



Refining Solutions from Honeywell

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Honeywell Process Solutions

Honeywell

Today's Agenda

Introduction

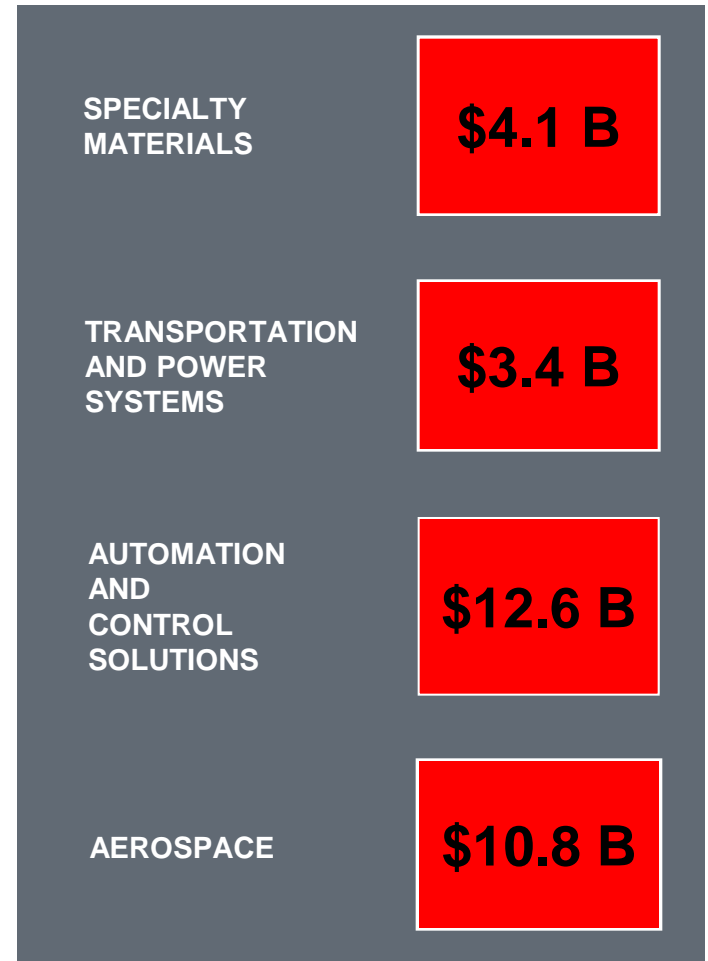
Refining Challenges

Unique Enterprise-wide Approach

Summary

Honeywell Corporate Overview

- Founded in 1886
- 122,000 employees in more than 100 countries; 870 direct offices
- Global leader in advanced technology products, services and solutions
- 120-year legacy of innovation
- Among world's leading patent holders
 - 11,000 active patents in the world



Financially Strong and Global

Honeywell Process Solutions Strategic Vision

Honeywell's Strengths

- Our best-in-class ability to gather data throughout a plant
- To use our domain knowledge to turn that data into information
- Put the data in front of decision makers in the most clear, actionable way possible

Turning data into information applies to four interlinked areas:

Better Process Efficiency

How to push the plant process to the maximum output / yield

Better Business Decision Making

Which crudes to process, which products to make and when

Better Asset Effectiveness

Deciding when/where / how to operate, maintain or repair equipment

Better Operator Effectiveness

How to react to different, abnormal circumstances

Experion connects operators and decision makers into the control loop.

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Refining Industry Trends

Safety

- Increased focus on safety and security

Reliability

- Managing mature infrastructure and retiring workforce in OECD
- Managing plant assets with less skilled resources in emerging regions
- Tight margins requiring maximum asset availability

Efficiency

- Reducing operating costs
- Increasing throughput and yield especially in emerging regions
- Flexibility on feed (crudes) and product slate

Sustainability

- Increased Energy Efficiency to reduce cost and emissions
- Meeting product specs while minimizing give away
- Meeting Renewables mandates



Improve Business Performance

Business performance & bottom-line results are impacted by:

- Safety incidents
- Downtime
- Lost productivity
- Regulatory compliance
- Budget/resources and schedule during start-up



Improve Business Performance

Honeywell delivers bottom-line results:

- Deliver total start-up cost reduction of \$47 MM*
 - Faster startup by 34 days
- Enable operational benefits of \$27 MM/ annum**
- Increase reliability by 7-10%
- Reduce energy usage and emissions by 12-25%**



Improve Business Performance

Safety



**Protect People,
Assets & Processes**

Reliability



**Improve Availability
Reduce Downtime**

Efficiency



**Improve Productivity
Reduce Cost**

Sustainability



**Maximize Return on
Investment**

**Honeywell solutions address
these critical business performance issues**

What are the Business Pressures?

Safety

- Reduce and mitigate incidents
- Improve emergency response
- Reduce human error
- Reduce unexpected equipment failures
- Maintain stable control



What are the Business Pressures?

Reliability

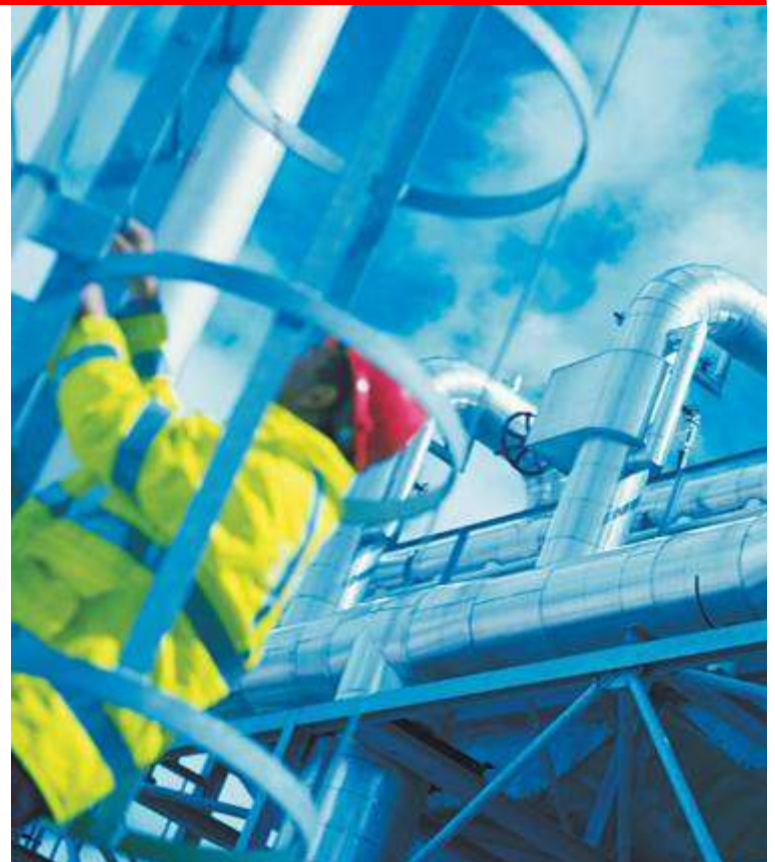
- Minimize unscheduled downtime
- Protect high capital cost assets:
 - Mature assets and retiring workforce in OECD
 - New assets and inexperienced workforce in emerging regions
- Enhance asset life
- Reduce/eliminate abnormal situations



What are the Business Pressures?

