



Flow Control Segment: Oil & Gas Market Overview

O I L & G A S

David Linton, President
Curtiss-Wright Flow Control

March 15, 2007
Houston, TX

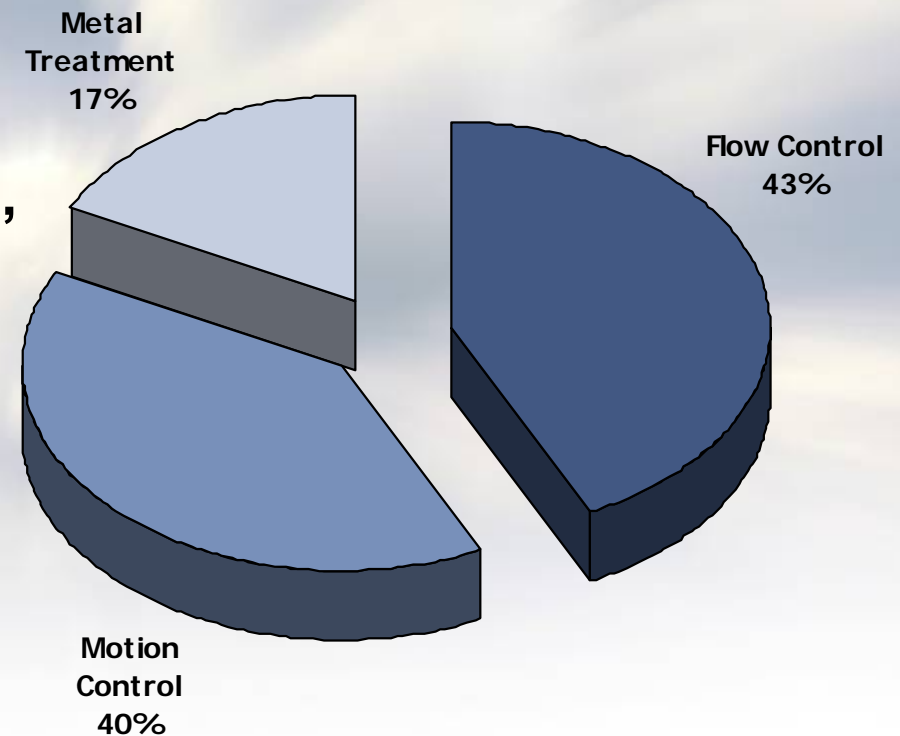


Agenda

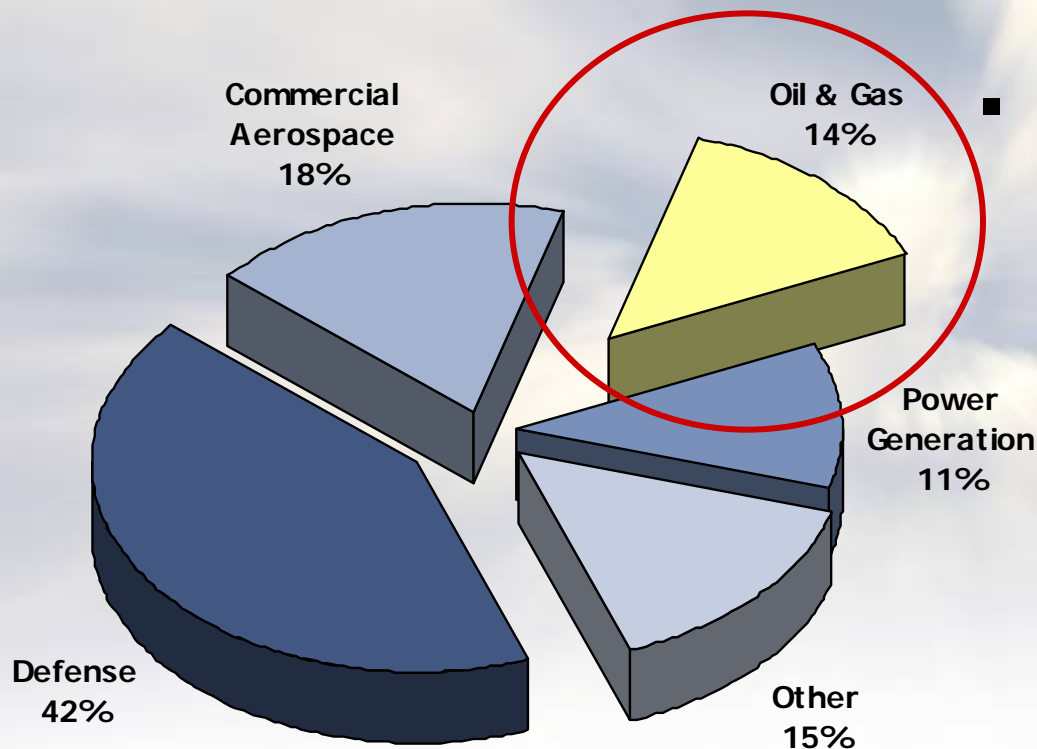
- **Curtiss-Wright Overview**
- **Market Trends & Drivers**
- **CW Portfolio Approach**
 - **Valve Products: Driving Growth**
 - **FCCU Vessels: Subsystem Solutions**
 - **Advanced Technology for Tomorrow**
 - **Electronics**
 - **Pumps & Motors**

Curtiss-Wright Overview

- 75-year Corporate History
- More Than a Century of Engineering Expertise
- Focus on Highly Engineered, Critical Applications
- Provide Proprietary, Advanced Technologies
- Today ≈\$1.4 Billion Sales & 6,200 Employees Worldwide

