UPC-MARATHON CONTROL SOLUTIONS

A WORD FROM

THE PRESIDENT OF NITREX / UPC-MARATHON

NITREX embodies the company I've long aspired to lead. From my early work in nitriding science to my career in vacuum and hydrogen retort furnaces, my journey closely aligns with NITREX's vision as a global leader in technology and processing expertise. Today, it is my honor to head the furnaces and controls division.

At NITREX, our commitment to innovation and heat treating sciences allows us to meet the evolving needs of manufacturers. Our many processing experts assist customers in selecting the appropriate cutting-edge heat treating technologies and solutions that optimize performance while meeting the latest needs in quality, productivity, safety, and environmental responsibility.

My team of experts and I stand by you from the initial contact to the post-installation stages and process confirmation, fostering a deeper partnership built on trust and innovation. We ensure your satisfaction, sustained growth, and business development. Our dedication to your journey is absolute—your success is our personal investment.

Please contact us today and let us assist you in your journey to better heat processing.

MARK HEMSATH

President, Nitrex / UPC-Marathon / GM Enterprises / mark.hemsath@nitrex.com

UPC·MARATHON

END-TO-END SOLUTIONS

THE FLEXIBILITY TO CHOOSE THE RIGHT CONTROLS

WHAT IS AN END-TO-END CONTROL SOLUTION?

UPC-Marathon end-to-end control solutions include a variety of high-end engineered instrumentation, software tools, and advanced capabilities on a common integrated platform that drive efficiencies for a wide range of batch and continuous heat treating processes, including carburizing, carbonitriding, nitriding, ferritic nitrocarburizing, neutral hardening, annealing, and vacuum heat treatment applications.

This comprehensive approach enables a single point of data management, simplified automation, increased visibility, and improved control and management of heat treating operations.

OUR CONTROL SOLUTIONS DELIVER SUPERIOR PERFORMANCE AND RELIABILITY YEAR AFTER YEAR, WHILE OPTIMIZING YOUR FURNACE PERFORMANCE AND PROCESS COST EFFICIENCY.

UPC·MARATHON

MAKING AN IMPACT IN EVERY INDUSTRY

SOLUTIONS FOR ALL TYPES OF BUSINESSES

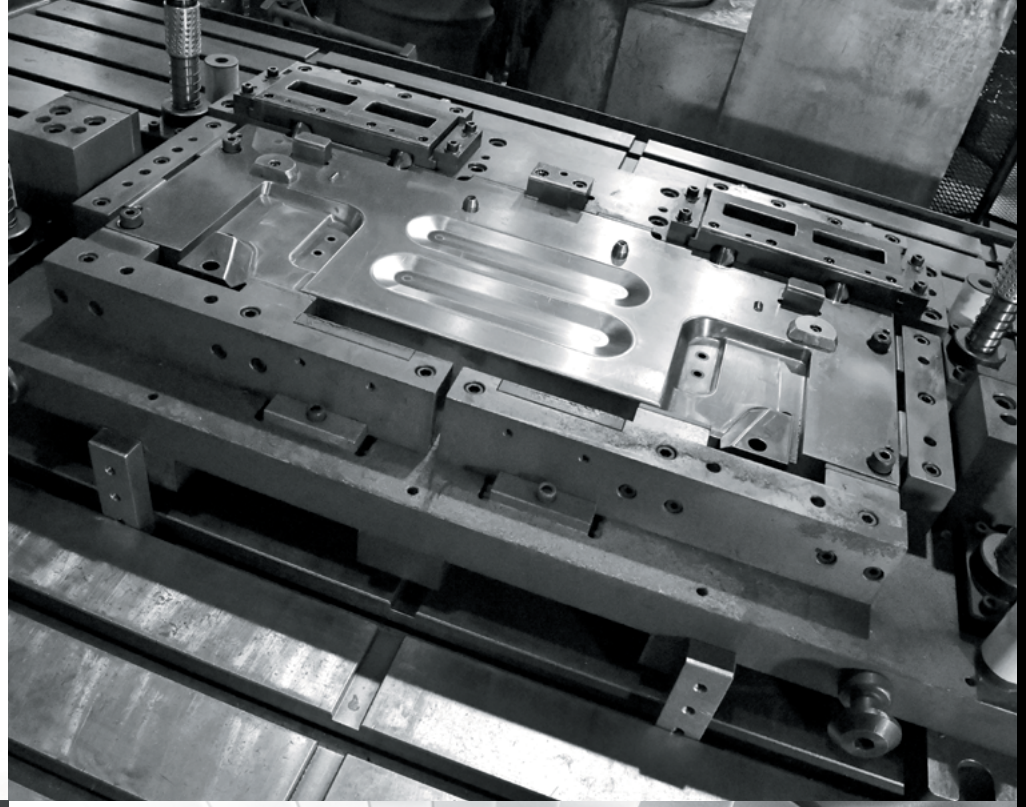
UPC-Marathon serves customers in a wide range of industries, all with unique needs and requirements. And in this fast-changing world that demands durability, sustainability, quality, and cost efficiency, more and more industries and companies are viewing heat treating as business critical.

