

Greater Edmonton Upgrader Supply Chain Study

2007 National Buyer / Seller Forum

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Edmonton Division

Colt WorleyParsons



Presentation Content

- Who is Colt WorleyParsons and where does CWP fit into oil sands development
- Upgrader Supply Chain Study
- What are the opportunities for potential suppliers
- Colt WorleyParsons' involvement in oil sands equipment procurement

Colt Introduction

- Founded in 1973
- Focused on the Hydrocarbon Industry
- Engineering, Procurement, Construction / Construction Management
- Total Home Office Staff > 4,600
- 100% Employee-Owned and Managed
- Edmonton, Calgary, Toronto, Sarnia, Anchorage
- Strategic Alliances with both the Upstream and Downstream Sectors



Colt's Involvement in the Oilsands

- First Project Circa 1975
- CoSyn - Colt's Oldest and Largest Alliance – 500+
- Suncor – Supplier of Choice for Extraction Projects
- Synenco – Extraction and Froth Treatment
- Alliances locally with Shell and Petro-Canada's Downstream Facilities
- Numerous SAGD Production Facilities
- Major Crude, Condensate, & Other Liquids Pipelines and Terminals



WorleyParsons

- 15,000 EPCM Professionals in 30 Countries
- Publicly Traded on ASX
- Hydrocarbons, Minerals & Metals, Infrastructure, Power Industries
- Corporate History (Worley, Parsons) is 60+ Years
- Internationally Renowned in “Asset Management” Business (Engineer, Construct, Maintain, Operate, Own)



Colt WorleyParsons

- February 8, 2007
- Colt WorleyParsons is a “Tier One” Service Provider to the Global Hydrocarbons Industry
- “The Perfect Merger,” enabling:
 - Accelerated Global Growth
 - Enhanced Leveraging (Major Projects, Global Alliances)
- World Scale EPCM Service Provider to Canadian Hydrocarbons Industry:
 - Canada, 2007, 8th Largest Crude Oil Producer
 - Canada, 2015, 4th Largest Crude Producer



Colt WorleyParsons

- Corporate Visions & Synergies
 - Leadership: Committed, Empowered, Rewarded People
 - Performance: "Zero Harm," Results Driven, World Class Resources & Experiences
 - Agility: Local Capability, Responsive
 - Relationships: Collaborative, Strong Stakeholder Rapport

Upgrader Supply Chain Study

- Scope and Boundaries
- Methodology / Terms
- Results
- *Greater Edmonton Upgrader Supply Chain Study* report will be released on April 15, 2007 at www.edmonton.com/upgraderstudy

Study Scope and Boundaries

- Announced and Proposed Upgraders for Alberta's Industrial Heartland
- Pipelines, Terminals, Refinery Additions, Petrochemicals, Power Plants, Rail, Roads or other Infrastructure - **NOT INCLUDED**
- Publicly Available Information on the Configuration of each Upgrader
- Where no information was available the configuration was assumed to be similar to existing Fort McMurray Upgrader

Upgrader Information Available

Greater Edmonton Upgraders	Current Status
Petro-Canada Refinery	Mid 2008 Start-up
BA Energy	3Q 2008 Start-up
Shell Scotford	Nov. 1, 2006 - AOSP Expansion 1 to proceed Planned Start-up 2010 (more phases announced)
Northwest Upgrading	EUB Submission Feb. 2006 – Detailed Eng. underway - Planned Start-up 2010
Synenco/SinoCanada	EUB Submission Sept. 2006 – Expect First Oil 2010/2011
Petro-Canada/UTS	EUB Submission Dec. 2006 – Project Sanction 2008 – Planned Start-up 2012
Total SA	CAPP List/Media Announcements
North American Oil Sands	CAPP List/Media Announcements
Other	CAPP List/Media Announcements

Sturgeon County

Synenco
Northern Lights
Upgrader

Agrium

56-22

NWU

North West Upgrading

56-21

Energy & Natural
Resources

56-20

Energy & Natural
Resources

Texas
Exploration Ltd.

Proposed
Petro
Canada

Access

Kinder Morgan

Energy &
Natural
Resources

Shell
Canada Ltd.

Enbridge
Stonefall

SA Energy

Provident
Williams

Enbridge Stonefall

Shell
Chemicals

Enbridge
Stonefall

King Tech
Maple
Resources

Proposed
North American
Oil Sands

Shell Canada Ltd.

ATCO

Suncor
Energy Inc.