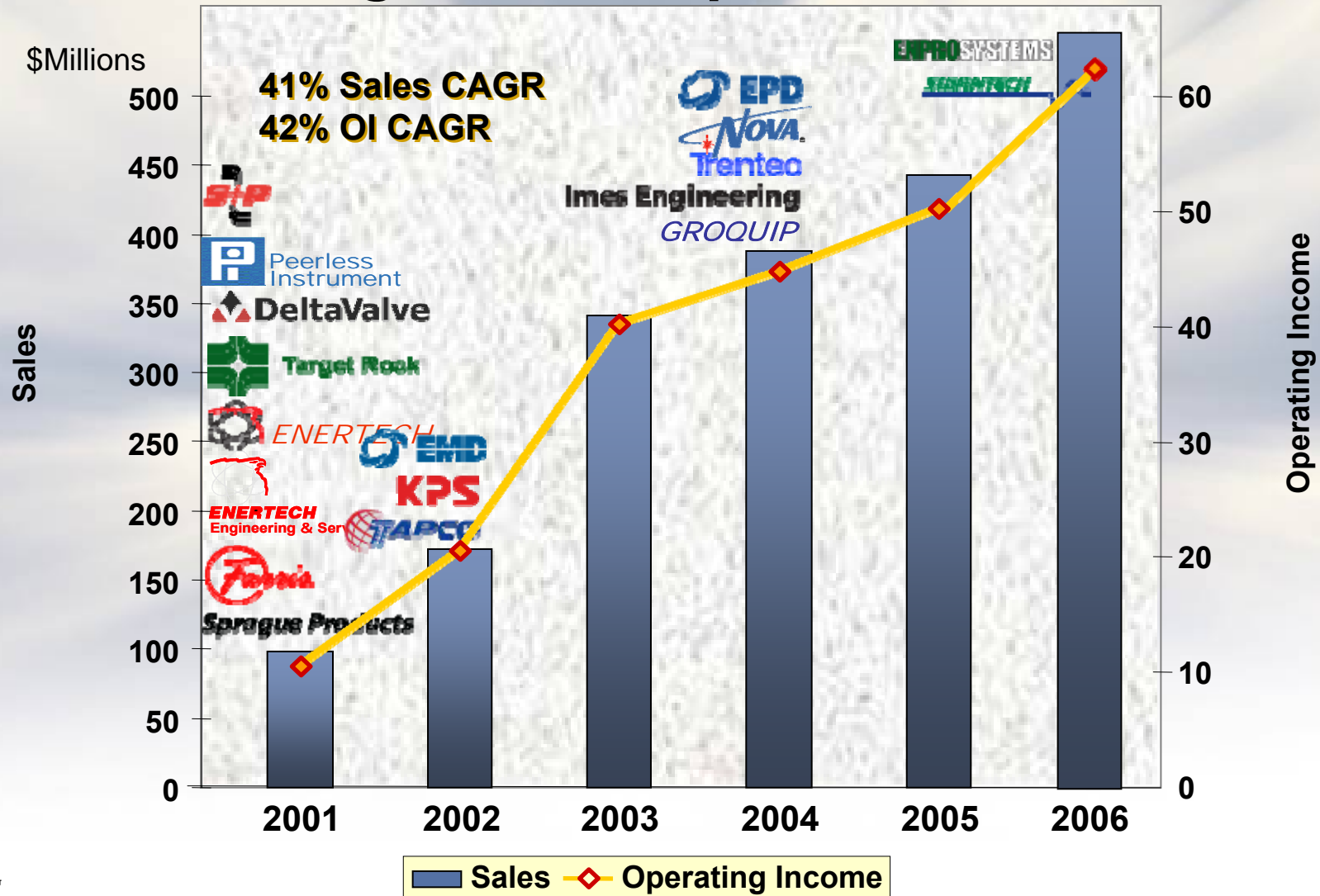


Curtiss-Wright Market Overview



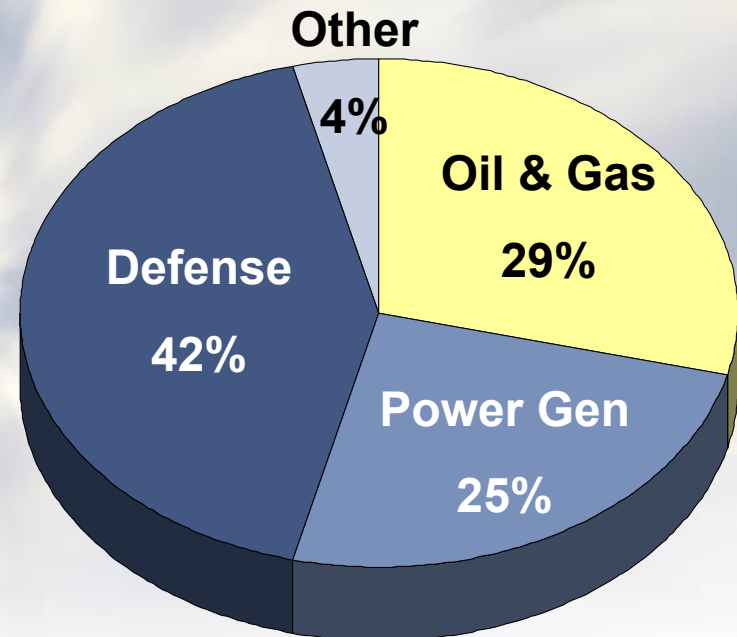
- **Balanced Growth Through Diversification**
- **Leveraging Proven Defense Solutions for High Performance Platforms in Commercial Markets**

