

The EPC contractors answer to current market challenges



Arjen Blok

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A culture that consistently provides the best safety performance among the world's major contractors

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There are many developments in the E&C industry at this moment.

Amongst others there is an increasing demand for E & C services, a geographical shift for projects to less traditional regions, heated suppliers market, a strong demand for construction labour in parts of the world.

I will address the developments in the market in a nutshell and then focus on the response to this changing environment from a contractor's perspective.



Introduction

1. Energy & Chemicals Market Demand
2. Impact on the EPC Industry
3. Meeting the Challenge
4. The Shift in Approach
5. Boundary Conditions
6. Impact on estimates

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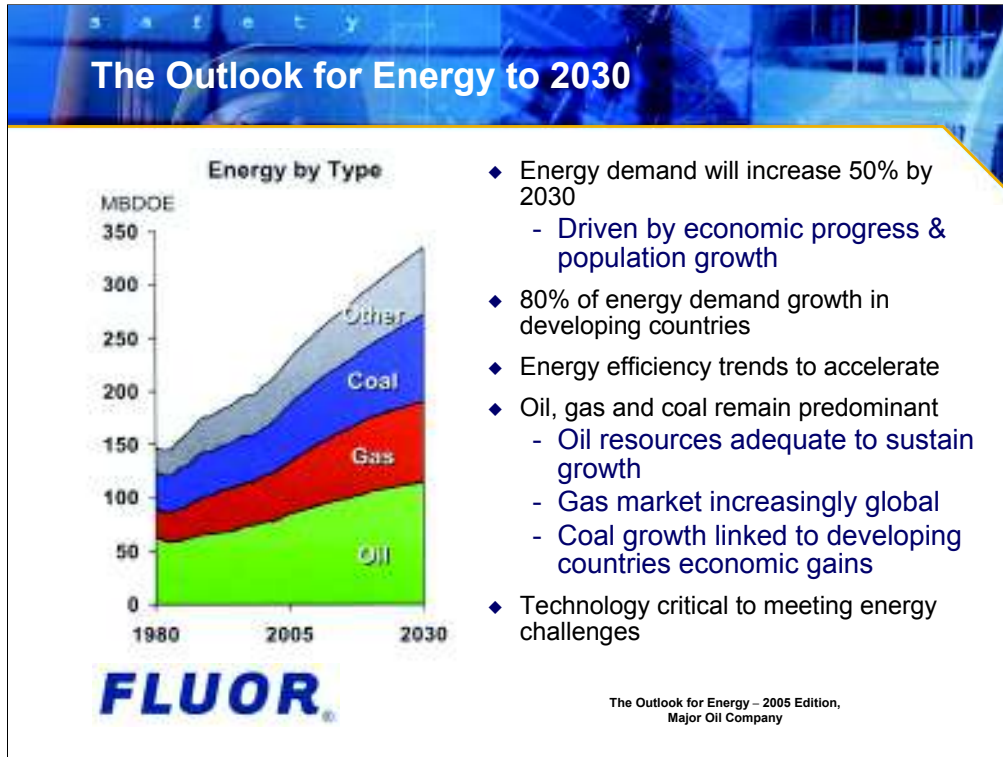
1. Energy & Chemicals Market Demand



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Key message is Demand continues to rise at an accelerated rate in major energy markets

Most of you will have seen this picture and it says more than a thousand words. In short: Energy demand will increase by 50% in 2030 and it will require many investments in new facilities and optimization through new technologies.

In summary:

By 2030, energy demand will increase about 50 percent versus current levels to approximately 335 MBDOE (million barrels of oil equivalent)

driven by economic progress and population growth.

The vast majority – approximately 80 percent – of the increase in energy demand will occur in non-OECD (Organisation for Economic Cooperation and Development) nations.

As demand rises, energy efficiency will become increasingly important, with the pace of improvement likely to

accelerate.

