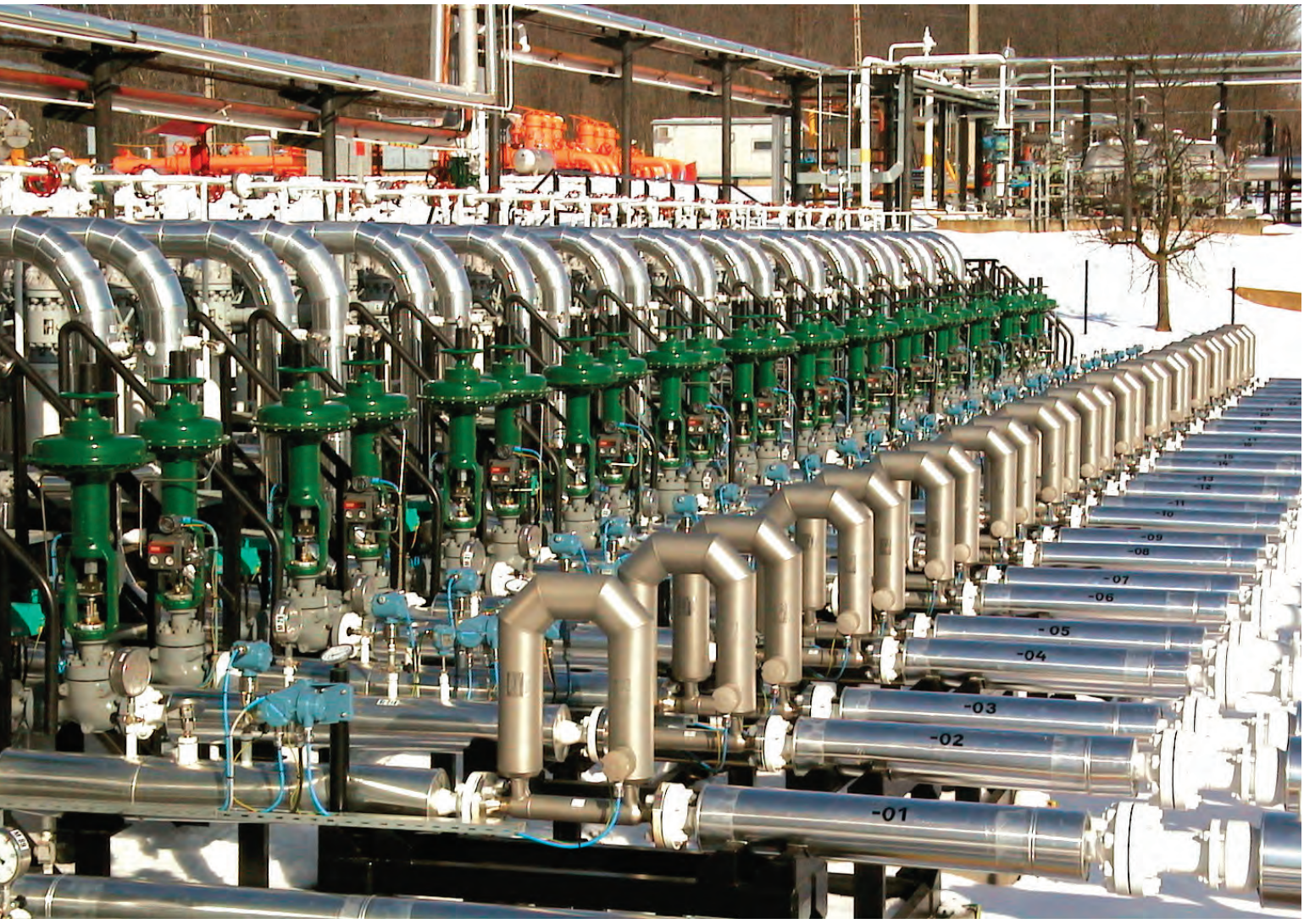
Fulfill Production Goals and Mitigate Risk