Flow Control Segment: Balanced Organic & Acquisition Growth

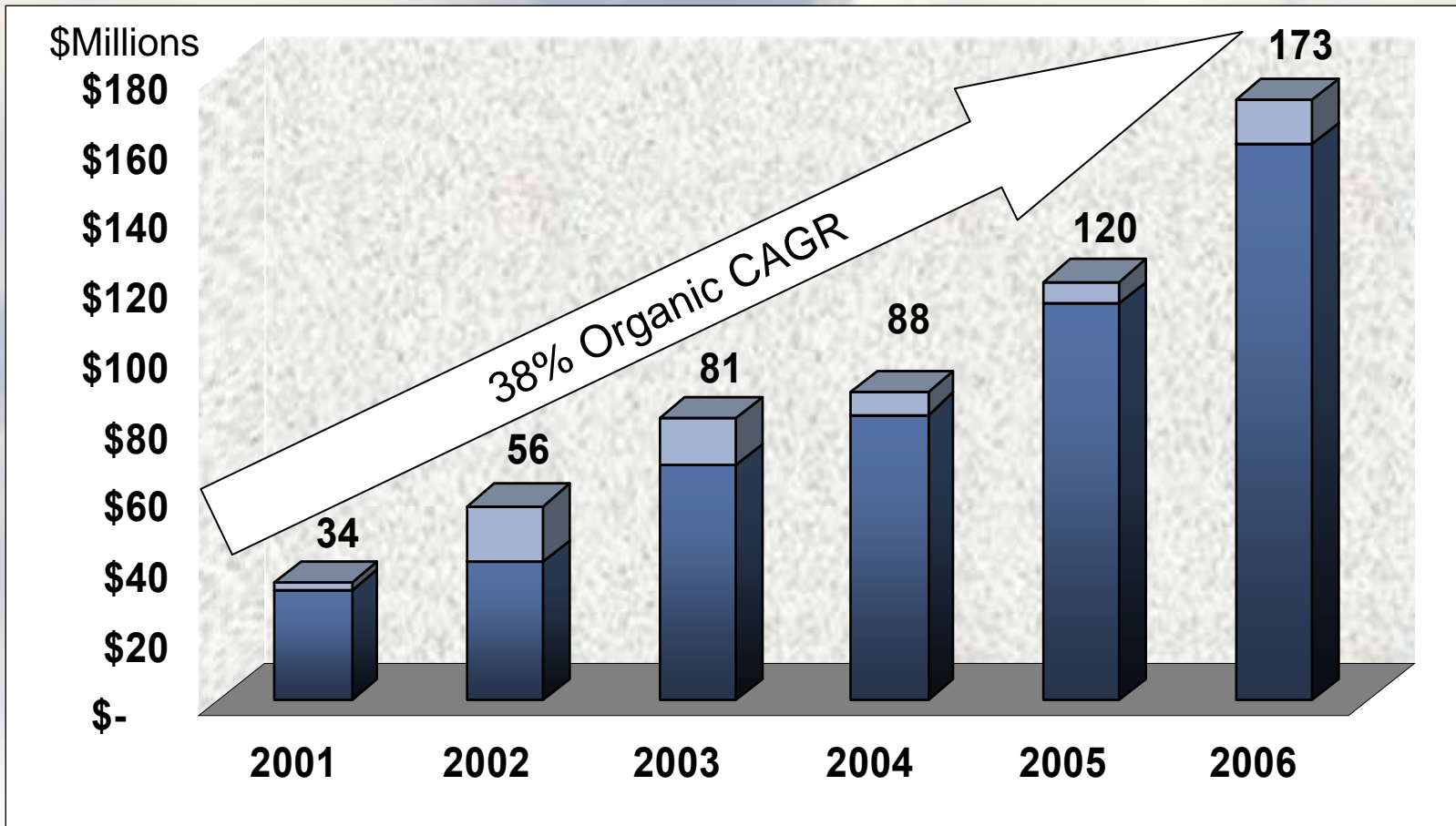


Flow Control Segment: Energy Market Expertise

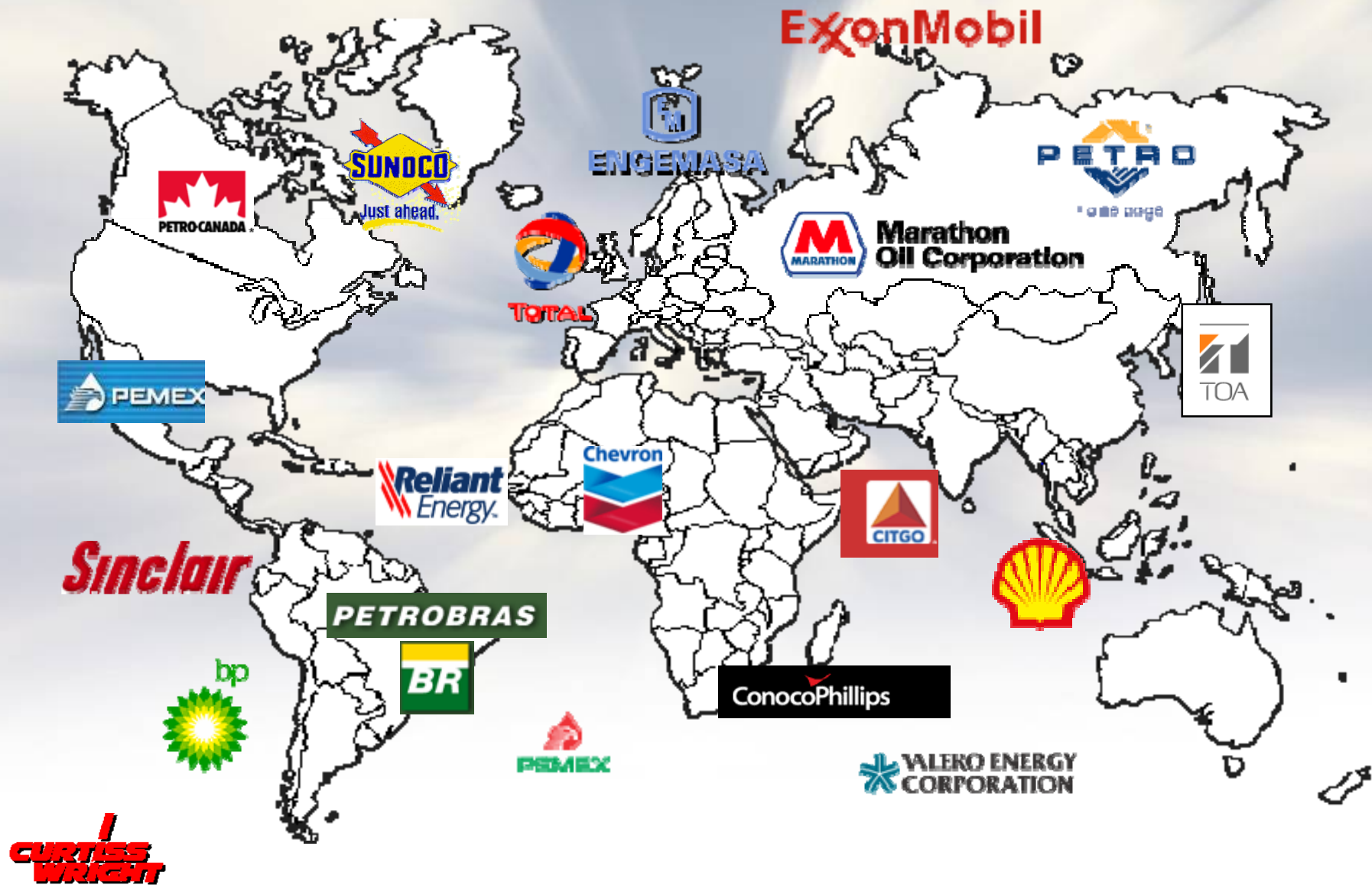
- **≈ 95% Oil & Gas Market in Flow Control**
- **43% Sales Growth in Oil & Gas Market over Prior Year**
- **30% Organic Growth**
- **Significant Leverage of Defense Technologies to Commercial Applications**



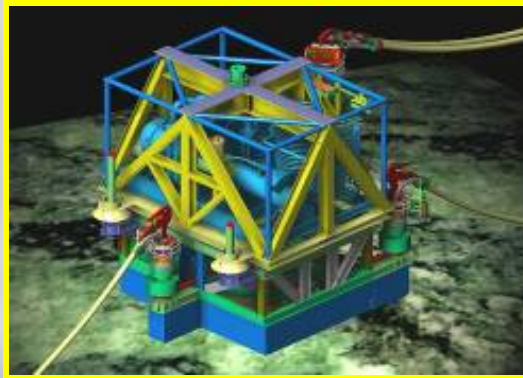
CW Oil & Gas Market Organic & Acquisition Growth



Global Market Reach



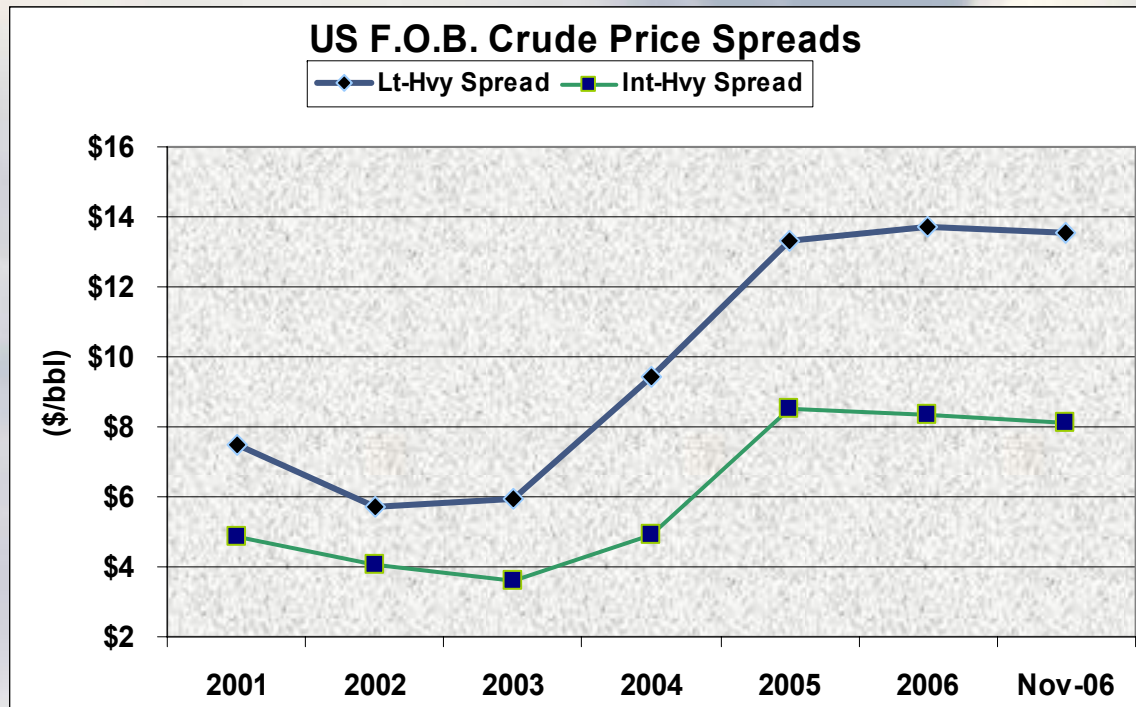
Diversified Product Strategy



Exploration & Production – Upstream
Pipeline, Fractionating, Transportation & Storage – Midstream
Crude Oil Refining & Petrochemical Processing – Downstream