Efficiency

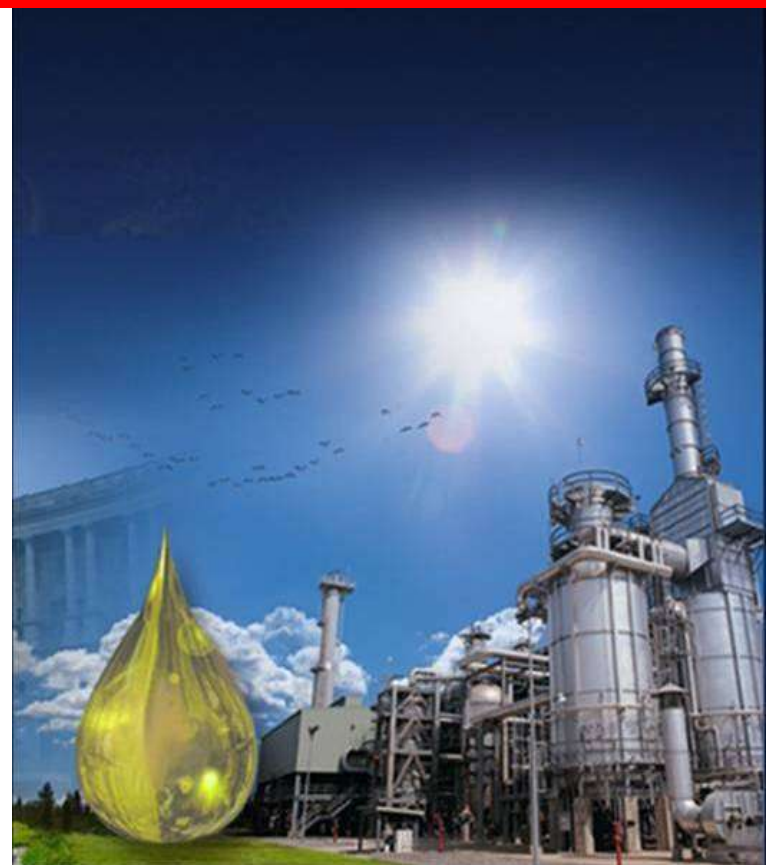
- Increase throughput and yield
- Improve Planning and Scheduling
- Be flexible to meet product demand volatility
- Increase energy efficiency
- Operate consistently
- Capture best operating practices
- Meet increasingly stringent product specs including biofuels while minimizing give away
- Reduce overall cost



What are the Business Pressures?

Sustainability

- Maintain & increase return on investment
- Reduce lifecycle costs
- Meet environmental regulations
- Transfer knowledge from aging to young workforce
- Minimize energy usage and emissions
- Use alternative energy resources where available



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You Know Us for Process Automation