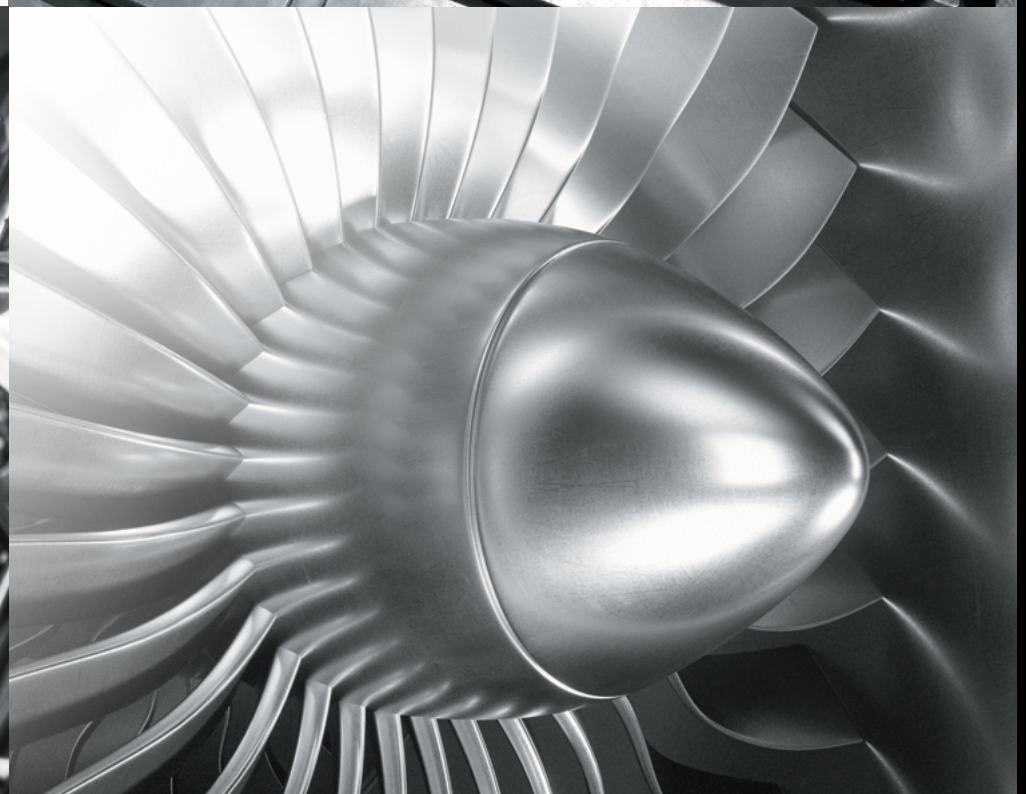
MARKETS WE SERVE

- Additive manufacturing
- Aerospace
- Automotive
- Commercial heat treating
- Defense & armament
- Medical
- Mining
- Oil & gas
- Tooling

TYPICAL PROCESSES

- Annealing
- Atmosphere hardening
- Carbonitriding
- Carburizing
- Low pressure carburizing
- Nitriding
- Nitrocarburizing
- Vacuum processes





UPC
MARATHON

CONTROL SOLUTIONS BROCHURE

Making an
Impact in
Every Industry

MEET OUR LINEUP

CARBON/OXYGEN PROBES

Suitable to use in heat treating processes such as carburizing, carbonitriding, ferritic nitrocarburizing, and neutral hardening as well as generator, and high-temperature combustion applications. UPC-Marathon probes provide an accurate in-situ concentration of oxygen. This is used for carbon potential calculations to ensure optimal furnace performance for improved product quality.

ANALYZERS

UPC-Marathon process gas analyzers improve and optimize process efficiency and repeatability, increasing process quality while reducing product waste and equipment downtime. These feature-rich, versatile analyzers can be stand-alone or integrated into a new or an existing control system.

PROGRAMMABLE & CONFIGURABLE PROCESS CONTROLLERS

The Protherm™ controller series manages all furnace functions, including key set points for atmosphere composition, alarms and maintenance tasks. Controllers can be used on both new and retrofit applications to help meet modern safety, efficiency, and standards compliance.