Market Driver: Crude Prices

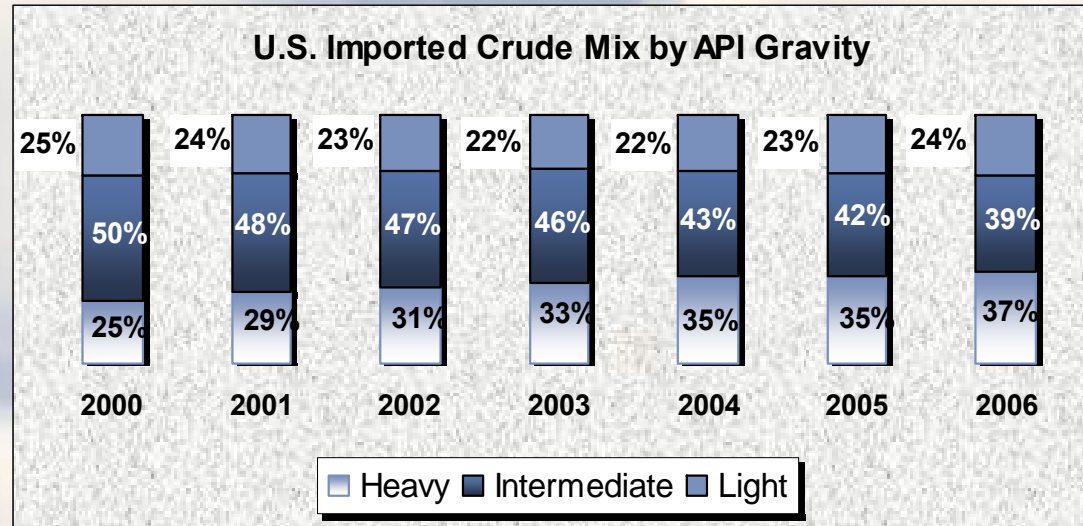


Data source: Industrial Information Resources

Increasing Oil Prices Drive Customer Earnings

- Capital Expenditure Spending
- Spreads Drive FCCU & Coker Investments

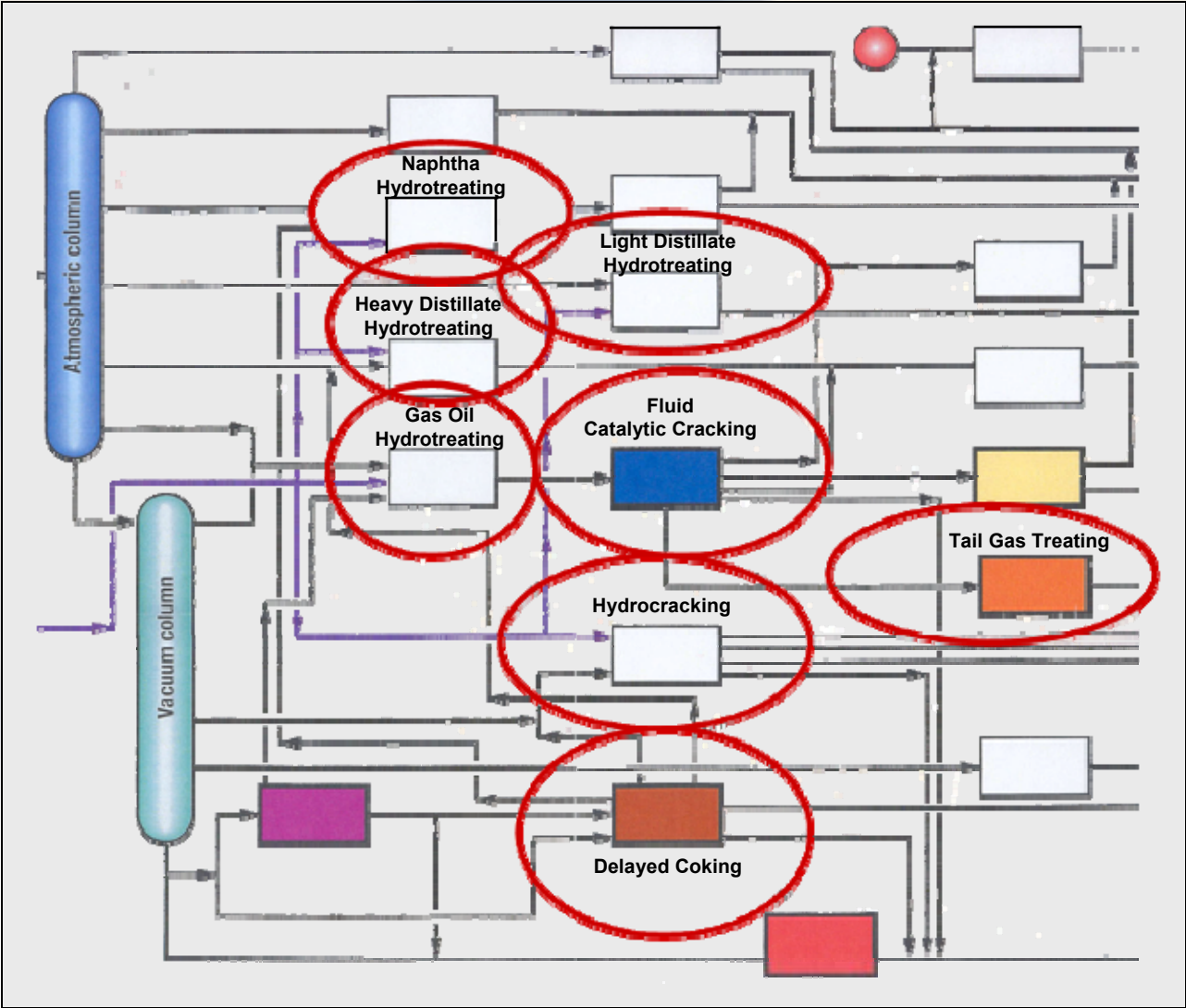
Market Trend: Refiners Processing More Heavy Crude



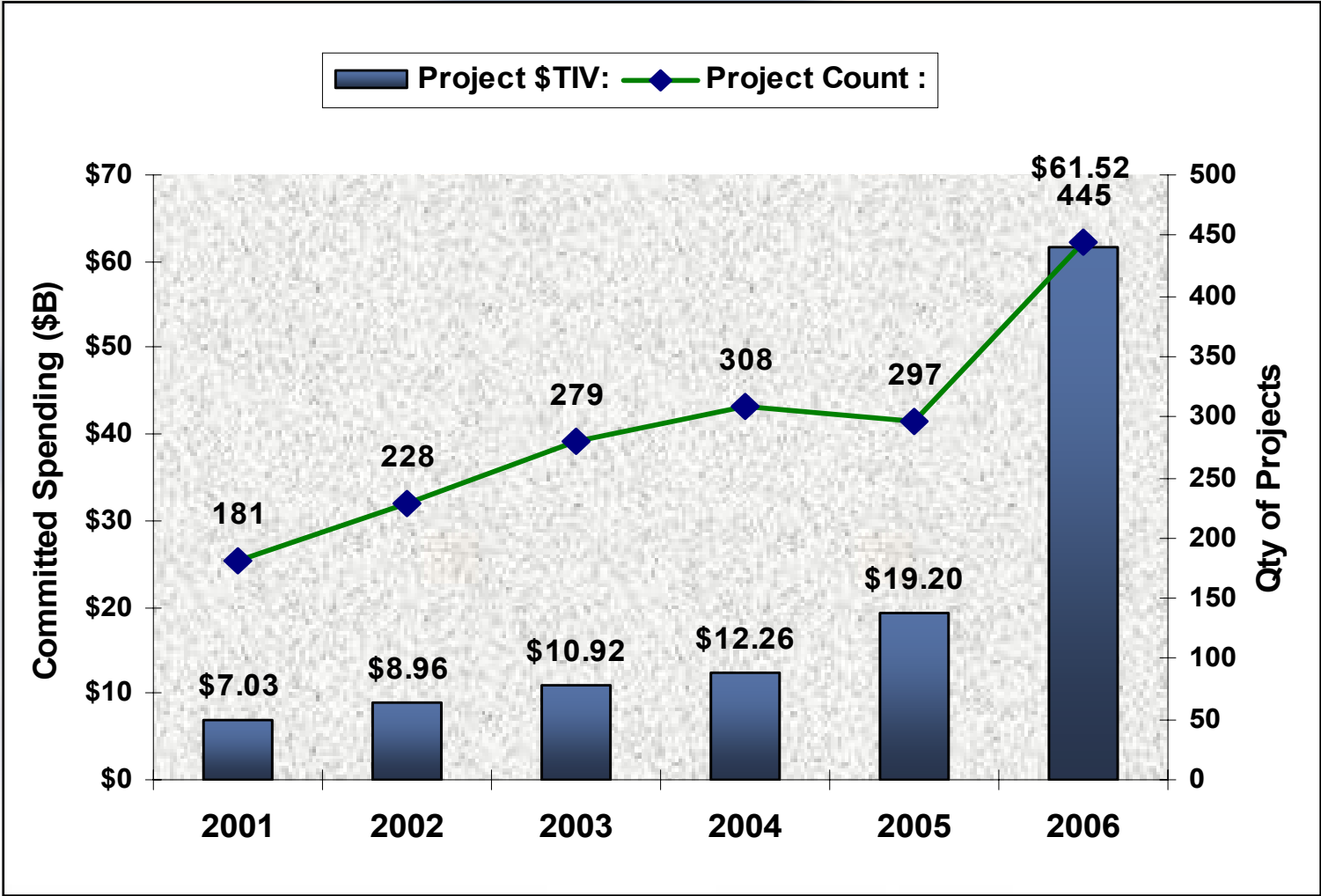
Data source: Industrial Information Resources

- Lower “Input” Costs Provide Higher Margins
- Advanced Technologies Required to Process Heavy Crude
- Secondary Processing Technologies Improving Yield
- As a Result, FCCU & Coker Investments Increasing

Key Growth Market: Secondary Refining Processes



Worldwide Refinery Project Activity



Data source: Industrial Information Resources



Product Portfolio: Valves



**120 Series
Solenoid Valve**



**4200 Series
Pressure Relief Valve**

- Fluid Catalytic Converter Units
- Coke Drum Unheading
- Pressure Relief
- Engineering & Plant Services