**Automation &
Control**

**MES & ERP
Integration**

**Plant Performance
Solutions**

Advanced Control

Simulation

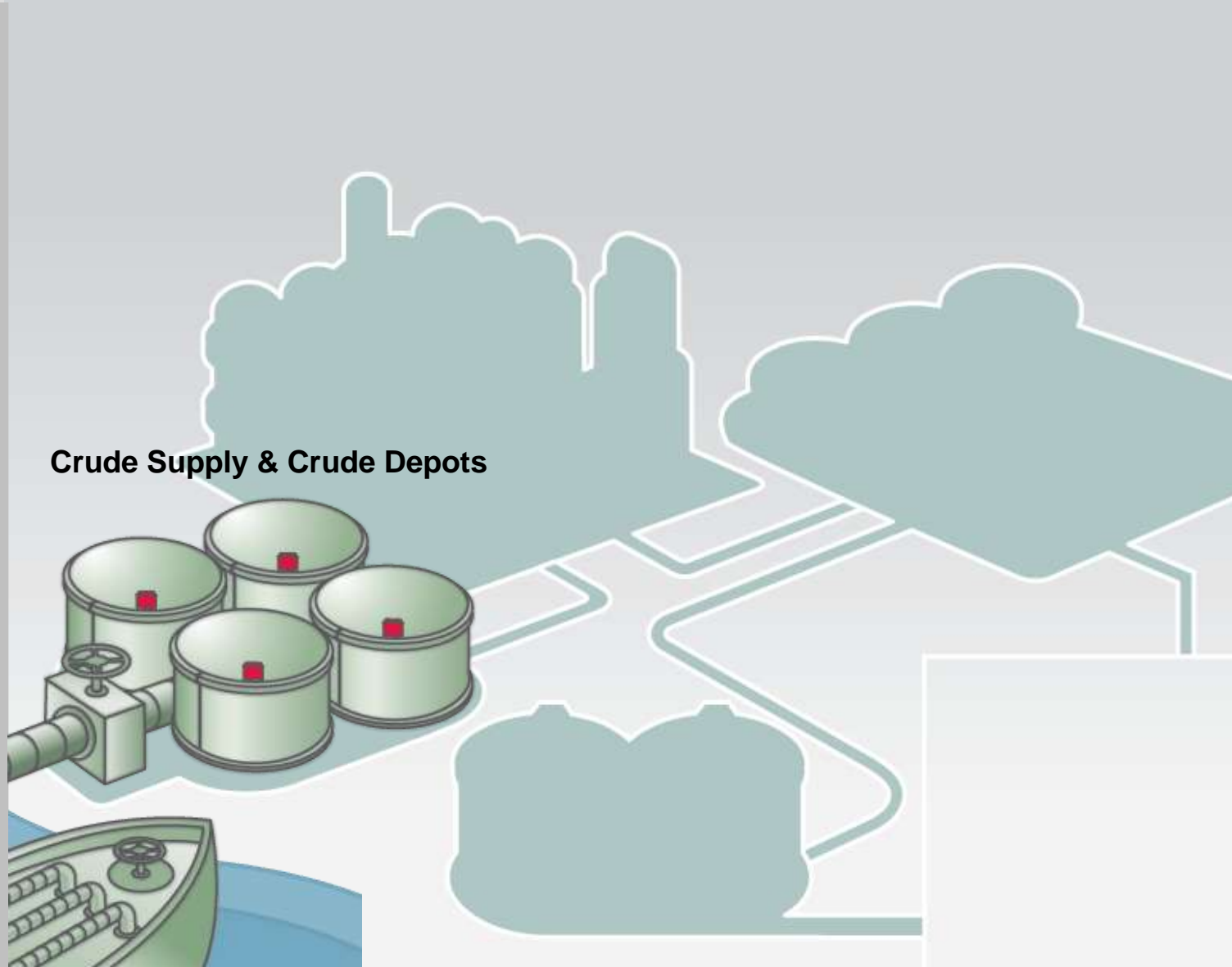
**Field Instruments
& Sensors**

Lifecycle Services



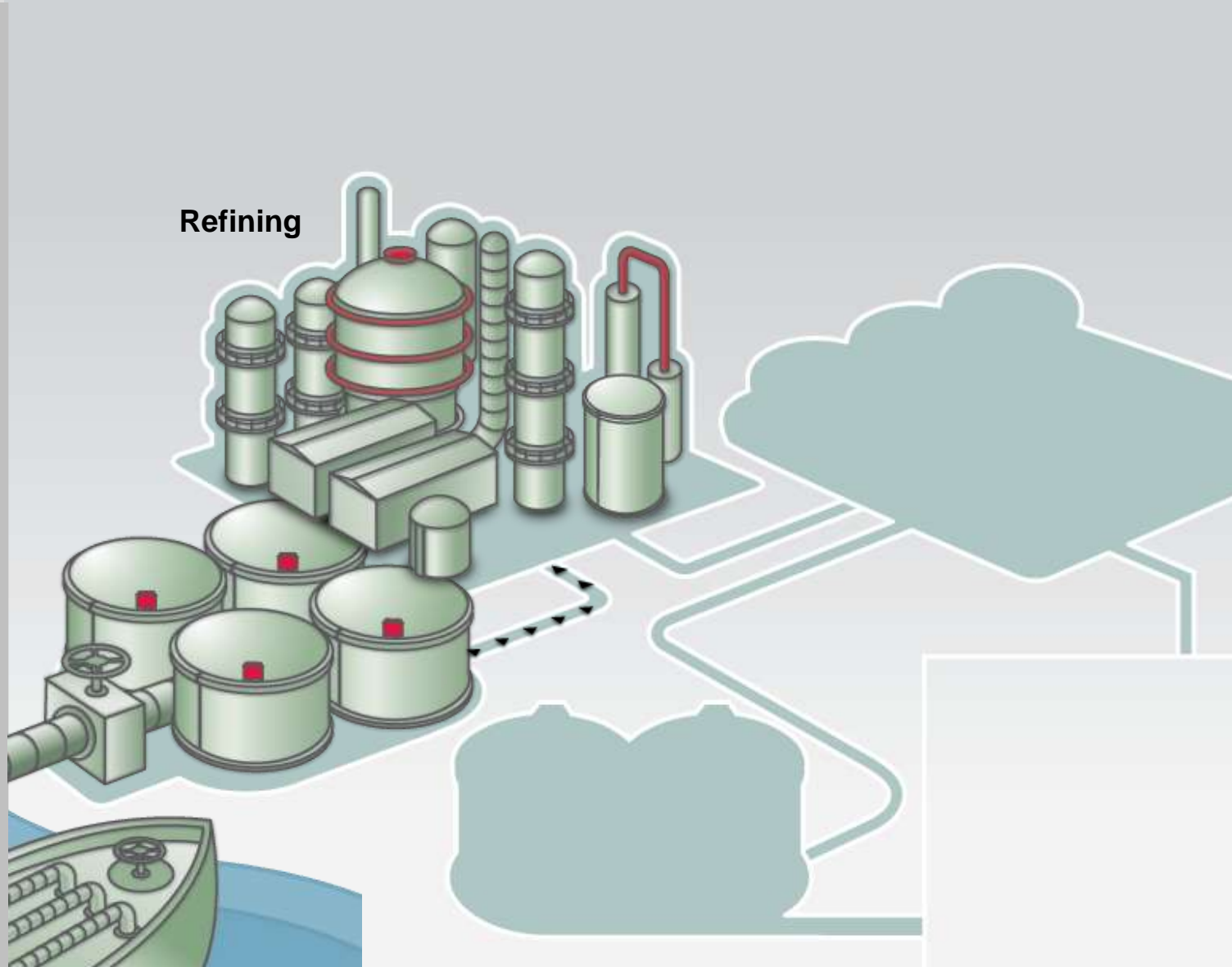
Get to Know Our Enterprise-Wide Solutions

- Tank Gauging and Instruments
- Terminal Automation
- Tank Farm and Inventory Management
- Wireless Instruments
- Planning and Scheduling
- Crude Blending



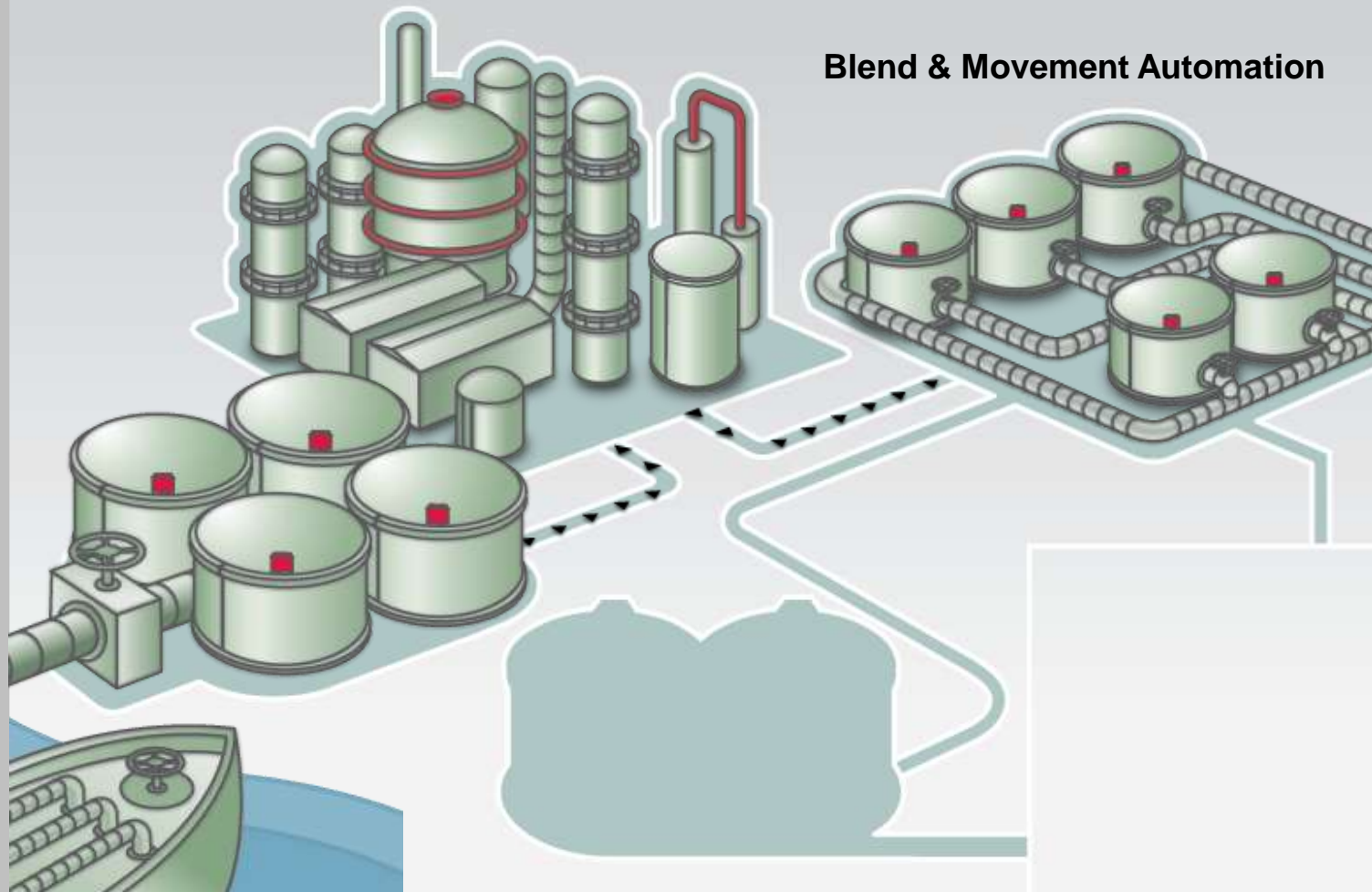
Get to Know Our Enterprise-Wide Solutions

