

# Proven Chemical and Petrochemical Solutions



**Control. Manage. Optimize.**



# Measurable Performance.

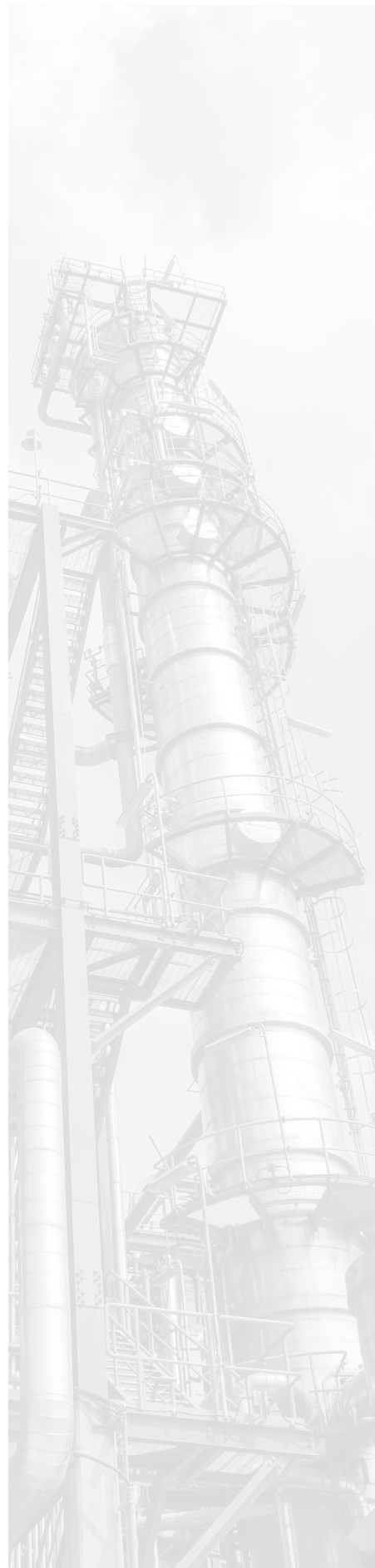
Today's chemical and petrochemical producers face the challenges of process efficiency, energy consumption and resource utilization. Plants are also getting larger, putting pressures on capital investment, on-stream reliability and product quality.

Hydrocarbon processing plants are looking to optimize the production of products with end uses ranging from cosmetics, pharmaceuticals and cleaning products, to synthetic rubber, automotive lubricants, plastics and fuel. These processes involve a host of demanding flow measurement applications.