Emerson's Integrated Blending Solution



EMERSON™
Process Management

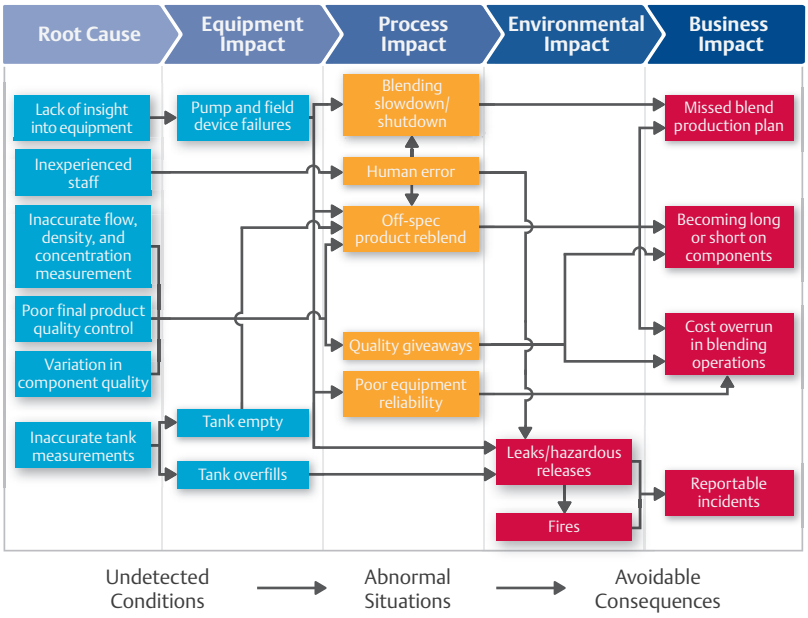
Tighter control for better performance

While your refinery's blending operation yields outstanding profits, you are challenged to meet your production plans, as well as manage excessive costs and the ongoing threat of reportable incidents.

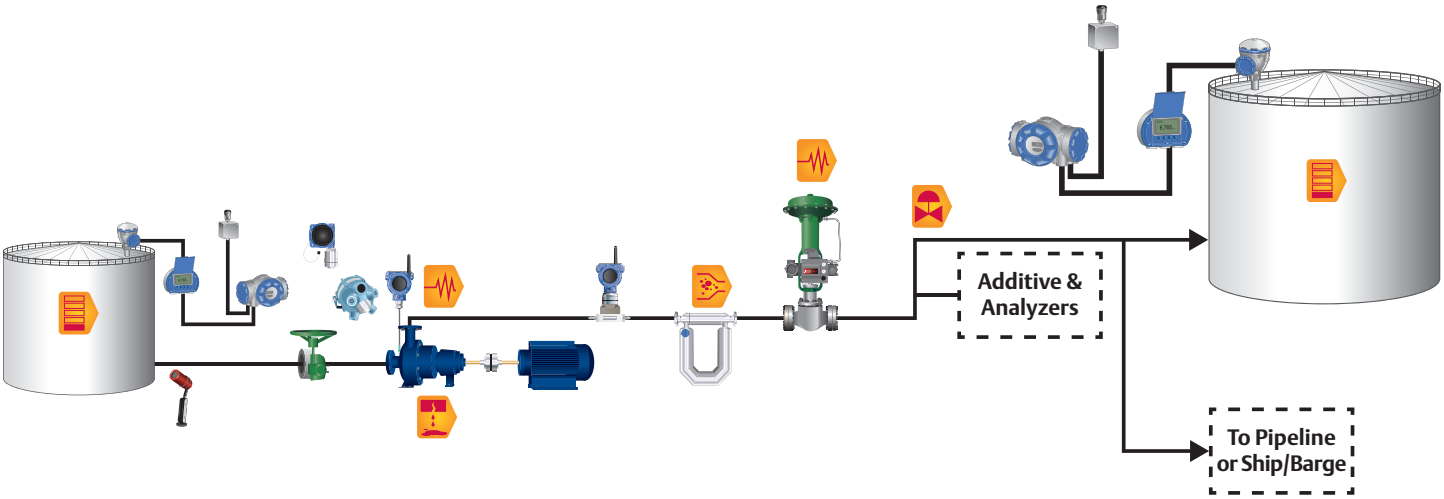
Running an efficient blending operation is a top priority at your refinery, but globally, process manufacturing industries like yours lose $20 billion annually because of unscheduled downtime and poor product quality. So, when mechanical disruptions or operator miscalculations create an unscheduled event, forcing you to shut down your operation—or you have to push back schedules to reblend product that doesn't meet specifications—there is a chain reaction and you are unable to meet your blend production plan. Human error multiplies the effects.

