

Engine & Compression Solutions and Emissions Management



CANADA'S BEST MANAGED COMPANIES Platinum member



Creating Value - Reducing Risk

60

Brands Represented

\$1.5B

Incremental Value Creation

\$75M

Inventory

12

Locations

\$10M+

Post-Secondary Support

500,000+

Square Feet

24/7

Customer Support

Kitimat

Prince George

Fort St. John

Grande Prairie

Whitecourt

Red Deer

Calgary

Lloydminster

Edmonton

Saskatoon

Regina

Midale

Burnaby

14

Certified Service Shops

0.6-0.7

Average TRIF

>5,000

Customers Trained/Yr

Spartan Controls Ltd. is the recognized leading provider of industrial automation, valves, measurement, and process control solutions and services for process industries in Western Canada. Our unique partnership with Emerson and other leading solution providers enables us to connect to our Customers with world-class technology, superior technical expertise and full lifecycle services.

We are a Canadian employee-owned company with project experience that spans multiple industries. Our single point of contact reduces cost, improves the Customer experience, and allows us to quickly apply solutions and services to meet our Customers' automation challenges head-on.

We invest to earn your business; we invest more to keep it.

Supported Industries



Oil and Gas



Oil Sands



Refining

Supported Industries



Pipelines and Terminals



Power



Chemical



Mining and Metals



Water and Wastewater



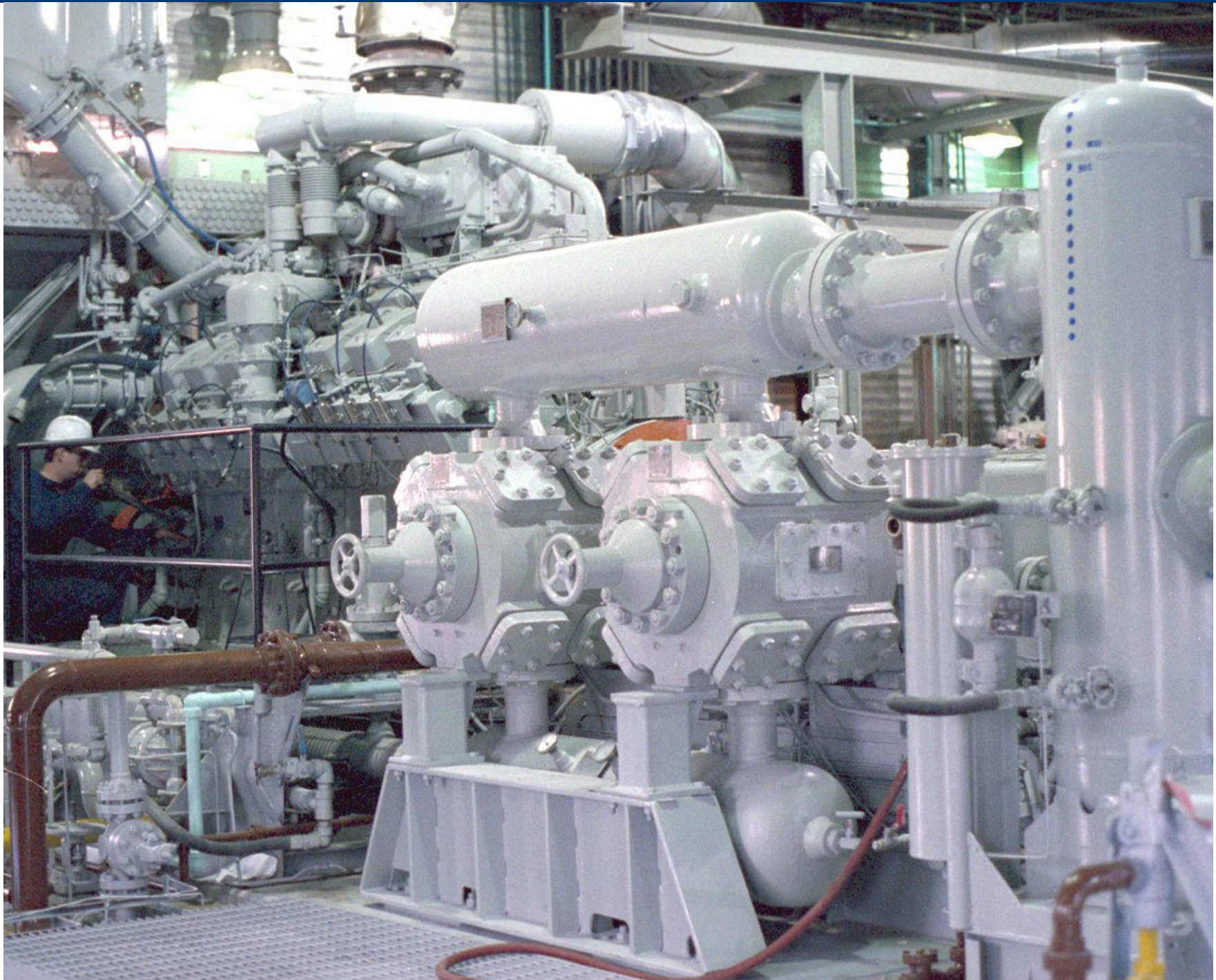
Pulp and Paper

Engine & Compression Solutions and Emissions Management

Spartan's Engine & Compression Solutions team provides integrated solutions to address Customer challenges and ensure critical rotating and reciprocating equipment operates in a safe, reliable and efficient manner. Our engine and compressor control panels, ignition controls, patented air-fuel ratio, emission reduction technology, and vent capture systems have an international installed base.

