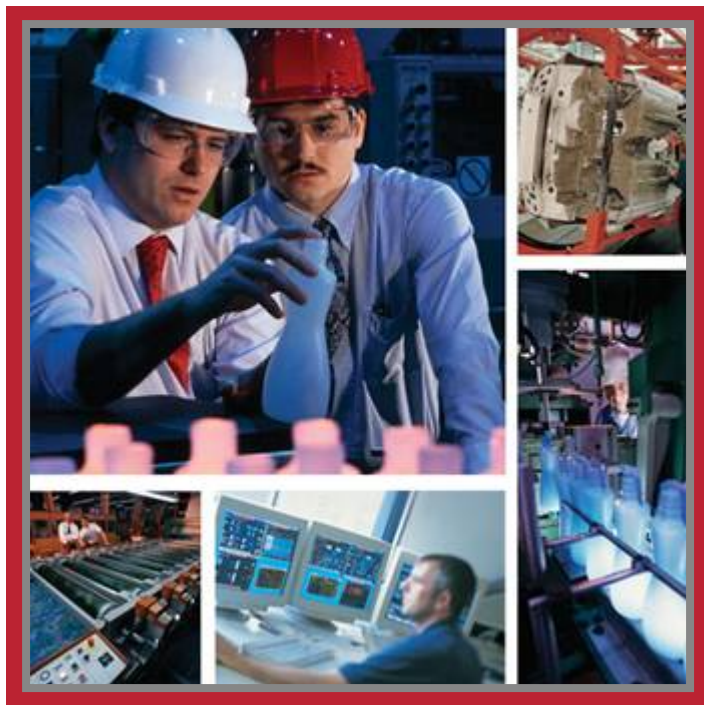


LISTEN.
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SOLVE.™



Sustainability and Energy Savings

Doug Burns
Sustainability Lead
Rockwell Automation

Agenda

- Defining Sustainability
- Developing an Energy Strategy
- Case Studies
- Open discussions

The objective is to maintain optimum energy procurement and utilization throughout an organization while minimizing Energy Costs, Waste and Environmental Impact without affecting Production

“A Natural Extension of Our Business”

- Driving cost, quality, productivity and flexibility improvements
- Automation and controls enable Sustainable production

“More Than Green”

- Energy and environmental concerns
- Efficient use of production assets and raw materials
- Workplace and product safety

“A Business Imperative”

- Not just society and environment
- Must improve global competitiveness

“Manufacturers Shouldn’t Go it Alone”

- Rockwell Automation can help
- We enable economic advantage in manufacturing

“Practicing What We Preach”