In addition, errors as small as 0.3% in the blend accuracy, caused by the flow meter providing the blend information, can substantially decrease profitability. And when it comes to maintenance strategies, it is important to note that up to 60 percent of safety incidents occur because of reactive executions. So, finding a way to operate your blending operation efficiently, cost-effectively, and safely is essential.

The Anatomy of Blending Performance



Common Threats to Blending



EQUIPMENT AND INSTRUMENTATION PROBLEMS

Equipment problems, such as pump cavitation, bearing wear, and stuck valves can lead to failures that cause unexpected downtime, missed production schedules, increased maintenance costs, and even reportable incidents.

INACCURATE FLOW/MASS DENSITY MEASUREMENTS

Inaccurate flow/mass and density measurement can result in products that don't meet specifications, so they need to be downgraded or require reblending which costs time and money. Target volumes for each component may not be met if flow meters lose their accuracy due to two-phase flow or entrained vapor in the line, or mechanical wear over time.

HYDROCARBON LEAKS

Leaks caused by mechanical failures in blending equipment can be catastrophic. Early detection of hydrocarbon leakage can help avoid toxic releases, fires, and their consequences.

POOR RECIPE BLENDING CONTROL

Poor recipe management and control throughout the blending process increases variability in product quality, which not only leads to off-spec product that requires reblending and derails the production schedule, but often encourages quality giveaways, causing cost overrun in blending operations or suboptimum blends which utilize more expensive blend stocks.

INACCURATE TANK MEASUREMENTS

Inaccurate tank measurements can lead to suboptimum blending conditions or dry-run operation/tank overfills. Tank overfills are relatively rare events, but their consequences can be catastrophic. Serious incidents usually yield unacceptable risks to the tank owners/operators.

What if you could...

Get it right the first time, every time
With Emerson's solutions, you'll be able to operate your blending process more efficiently, enabling you to meet your quality and quantity targets on time. You'll also be able to reduce or eliminate the operating constraints that lead to inefficiencies, meet your blending requirements the first time, and access human resources and training designed to reduce human error.

Tighten component control
By partnering with Emerson, you can control the blending process more precisely, incorporate a predictive maintenance strategy into your process, so you only repair equipment that needs service, and minimize the need for reblending because you have the right resources and technology to do it right the first time.

Access greater equipment insight and respond to problems early
With Emerson's state-of-the-art technology, safety systems, certified local experts, and sophisticated training methodology, you'll be able to keep your equipment operating efficiently and optimize process reliability to reduce the number of hazardous events–such as shutdowns and startups– that place your people, facility, and community in harm's way.

Protecting your profit

Industry experts suggest that refineries can minimize Octane and RVP giveaway by 50 percent, using blender control and optimization. This can result in an annual savings of more than $5 million.

INPUT	
a. Blender capacity in barrels per day	100,000
b. Operation days per year	350
OCTANE GIVEAWAY BENEFITS	
c. Actual octane giveaway (ON)	0.25
d. Best practice octane giveaway (ON)	0.03
e. Reduction in octane giveaway with blender control and optimization	50%
f. Octane giveaway cost ($/ON/bbl)[1]	2.73
g. Percentage time ON limiting[2]	33%
Annual Octane Giveaway Cost Reduction (a*b*[c-d]*e*f*g)	**$3,468,465**
RVP GIVEAWAY BENEFITS	
h. Actual RVP giveaway (psi)	0.5
i. Best practice RVP giveaway (psi)	0.058
j. Reduction in RVP giveaway with blender control and optimization	50%
k. RVP giveaway value (additional nC4 upgrade)[3]	0.379%
l. RVP giveaway value (LPG to regular differential $/bbl)[3]	35.10
m. Percentage time RVP limiting[1]	33%
Annual RVP Giveaway Cost Reduction (a*b*k*l*m)	**$1,536,485**
OPTIMIZATION BENEFITS	
Annual Premium versus Regular Optimization Improvement (a*350*e*0.05)[4]	**$4,777,500**
ADDITIONAL BENEFITS	
n. Inventory holding cost reduction[5]	$140,000
o. Demurrage costs/missed shipping schedule	$175,000
p. Reduced additive costs[6]	$35,000
Annual Additional Cost Reduction (n+o+p)	**$350,000**
TOTAL ANNUAL PROFIT IMPROVEMENT	**$10,132,450**

Value calculation notes
1. *Based delta between regular and premium gasoline; assume premium sales available*
2. *Assumes no other spec is limiting achievement of reduced octane giveaway; mostly seasonal based*
3. *Additional amount of nC4 which can be upgraded to regular gasoline due to giveaway reduction*
4. *Assumes by optimum usage of components can upgrade equivalent amount from regular to premium grades*
5. *Assumes Inline Blend Certification (ILBC) allows shipping directly and reduced rework*
6. *Closer control of gasoline additives results in reduced usage*

Get Started Today at
EmersonProcess.com/RefineryBlending

Blending Solution

Emerson 's One Platform SmartProcess Blender Control & Optimization solution delivers complete regulatory control of the automated blend process for gasoline, diesel, and other petroleum-based products.