As Western Canada's leading environmental control technology and testing supplier, our solutions not only span across a wide breadth of applications, but our service capability ensures your assets reach and maintain peak performance and efficiency with the lowest downtime possible.

“All of our products and solutions are supported 24/7 by field service, technical phone support, local inventory, and extensive education programs across Western Canada.”



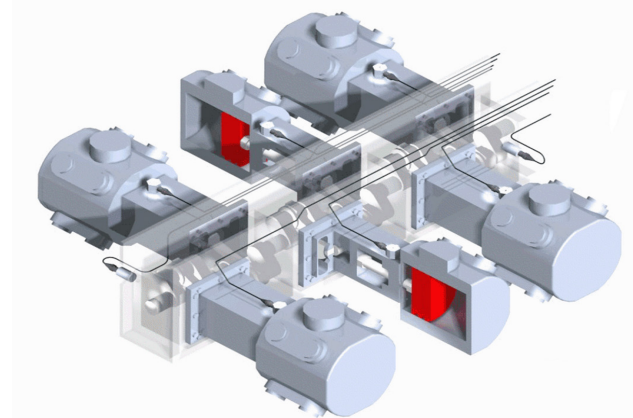
Engine & Compression Solutions



Together with our principals, we strive to provide solutions that focus on further developing our Customers' sustainability, profitability and improving environmental performance across all industries served.

Engine and Compressor Solutions:

- REMVue[®] Air-Fuel Ratio control
- Stoichiometric engine control with three-way catalyst
- Ignition control and management
- Combustion and emission accessories
- SlipStream[®] vent capture
- Shutdown control and protection



Cutaway of a 6-throw reciprocating compressor.



Our focus on environmental leadership technology provides our customers with proven and **implementation-ready cleantech** solutions to meet voluntary and regulatory emission reductions.

“ We stand behind what matters: our Customers. ”

Environmental Leadership

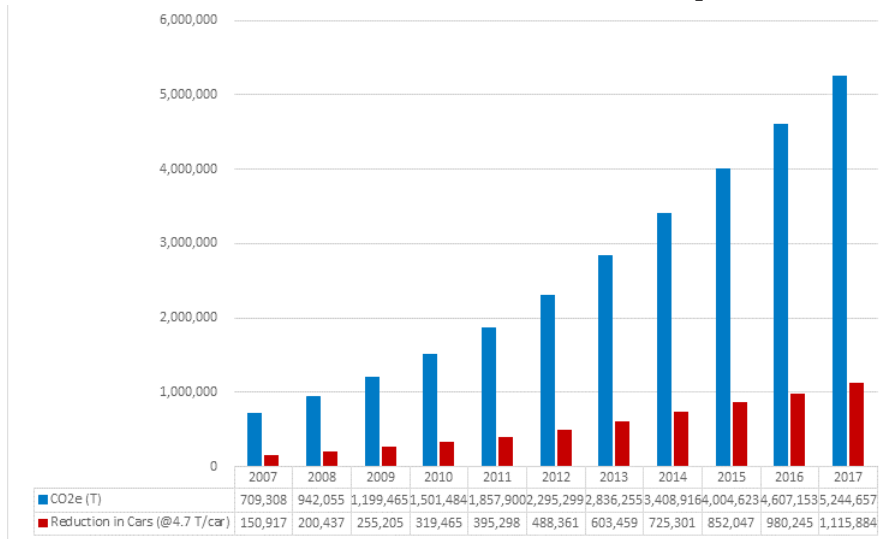
Our environmental leadership technology provides Customers with proven and implementation-ready solutions to meet fast approaching timelines outlined in current and pending environmental regulations.

Our solutions ensure Customers plan their path to compliance, reducing NO_x and Greenhouse Gas (GHG) emissions while further developing sustainability and profitability.