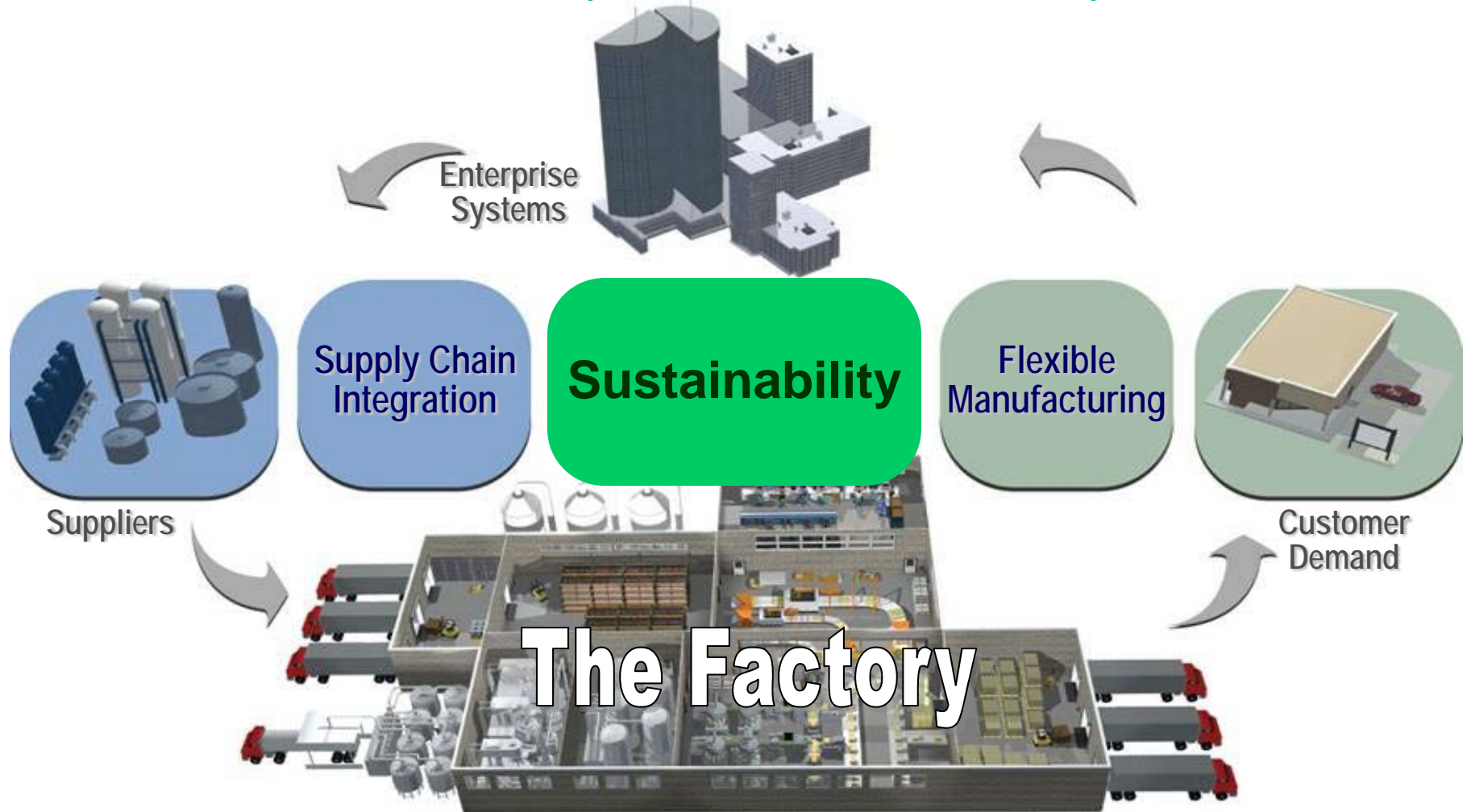
- Rockwell Automation applies sustainable production principles in its own facilities



Cleaner, Safer, More Energy Efficient

The Emerging Sustainability Imperative

Product & Production Safety | Environmental Protection | Energy Efficiency



Faster Time to Market | Lower Total Cost of Ownership | Asset Optimization | Risk Management

Consider.....

- Industry accounts for 1/3 of the total energy used across the globe
- Energy costs US manufacturers \$100 billion annually
- 5% of the worlds population consumes 22% of its energy
- 60% of fan systems on average are oversized
- Most chillers are oversized by 50–150%
- 30% of energy used in a building is unnecessary or inefficient
- Compressed air systems average efficiency is 15%