The blending solution is pre-engineered with templates that can be customized to fit the unique requirements of your particular project. Your package can include optional modules and features, such as blend order management, analyzer trim control, recipe management, tank inventories, and quality tracking.

Request Information

Use our simple online form to select the options most important to you. An Emerson specialist will contact you shortly.

Scan this code or visit
EmersonProcess.com/RefineryBlending

Emerson's SmartProcess™ Blend Integrated Solution

SOFTWARE

ONE PLATFORM SMARTPROCESS BLENDER CONTROL AND OPTIMIZATION

DeltaV blend control application/single-control platform automates the functions necessary to setup, start-up, execute, shutdown, and account for an in-line blending system, covering all activities from blend optimization to online control of the final blend properties. Includes complete regulatory control of the automated blend process and offers optional modules and features, such as blend order management, analyzer trim control, recipe management, tank inventories, and quality tracking

AMS SUITE: INTELLIGENT DEVICE MANAGER, ASSET GRAPHICS, MACHINERY HEALTH MANAGER

AMS Intelligent Device Manager displays predictive diagnostic information from valves and field devices. Dashboards provide alerts when a device needs attention, so repairs can be planned in advance. AMS Asset Graphics provides graphical displays that indicate operating conditions and helps identify abnormal performance in key equipment, and aggregates process and equipment data to analyze and report asset health. AMS Machinery Health Manager uses predictive diagnostics to identify equipment problems early, allowing maintenance to schedule repairs while reducing cost and downtime. Includes waveform, trends, and other vibration analysis tools.

NETWORK INTERFACE

SMART WIRELESS GATEWAY

Connects IEC 62591 (*Wireless*HART®) self-organizing networks with any host system.

ADDITIONAL OPTIONS

ROSEMOUNT WIRELESS DISCRETE TRANSMITTER with Tyco TraceTek Sensor

Senses liquid hydrocarbons (including crude and gasoline) and provides early warning of hazardous leaks before they become catastrophic.

SMART WIRELESS THUM ADAPTER

Allows devices compliant with HART 5 (and later revisions) to wirelessly transmit measurement and diagnostic information that was previously unavailable.

ROSEMOUNT ANALYTICAL GAS DETECTION TRANSMITTERS AND FLAME DETECTORS

Provides enhanced protection, fast response time, high reliability, and low false alarm condition rates for detecting gas leaks and fire events, to minimize the severity of safety incidents.

DEVICES

CSI WIRELESS VIBRATION TRANSMITTER

Provides early warning of excessive vibration in pumps. Helps determine root cause and guides corrective action. Optional functionality can identify premature bearing wear and predict failure.

ROSEMOUNT WIRELESS PRESSURE TRANSMITTER

Detects increases in discharge pressure variation, which leads to cavitation, impeller damage, and seal failure in cooling tower pumps.

ROSEMOUNT 2-IN-1 RADAR LEVEL GAUGE with Rosemount Tank Hub

Provides continuous and highly accurate tank overfill prevention. Contains two independent radar units in the same enclosure, which share a single antenna and tank connection for redundant level measurement.

MICRO MOTION CORIOLIS FLOWMETER

Enables accurate and simultaneous flow and density measurements for a continuous blend quality check. Smart meter verification technology verifies the meter performance without interrupting the process and exposing personnel to hazardous materials.

FISHER VALVES AND DIGITAL VALVE CONTROLLERS

Precisely control flow rates to blend the correct amount of the various components for blend recipe requirements. Predictive diagnostics feature provides online condition data of valve health in the field.

Emerson Process Management
1100 W. Louis Henna Blvd.
Building One
Round Rock, Texas 78681-7430
www.EmersonProcess.com

EMERSON™
Process Management

D352138X012 / Printed in USA / 7-13