CUSTOM PROCESS SOLUTIONS

These control & technology packages significantly improve heat treating operations, they meet industry standards, and ultimately provide control and technology for a wide range of heat treating technologies. Solutions range from "controller-only" packages to plate solutions and full control systems. Standard and custom solutions are based on our Protherm™ series of controllers.

CUSTOM FLOW CONTROL SOLUTIONS

Turnkey gas mixing systems produce high-quality gas mixtures while precisely maintaining the preset gas ratio to ensure the most efficient and cost-effective use of mixing gases for any application. When compared to pre-mixed gases, our systems provide greater flexibility in terms of mixing ratio, flow rates, and gas supply quality.

MEET OUR LINEUP

HOLISTIC IoT PLATFORM FOR THE HEAT TREAT INDUSTRY

QMULUS is a cloud-based platform with AI and machine learning capabilities that can digitalize the shop floor and provide real-time visibility and control of heat treating operations from anywhere, at any time.

WAUKEE™ FLOW CONTROL INSTRUMENTS

The complete line of mechanical and electronic flow controllers and meters is designed and supported by industry experts for industrial applications involving challenging gases and liquids. Every flow meter and controller is assembled and calibrated to meet the exact gas or liquid flow specifications while maintaining the highest standards.

TURNKEY GAS GENERATORS

Turnkey gas generators supply high-quality on-demand endothermic or exothermic gas to atmosphere heat treat furnaces for better process efficiency. They only provide as much gas as is required, resulting in no gas waste and a greener way of utilizing resources and utilities.

COMBUSTION OPTIMIZATION

Designed for use in high-temperature environments up to 1650 °C (3000 °F), such as furnaces, incinerators, fired heaters, and kilns, UPC-Marathon combustion solutions can significantly reduce fuel consumption, maintenance costs and emissions. NOx emissions can be cut by as much as 40%. This aids in meeting environmental regulatory obligations.

AFTERMARKET

UPC-Marathon priority support services ensure the maximum availability and uptime of heat treating equipment throughout its life cycle. We can assist you with spare parts, technical service visits, assessments and surveys, retrofits and upgrades, service plans, maintenance programs, and much more.

CARBON/OXYGEN PROBES

ACCURATE FURNACE ATMOSPHERE ANALYSIS FOR A VARIETY OF PROCESSES

Suitable for use in heat treating processes such as carburizing, carbonitriding, ferritic nitrocarburizing, and neutral hardening, as well as generator applications, UPC-Marathon probes provide accurate in-situ measurement of oxygen concentration or for carbon potential calculation to ensure optimal furnace performance for improved product quality.

A2™

A2™ is a high-accuracy oxygen probe used in low and medium carbon applications or generators where frequent burn-off is not required.

- Most accurate measurement of oxygen content
- Allows for true calculated carbon potential with no "CO factor" adjustments required
- Adjustable insertion depth that allows one probe to fit all furnaces

QUICKSILVER™

Ideal for heavy carburizing applications, QuickSilver™ is an economical rugged sensor designed for effective burn-off without the worry of thermal shock.

- Designed for effective burn-off with 1/2" RA330 alloy pipe sheath
- Rugged electrode design
- Competitively priced

CARBONSEER™, CARBONSEER XS™

The industry's most popular workhorse carbon probes, the Carbonseer™ series stands out as the natural choice for high-carbon atmospheres and furnaces that run a wide range of carbon levels.

- Genuine RA330 alloy sheath
- New advanced monolithic substrate that is leak-proof
- Insertion in the furnace of up to 10" past the hot face
- Fast probe burn-off and rapid recovery time

CS87™

The CS87 oxygen probe with mechanical self-cleaning mechanism maintains a permanently clean surface between the zirconium dioxide and the external electrode to ensure an accurate signal detection.

- Robust design that withstands thermal shocks to maximize service life
- Modular design allows for easy repair and rebuild and makes it possible for very long insertions

NITROCARB™

The fully gas-tight design and special sheath allows NitroCarb™ to work in all nitrocarburizing environments where other probes simply cannot.

- Ventilated sheath to prevent moisture buildup during high dew point heat-up
- Vacuum-tight sealed head and all stainless steel connection fittings
- Signal transmission by the probe to the control instrumentation to calculate the K_C potential

PROBE BUDDY™

Probe Buddy™ is a smart tester and simulator that checks the integrity and health of oxygen probes from UPC-Marathon and other makers.

- Imitates the output signals of a working probe to check the scaling and operation of the process control system
- Performs a probe impedance test when connected to a probe
- Computes carbon, dew point and oxygen in input and output mode

ANALYZERS

CONTINUOUS SINGLE- AND MULTI-GAS MONITORING & CONTROL

UPC-Marathon process gas analyzers improve and optimize efficiency and repeatability, increasing process quality while reducing product waste and equipment downtime. These feature-rich, versatile analyzers can be stand-alone or integrated into a new or an existing control system.