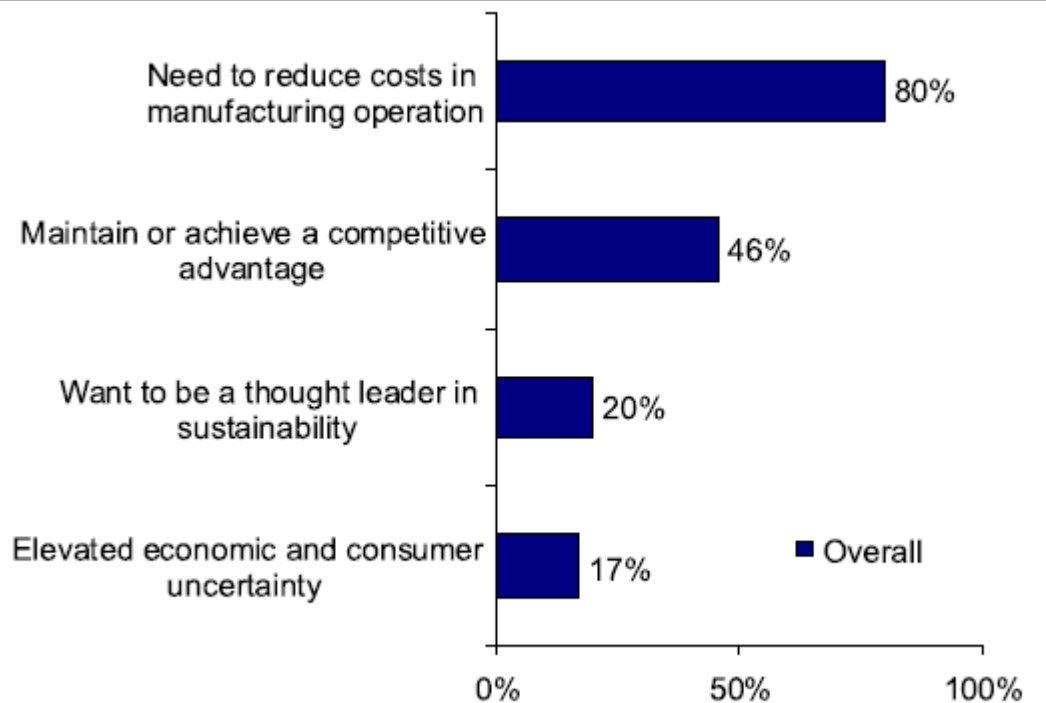
Most energy initiatives drive a 15% reduction in use!

Where are the Large Energy Savings?

Recent market study of Energy Management

- Overwhelmingly, cost reduction is the top priority

Figure 1: Top Market Pressures



Source: Aberdeen Group, April 2009

Energy Saving Opportunities are Significant on the Factory Floor!

Energy Savings Starts with a Plan



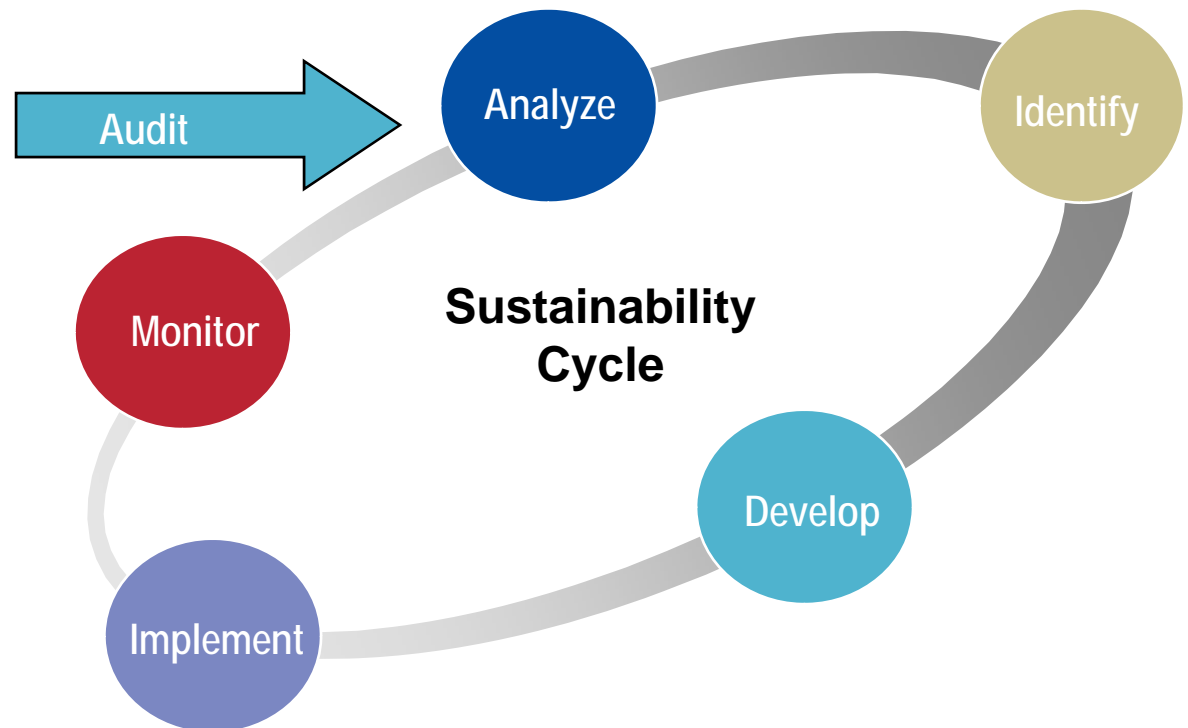
- Monitoring of utilities to determine usage
- Utilities Management ~ optimization
 - Plant production tied to utilities (air, steam, chilled water)
- Equipment Management ~ improve performance
 - Equipment re-programmed to current production rates
- Production Management ~ operations efficiency
 - Energy as a part of the product
- Small changes, big impact ~ prioritize, implement, repeat