Oil, gas and coal will remain predominant energy sources with roughly an 80 percent share of total energy:

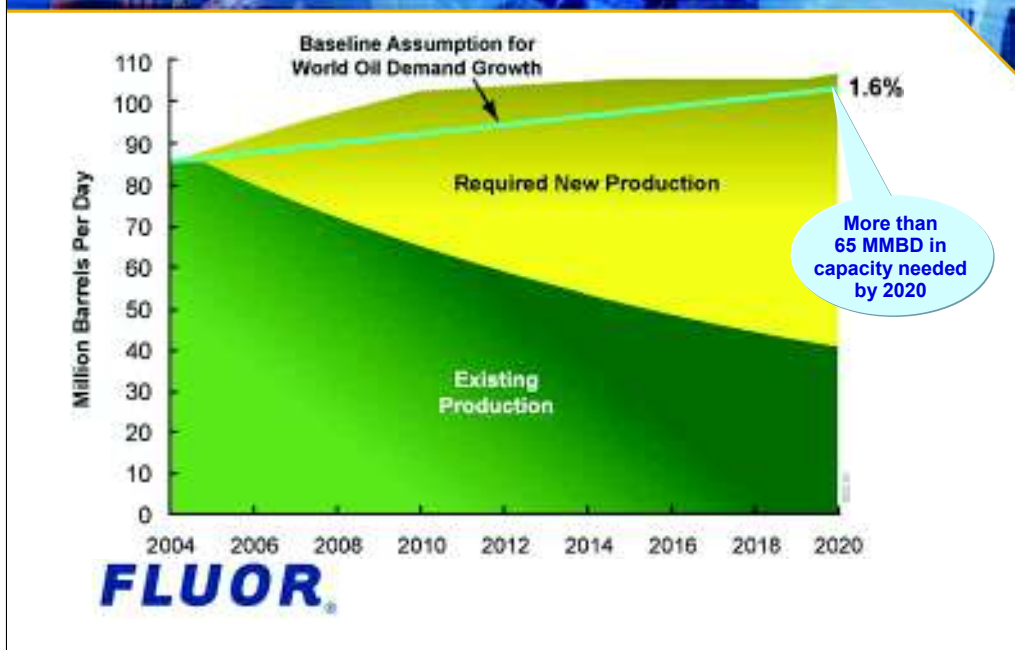
Oil resources are adequate with growing contributions from OPEC, Russia/Caspian;

Gas resources are adequate and diverse with increasingly distant supplies driving LNG growth;

Coal resources remain fundamental to support rapidly growing non-OECD needs

Lastly, technology advances will remain critical to successfully meeting the significant energy supply and demand challenges ahead (e.g., specification, other bottom of the

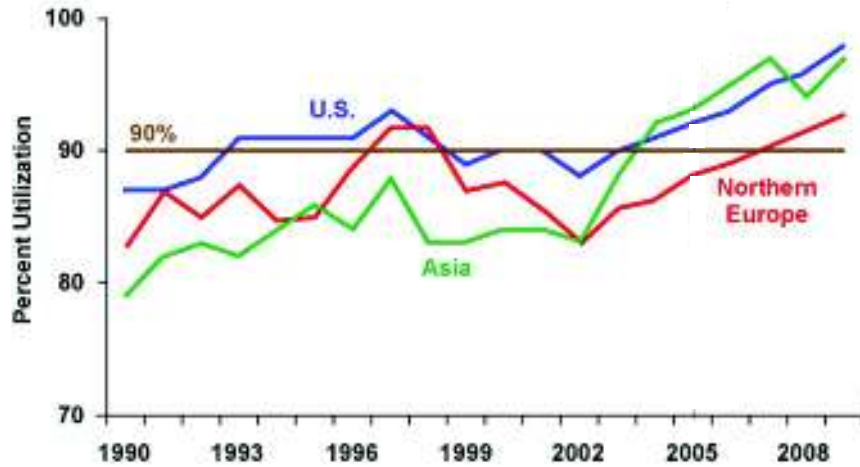
The Oil Supply Challenge



Key messages:

- No or limited margin between supply and demand at this point in time
- More than 60% of the exploration capacity for 2020 is still to be installed.