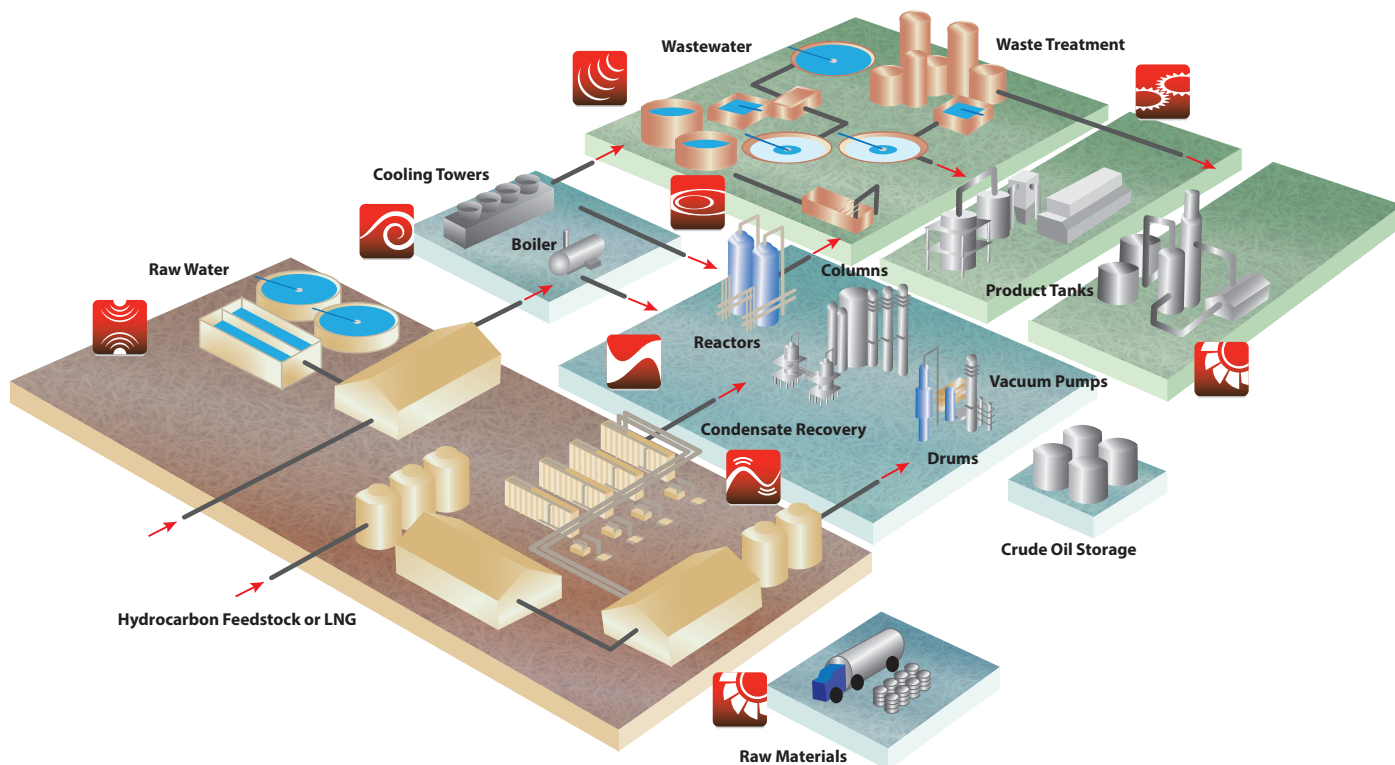
Badger Meter understands you cannot manage what you cannot measure. A worldwide leader in flow metering technologies, we offer one of the broadest product portfolios for the chemical and petrochemical industry. This includes respected brand names such as Dynasonics®, Research Control®, ModMAG®, Hedland®, and more. From oval gear, electromagnetic, turbine, and vortex meters to advanced control valves, our solutions will help you improve the efficiency, reliability and safety of your operations.

## **Badger Meter offers solutions for:**

- Chemical batching
- Dosing/blending
- Steam flow
- Lubricating oil
- Process cooling
- Pressure regulation
- Leak detection
- Waste treatment
- Emissions monitoring
- Fiscal measurement



# Application Environment



Around the world, the demands placed on chemical and petrochemical facilities are on the rise. Operators can make critical decisions faster by capturing, managing and analyzing the right flow measurement data at the right time.

Badger Meter products are used across the entire hydrocarbon sector — from upstream production to feedstock for the intermediate stage and downstream processing — in applications ranging from catalyst injection and gas flow measurement, to batching and blending, custody transfer and fugitive emissions monitoring. We support both the efficient processing of high-value products and the safe operation of production facilities.

 **Blancett®**  
Turbine Flow Meters

 **Coriolis**  
Mass Flow Meters

 **Cox**  
Turbine Flow Meters

 **Dynasonics®**  
Ultrasonic Flow Meters

 **ModMAG®**  
M-Series® | B-MAG Electromagnetic Flow Meters

 **Oval Gear**  
Industrial Oval Gear Flow Meters

 **Preso®**  
Differential Pressure Flow Meters

 **RCV**  
Research Control® | ReCo® Valves

 **Vortex**  
Flow Meters



# Chemical Industry Challenges

To succeed in a competitive marketplace, chemical and petrochemical manufacturers must deliver the right product on time, every time, as well as capitalize on opportunities for new products and reduce production costs.

Chemical processing involves a wide range of corrosive, aggressive liquids and gases, as well as extreme temperatures, viscosities and pressures. Flow instrumentation is required to withstand these harsh operating conditions while serving as a vital tool for efficiency and production optimization. Chemical producers are seeking accurate, real-time flow data to reduce resource consumption and make the best use of expensive raw materials.