- Process Technology
- Field Instruments
- Integrated Process Control, Fire and Gas and Safety Systems
- Alarm Management
- Asset Management
- Advanced Process Control and Optimization
- Process Simulation
- Operator Training
- Energy Management, Environmental Reporting System
- Production Management
- Operations Management
- Remote Monitoring



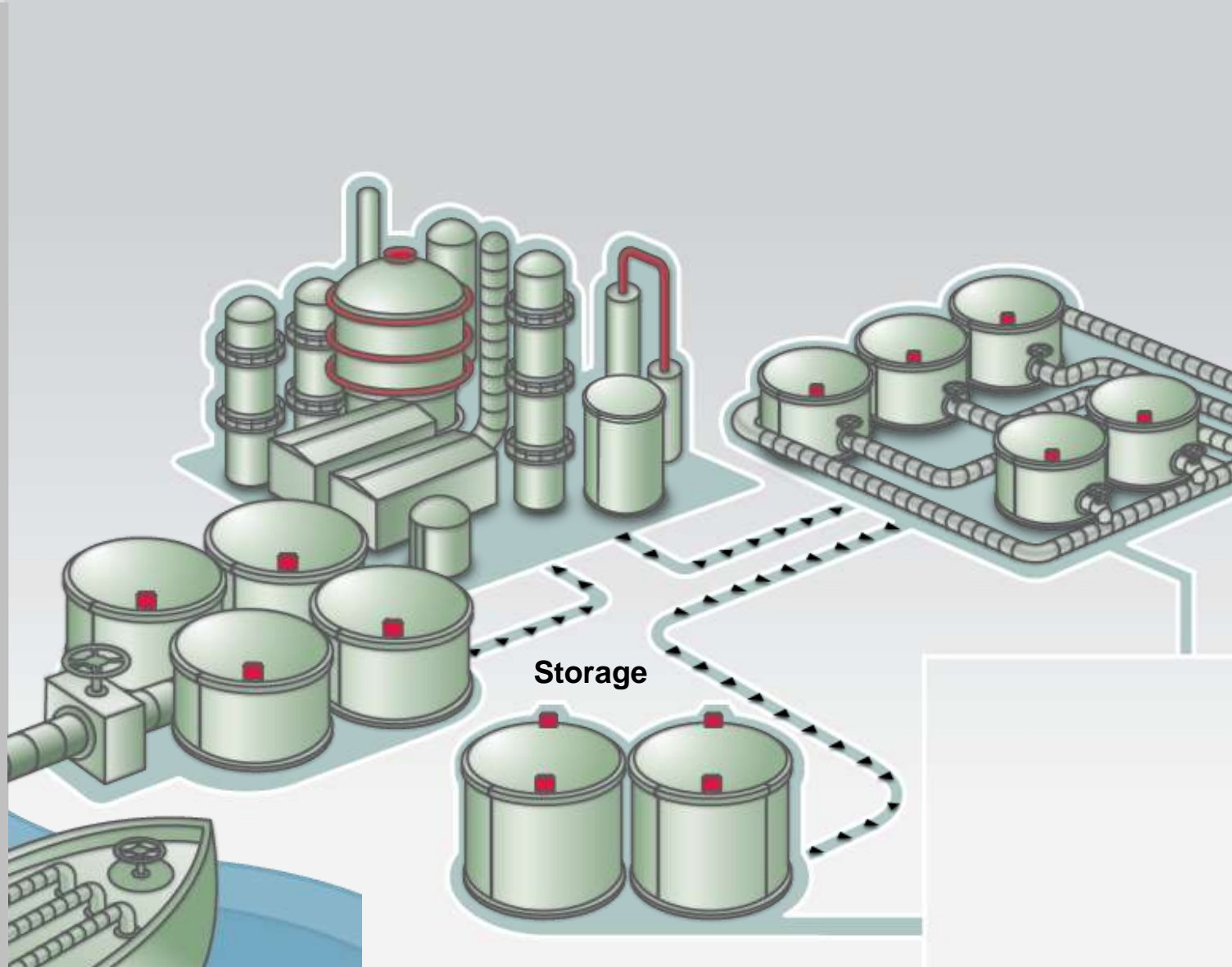
Get to Know Our Enterprise-Wide Solutions

- Blending:
 - Planning and Scheduling
 - Blending Orders
 - Data Analysis
 - Optimization and Property Control
 - In-line Blending
- Lab Information System
- Movement Automation
 - Inventory Monitoring
 - Movement Orders
 - Monitoring
 - Control