H2SMART™

The H2Smart™ measures hydrogen content with high accuracy in process atmospheres. It features an integrated sampling system with flow control to ensure reliable sampling and measurement.

- Internal temperature control for stability and protection against condensation and contamination
- No need for a reference gas cell, which simplifies installation and usage
- Integrated web server for diagnostics, configuration, and maintenance
- Optional calculation of nitriding and carbon potentials for nitriding and nitrocarburizing processes

SGS™

The SGS™ measures hydrogen content or dissociation level with high accuracy in nitriding and nitrocarburizing atmospheres.

- Integral sampling that eliminates the need for a separate sampling system
- Sampling flow generated by the Venturi effect using either process atmosphere or exhaust gases
- Integrated web server for diagnostics, configuration, and maintenance
- Optional calculation of nitriding and carbon potential for nitriding and nitrocarburizing processes

FURNACEDOCTOR®-PRO

FurnaceDoctor®-Pro provides portable accurate infrared measurement of CO, CO2, and CH4, and computes the percentage of carbon, dew point, and expected O2 probe millivolts.

- Accurate calculation of atmosphere carbon potential
- Verification of oxygen probe accuracy
- Evaluation of endothermic and exothermic gas generator performance and catalyst condition
- Optimization of nitrogen-methanol system performance
- Fully compliant with CQI9 secondary measurement

FURNACEDOCTOR®-DPT

FurnaceDoctor®-DPT provides portable measurement of dew point and is ideal for applications that require a second reading to verify in-process measurement and standards compliance.

- No interpretation errors
- Ideal for use on atmosphere generators or furnaces
- Equivalent percentage of carbon computed for cross-checking O2 probe systems
- Short response time, even when moving between a high and a low dew point process and output mode

ATMOSENSE™

The AtmoSense™ measures process gases in real time in a variety of atmosphere control applications, and can accurately measure dew point, relative humidity (%RH), CH4, C3H8, H2, CO, CO2.

- Universal package designed to be fitted with an array of different sensors to meet most applications
- Robust industrial design engineered to operate in harsh environments
- Integrated filter, meter, and optional sample pump

PROCESS CONTROLLERS

PRECISE CONTROL FOR NEW AND RETROFIT FURNACES

UPC-Marathon process controllers can help optimize processes using advanced modeling, configuration and tuning options based on a long history of process control knowledge. The Protherm™ controller series manages all furnace functions, including key set points for atmosphere composition, alarms and maintenance tasks. Controllers can be used on both new and retrofit applications to help meet modern safety, efficiency, and standards compliance.

PROTHERM™ 25 ¼ DIN MULTI-LOOP

The Protherm 25 universal process controller is delivered preconfigured to the user's application for easy operation and review of process variables and set point data. It includes a paperless chart recorder and remote process monitoring and control.

- Universal configurable inputs (TC type, mA, voltage, etc.)
- Simplified PID tuning with Auto-Tune features reduces startup configuration time
- Recipe control
- Secure Ethernet communications

PROTHERM™ 06 OVERTEMPERATURE LIMIT

Protherm 06 is a compact 1/16 DIN designed for overtemperature limit protection. The universal input is easily configured for most thermocouple and signal types, while the three-alarm outputs are configured with different set points to provide multiple limit alarm logic capabilities that meet most application requirements.

- FM approved high limit/overtemperature controller
- Display of set points and actual values
- Easily configurable

PROTHERM™ 710 TOUCH

PROTHERM™ 470

PROTHERM™ Q

PROGRAMMABLE PROTHERM™ 470/510/Q/710

The Protherm™ series features our most advanced process controllers that include a full-color display with customizable graphics for real-time monitoring, control and archiving of jobs at all stages of the process and in all chambers of the furnace. Optional modeling and target control can take heat treatment recipes to the next level.

- Alarm handling and logging
- Plain language recipe control with tolerance alarms
- Multi-screen digital chart recorder
- Seamless integration with the with QMULUS & PROTHERM™ 9800 SCADA
- Easy navigation with push and turn knob or touchscreen
- Front USB port for easy backup and configuration
- Ethernet communication

PROTHERM™ 510

CUSTOM PROCESS CONTROL SOLUTIONS

BUILT WITH COMPLIANCE IN MIND

These control & technology packages significantly improve heat treating operations, they meet industry standards, and ultimately provide precise and reliable process and flow control. Solutions packages are available in retrofit plates, full control panels, and “Lite Solution” controller-only packages. Standard and custom solutions are based on our Protherm™ series of controllers.