Gulf
Chemicals

Strathcona County

55-22

Aux
Sable

BP
Canada

Petro
Gas

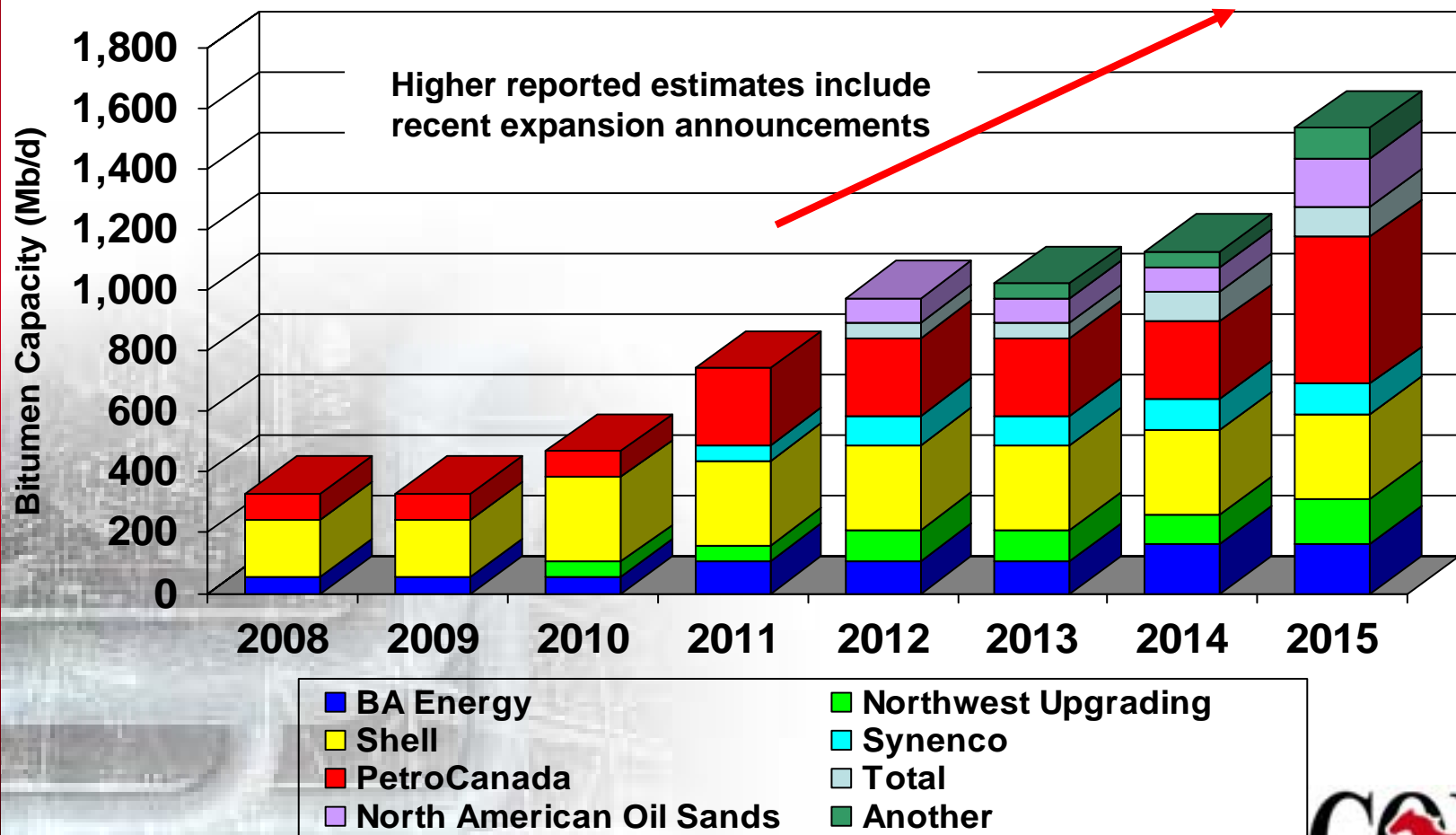
Dow

Total

55-21

55-20

Greater Edmonton Upgrader Activity



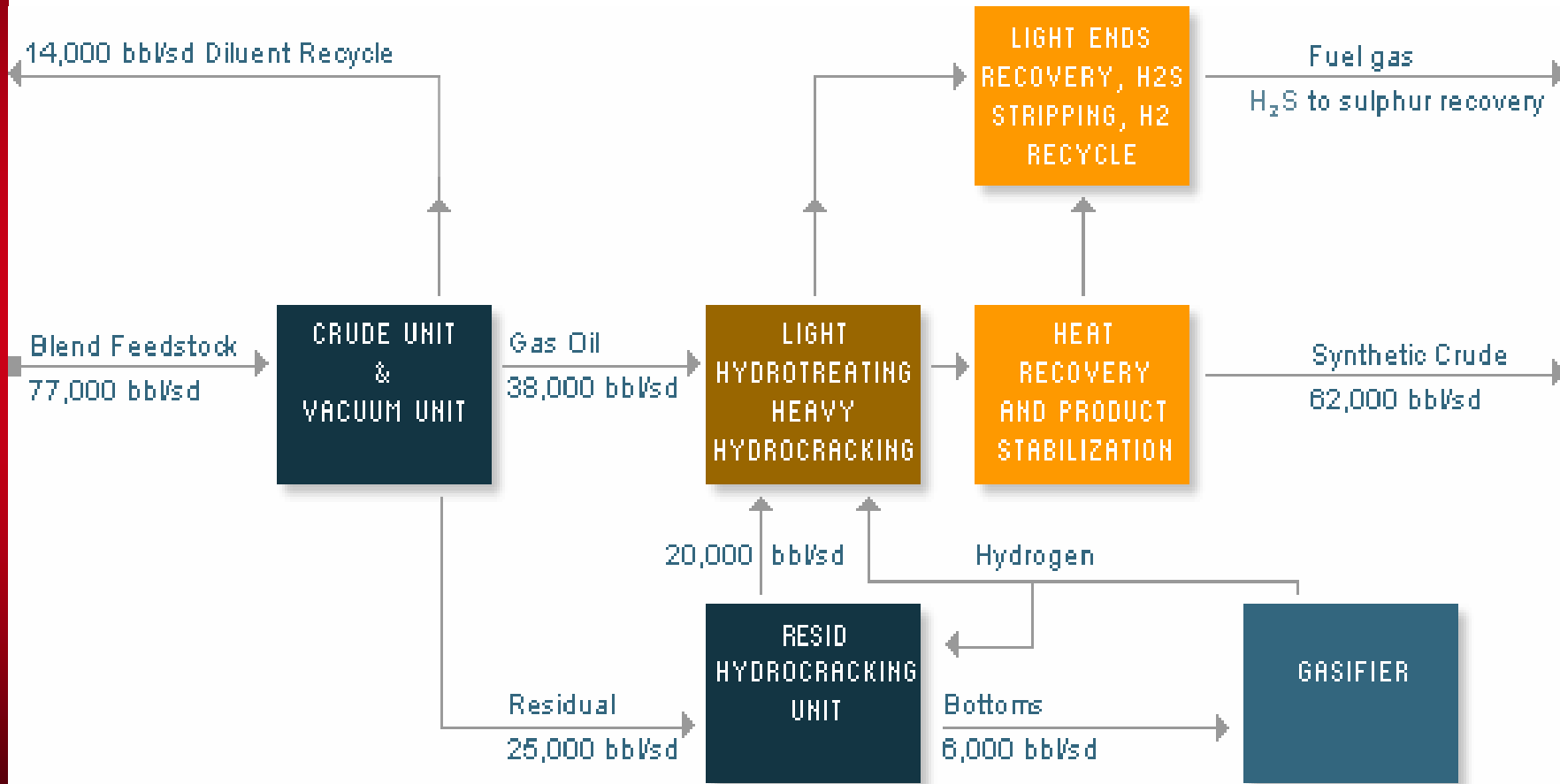
Source: Upgrader Supply Chain Study – Feb 2007