With a growing focus on environmental conservation and sustainable operations, the monitoring of greenhouse gas emissions is also important to all petroleum-related businesses. Another crucial application is custody transfer, with increasing energy costs driving the need for greater flow measurement accuracy.

## Today's Industry Trends:

- Increased global demand for products
- Growth of emerging markets
- Opportunities for new specialty chemicals
- Tighter government regulations
- Greater focus on environmental stewardship



# Process Plant Operations

## A movement toward sustainability

In the current business environment, chemical and petrochemical companies are forced to do more with less, focusing on making operations more sustainable in order to protect our natural resources and be responsible corporate citizens. This means running plants with less raw material and energy consumption — all while reducing the cost of operation and ensuring high-quality products.

For example, plants can improve the dosing, blending and batching of expensive chemical additives by employing Badger Meter RCT1000 Coriolis flow meters. They directly measure fluid mass over a wide range of temperatures with a high degree of accuracy. The meters' unobstructed, open flow design is suitable for viscous, nonconductive fluids that are difficult to measure with other technologies.

Chemical producers can optimize other demanding process applications — fluid, steam and gas measurement in high-viscosity fluids — by utilizing our proven Preso® differential pressure technology. Preso differential meters offer a custom engineered solution specifically manufactured to fit within your system.



## Applications:

- Dosing and blending
- Chemical batching
- Fluid, steam and gas measurement
- Fuel consumption monitoring
- Lube oil blending and loading
- Process cooling water
- Custody transfer



# Safety and Regulatory Compliance

## Increased standards requirements

Producing chemicals and petrochemicals involves handling hazardous materials and managing large amounts of energy. Because of these conditions, when something goes wrong at a processing facility, it can have catastrophic consequences.

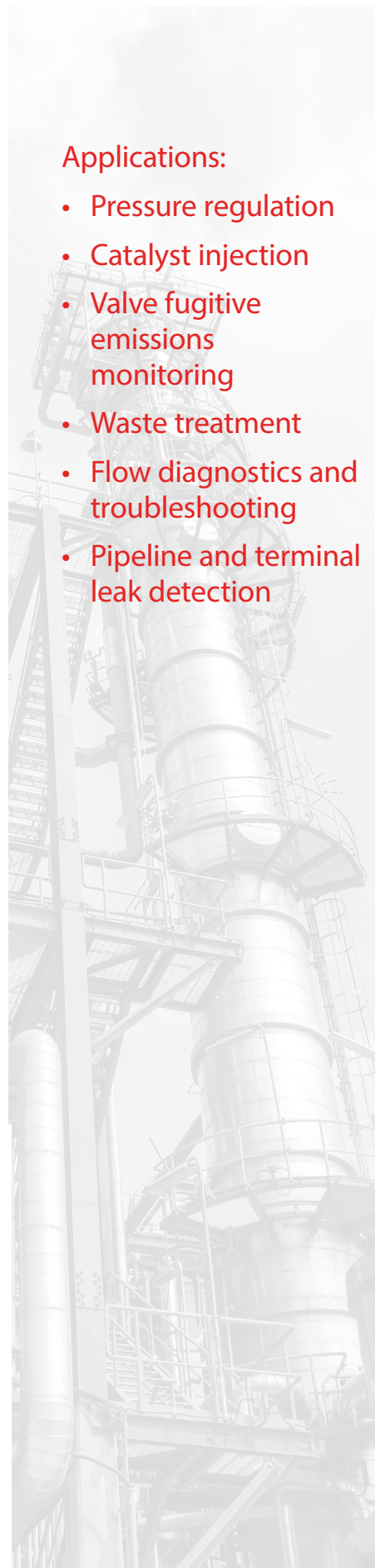
Badger Meter delivers robust solutions to help chemical firms ensure the safety of their workers and the environment. This is key to complying with strict standards set by the U.S. Environmental Protection Agency (EPA), American Society for Testing and Materials (ASTM), American Society of Mechanical Engineers (ASME), Canadian Registration Numbers (CRN), International Society of Automation (ISA), and other regulatory bodies.