NITRIDING, NITROCARBURIZING

The nitriding/nitrocarburizing control solution includes a Protherm™ controller, hydrogen analyzer and optional NitroCarb™ probe for precise atmosphere control of K_N, K_C, K_O, or the dissociation rate (%).

- Recipe control for repeatability
- Real-time and historical paperless chart recorder displaying process variables
- Built-in web server for remote monitoring
- Automatic batch logging
- Seamless integration with QMULUS & Protherm™ 9800 SCADA

CARBURIZING, CARBONITRIDING

The carburizing control solution includes a Protherm™ controller with optional online carbon and nitrogen diffusion as well as β-control modules available for even more precise control.

- Recipe control for repeatability
- Precise atmosphere control (carbon potential control)
- Furnace temperature control
- Oil quench temperature control
- Built-in web server for remote monitoring
- Automatic batch logging
- Seamless integration with QMULUS & Protherm™ 9800 SCADA

NITROGEN-METHANOL

The SmartMeth™ is a fully automated nitrogen-methanol mixing system for heat treating furnace atmosphere production. The built-in flow rate calculation automatically sets the nitrogen and methanol flow rates based on the desired furnace carbon monoxide concentration (%CO).

- Customizable recipe software
- Automatic atmosphere recovery that provides additional synthetic gas flow on demand when introducing a new load into the furnace
- Precision differential pressure flow measurement
- Integrated nitrogen purge

ANNEALING

The annealing control solution includes a Protherm™ controller with an optional combination of analyzers, probes, and flow meters to suit the specific annealing application.

- Precise atmosphere control–PF or reduction/oxidation potential (redox)
- Recipe control for repeatability
- Real-time and historical paperless chart recorder displaying process variables
- Built-in web server for remote monitoring
- Seamless integration with QMULUS & Protherm™ 9800 SCADA

VACUUM

The vacuum control solution includes a Protherm™ controller and optional multiple load thermocouple inputs for soak guarantees.

- Recipe control for repeatability
- Furnace temperature available in single- or multi-heater zones, with direct or cascade control and multiple PID sets for overshoot control
- Real-time and historical paperless chart recorder displaying process variables
- Built-in web server for remote monitoring
- Seamless integration with QMULUS & Protherm™ 9800 SCADA

CUSTOM FLOW CONTROL SOLUTIONS

BUILT WITH COMPLIANCE IN MIND

Turnkey gas mixing systems produce high-quality gas mixtures while precisely maintaining the preset gas ratio to ensure the most efficient and cost-effective use of mixing gases for any application. When compared to pre-mixed gases, our systems provide greater flexibility in terms of mixing ratio, flow rates, and gas supply quality.

FLOW CONTROL PANELS

The turnkey control panels are designed to provide installation-ready assemblies for any process control application. The panels include all process flow control components pre-piped and wired to a NEMA enclosure for faster installation and startup time.

- Multi zone furnace atmosphere control
- Recipe control available
- Data logging and paperless chart recorder available
- Automatic control of flow levels
- Forms a complete control solution when combined with temperature and atmosphere controls

GAS MIXORS

The Mixor™ is a precision compressor-carburetor device that accurately mixes gas and air in any selected ratio and compresses it for use with endothermic or exothermic cracking generators, or as a source of pre-mixed gas and air for torch brazing, flame heat treating, or sort metal melting.

- Built-in automatic bypass regulator to maintain preset pressure
- Standard 1,750 RPM motor for optimal belt tension
- Air filter for enhanced carburator performance
- Optional enriching flow meter for critical cracking applications

GAS MIXING PANELS

Easy to use, gas mixing panels are supplied with the dependable Waukee™ rotary vane compressors, Waukee air and gas flow meters, and either a mechanical carburetor or RatioProver for precise ratio control.

- Outlet pressures ranging from 0.5 psig to 5.0 psig
- Output capacities ranging from 200 CFH to 12,000 CFH
- Standard turndown of 2:1 or 10:1 when used with a compressor pressure controller
- Integrated nitrogen purge
- Precision control valves
- Optional integrated carbon and temperature control

GAS MIXING SYSTEMS

The EndoInjector™/ExoInjector™ is a precision gas mixing and control system using a patented fuel injection design to consistently provide the ideal gas mixture for high-quality on-demand endothermic/exothermic gas generation. This design feature makes it possible to significantly reduce operating costs and eliminate gas waste.

- High turndown capability
- Reduced generator setup/startup time
- No lubrication required
- Precision dew point control
- No sooting of the catalyst caused by mistuned carburetors
- Pays for itself in less than one year

BUILT WITH COMPLIANCE IN MIND.

As heat treat specialists, we understand and adhere to: NFPA 86, CQI-9, AMS 2750, AMS 2759, and Nadcap.

Our control solutions have the necessary features to help you maintain quality compliance.