Lists of Major Equipment and Bulk Items

- Generate List of Total Major Components
- Process Flow Diagrams for each process unit type
- Colt's Experience and Information from Process Technology Licensors
 - Develop major equipment lists
 - Use standard list of bulk equipment for each type of major equipment (instrumentation, valves etc)
 - Build database
 - Report

Northwest Upgrading Flow Scheme



Types of Units

Process Unit

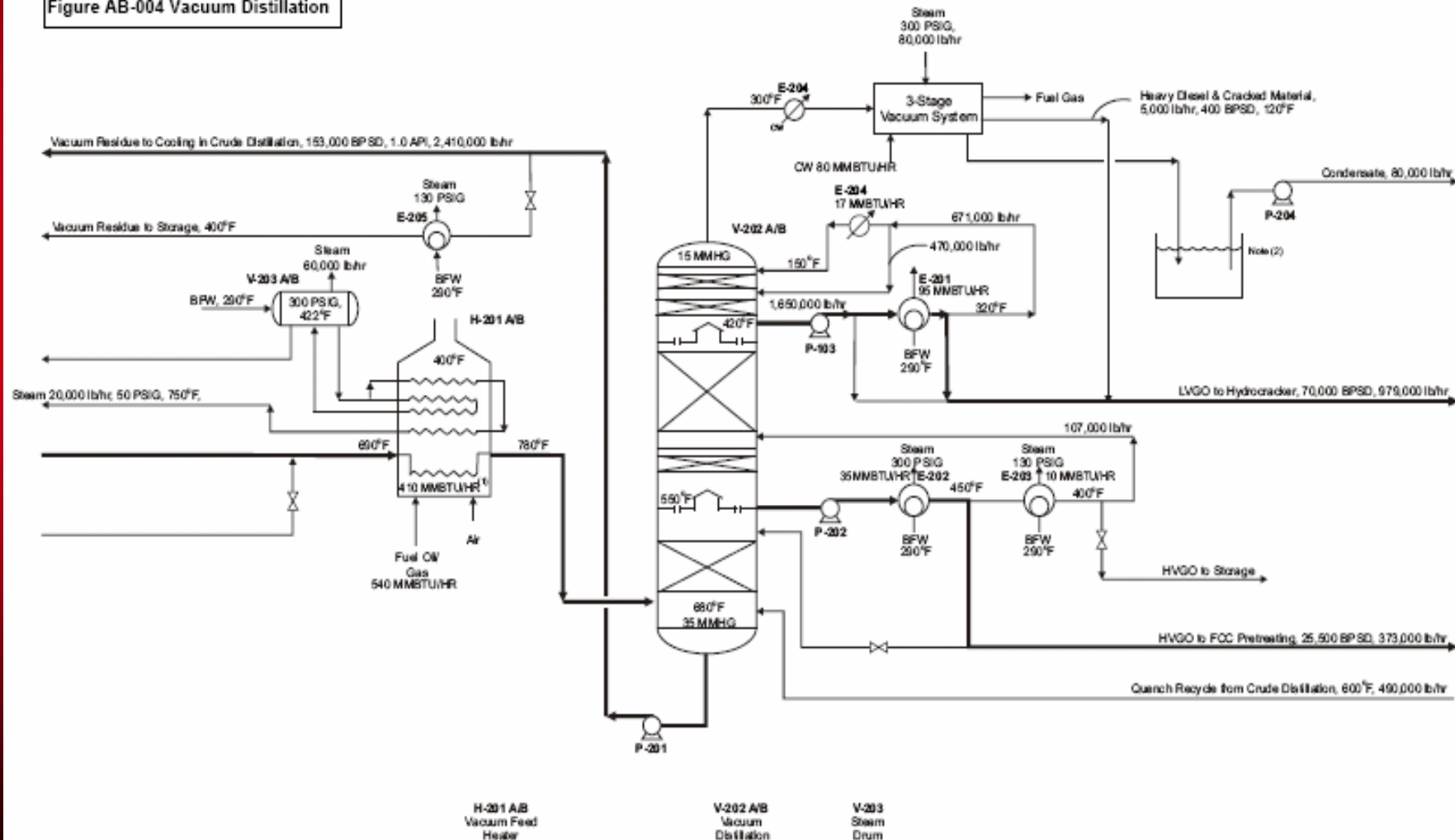
- Diluent Recovery
- Vacuum
- Deasphalt
- Coking
- Hydrocracking
- Hydrotreating
- Gas Recovery Unit
- Gas Sweetening Units
- Sulphur Recovery
- Hydrogen Production
- Sour Water Stripping
- Coke Gasification