Solutions needed to Monitor, Analyze and Control

Sustainability Driving Cost Savings

- Success Through:
 - Identify the baseline conditions
 - Evaluate existing projects results
 - On-going monitoring and goal setting



Rockwell Automation Milwaukee Energy Initiative

- Facility is 3,000,000 square feet
- Annual energy budget is \$4.3M
- Opportunity
 - Significant baseline consumption
 - Peak Demand component
 - Implement a monitoring strategy
 - Department accountability
 - Cost savings!
- Challenges
 - Campus grew over 100 years
 - Primary use evolved from manufacturing to office
 - Difficulty aligning meters with functional areas
 - Legacy networks in place
- Expected results
 - 75 existing power monitors
 - Dashboard view of energy usage
 - Identify targets for cost saving investments



Initiative Methodology



Utility Systems

- Electricity
- Steam
- Water
- Natural Gas

Production

- Compressed air
- Chilled water
- HVAC

Energy Costs

- Monthly Bills

RSEnergyMetrix

- Time of Day
- Monthly
- Demand load
- By Area

Process Studies

- Baseline - Peak
- Seasonal review
- Relative usage
- DOE benchmarks

Focus Areas

- Identify savings opps.

Behavior

- Savings through training
- Shifting usage to lower peak time
- Employee awareness

Programming

- Small engineering projects
- Optimize existing control
- Align utilities to requirements