NFPA 86

CQI-9 COMPLIANT

COMPLIANCE AMS 2750 COMPLIANCE

COMPLIANCE AMS 2759 COMPLIANCE

Nadcap Administered by PRI ACCREDITED

AI FOR SURFACE TREATMENT™
QMULUS

MORE THAN JUST SCADA

SCADA- COMPARABLE FEATURES

LEVEL 4 ERP

PRODUCTION LOGS
Access all loads and processes from detailed views of single processes to multiple process comparisons with Chart Recorder.

ERP INTGRATION
Integrate with your ERP system for streamlined data flow, enhanced efficiency, and maximized operational productivity.

MAINTENANCE CALENDAR
Plan, manage, and track maintenance tasks with calendar scheduling, job grouping, and detailed reporting.

LOAD PLANNING
Streamline planning and optimize throughput, including prioritization, with integrated order management for efficient shop order handling.

LEVEL 3 PRODUCTION PLANNING

RECIPE BUILDER
Create, edit, and manage recipes for Nitrex nitriding furnaces and Protherm or other brand controllers, ensuring precise treatment control.

MATERIALS
Calculate heat treatment parameters from steel grades, with predefined or customizable materials for flexible options.

PARTS
Manage part properties, attributes, and treatment data for efficient part handling and treatment process management.

SPC
Analyze production processes, tracking data trends to maintain quality, efficiency, productivity, and process performance.

LEVEL 2 SUPERVISORY

LIVE APP
View furnace status, running recipes, active alarms, and job charts in real-time.

SHOP LAYOUT
Visualize heat treatment operations, detailing zones, asset arrangements, and providing real-time updates on charge cars.

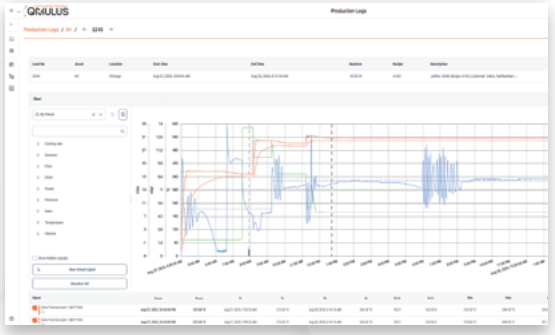
REMOTE CONTROL
Mirror asset controller interface, enabling job management, recipe adjustments, and real-time monitoring functionalities.

LEVEL 1 CONTROL

RTU & PLC
CONTROLLERS - PROTHERM

LEVEL 0 FIELD LEVEL

SENSOR & ACTUATOR
PROBES - NITROCARB ANALYZERS - H2SMART



AI FOR SURFACE TREATMENT™
QMULUS

MORE THAN JUST SCADA

BEYOND SCADA - THE COMPLETE SUITE

PRODUCTION STATISTICS
Gain insights and ratings for individual processes, with convenient multi-process comparisons.

QUALITY CERTIFICATE
Audit process values, manage quality results, validate compliance with specifications, and automatically create certificates and reports.

ALARM STATISTICS
Track and analyze alarms within a specified period for comprehensive statistical insights.

ANOMALY DETECTION
Identify patterns, irregularities, and pinpoint deviations from desired results.

STATISTICAL PROCESS CONTROL
Examine quality results and adjust production parameters based on quality statistics to optimize and harmonize production.

HISTORY & TRENDS
Explore aggregated, derived, and calculated load values for every operation on the selected asset.

ASSET MANAGEMENT
Gain a comprehensive overview of all company assets, with centrally stored asset files for easy access.

SIMULATORS
Design and optimize recipes to expedite the development of carburizing, nitriding, and nitrocarburizing processes.

SELF-SERVICE DASHBOARDS
Design personalized dashboards and generate insightful reports for enhanced data visualization.

PERFORMANCE DASHBOARD
Access insights into consumables and other plant and asset performance indicators.

ML PROTOTYPING
Identify correlations in data and train models to predict or verify process data readings.

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UPC MARATHON

CONTROL SOLUTIONS BROCHURE

More Than Just Scada

WAUKEE™ FLOW CONTROL INSTRUMENTS

PRECISE & RELIABLE CONTROL OF ATMOSPHERE GASES & LIQUIDS

The complete line of mechanical and electronic flow controllers and meters is designed and supported by industry experts for industrial applications involving challenging gases and liquids. Every flow meter and controller is assembled and calibrated to meet the exact gas or liquid flow specifications while maintaining the highest standards. Waukee™ electronic variable flow meters and controllers provide digital and visual flow readings.

WAUKEE™ FLO-METER™

Dubbed "The Heat Treater's Favorite", the Flo-Meter™ is a rugged and cost-efficient flow meter for gases and liquids. The only moving part of the meter is the patented float rod assembly.