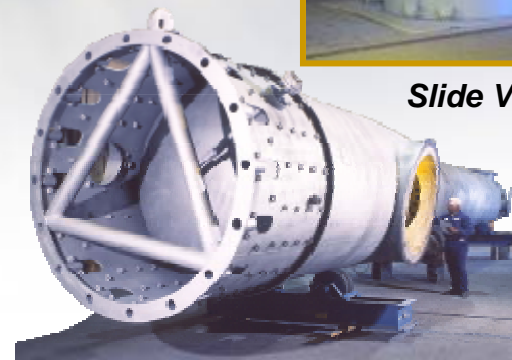
96" Butterfly Valve



Slide Valve



"Big Red" Bottom Unheading Valve



Orifice Chamber

Valve Products Driving Growth

Key Products for Processing Market

- **FCCU Reactors & Vessels**
 - **Enormous Size Requires Superior Engineering Expertise and Facilities**
 - **Component to Subsystem Portfolio**
- **DeltaValve**
 - **Revolutionary Coke Deheading Valve**
 - **Enabling Heavy Crude Processing**
 - **Unprecedented Reliability & Safety**
- **Pressure Relief Valves**

FCCU Reactors



Sunoco – New Jersey



Valero – St Charles



Chevron – Salt Lake City



Valero - Memphis



BP Oil – Texas City

Flint Hills – St Paul



Flying J – Salt Lake City



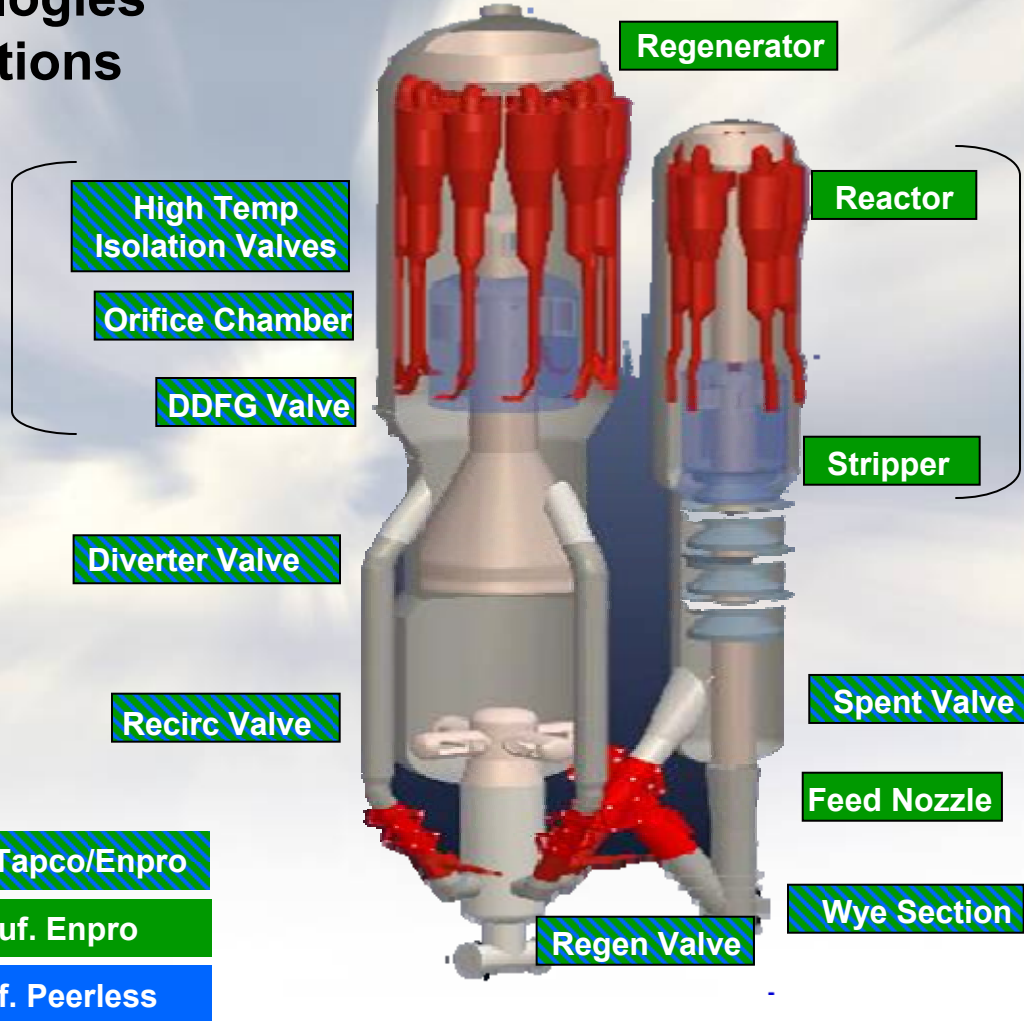
Valero – Texas City

FCCU Product Strategy

Proprietary Technologies
& Subsystem Solutions



DVC



High Temp Isolation Valves

Orifice Chamber

DDFG Valve

Diverter Valve

Recirc Valve

Manuf. Tapco/Enpro

Manuf. Enpro

Manuf. Peerless

Regenerator

Reactor

Stripper

Spent Valve

Feed Nozzle

Wye Section

Regen Valve



FCCU Product Portfolio



- **Markets Served**

- Refineries
- Oil & Gas
- Petrochemical
- Process Industry

- **Products**

- FCCU Reactors
- Hydrotreaters
- Cat Cracker Equipment
- ASME Pressure Vessels
- Division 1 and 2 Reactors
- S-Zorb Slide Valves
- High Performance Valves
- Butterfly Valves
- Diverter Valves

- **Services**

- Engineering Services
- 3D Finite Element Analysis
- Installation, Maintenance, Repair
- Troubleshooting
- 24/7 Emergency Response

*Houston Service Center
Turnarounds, Repair;
Actuator Assembly
Houston, Texas*



*Channelview Operations
Engineered Vessels &
Valve Fabrication
Channelview, Texas*



DeltaValveSM Product Portfolio

- **Markets Served**

- Refineries
- Process Industry

- **Products**

- Coke-drum Bottom Unheading Device
- Coke-drum Top Unheading Device
- HPU (Hydraulic Power Units) & Controls
- DeltaGlide Installation/maintenance System
- Transition Spool
- Coke Chute

- **Services**

- Flow-Control Technology: Design, engineering and manufacturing of Delayed-Coking valves and related equipment

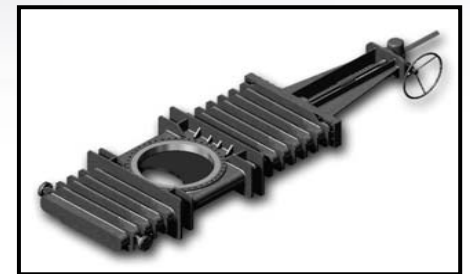
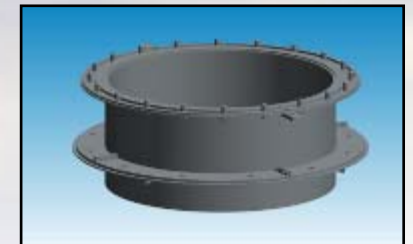
- **Quality Programs**