Take our Research Control Valve (RCV) products: They provide accurate pressure regulation in plant safety systems and can be used to inject reactants into reactors. RCV smart valve positioners can also help detect fugitive emission leak paths in pneumatically actuated valves and help keep waste byproducts within prescribed limits.

Badger Meter also offers a choice of precise and dependable turbine flow meters for chemical processing. Our Blancett and Cox meters are intended for applications with wide flow, pressure and temperature ranges. They feature high-performance materials of construction and carry hazardous area or explosion-proof certifications for demanding industrial installations.

## Applications:

- Pressure regulation
- Catalyst injection
- Valve fugitive emissions monitoring
- Waste treatment
- Flow diagnostics and troubleshooting
- Pipeline and terminal leak detection



# Proven Flow Instrumentation

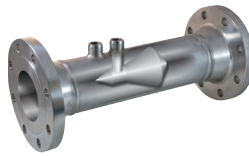
Badger Meter Flow Instrumentation provides many useful solutions for chemical and petrochemical manufacturing. From rigorous batching and blending applications, to fuel consumption monitoring and steam measurement, our products are recognized for high accuracy, proven reliability and a low cost-of-ownership.



**Electromagnetic Flow Meters**  
Water distribution, process water and waste flow applications



**Differential Pressure Meters**  
Designed for a wide range of liquid and gas metering applications



**Ultrasonic Flow Meters**  
Clamp-on meters for process fluid and waste flow applications



**Gas Flow Meters**  
Accurately measure flow of gases in chemical processing



**Oval Gear Flow Meters**  
Direct measurement of actual fluid volume



**Research Control® Valves**  
Control of liquid or gas, including dependable pressure regulation and emissions monitoring



**Dual Rotor Turbine Flow Meters**  
Precision flow measurement with exceptional linearity



**Turbine Flow Meters**  
Designed for wide flow and temperature ranges



**Mass Flow Meters**  
Direct measurement of fluid over wide temperatures



# Flow Dynamics® Calibration Services

The Badger Meter Flow Dynamics lab is a major, independent primary standard flow calibration laboratory, supplying both manufacturers and end users with industry-leading calibration results.

## What we provide:

- Calibration and repair of most types of flow meters
- Multiple viscosity liquid calibrations using Strouhal-Roshko analysis
- Calibration history files for future comparisons
- Research and development testing for flow measurement devices
- Variety of inert gas calibrations
- Correlation and extrapolation methods simulating hazardous fluids
- Electronic calibrations for flow computers and signal conditioners
- OEM production calibration service
- NIST-traceable calibrations



FM 78587  
AS9100 Rev. C and  
ISO 9001:2008

## Quick Calibration Service:

Seven-day turns or less for single viscosity calibrations, without expedite fees. Both on-site and field calibration services available.



- Calibration for most flow meter types
- OEM production calibrations
- NIST-traceable primary standards
- NVLAP (Code 200668-0) accredited\*



\*NVLAP accreditation applies only to the Badger Meter Flow Dynamics calibration Lab, located in Scottsdale, AZ.

## Control. Manage. Optimize.

Trademarks appearing in this document are the property of their respective entities. Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists. © 2016 Badger Meter, Inc. All rights reserved.

[www.badgermeter.com](http://www.badgermeter.com)

**The Americas | Badger Meter** | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400  
**México | Badger Meter de las Americas, S.A. de C.V.** | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882  
**Europe, Middle East and Africa | Badger Meter Europa GmbH** | Nurtlinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0  
**Europe, Middle East Branch Office | Badger Meter Europe** | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503  
**Czech Republic | Badger Meter Czech Republic s.r.o.** | Mařikova 2082/26 | 621 00 Brno, Czech Republic | +420-5-41420411  
**Slovakia | Badger Meter Slovakia s.r.o.** | Racienska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01  
**Asia Pacific | Badger Meter** | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836  
**China | Badger Meter** | 7-1202 | 99 Hangzhong Road | Minhang District | Shanghai | China 201101 | +86-21-5763 5412  
**Switzerland | Badger Meter Swiss AG** | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11