- Compliant with NFPA requirements for visual flow indication
- Calibrated in our ISO/IEC17025:2005 calibration lab and traceable to NIST (National Institute of Standards and Technology)
- High turndown ratio
- Gas flow capacities of up to 40,000 CFH (1,140 m3/hr)
- Liquid flow capacities of up to 25 GPH (94 L/hr)

WAUKEE™ FLO-TRONIC PLUS™

The Flo-Tronic Plus™ displays a visual flow rate and generates an analog output signal proportional to the flow rate. The magnetic sensor technology is resistant to the effects of dirty oil.

- Compliant with NFPA and EN746 requirements for visual flow indication
- Calibrated in our ISO/IEC17025-2005 calibration lab and traceable to NIST (National Institute of Standards and Technology)
- Ability to log flow rates for Nadcap or CQI-9 compliance
- Easy connection to any PLC or controller with differential or single-ended analog inputs

WAUKEE™ SAV PLUS™

The SAV Plus™ is a heavy-duty position control valve that maintains the position of the valve based on the desired percentage (%) of output set point.

- Perfect for controlling dew point, carbon potential, etc.
- Standard Modbus TCP for easy integration with control systems
- Control valve and flow meter in one convenient assembly
- Built-in web server for remote access to device
- Electronic and mechanical flow indication

WAUKEE™ VALVE-TRONIC PLUS™

The Valve-Tronic Plus™ electronic flow controller is designed for use in highly demanding industrial applications requiring accurate flow control and measurement.

- Ability to log flow rates for Nadcap or CQI-9 compliance
- Advanced polynomial calibration for high accuracy across the meter's range
- Complete PID set point control
- Electronic and mechanical flow indication

WAUKEE™ VERSAMETER™

The VersaMeter™ represents a full range of precision flow measurement instruments–meters and controllers–based on our certifiable differential pressure flow measurement design, which is proven to withstand the rugged requirements of industrial heat treatment applications.

- Easy-to-read touch screen display
- In-field calibration verification
- Integrated flow alarm and flow totalizer
- Multipoint calibration

WAUKEE™ FURNACEMETER™

The FurnaceMeter™ employs differential pressure flow measurement technology that is precise, field-proven, and certifiable. It can also be equipped with a motorized flow control valve to provide a complete solution for flow control applications.

- In-field calibration verification to meet CQI-9, ISO, Nadcap and QS quality audit systems
- Compliant with NFPA 86 guidelines for safe usage in the thermal processing industry
- Precise integrated and motorized control valve
- Integrated flow alarm and flow totalizer

TURNKEY GAS GENERATORS

EFFICIENT, COST-EFFECTIVE GENERATION OF ENDOTHERMIC/EXOTHERMIC GAS

Turnkey gas generators supply high-quality on-demand endothermic or exothermic gas to atmosphere heat treat furnaces for better process efficiency. They only provide as much gas as is required, resulting in no gas waste and a greener way of utilizing resources and utilities.

ENDOFLEX™

The EndoFlex™ combines technological advancements in process and design to deliver on-demand metered endothermic gas of the highest quality to heat treating operations. This adds up to big savings from increased heating efficiency and lower operation and maintenance costs.

- Lower operating costs and emission waste by 20-80% of the generator's capacity
- Automatic endothermic gas pressure control, which eliminates regulator adjustments
- Multi-retort design allowing for quick component replacement and cost reduction
- Separate methane sensors providing data for scheduling retort burnout
- Filter change indicator for improvement of system efficiency and operation time
- Built-in software for ease of scheduling, maintenance, and paperless data logging

EXOFLEX™

The ExoFlex™ combines technological advancements in process and design to deliver on-demand metered exothermic gas of the highest quality to heat treating operations. This adds up to big savings from increased heating efficiency and lower operation and maintenance costs.

- Lower operating costs and emission waste by 20-80% of the generator's capacity
- Automatic exothermic gas pressure control, which eliminates regulator adjustments
- Filter change indication for improvement of system efficiency and operation time
- Built-in software for ease of scheduling, maintenance and paperless data logging
- Optional dedicated H2 sensor for monitoring and controlling hydrogen concentration (%)

COMBUSTION OPTIMIZATION

FLEXIBLE OPTIONS FOR COMBUSTION PROCESS MONITORING AND CONTROL

Designed for use in high-temperature environments up to 1650 °C (3000 °F), such as furnaces, incinerators, fired heaters, and kilns, UPC-Marathon combustion solutions can significantly reduce fuel consumption, maintenance costs and emissions. NOx emissions can be cut by as much as 40%. This aids in meeting environmental regulatory obligations.