- Industry Standards

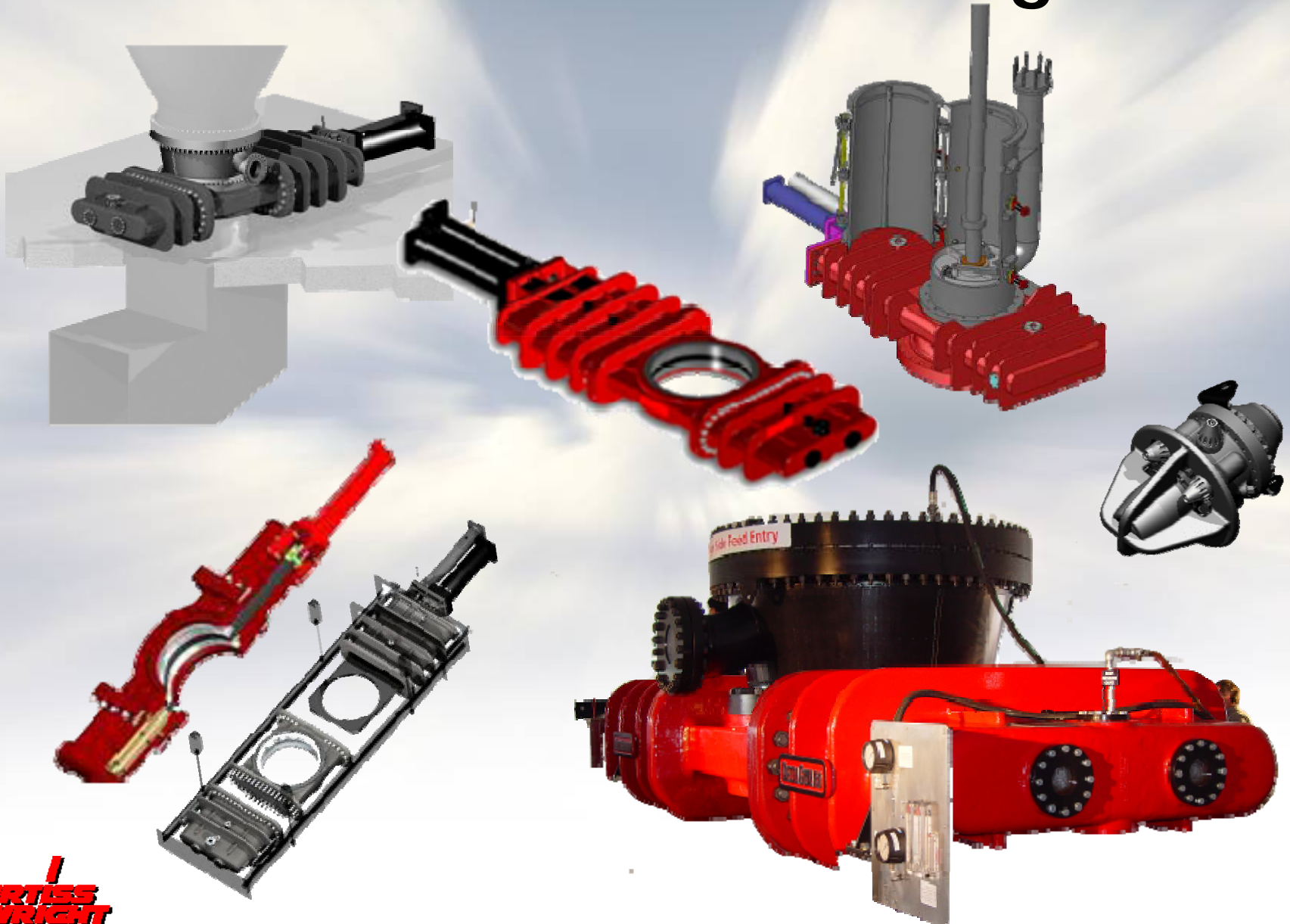


Corporate Office
Salt Lake City, Utah

Manufacturing
Calgary, Alberta, Canada



DeltaValve Coke Deheading



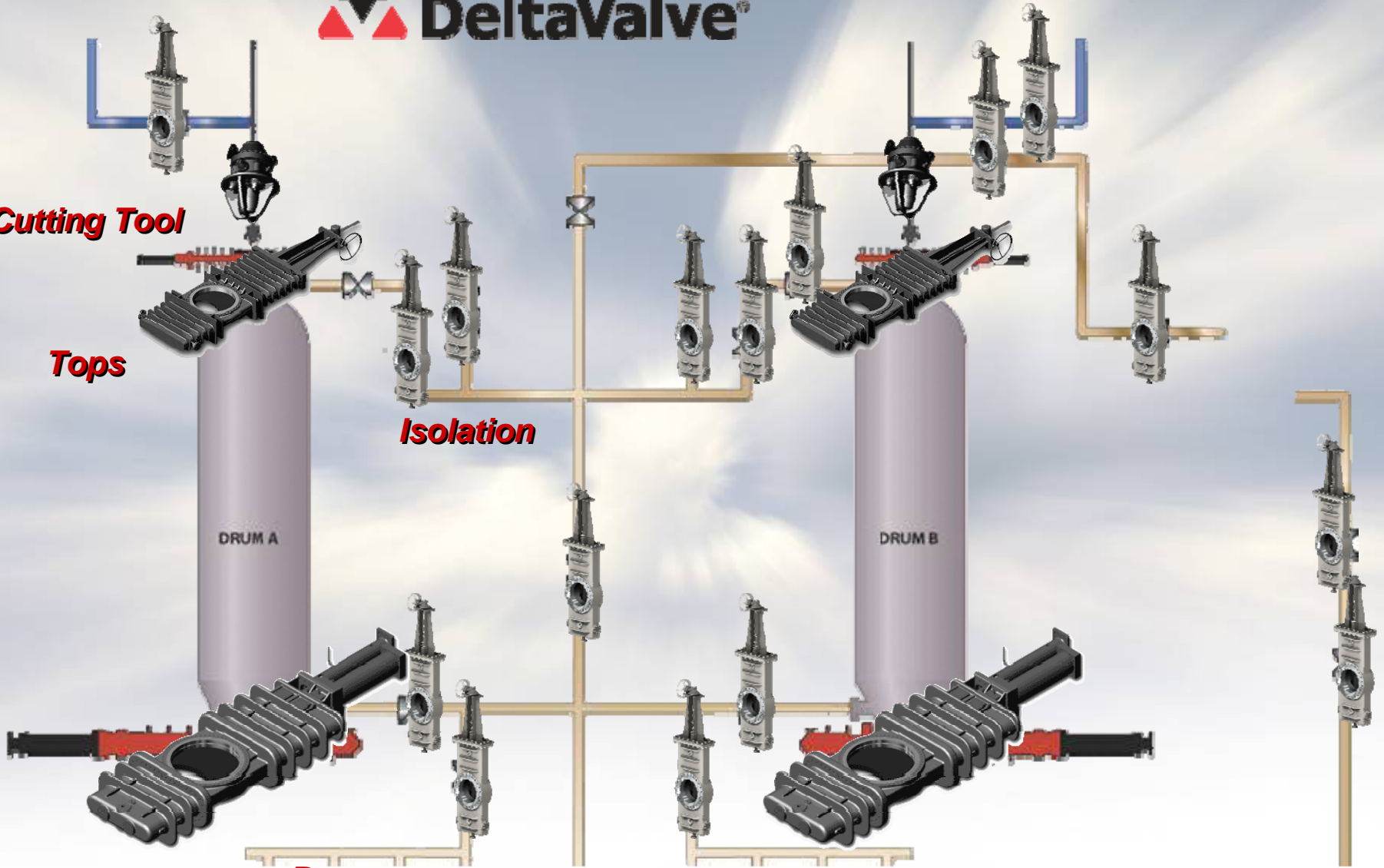


Cutting Tool

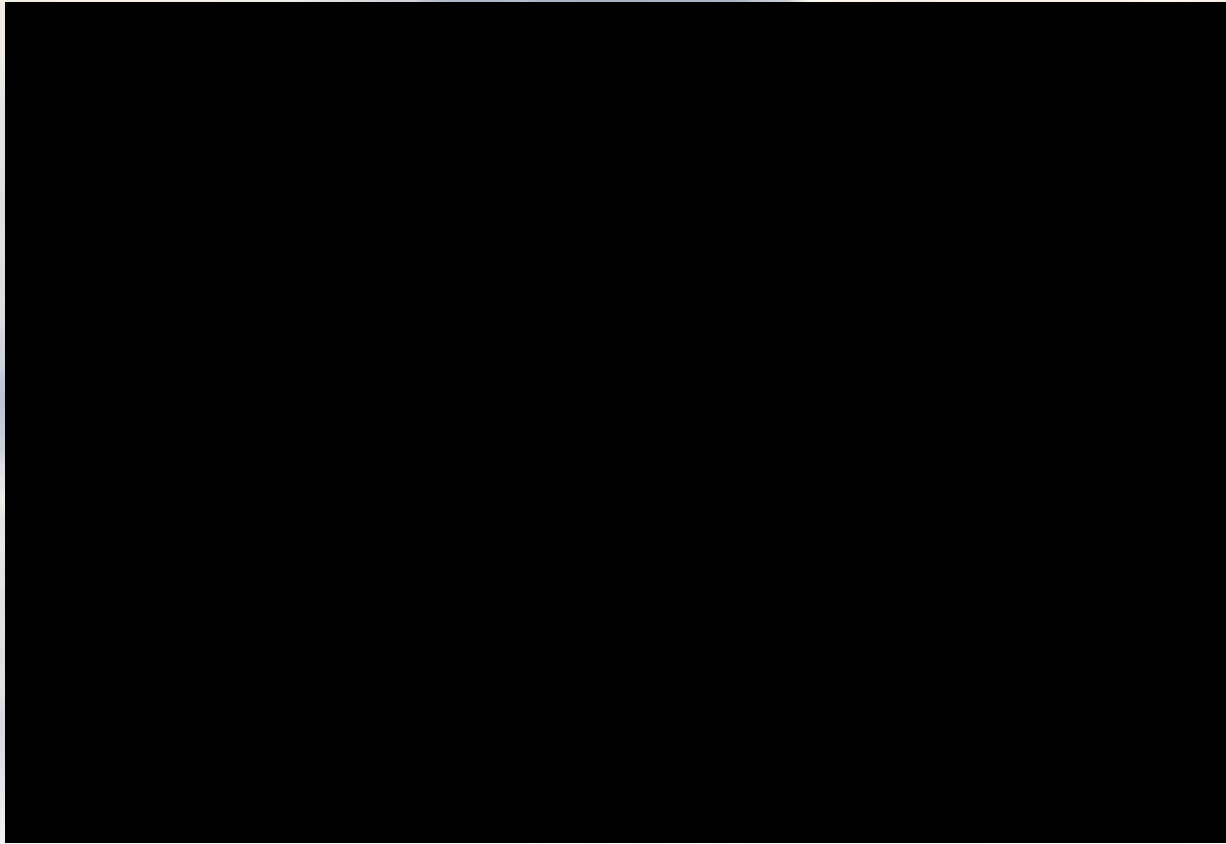
Tops

Isolation

Bottoms



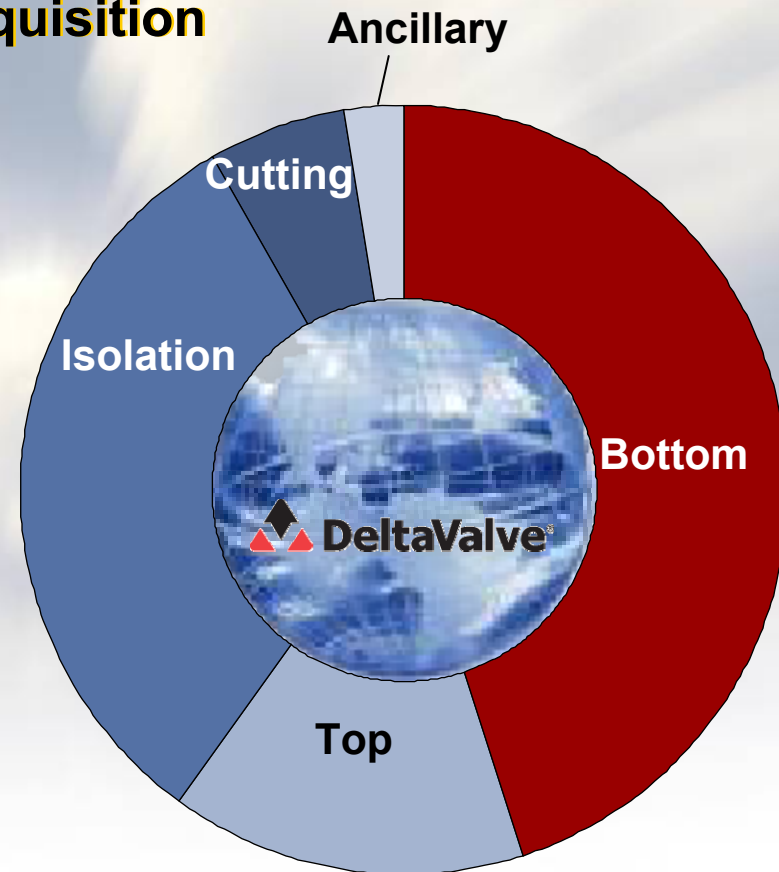
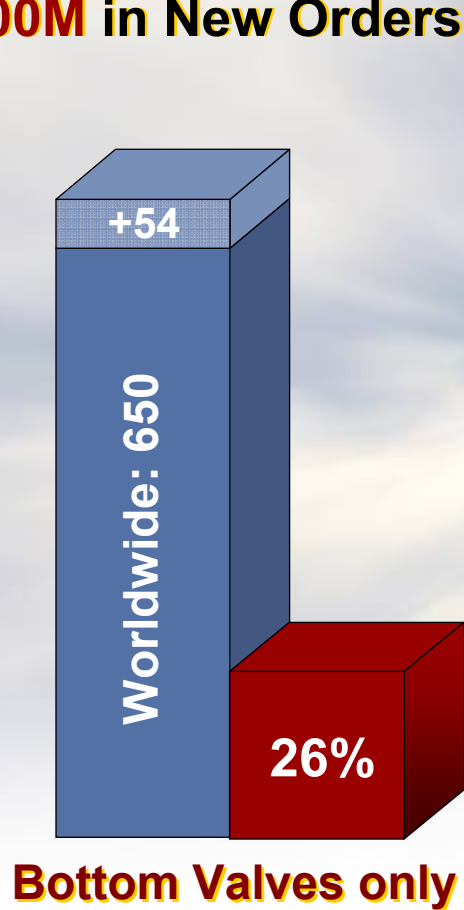
Coker Unheading Device



Worldwide Coker Market Share

MAJOR MILESTONE!

\$200M in New Orders Since Acquisition



Potential content per 2-drum set \$3-4 M

Processing Market: Pressure Relief Valves



- **Markets Served**

- Oil & Gas
- Petrochemical
- Natural Gas Production & Transmission
- Navy and Marine
- Nuclear and Fossil Power

- **Sister Companies**