Refining Capacity Utilization



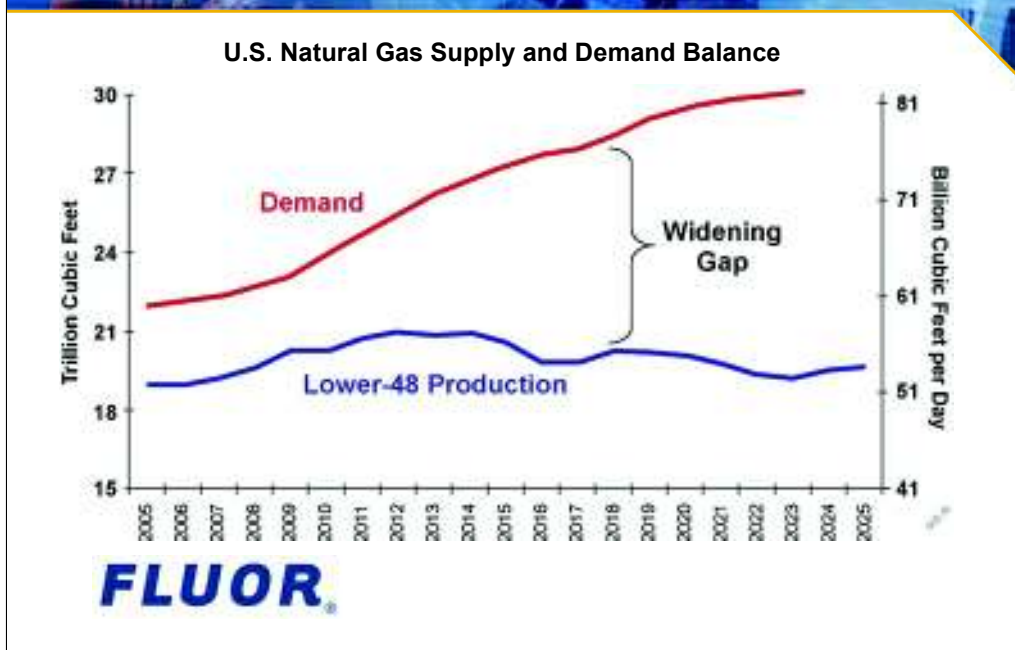
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Key message:

Refiners are running at high to very high utilization percentages. This makes the market very vulnerable for upset scenarios; e.g. Katrina. Key for this presentation is the fact that all increase in energy demand will need to result in new refinery capacity to be installed; that is, energy demand in terms of refined products.

The only main region with lower utilization percentages is the FSU. Some regions are running at a deficit in refining capacity. The US is running at a consistent shortage of approx 3 to 5 % and in 2005 the Pacific Asia region started to show a deficit as well.

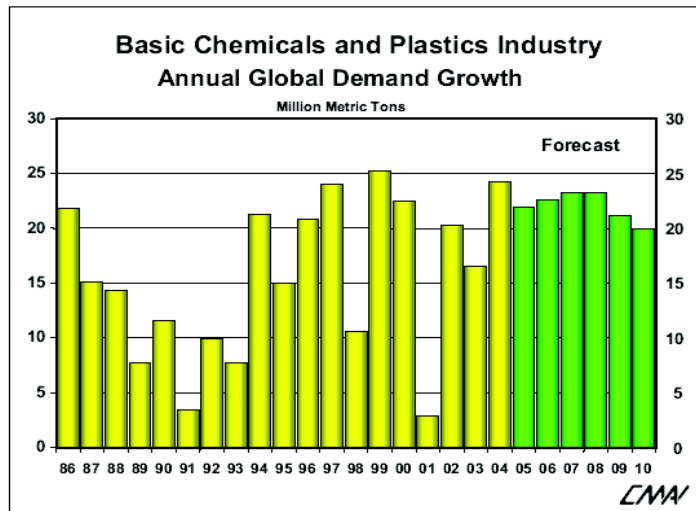
Natural Gas Demand Spiking



This is a US picture but as became painfully clear not too long ago (Gazprom – Oekraine), this applies to other regions as well.

Lower-48 production basically means US domestic production.

Global Chemicals Demand Growth



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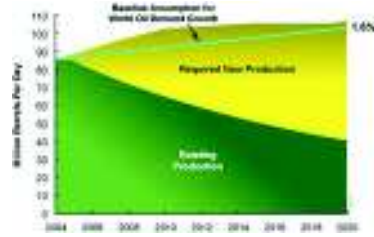
Global growth in demand for basic chemicals and plastics.

- CMAI (Chemical Market Associates Inc) assumes that global GDP growth will hold in the 3.0-4.0% per year range for the balance of the decade, trending downward in the later portion.
- Current demand growth in is of the same order of magnitude as the demand growth when projects like BASF-YPC and Shell Nanjing were sanctioned.
- CMAI's definition of the basic chemicals and plastics industry includes light olefins (ethylene and propylene, 25% of the total), aromatics (benzene, orthoxylene, paraxylene, and styrene, 17%), chlor-alkali (chlorine and caustic soda, 20%) methanol and plastics (LD, LL and HD polyethylene, polypropylene, polystyrene, PVC and PET, 31%).