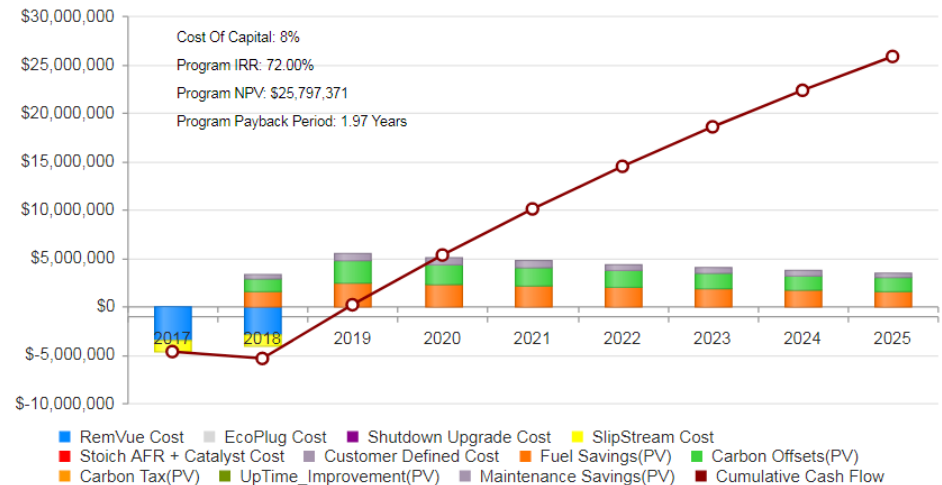
Spartan is already demonstrating substantial environmental technology leadership, removing an cumulative CO₂e equivalent of 1.1M vehicles from the road through REMVue® engine control and SlipStream® vent capture technology.



Engine & Compression Solutions QER
Cumulative Reduction in Emissions (CO₂e)



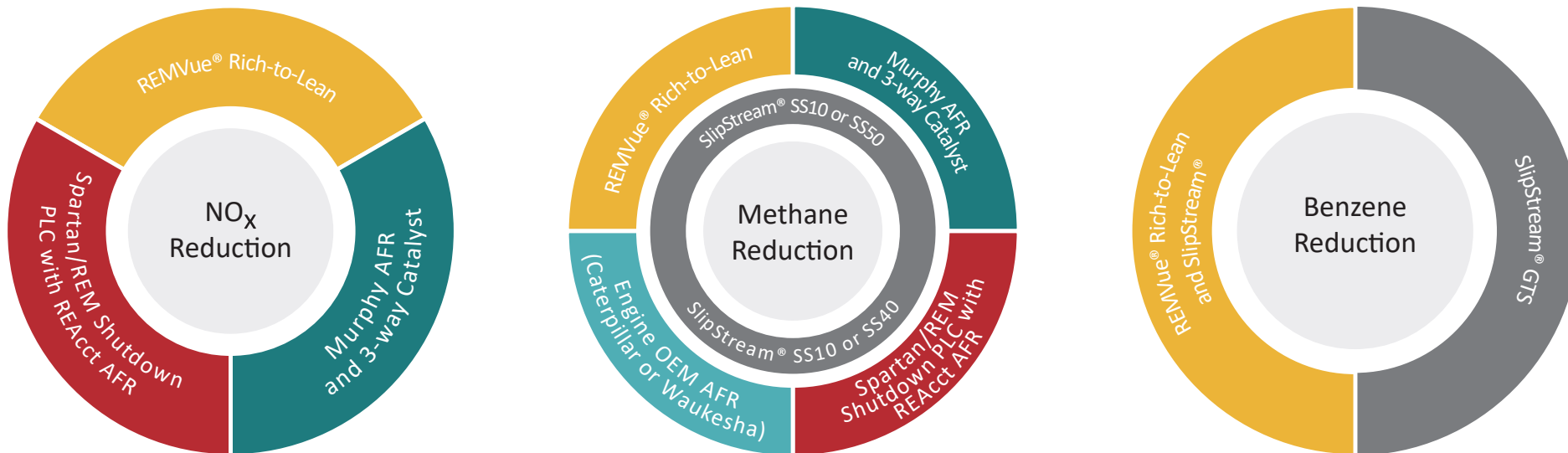
Environmental Solutions with a Return on Investment



*ROI based on average of 5 tonnes of CO₂(e) per vehicle.

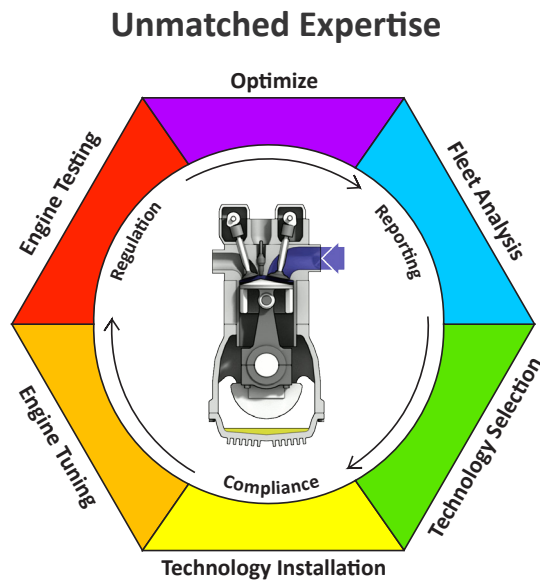
Complete Compliance Solutions

Spartan Controls continuously invests in developing new, innovative solutions for our Customers. These solutions not only enable emission compliance with regulations, but also provide multiple additional benefits such as improved performance, increased fuel efficiency, reduced maintenance, and GHG reduction.