OXYFIRE™

The OxyFire™ in-situ oxygen sensor measures oxygen concentrations directly in the "high-heat" zones of high-temperature furnaces and incinerators. This sensor is intrinsically safe, requires no electrical input power and generates only a low millivolt output.

- Temperature range: 1,000 °F-3,000 °F (538 °C-1,649 °C)
- No drift or accuracy problems common to "side hole" probes
- Patented "boot" for a fast response while protecting the outer electrode and preventing accuracy problems that plague foil-based electrodes

OXYMIT 2™

The Oxymit 2™ transmitter provides a cost-effective solution for oxygen and temperature transmission (4-20 mA) to your DCS system. This DIN rail module provides full probe maintenance and verification functions.

- Full probe care support (probe burn-off, verification and impedance testing)
- Available analog outputs for temperature, probe signal (mV), and calculated oxygen level
- Supported Modbus RTU communication

PROTHERM™ COMBUSTION LITE SOLUTION

The Protherm Combustion Lite Solution is designed to monitor, control, record, and archive combustion processes running in a furnace or simultaneously in multiple chambers. This powerful controller is suitable for batch and continuous operations and can be installed on new, retrofit, or refurbished equipment.

- Visual display of the sensor values
- Possibility of displaying or logging up to four oxygen sensors
- Possibility of configuring all process parameters with alarm limits
- Notification and processing of alarms
- Possibility of viewing and recording process variables with chart recorder
- Connectable to SCADA systems via Modbus RTU or TCP

INDUSTRIES WE SERVE

METALS
Combustion efficiency and scale control

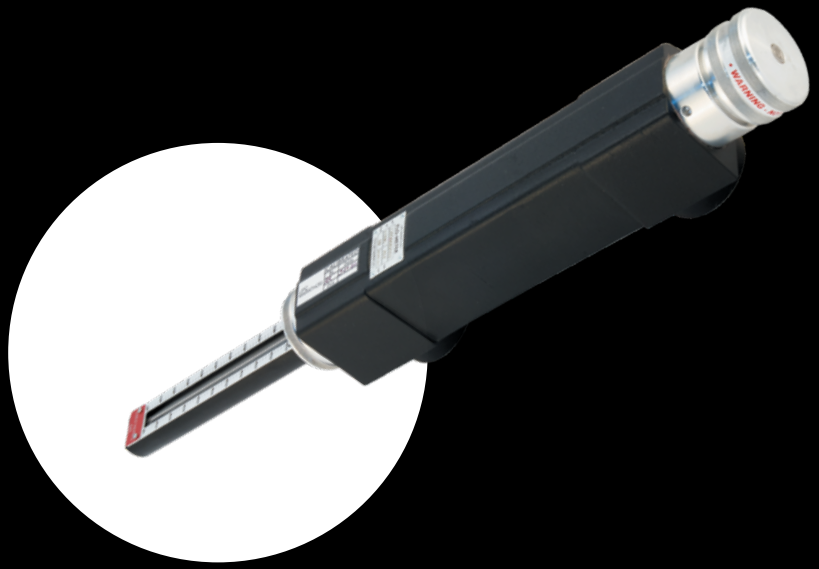
ALUMINUM RECLAMATION
Fuel savings, reduced emissions, and improved metal yield

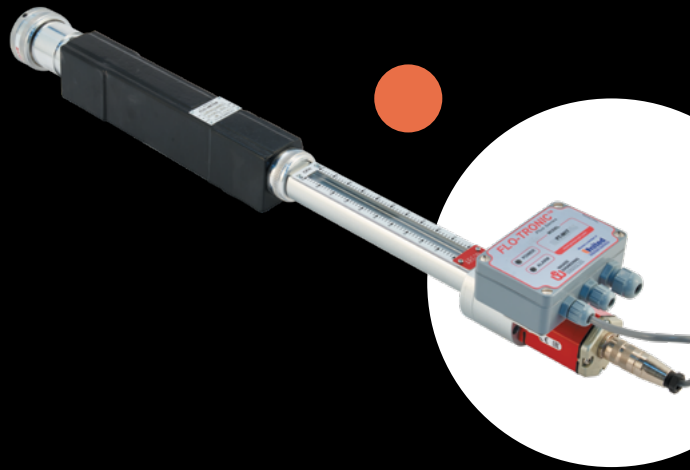
REFINERY & PETROCHEMICAL
Fuel savings, longer refractory life, NOx reductions, and process optimization

INCINERATION
EPA compliance and complete combustion

GLASS
Improved efficiency and fuel savings through optimized combustion

SULFURIC ACID
Higher acid quality, NOx reductions, and fuel savings





MASTERING STRENGTH.
WORLDWIDE.

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