Offsites and Utilities

- Electrical Distribution
- Cooling water
- Flare System
- Fuel Gas
- Effluent Treating
- Boiler / Power
- Control Rooms (I/C)
- Buildings
- Interconnecting Pipes
- Tank Farm
- Blending/Loading Racks
- Plant Air

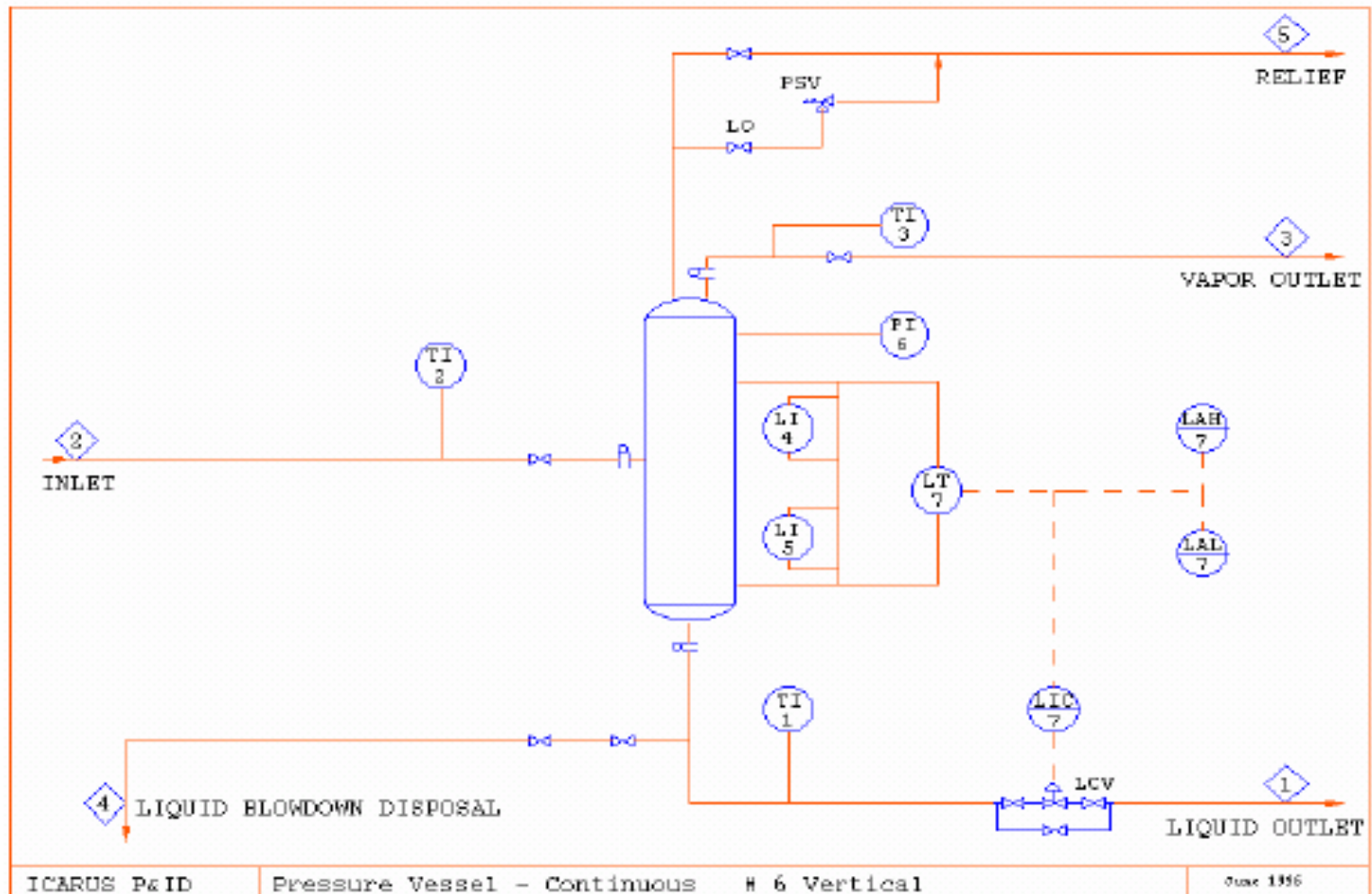
Typical Unit Process Flow Diagrams

Figure AB-004 Vacuum Distillation



Bulks Associated With Major Equipment Item (e.g. Vertical Vessel)