Multiple solutions to address each regulation.

Emission compliance with a return on investment (ROI) - only from Spartan Controls.



MSAPR Compliance

With fast-approaching timelines outlined in current and pending climate change and emissions regulations, such as the Multi-Sector Air Pollutants Regulations (MSAPR), Spartan Controls is ready with experienced personnel and a suite of services and solutions.

Along with an array of products and solutions, we have developed an **Engine Fleet Analysis, Planning and Implementation MSAPR Web Tool** to ensure our Customers can plan their path to meeting the new Nitrogen Oxide (NO_x) regulations for their natural gas engine fleet.

➤ Fleet Analysis, Business Plan, and Implementation Services to guide our Customers towards meeting compliance.

➤ Full line of products, technology, solutions, and services enabling natural gas engines to meet emissions requirements.

➤ Offering the only patented rich-to-lean NO_x reduction solution, REMVue®, with proven return on investment (ROI).

“ Analyze, Plan, Implement, Succeed. ”

NO_x Reduction - REMVue® AFR

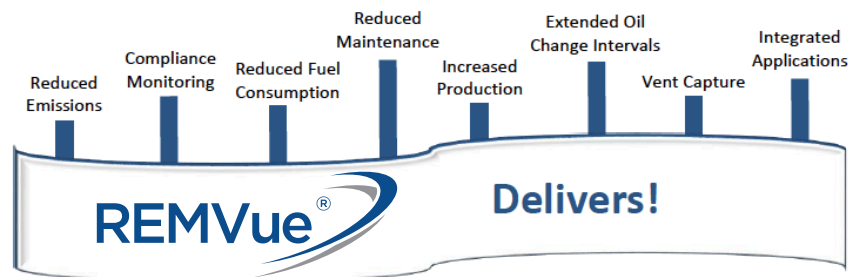
The REMVue® AFR is the only patented, Rich-to-Lean control system for rich-burn engines providing emission compliant NO_x reduction solutions to meet current and future regulations. With air-fuel ratio control, combustion management and SlipStream® compatibility, REMVue® AFR consistently improves reliability, reduces fuel and maintenance costs, and increases asset uptime, while maintaining emission compliance.



- OEM rated performance maintained
- Adaptive control enables reliable operation with high BTU fuel
- Average fuel savings of 15%
- 3-16 month return on investment on average
- GHG emissions reduction
- Builds a foundation for further optimization using additional Spartan advanced solutions such as SlipStream®
- CSA Certified, Class I Division 2 Group C & D



✓ *Approved GHG Protocol in Alberta!*



NO_x Reduction

The Murphy™ Compliance AFR is a best-in-class, SlipStream® compatible, stoichiometric AFR controller that consistently achieves the air-fuel ratio to support your NO_x reducing Non-Selective Catalytic Reduction (NSCR) system. Offering single or multi-point control, the Murphy™ Compliance AFR delivers improved performance and low NO_x emissions.

- Applicable to rich or lean burn, and fuel injected engines
- Advanced load following controller design
- Comprehensive on-board diagnostics and troubleshooting
- CSA Certified, Class I Division 2 Group C & D



PV-450 Display and AFR-9R

3-Way NSCR Catalysts

For rich-burn engines, a 3-way catalyst is one of the options to reduce NO_x emissions. Spartan has a full line of catalyst solutions for all horsepower ratings.



Our solutions include replacement catalyst elements for all makes and models, as well as full catalytic converter systems with housing and catalyst-silencer combo packages.

NO_x Reduction - REAcct AFR

The Reciprocating Engine Adaptive Catalyst Control Technology (REAcct) AFR system is a low cost stoichiometric AFR option to reliably reduce NO_x emissions for four-cycle, spark-ignited rich-burn engines.

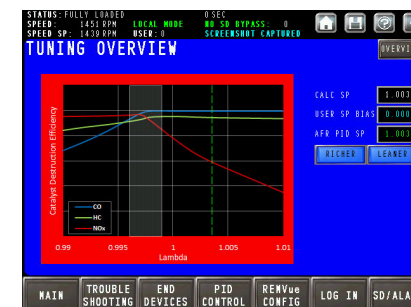
Coupled with industry leading 3-way catalyst systems, the REAcct AFR can maintain emission levels to comply with current and future NO_x emission limits.

The REAcct AFR system is integrated into new and existing REMVue®-500 control systems and provides all control, trending and datalogging from a single HMI.