Capital

- Requires > \$25K investment

Trend Observations

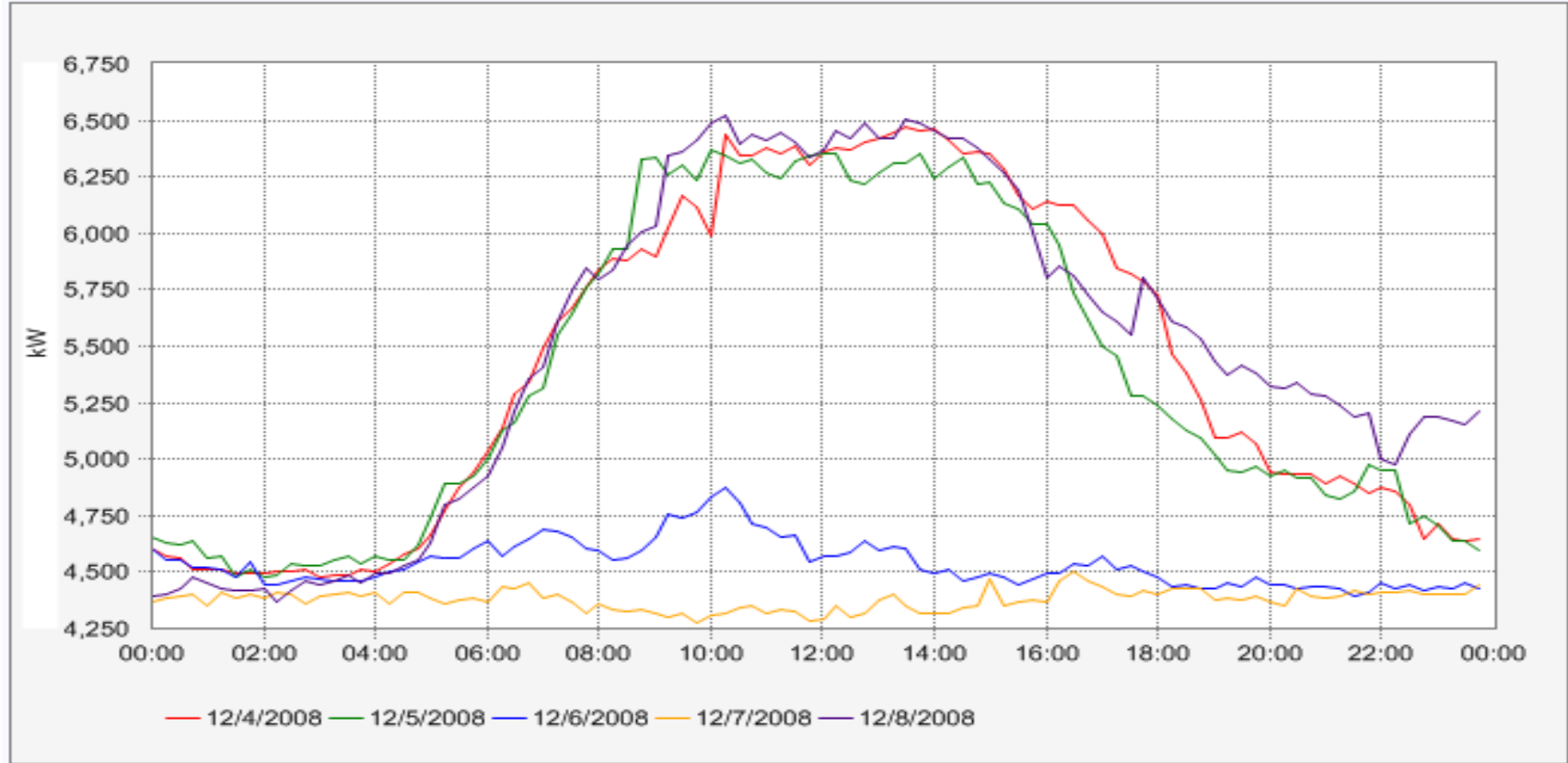
Total MKE Usage

Domain/Meter: Rockwell Automation Milwaukee Campus/1 WE Electric Mains/PFZT 1235 Bldg 42

Meter type: Electric Device class: Powermonitor II

Meter Data Trend **Calendar Trend** Meter Setup

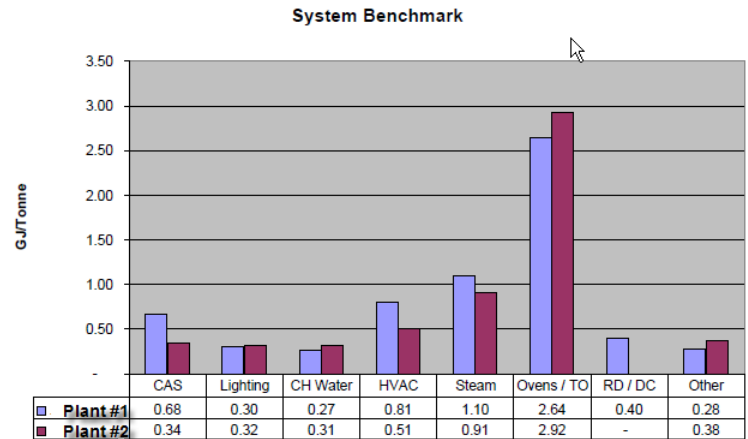
Meter tag Real Power Demand Month December Year 2008 Export Data