6 Vertical Pressure Vessel – Continuous



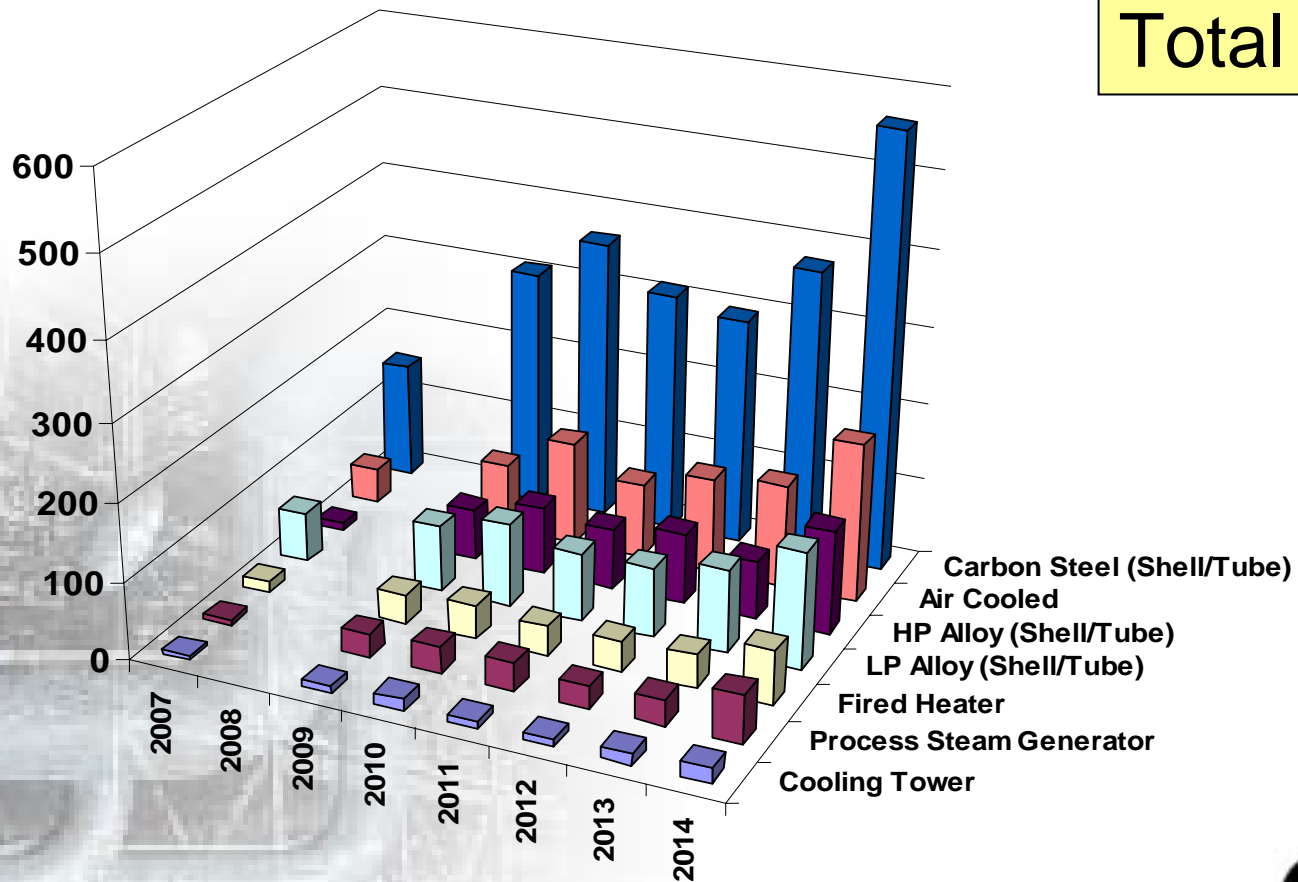
Study Results

- Major equipment
- Bulk equipment
- Equipment orders over time
- Estimates of some commodities
 - structural steel, pipe, etc.
- *Greater Edmonton Upgrader Supply Chain Study* report will be released on April 15, 2007 at www.edmonton.com/upgraderstudy