- CSA Certified, Class I Division 2 Group C & D
- Full authority fuel control
- Designed as an upgrade for new or existing Spartan or REMVue® compressor shutdown panels



REMVue®
Shutdown PLC



User-friendly Operator AFR Tuning Screen

- Compatible with SlipStream® technology
- Adaptive control for load and speed changes
- Fail safe design to keep engine emissions in compliance due to sensor failure
- Advanced control using wide-band-lambda (O₂) sensor

Ignition

Spartan Controls has over 40 years of natural gas engine ignition sales, support and service experience. Partnering with leading providers such as Murphy™, Champion®, BG™, and Stitt® allows us to carry an extensive inventory of replacement parts, as well as new Murphy™ IntelliSpark™ Ignition Control Systems. We can supply a variety of ignition controllers, spark plugs, coils, magnetic pickups, ignition harnesses, leads, and accessories.

IntelliSpark™

- Capacitive discharge design with precise ignition timing for improved performance
- Improves fuel economy, load balance and ignition stability
- Patented Smart Coil Technology CSA Certified, Class I Division 2 Group C & D
- Stand-alone or retrofit existing ignition systems



ITX-250 Coil



Champion® Spark Plug



IntelliSpark™ Ignition Controller



In-house custom built ignition harnesses

MSAPR Engine Testing Services

Spartan has extensive experience in all areas of engine and compressor automation, service, and support. Our team includes accomplished compression professionals with extensive industry experience. Their knowledge in engine operation, emission testing, tuning, troubleshooting, and commissioning is unsurpassed. We can provide a full suite of services to ensure the reliability and performance of assets, while meeting regulatory compliance.



Experience you can count on

With 16 technicians across 5 Western Canadian locations, and the ability to offer ECOM analyzer factory-certified training, repair and calibration, Spartan is well equipped for the MSAPR.

Along with emissions, our technicians are proficient in engine and compressor operation and can provide critical tuning, cooling, performance, and efficiency observations and recommendations.

MSAPR Fleet Testing

Multi-Sector Air Pollutants Regulations (MSAPR) has outlined two types of required emission tests: a performance test and/or an emission check.

Spartan has developed detailed procedures and specialized reports for both emission tests, allowing our Customers to realize consistent reporting and the most cost-effective emission testing programs.

MSAPR Emission Testing

The MSAPR testing requirements are detailed and require experienced personnel who not only understand the testing methods, but are experts on the tools used to perform the tests. Our service technicians are fully trained on these methods and are certified on the portable emission testing equipment.

Vent Capture - SlipStream®

As an addition to the REMVue® AFR, Murphy™ AFR9, REAcct AFR, or Caterpillar and Waukesha OEM AFR, SlipStream® captures normally vented hydrocarbons and uses them as a supplementary fuel. This results in improved efficiency, while reducing (CO₂e) and volatile organic compounds (VOCs) such as benzene, toluene, ethylbenzene, and xylene (BTEX) from the vented hydrocarbons. This patented technology can be applied to compressor packing vents, glycol dehydrators, hydrocarbon storage tanks, and other hydrocarbon vent sources.

- Easily integrated into new or existing installations
- Typically six months return on investment (ROI)
- Significant Greenhouse Gas (GHG) reductions
- Safe, reliable, and efficient engine or burner operation
- Significant fuel savings and emission reductions are possible
- Meets North American vented emission compliance regulations
- CSA Certified, Class I Division 2 Group C & D



SlipStream®
Getting a free boost!

✓ **EPA Approved!**



SlipStream® SS3

✓ **Approved for Alberta Vent Capture Protocol**

Greenhouse Gas Datalogger

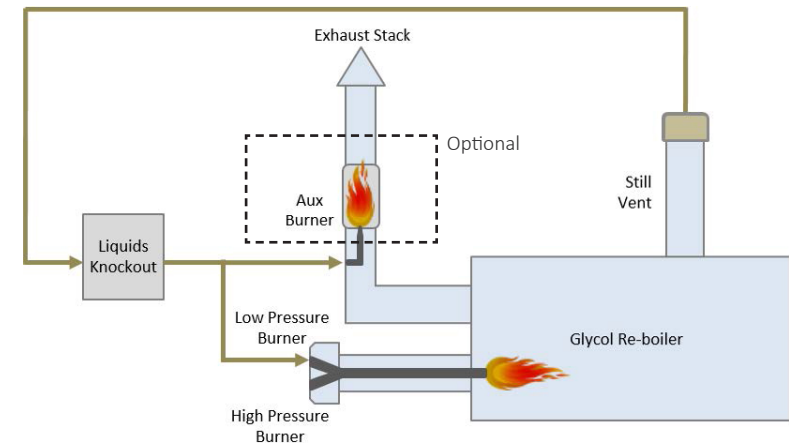
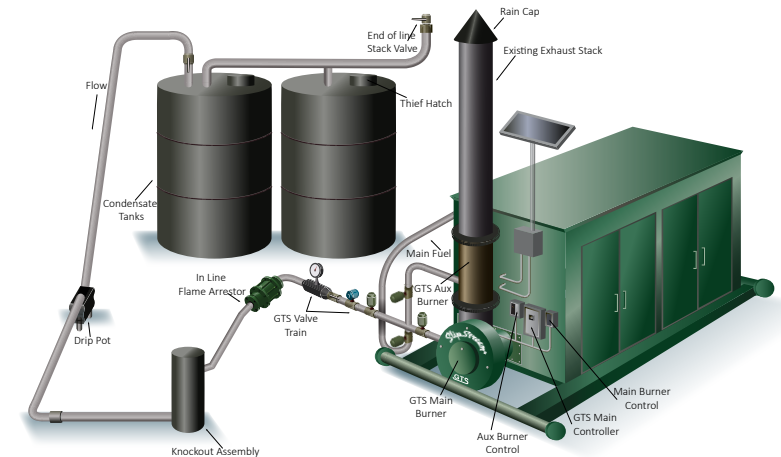
The GHG datalogger is used by our Customers to record GHG emissions reduction data as well as fuel savings, runtime hours, and other pertinent data for the monetization of carbon dioxide (CO₂) offsets.