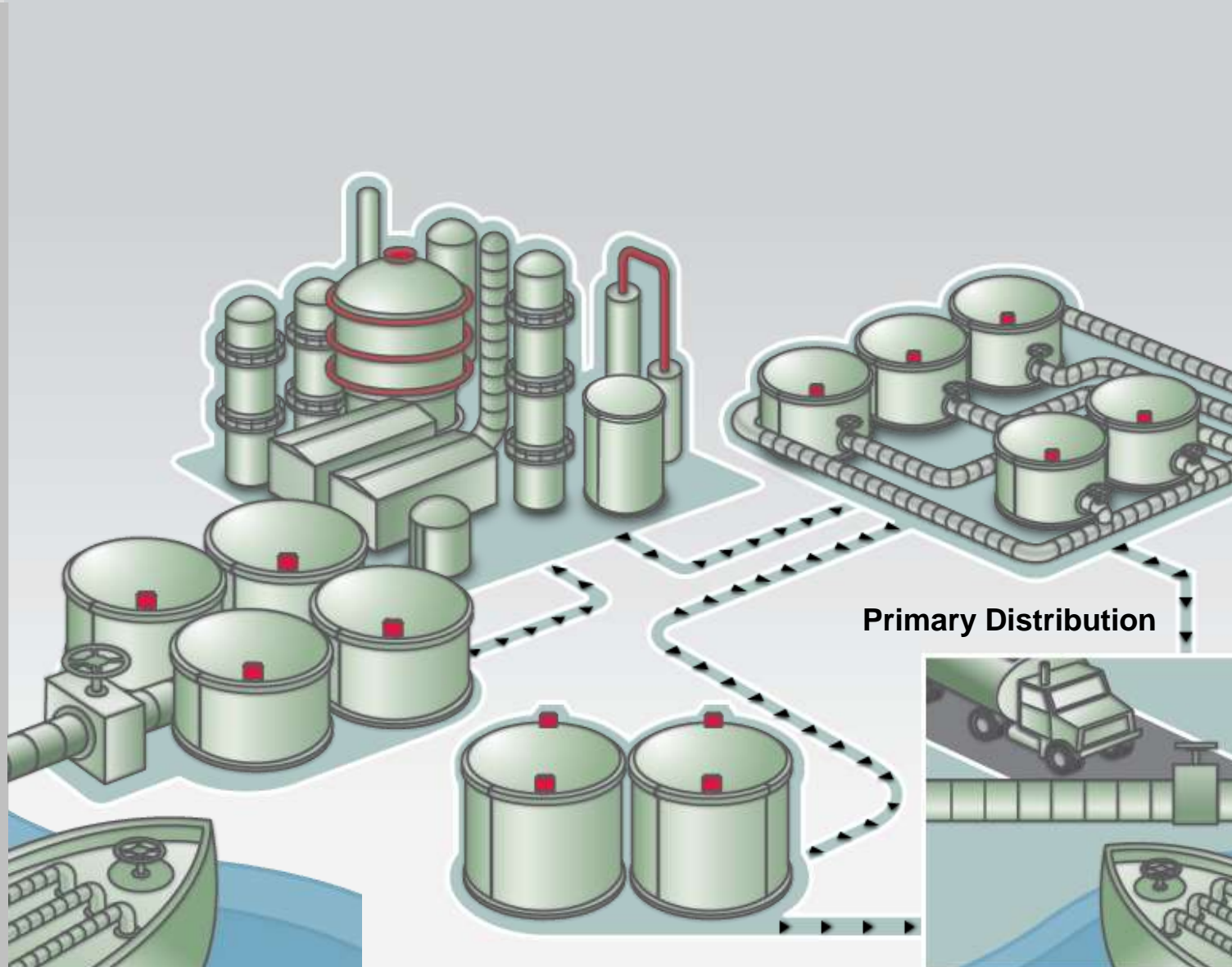
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- Tank Gauging and Instruments
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Get to Know Our Enterprise-Wide Solutions

- Terminal Automation
- Demand Planning
- Advanced Planning and Optimization
- Distribution Scheduling
- Event Monitoring
- Security Solutions



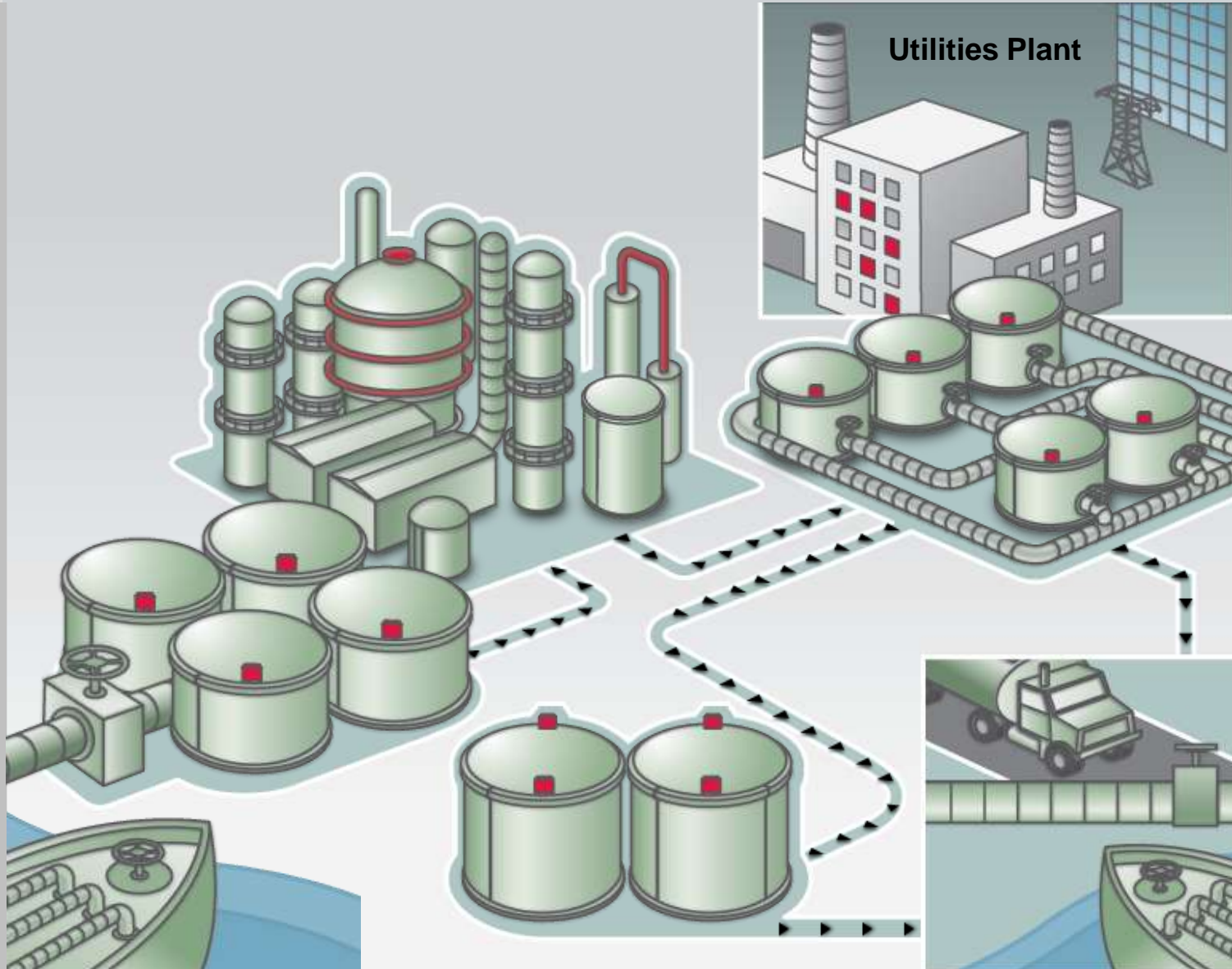
Get to Know Our Enterprise-Wide Solutions

- **Advanced Energy Suite**

- Combustion Control
- Master Pressure Control
- Economic Load Allocation for Boilers
- Economic Load Allocation for Turbines