Heat Exchangers

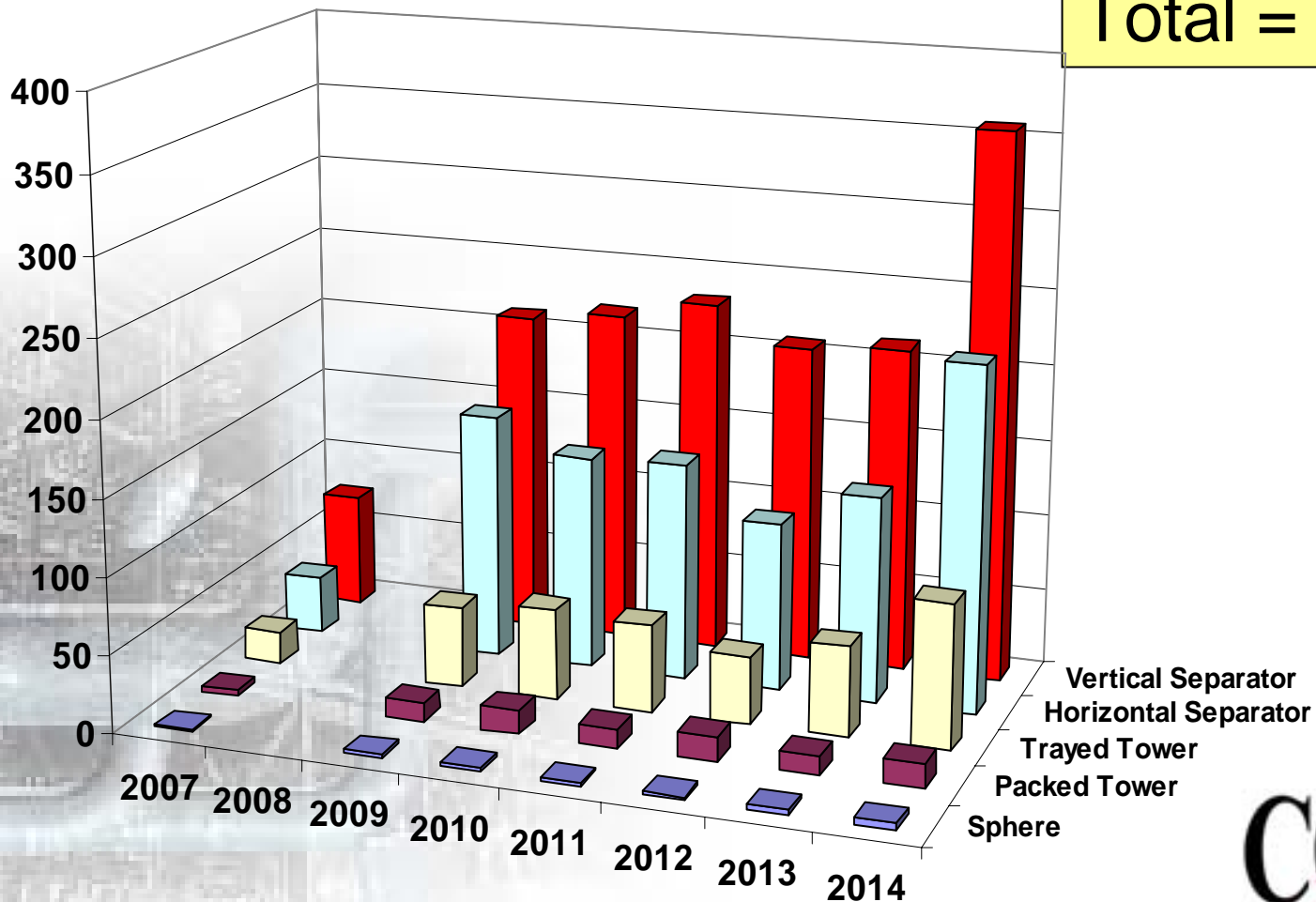
Annual Expected Equipment Orders

Total = 5,100



Process Vessels and Towers

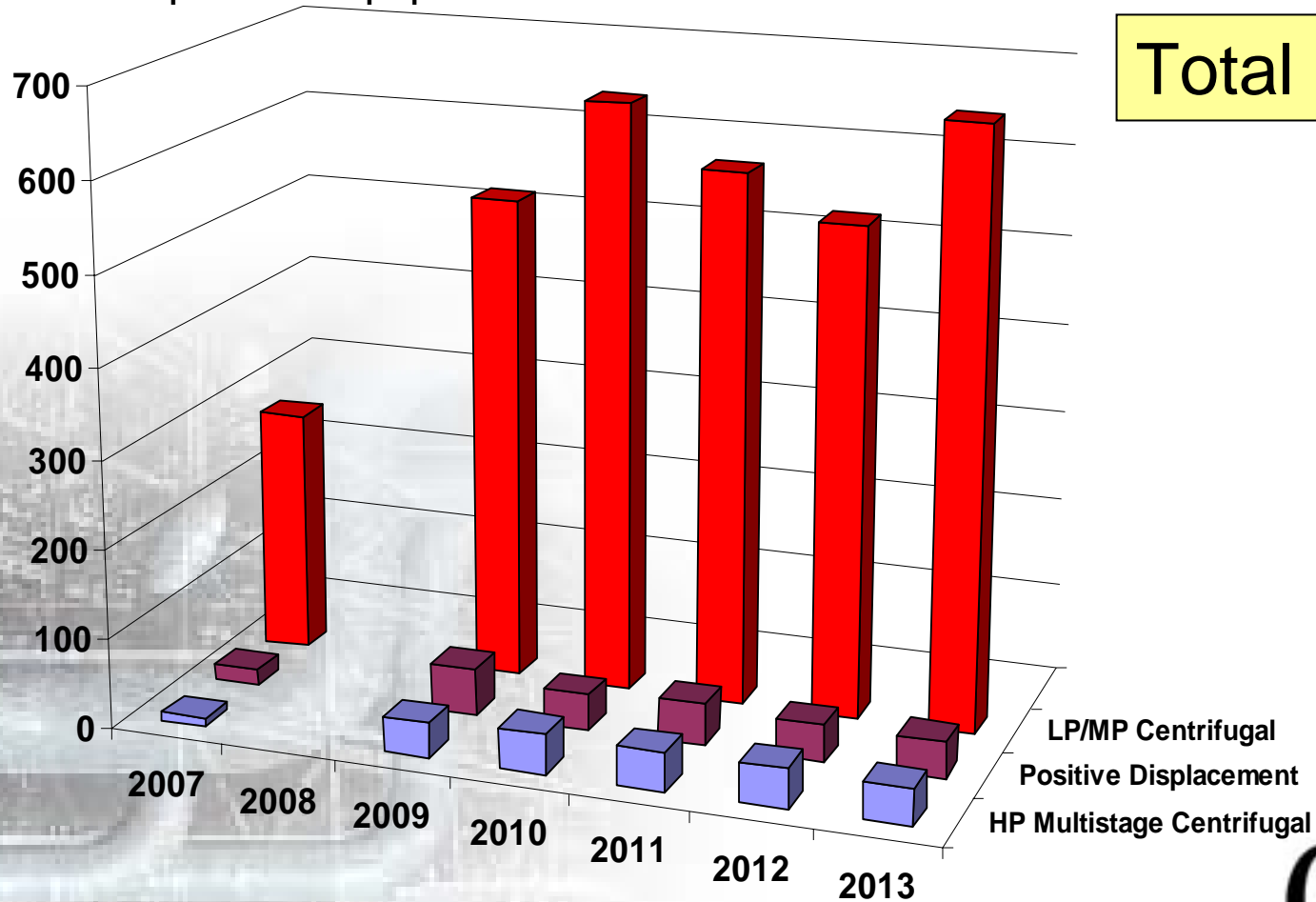
Annual Expected Equipment Orders



Total = 3,000

Pumps

Annual Expected Equipment Orders

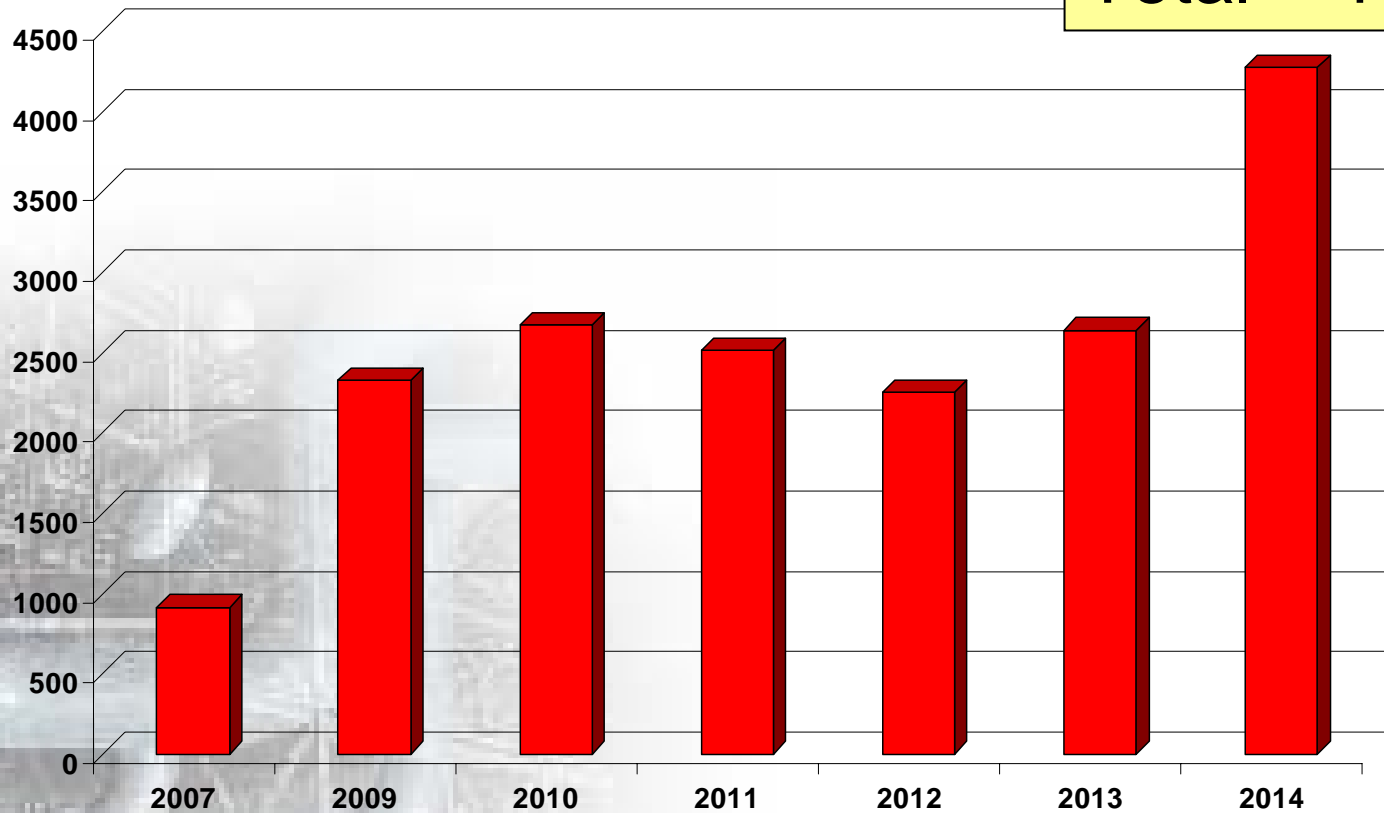


Total = 4,900

Control Valves

Annual Expected Equipment Orders

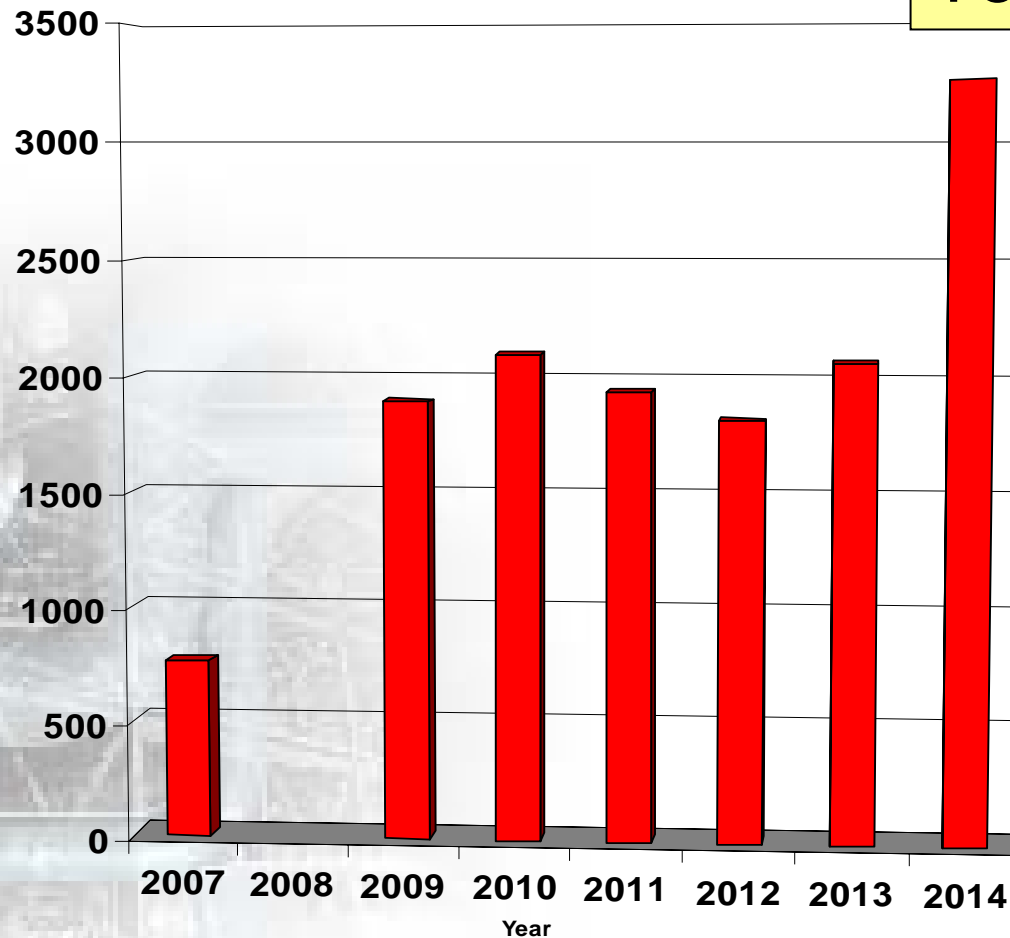
Total = 17,600



Safety Relief Valves

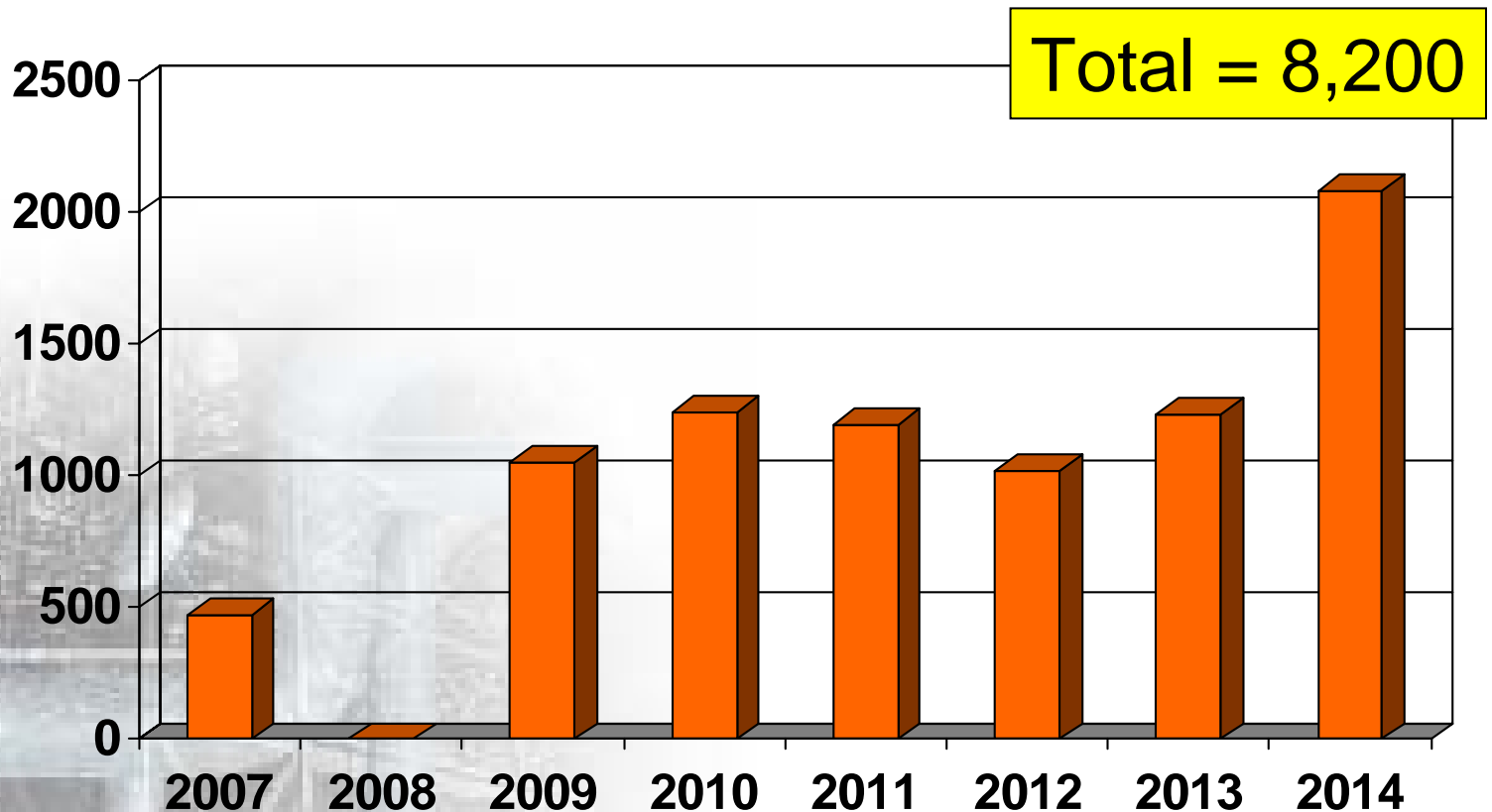
Annual Expected Equipment Orders

Total = 13,900



Flow Instruments

Annual Expected Equipment Orders



Estimated Cost for Other Bulk Items

What Does an Upgrader Cost?

- Current estimates range from \$30K to \$50K per barrel per day throughput
 - \$40-70 Billion total installed cost
- Pipe: approximately 13% of total installed cost
- Structural Steel: approximately 2% of total installed cost
 - Pipe for all Edmonton area upgraders: ~\$5.5-9.0 Billion
 - Structural steel for upgraders : ~\$0.9-1.5 Billion

What This Means for Potential Suppliers

- The opportunities are large
- The opportunities are imminent
- The opportunities are here in the Edmonton area



Colt's Involvement in Oil Sands Equipment Procurement

- Varies on the client and project
- Colt can procure on behalf of the client
- Can review and recommend suppliers to be added to bid lists
- Provide procurement support (generate requisitions, prepare bid tabulations, carry out shop inspections)