Vent Capture - SlipStream® GTS

Specifically designed to capture vented hydrocarbons from condensate tanks, glycol dehydrators and oil storage tanks, SlipStream® GTS (Green Tank System) is highly efficient in reducing GHG emissions and destroying BTEX and other VOCs. By re-routing the captured vent gases back into the SlipStream® main and auxiliary burners*, SlipStream® technology has the ability to bring assets into emissions compliance and produce significant fuel savings, while eliminating vent odours.

- Used for dehydrators, condensate tanks and other hydrocarbon storage tank applications
- >99.5% destruction efficiency of BTEX, CH4 and other VOCs
- Eliminates the need for stand-alone flares
- No recompression of vent gas required
- SlipStream® GTS is approved for EPA Quad-O requirements
- CSA Certified, Class I Division 2 Group C & D
- Can be packaged with or without the Auxiliary Burner



✓ **EPA Approved!**

✓ **AER validated for 99.5% destruction efficiency**

*Patents Pending

Shutdown and Control Panels

Our control systems have an international installed base, consisting of REMVue®, Allen-Bradley® and other configurable Programmable Logic Controllers (PLCs) and annunciators, such as Murphy™. Our control panels are the most rugged, versatile and scalable systems available. We offer custom built panels, all with the best-in-class operating philosophy and functionality.

Standard designs available for: gas engines, electric motors, vapour recovery units (VRUs), reciprocating or screw compressors, refrigeration, and many other applications up to 5000 HP.



- CSA approvals for Class I Division 1, Division 2 and Zone 2 hazardous locations, as well as ATEX and IECEx certifications, and are available with NEMA 12, 4 and 4X ratings.
- AFR upgrades, SlipStream® and other applications can easily be integrated for even tighter control and asset performance.

Control Panel Retrofits and Conversions



REMVue® Subplate pre-wired and ready for install

Complementing our international installed base of control panels, Spartan offers a wide range of custom built control panel retrofit and conversion options.

Our retrofit capabilities include full panel replacements, pneumatic upgrades and subplate conversions to provide users with a variety of cost effective options to upgrade their controls, each with the option to replace or re-use existing wiring, instruments, power and even the cabinet, including the ability to add new low/no bleed instruments.

- Many subplate and retrofit conversions are in stock at Spartan for quick delivery to ensure our Customer's experience the least amount of downtime on their assets.
- Replace pneumatic panels, Exacta, Frick Quantum, Hawk-I, Prologic, Motiv, RC2000, and many other panels with updated REMVue® or Allen-Bradley® hardware and Spartan's industry leading control software.



Compression on DeltaV™



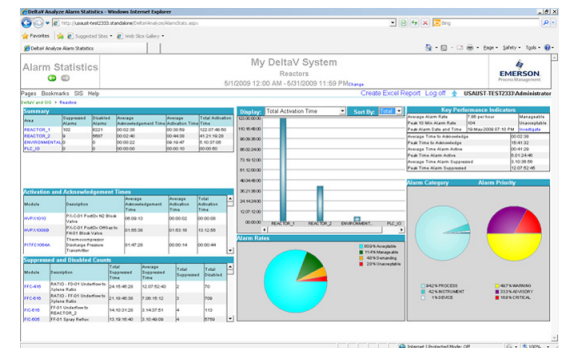
REMVue® engine and compressor expertise running on the plantwide architecture of DeltaV™ process control. Imagine completely seamless control across the entire plant. No more islands of automation, just 'One Plant'.

Benefits of Compression on DeltaV™:

- Compression control and process control integrated into one seamless system
- Increased fault tolerance and availability
- Reduced training and maintenance
- Time synchronized events data across the entire plant
- Plantwide data integration, alarm management, and trending
- Improved diagnostics and troubleshooting



DeltaV™ Electronic Marshalling with CHARMS



Seamless Plantwide Trending and Alarm Management

Bi-Fuel Capability - Altronic GTI Bi-Fuel®



This innovative, patented system, which requires no modification to the engine internals, allows for an efficient means of operating industrial diesel engines by co-firing diesel and natural gas (or other available gas) as fuel sources. With up to 70%* diesel fuel substitution capability, Bi-Fuel® technology reduces fuel costs, requirements for on-site fuel storage, and exhaust emissions.