- Imes Engineering (Baton Rouge, LA): Process Safety Management Engineering Services and Software Development – iPRISM
- GroQuip (Gulf Coast): Distribution, Repair and Service of Pressure Relief Devices

- **Products & Services**

- Spring Loaded Pressure Relief Valves
- Spring Loaded Steam Safety Valves
- Snap Acting and Modulation, High Pressure Pilot Operated Relief valves
- Pressure Relief Valve Test Stands
- SizeMaster™ Relief Valve Sizing Program
- iPRISM Process Safety Management Software

- **Quality Programs**

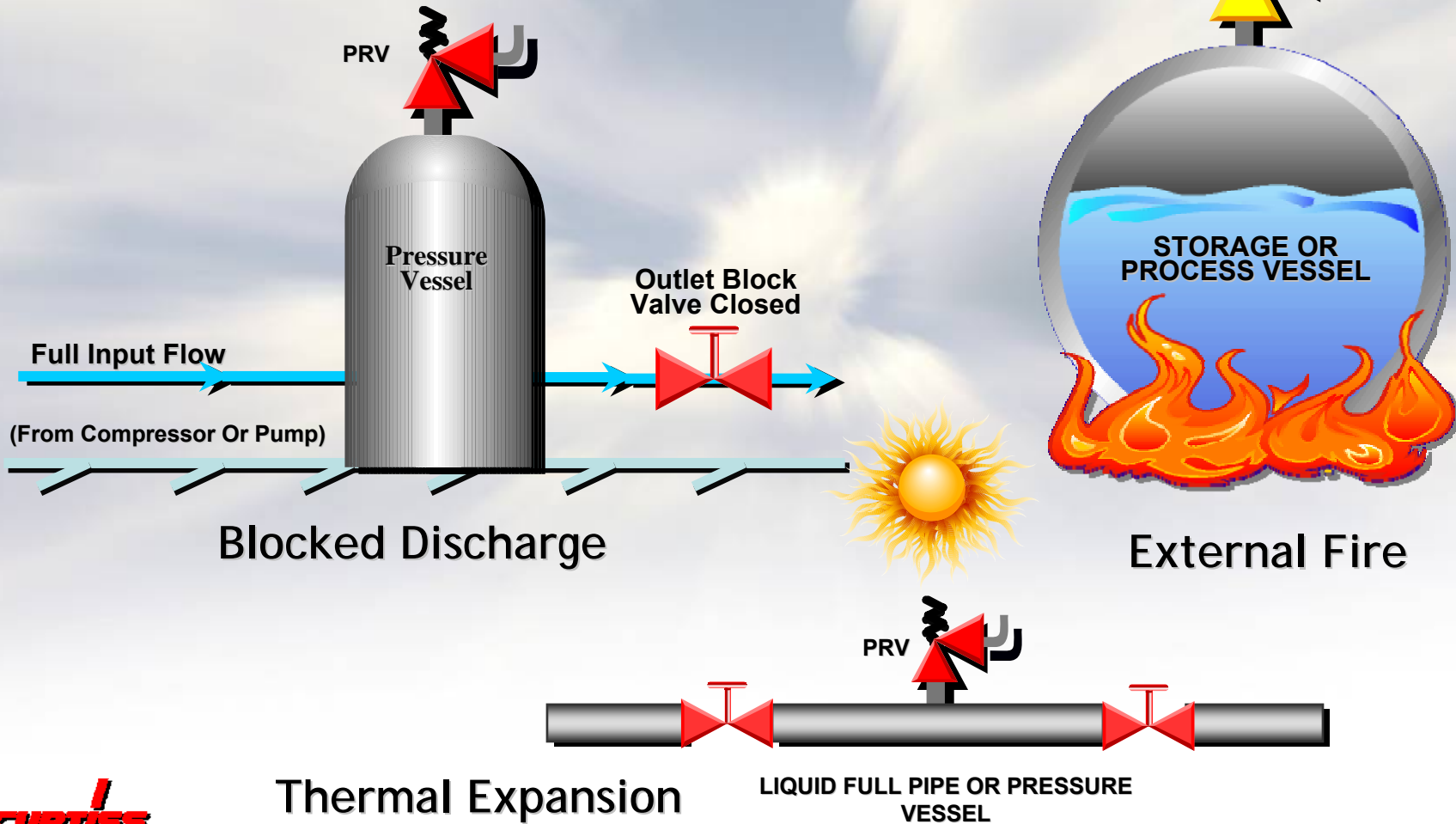
- ISO 9001:2000
- 10CFR50, Appendix B; NQA-1; N285.0
- ASME/National Board Stamps: NV, UV, V, VR, NB
- ASME Certified Flow Laboratory
- PED/CE/ATEX (Europe), GOST/GOZ (Russia), CSQL (China)
- U.S. Coast Guard Product Approval