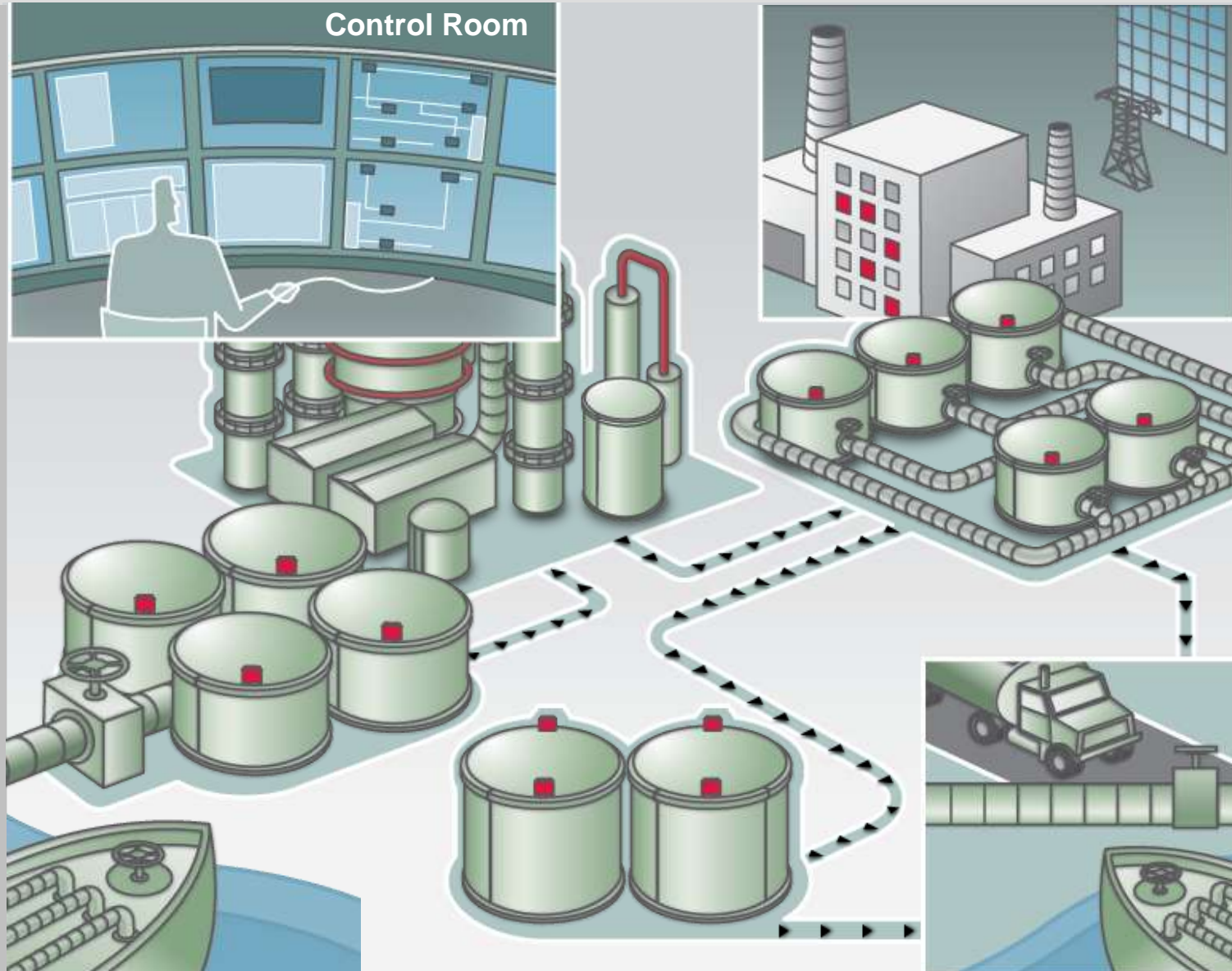
- **Utilities Optimization**

- Balance Supply with Demand
- Buy/Sell decisions
- Optimization including discrete decisions on fuel type and equipment usage



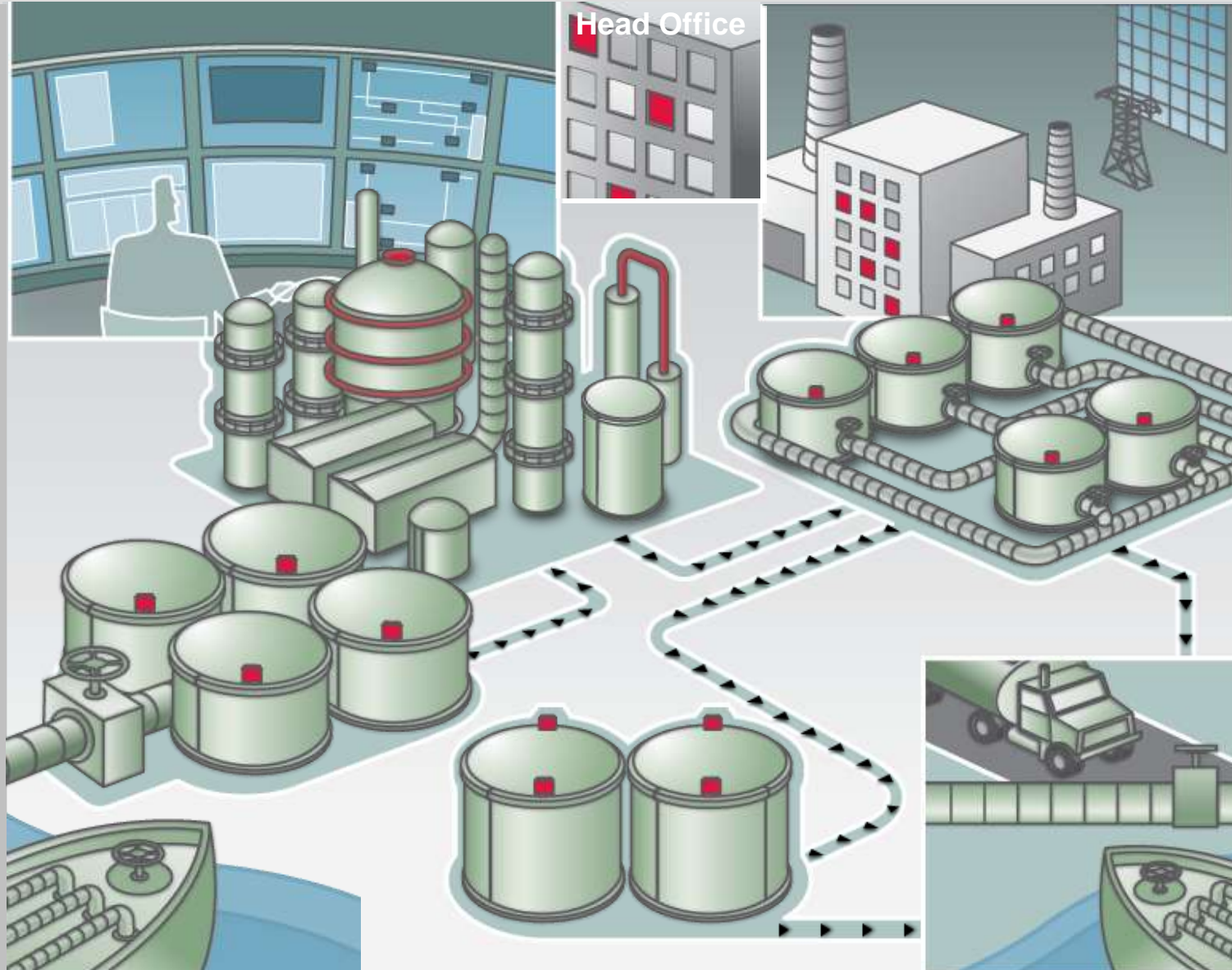
Get to Know Our Enterprise-Wide Solutions