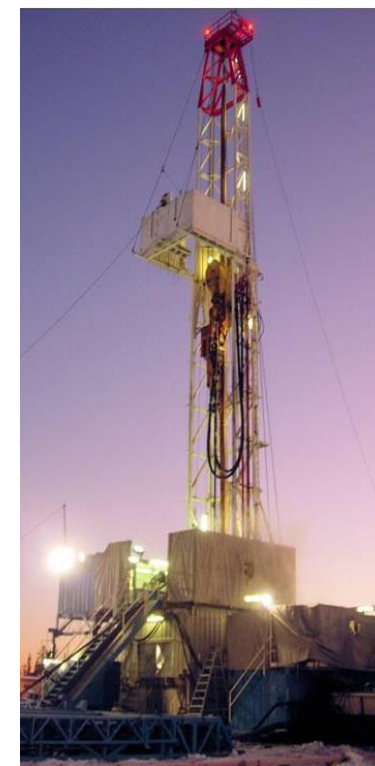


GTI+ Bi-Fuel® System



GTI Bi-Fuel® Set-up

- Maintains diesel-like performance and efficiency
- Increased savings via extended runtime and reduced fuel cost, with a rapid return on investment (ROI)
- Increases runtime by up to 300%*
- Auto-switch fuels; return to 100% diesel at any time
- Applications include prime power, peak shaving, standby power, distributed power generation, pumping applications, drilling rigs, fracking, and well service



**Subject to fuel quality and other applicable operating conditions*

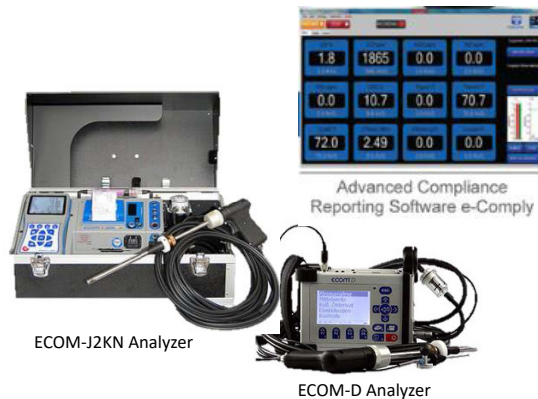


REM EcoPlug™

When combined with REMVue® AFR, EcoPlug™ technology extends the lean limit of the engine resulting in further reduced NO_x emissions and increased fuel efficiency.



- Specially designed for Waukesha VHP engines
- Extended plug life, 10+ months

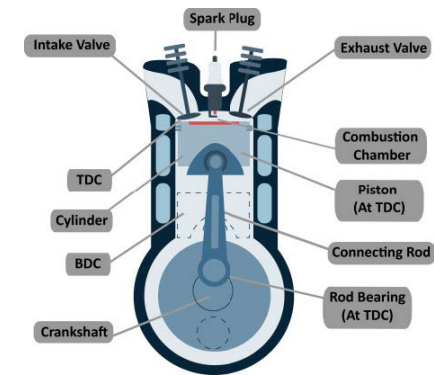


ECOM® Emissions Analyzers

As an industry leader in portable analyzers, ECOM® offers a wide range of rugged instruments, services, and maintenance tools to aid in diagnosing and optimizing system efficiency.



- Meets emission testing standards, such as those outlined in MSAPR
- Sensors for O₂, CO, CO₂, NO, NO₂, SO₂, methane, and combustibles



Detonation Control

Spartan Controls provides multiple detonation control systems used to prevent major engine damage in the event of engine detonation or pre-ignition situations.



- Analyze both 2 and 4 stroke engines
- Ignition timing adjustments and shutdown control signals

Lubrication Panels and Accessories



Proven Solutions for the Global Compression Industry™

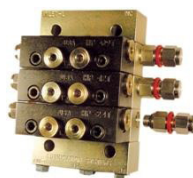
Compressor Products International (CPI) is an industry-leading manufacturer of precision-engineered components for reciprocating compressors used in petrochemical, refining, natural gas, and offshore industries. From individual components to complete systems, CPI provides a wide variety of lubrication compressor products.



Test Purge Gun



Balancing Valve Assembly



Lubrication
Divider Blocks

In addition to the lubrication products available, CPI's lubrication program development, maintenance and monitoring, asset audits, and consulting services ensure your assets are protected.



SAFEGUARD™ 5000
Lubrication System



Proflo® EOS

The Proflo® EOS, a self adjusting lubrication pump, brings a revolutionary advantage to lubrication programs with almost immediate return on investment (ROI) from lubrication and maintenance savings.



CPI lubrication services, programs, and consultations help maintain lubrication program excellence



For over 70 years, FW Murphy™ has been providing hundreds

of products suitable for Western Canadian industry applications, including engine/motor driven pump/compressor controls and instrumentation.