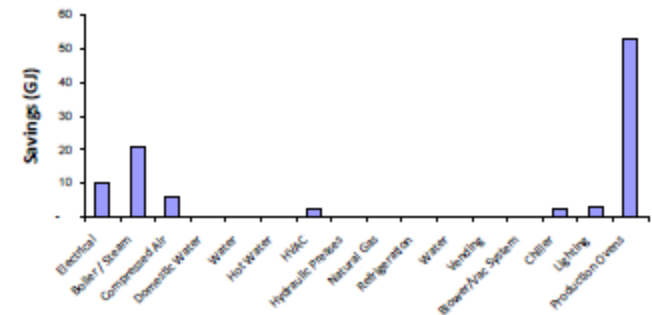
4500 KW base load costs \$1.2 M USD annually

Energy Initiative Example

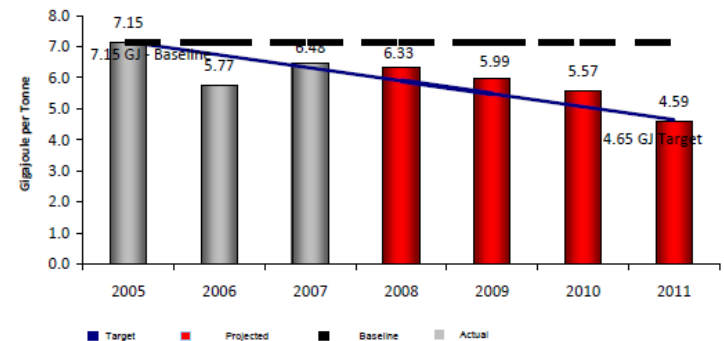
- Annual Utility Spend
 - Electricity \$2.4M
 - Natural Gas \$2.7M
 - Water \$52K
- Initiative Goals
 - Develop measurement strategy
 - Benchmark facilities
 - Implement energy savings projects
- Energy Audit Results
 - 48 projects identified
 - 14 projects less than 18 month payback
 - \$620K annual savings



Projects By Category



Program Target Roadmap



“More Than Green”

- Energy and environmental concerns
- Efficient use of production assets and raw materials
- Workplace and product safety

“A Business Imperative”

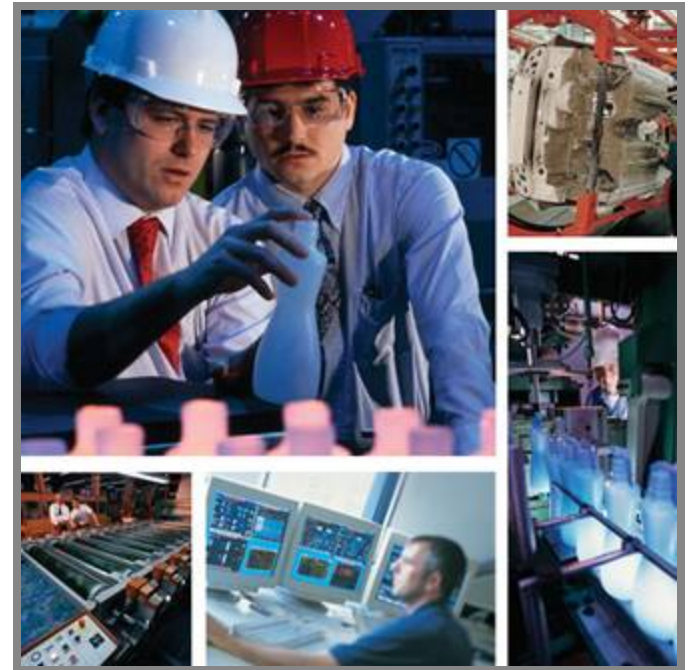
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Questions?