



Mining



Oil and Gas



Power and Utility



Rotating Equipment



Semiconductor



Water & Wastewater

RICH BURN CONTROL SYSTEM

INCREASED COMPLIANCE

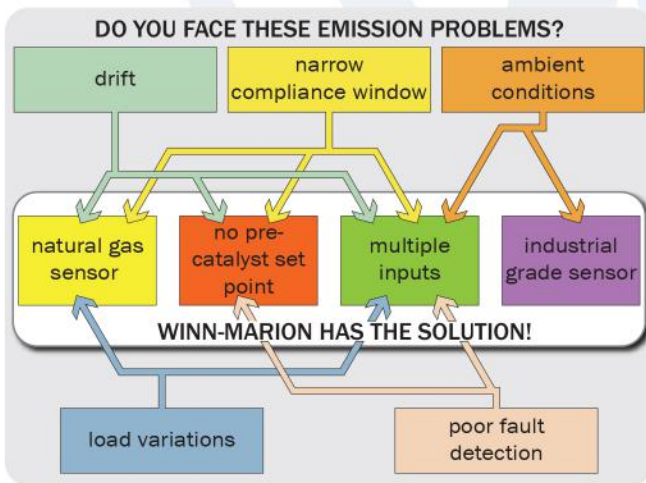
Natural Gas Rich Burn Engines are ideal applications for 3-way catalysts, which reduce emissions dramatically. Minimum emissions are only achieved if the air fuel ratio control holds the ratio within a very narrow window, with many variables affecting the equation, and if your business depends on one of these engines you know that emission controls can be problematic for this reason. With the tight EPA NSPS emission regulations, it is important for businesses to have a system that can keep the engine in compliance for longer periods of time, over a wider range of conditions, than previously possible.

Woodward's leading edge E3 Rich Trim System combines the benefits of user - friendly operation with increased system protection and longer compliance time. The system utilizes the StableSense™ sensor to provide excellent and stable control of the engine's stoichiometric combustion process.



PROVEN TECHNOLOGY

Winn-Marion provides installation, commissioning and field service for the StableSense™ sensor; **the only industrial, natural gas oxygen sensor on the market.** With this sensor, the E3 control system addresses all of the common problems of leading control systems today.



SYSTEM DESCRIPTION

Winn-Marion provides fully integrated Rich Burn Control Systems that are scalable to allow emission control of single manifold to dual manifold engines.

Application Details:

- Air-fuel ratio control system (base system)
- Integrated speed/load control (optional)
- Ignition control (optional)
- Engine protection
 - Full misfire protection
 - Overspeed
 - Start fuel limit

A standard panel can be integrated into hazardous locations with or without the optional touchscreen operator interface.



ADVANTAGES

Say goodbye to using automotive gas oxygen sensors from your local auto parts store! Say hello to the Winn-Marion Rich Burn Control System, which provides:

- Optimized amount of compliance time
- No emissions drift over long periods of time
 - **Ask about real world data & field test results**
- Fully scalable control of small to large engines
- Heated Exhaust Gas Oxygen (HEGO) Sensors
 - No retuning after oxygen sensor replacement
- Integrated engine & catalyst protection and diagnostics for operation
- Out of compliance engine shut down and/or user notification
- Heavy duty, industrial, fast & reliable fuel valves
- Full misfire detection & notification



Winn-Marion
Companies

Denver, CO – (303) 778-6767

Salt Lake City, UT – (801) 676-0155
 Phoenix, AZ – (480) 968-9344
 Billings, MT – (406) 259-9234
 Pittsburgh, PA – (412) 319-7392
 Roosevelt, UT – (435) 725-0082

Farmington, NM – (505) 326-4069
 Evans, CO – (970) 339-9211
 Gillette, WY – (307) 686-9196
 Arnegard, ND – (701) 586-3184
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Meet the Winn-Marion Companies

for more information visit www.winn-marion.com

SERVICE



WM Automation Service, LLC

Turnkey Automation - Oil & Gas Wellheads • Tank Batteries Separators • Multi-Well Pad Plunger Lift Control

Communications - Spread Spectrum & Licensed Frequency • Radio Systems • Network Design • Radio Path Studies • Ethernet Radios • Satellite

Troubleshooting - Gas Measurement • SCADA • Radio Communications • Automation Systems

Calibrations - Gas Sampling • Flow Calibrations

Industrial Control Electricians - Certified ABB VFD Start-up • Field Electrical Installations • Heat Trace



Analyzers - Gas Chromatographs • Continuous Gas Analyzers

BTU Analyzers • pH, Silica, Conductivity • Trace Oxygen • H₂S

Heat Tracing Instruments - Steam • Electric • Pre-Insulated Tubing Bundles

Transmitters - Differential Pressure • Gauge • Absolute Fully Welded Remote Seals • Multivariable • SIL 2 & SIL 3

Flow Meters - Coriolis • Magnetic Flow Meters • Precision DP Flow

Controllers - Single Loop Controllers • DCS • PLC • RTU

Recorders - Circular Chart • Videographic • Strip Chart

Valves - On/Off • Control Valves

Governors - Mechanical & Electric • Catalysts & Air Fuel Ratio

SALES



Winn-Marion Barber, LLC



CONTROLS



Winn-Marion, Inc.

Plant Control Systems - Human Machine Interface (HMI) Design & Integration • Protection System Design • Remote I/O • PLC • DCS

Field Service

Training

Engine Control - Emissions Control • Speed Control • Protection Systems • Mechanical Governor Upgrades

Turbine Control - Speed Control • Load Control • Protection Systems Steam • Valve Actuation • Mechanical Governor Upgrades

Generator Control - Start/Stop Sequencing • Load Control • Remote Monitoring • Protection Systems

Turnkey Design, Installation and Commissioning of All