Technologies include the Murphy™ Swichgage® series, level switches and maintainers, shut-off valves, or the Murphy™ TDX6/TDXM temperature scanner/pyrometer. Murphy™ instrumentation products can span across pressure, temperature, liquid level, speed, and vibration applications.



Winters Instruments is a global manufacturer of industrial instrumentation and has manufactured quality instrumentation for pressure and temperature measurement for over 50 years.

Along with the vast array of products and options such as pressure switches, gauges, diaphragm seals, thermowells, and thermometers, Winters also offers StabilizR™ dampened pointer movement for harsh conditions.



EL150 Level Swichage®



LM500 Level Maintainer



TDXM



TBR Series



TBM Series



LXP Transmitter



MLS Level Switch with test feature



20P and A20P Series



9WPS Switch



PFQ Series



PFQ Series



PPC Series



PN2 Series



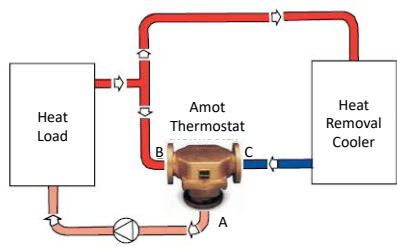
Amot designs and develops solutions for engines, compressors, turbines, and other rotating equipment. Its diverse product family includes valves, electric and pneumatic instrumentation, control and condition monitoring systems, and hazardous area products.

Technology such as the 4057 latching pilot valve are used in a variety of applications including hydraulic fluid, actuator control, pneumatic panel systems, and safety control systems.

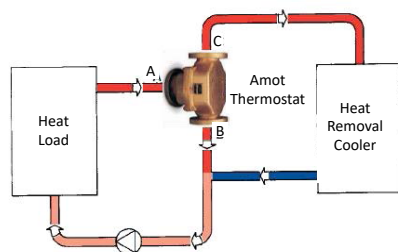


Pneumatic pilot valves, indicator, and relays

B Series



Mixing Applications



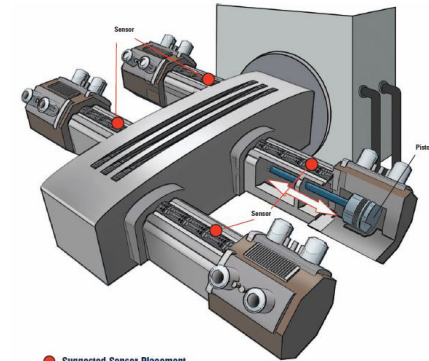
Diverting Applications



IMI Sensors provides a wide array of products including accelerometers, 4-20mA transmitters, pressure sensors, switches, vibration simulators, reliability accessories such as modal hammers and pressure transducers, cables and connectors, and enclosures.



CS and EX Series
Vibration Transmitters



● Suggested Sensor Placement

IMI Reciprocating Machinery Protectors (RMP)



Engine and Compressor Services

Spartan Controls has built a strong reputation from our Customer first mindset. We provide a full suite of services to support our Customers and ensure the reliability and performance of assets while meeting regulatory compliance.



Catalyst Services

Performance testing, catalyst washing, and chemical reclamation can ensure catalyst systems are being used to their full potential and no premature replacement is required.

Start-up and Commissioning

With 16 technicians all across Western Canada, start-up and commissioning services of new and retro-fitted assets is simplified with our experienced technicians who can help you from start to finish.

Health Check and AFR Tuning

Detailed inspections using a suite of condition monitoring technologies helps identify underperforming and failing engine and compressor components while optimizing performance and reliability.

“Call us 24/7!”



Opportunity Audit

This audit is designed to identify opportunities at site locations in the following areas:

- Engine/compressor reliability and control improvements
- Benzene reduction from glycol reboilers
- Vent capture opportunities and methane reduction
- Fuel savings
- NO_x reductions on engines

Education and Training

By offering customized courses that cover both theoretical and technical aspects, Spartan provides flexibility in learning with regional centres, e-learning, virtual classrooms, and on-site courses through our Education Services.

Master Tech REMVue® Training

This is a custom training program focusing on the REMVue® control system and its vast functionality. Topics covered include:

- REMVue® operating philosophy
- HMI and controller navigation
- I/O configuration
- AFR control theory
- Detailed applications for different engines



MSAPR Fleet Tool Training

Spartan's proprietary MSAPR web tool is designed to assist Customers in their understanding, planning, and implementation of their NO_x reduction strategy.



On-Site Installation Training

Our experienced team provides on-site training for the installation and commissioning, operation, and maintenance of all of our products and solutions.

MSAPR Engine Emission Testing Workshop

This workshop is designed for individuals who want to perform NO_x emission testing on engines using the MSAPR approved protocol and methods. Hands-on training with ECOM® portable emission analyzer and calibration procedures will also be covered.

To view our education courses, visit: spartancontrols.com/education

Register here!







Contact us today!
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join the conversation



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