- Automation & Control
- Plant Performance Solutions
- Advanced Control and Optimization
- Simulation
- Lifecycle Services



Get to Know Our Enterprise-Wide Solutions

- Project Engineering/ IMAC
- MES & ERP Integration
- MES
- Building Automation



Get to Know Our Enterprise-Wide Solutions

Honeywell's enterprise-wide capabilities in Refining help you achieve:

- Enhanced safety, reliability, efficiency, & sustainability
- Increased throughput and faster start-ups
- Highest asset availability
- Lowest risk
- Lowest cost of ownership
- Maximum lifecycle value

- Automation & Control
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- Project Engineering/IMAC
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- MES
- Building Automation

• Advanced Energy Suite

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• Blending:

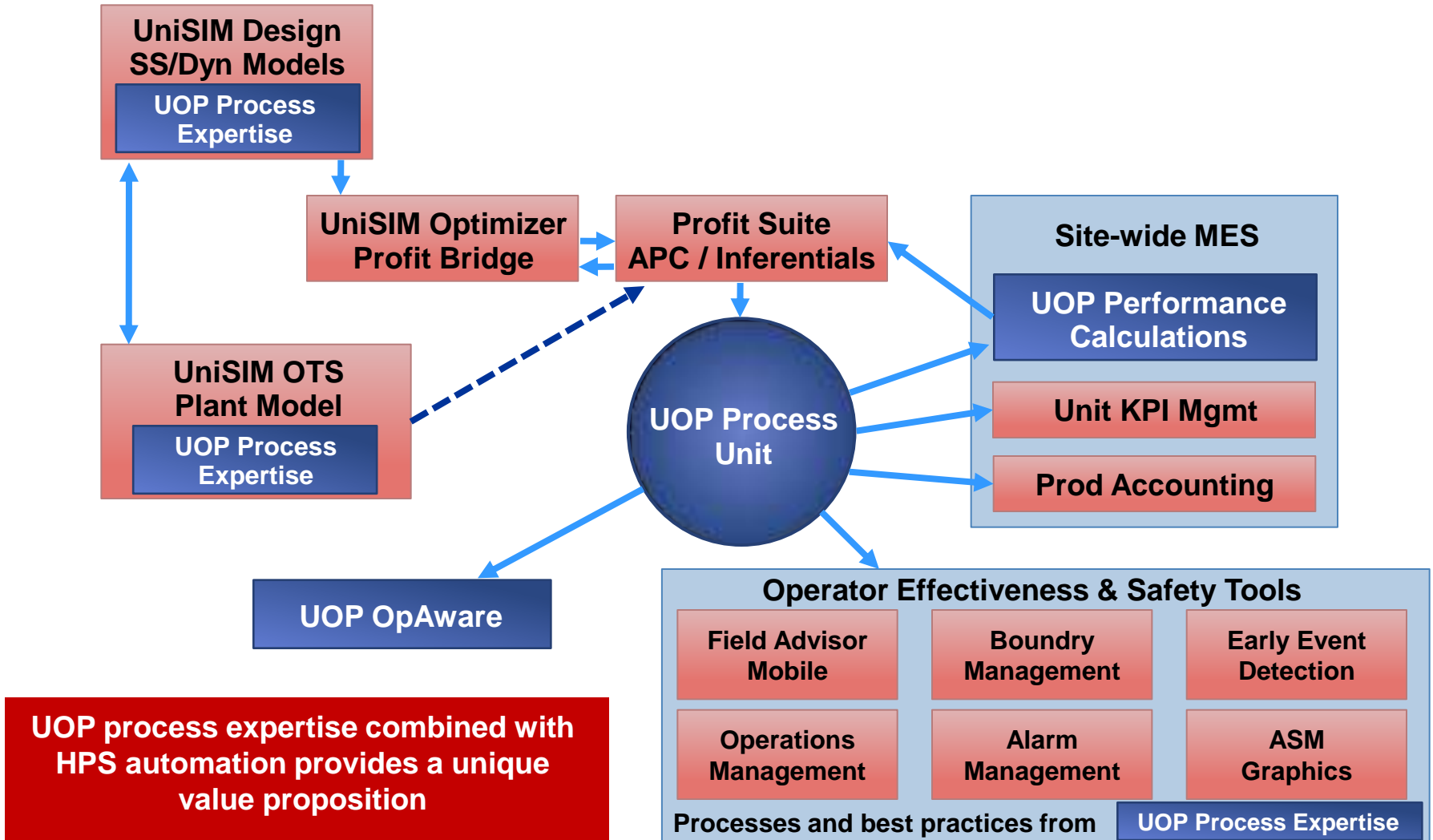
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UOP/HPS Integrated Solution



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Refining Expertise

- UOP is the world's largest provider of process technology to the refining & petrochemical industries with 2600+ patents
 - Over 90 years of experience in providing process licenses, catalysts, adsorbent and key equipment
 - Ranked #1 or 2 for most key conversion processes
- Honeywell automation solutions are present in over 50% of the refineries worldwide
 - Has over 30 years experience in refinery automation
 - Industry leader in Integrated DCS, Safety and Fire and Gas systems
 - Ranked #1 in Alarm Management, Operator Training, Advanced Process Control and Manufacturing Execution Systems



