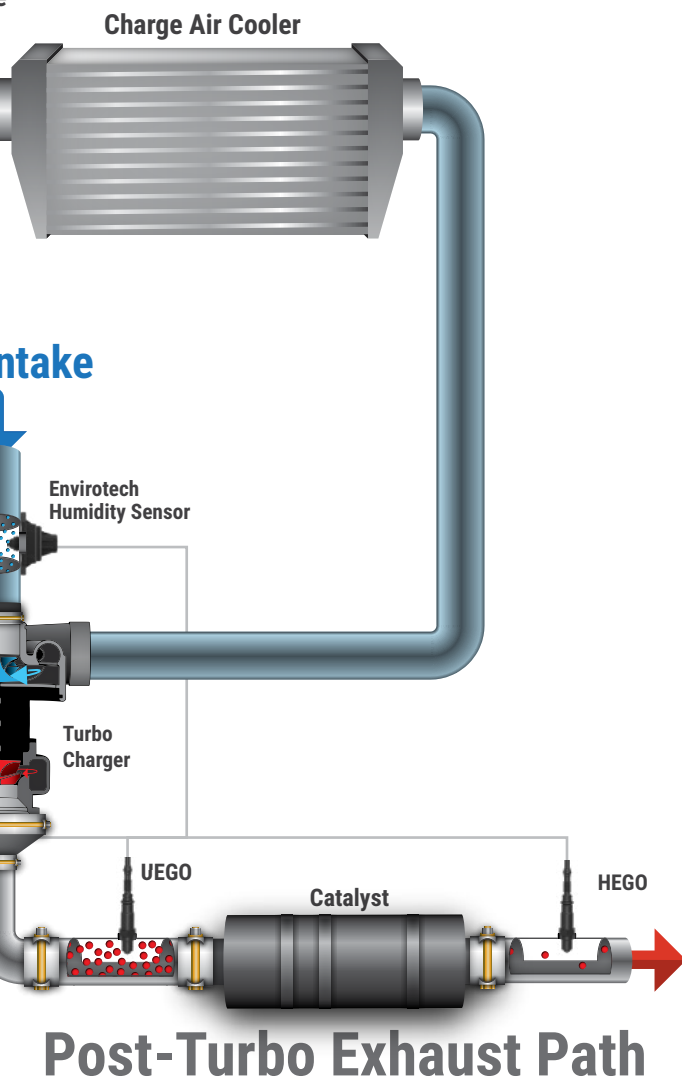
Since 1994, EControls by Enovation Controls has delivered innovation to engine and vehicle OEMs through state-of-the-art engine control systems, engine development, consulting and efficient engine calibration methods to meet emission regulations, provide optimized drivability and improve fuel economy.

- Largest natural gas engine control system provider in the world, with more than 300,000 truck and bus engine control systems on the road and more than 1.1 million systems across all markets
- Proven systems optimized to meet EURO III through EURO VI and US 2010 emission regulations
- Flexibility for OEMs to add new features quickly at a minimal cost
- Leading technology meeting near-zero NOx emissions using RNG, CNG and LNG



Modern diesel engines have a high cost of ownership resulting from expensive aftertreatment systems associated with increasingly strict emissions regulations. With their inherent simplicity and low aftertreatment costs, natural gas engines have the ability to offer the greatest value to engine/vehicle OEMs, fleets and owners/operators.

- Enable engine downsizing by using broader range at peak torque
- More accurate EGR measurement and more precise fuel control allow more aggressive engine calibration
- Higher engine reliability enabled by more accurate and faster fuel and EGR transient control, allowing wider knock/misfire margin



## Heavy-Duty, Natural Gas Stoichiometric EGR System

For Euro VI, US 2010 and Near-Zero NO<sub>x</sub>

### LOWER TOTAL COST OF OWNERSHIP –

With abundant global supplies and the continued exploration and production, natural gas is less expensive than traditional fuels.

### FUTURE-PROOF EMISSIONS SOLUTIONS –

Future emission and fuel economy (GHG) standards will push the cost of diesel engines ever higher. Our Euro VI / US EPA 2010 system architecture is designed to support future regulations as well as ever more stringent On-Board Diagnostic requirements.

### LOW CO<sub>2</sub>, ULTRA-LOW NO<sub>x</sub> –

Natural gas engines produce less CO<sub>2</sub> emissions and also enable a dramatic reduction of NO<sub>x</sub> levels at a significantly lower cost.

### DIESEL-LIKE TORQUE & DRIVABILITY –

With EControls' solutions on a natural gas engines, we deliver both similar torque performance across the speed range and transient response compared to diesel engines.



# KEY COMPONENTS

## ENGINE CONTROL MODULE



- Full-Authority Engine Control Unit – Controls spark, fueling, EGR, Turbo, throttle, transmission and more
- 100 percent On-Board Diagnostic compatible with Euro VI OBD and 2018 US HD-OBD
- Model-based control strategy improves performance and minimizes engine calibration time
- Diesel-like drivability through engine controls optimized to leverage speed and accuracy of fuel and EGR control



## CFV® (CONTINUOUS FLOW VALVE)

- Continuous flow fuel injection results in lower engine out emission, which reduces aftertreatment costs and improves fuel economy
- Compatible with RNG/biomethane, CNG and LNG
- Robust to dry and dirty gas compositions
- Significantly improved durability over traditional fuel injectors



## Contact Us:

### UNITED STATES

PHONE: 210 495 9772

E-MAIL: [info@novationcontrols.com](mailto:info@novationcontrols.com)

### CHINA

PHONE: +86 571 8788 6060

E-MAIL: [apsales@novationcontrols.com](mailto:apsales@novationcontrols.com)

In order to bring you the highest quality, full-featured products, we reserve the right to change our specifications and designs at any time.

Specifications and performance data subject to change without notice. Certified specifications and performance data available upon request.

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FM 28221 (Tulsa, OK - USA)  
FM 620667 (San Antonio, TX - USA)  
FM 28221 (Rosenberg, TX - USA)  
FM 29422 (UK)



FM 523851 (China) TS 589322 (China)

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