Engineering, manufacturing facilities in Brecksville, Ohio (right) and Branford, Ontario, Canada (below)




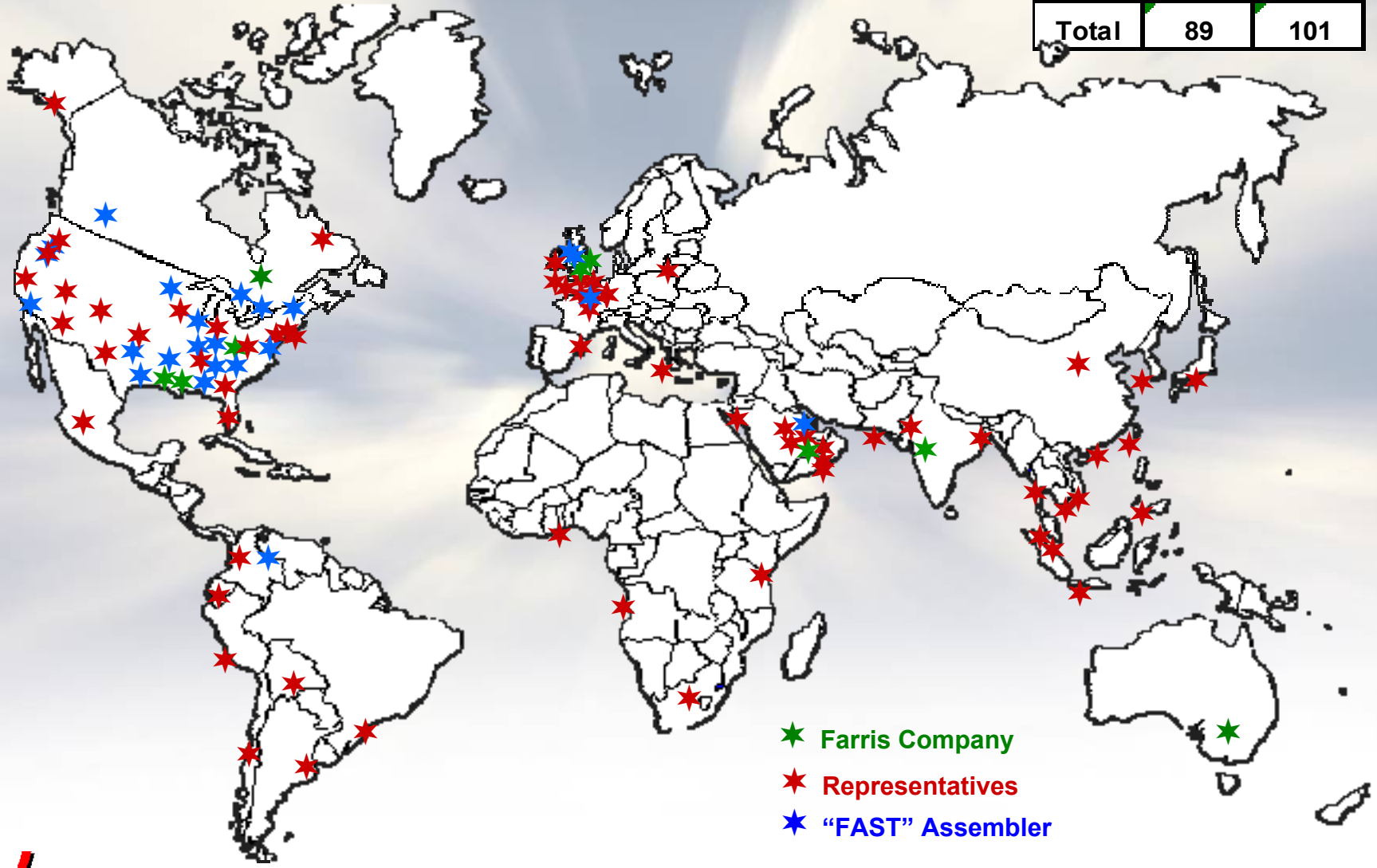
What Is a PRV?

A *Pressure Relief Valve* is a mechanical device designed to open and relieve excess pressure in a pressure system thus preventing catastrophic failure and resulting serious injury to personnel and damage to equipment.



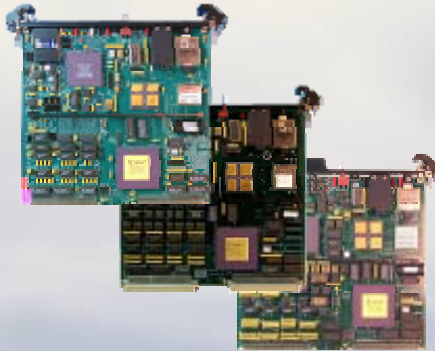
Strategic Initiative Expand Globally

	2003	2006
Reps	74	66
 FAST	15	35
Total	89	101



CW Product Portfolio

Refining & Oil & Gas Markets



Digital Processing Circuit Board Design

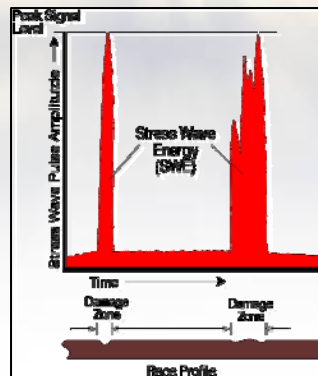
- Electronics**
- Digital Valve Controller
- Digital Circuit Cards
- StressWave Technology
- Cabinet Integration & Test



Commercial Off-the-Shelf (COTS) Power Supply



Automatic Chemistry Analysis System



Stress Wave Technology



Digital Valve Controller

Developing Pumps & Motors

Exploration & Production

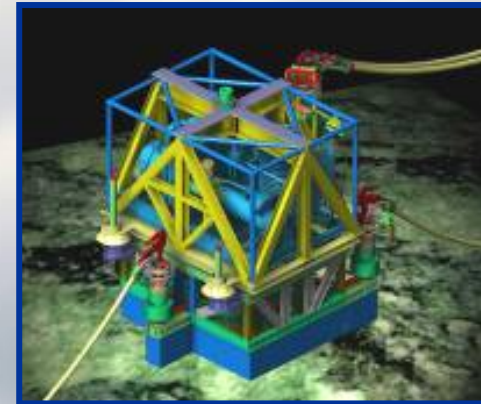


- Subsea Multiphase Pumping
- Integrated High Speed Motor



Military Technologies For Commercial Markets

- **Advanced Technology Products**
 - Subsea Pumping Systems
 - High Speed Gas Compressor Motors
 - Petrochemical Processing Pumps
 - Nuclear Waste Processing Pumps
- **Strategic Objective to Capitalize on**
 - Global Demand for Energy
 - Proven Naval Technologies
 - Established Relationships with Industry Leaders for Technology and Marketing



DRESSER-RAND

PETROBRAS





Facility Tour Channelview, TX



Q & A