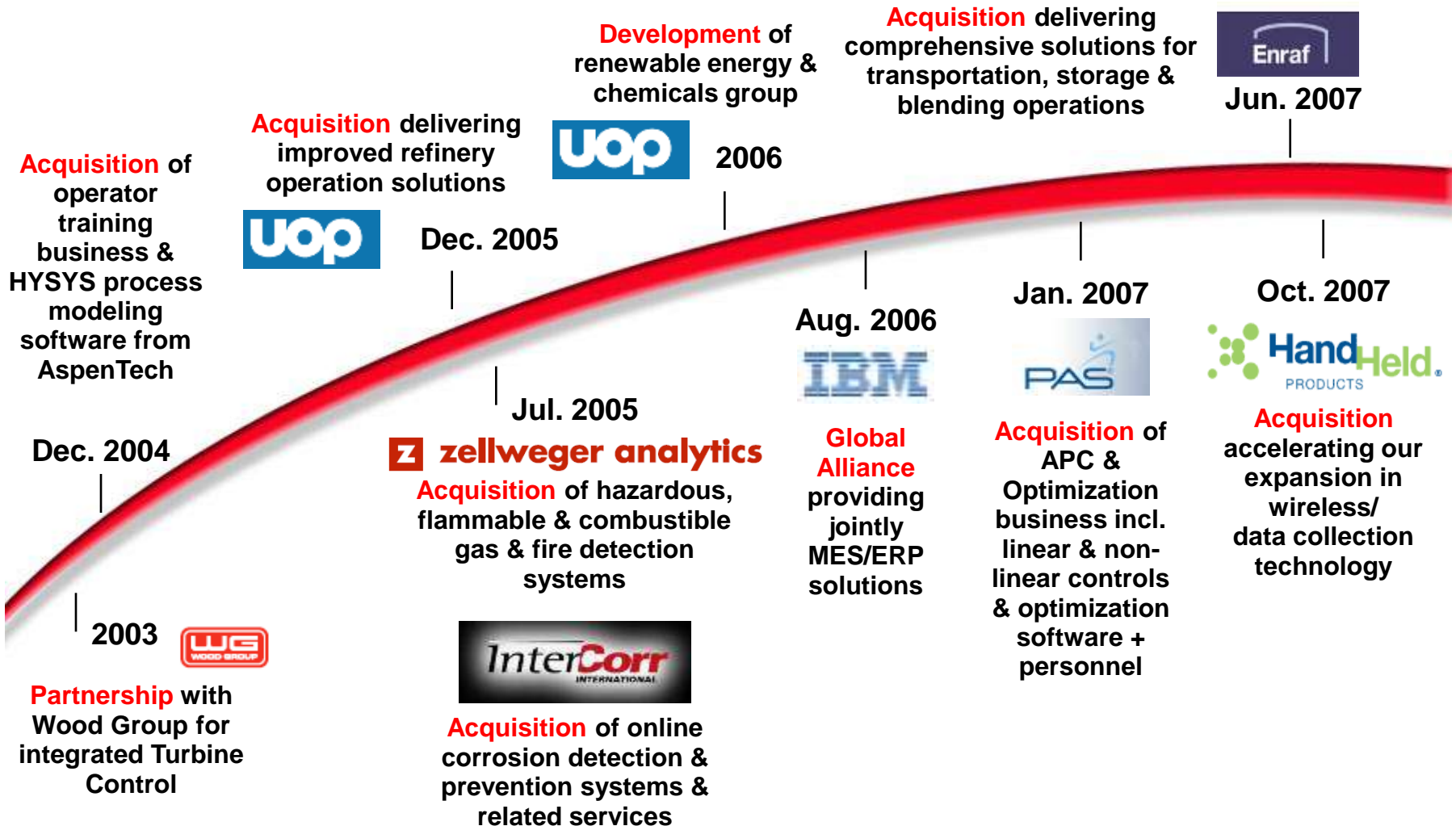
The Honeywell Difference

- Honeywell Process Solutions is #1 in automation solutions for refining
- UOP, a Honeywell Company, is #1 in process technology for refining and petrochemicals
- Callidus Technologies is a leader in environmental & combustion equipment
- Honeywell Enraf is a leader in terminal automation solutions
- Honeywell has proven global project execution, life cycle support and service capability

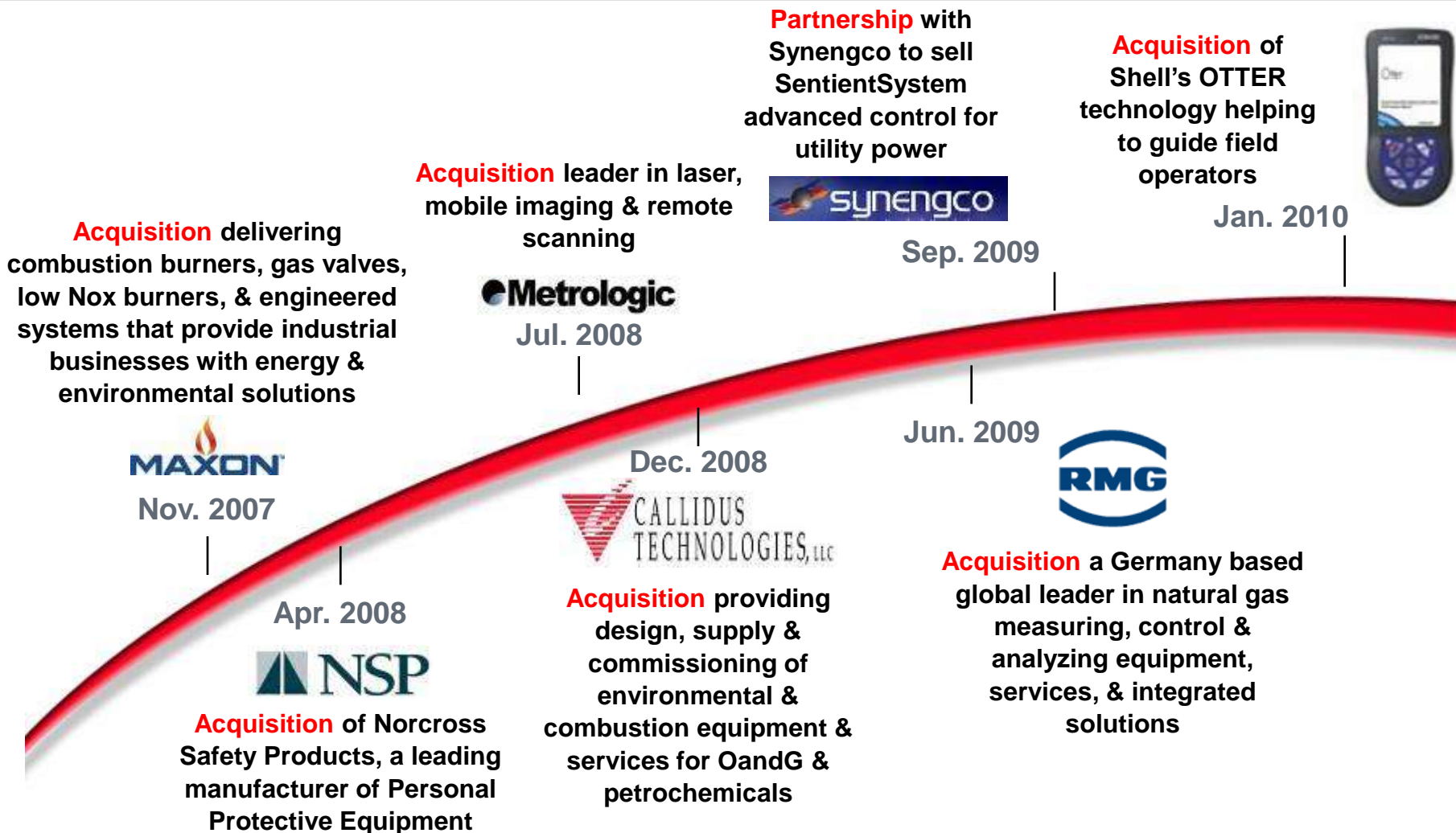


Backup Slides

Recent Acquisitions / Alliances 2003 - 2007



Recent Acquisitions / Alliances 2007 - 2009



Honeywell Reviews

- “World’s Most Ethical Companies“, *Ethisphere Institute*
- “World’s Most Admired Companies”, *Fortune* magazine
- “Company of the Year”, *Biofuels Digest*
- “Most Influential People in Finance”, *Treasury and Risk* magazine