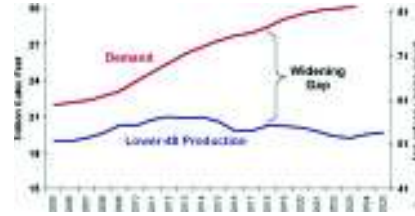
The Perfect Storm in E&C

Strong Demand in 4 Markets Simultaneously

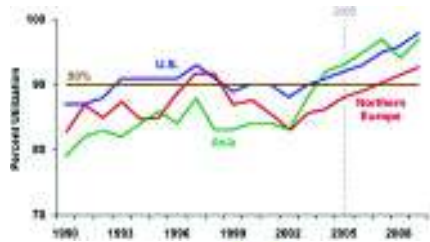
1. Oil & Gas Production Demand



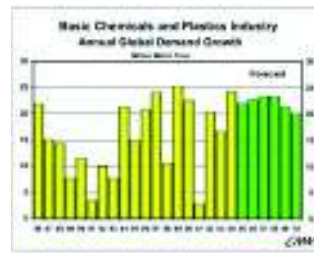
2. Gas Processing Demand



3. Refined Oil Products Demand



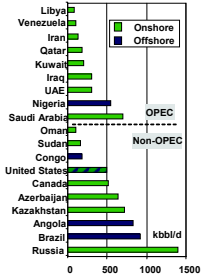
4. Chemical Products Demand



All in all, the simultaneous strong demand in the 4 markets creates what you could call “THE PERFECT STORM” in E&C.

Continue to have Strong Demand in 4 Markets Simultaneously in the Near-Term **ALTERNATIVE**

1. Supply Capacity Growth (2006-2010)



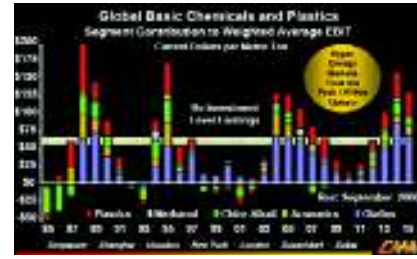
2. Gas Processing Demand



3. Refined Oil Products Supply & Demand

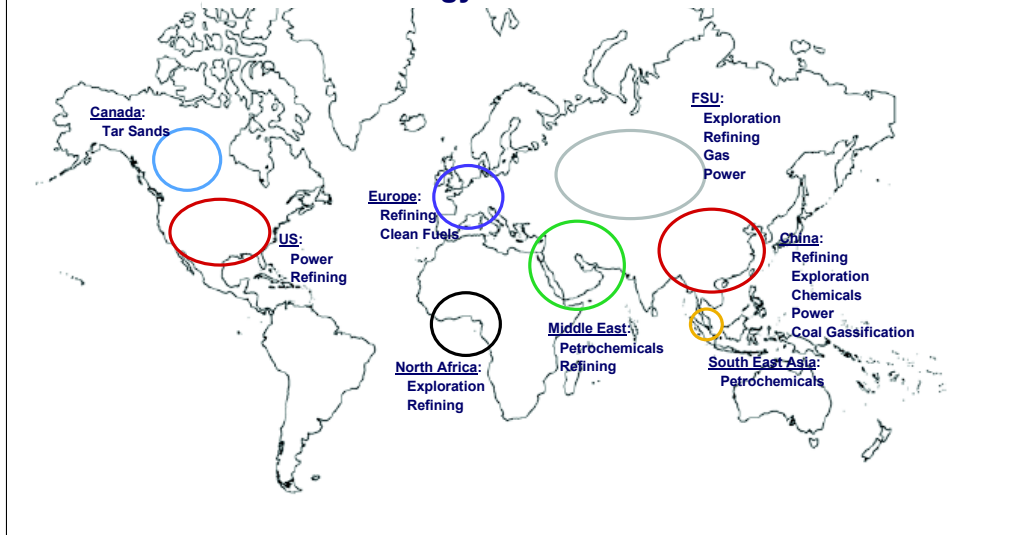


4. Chemical Products Demand



Investment on Global Scale

Global investment activity across all sectors of Energy & Chemicals



This picture gives a simple view of the most investment intensive regions. Fluor and a number of our competitors are very active in most if not all of these regions and business lines. (hinting at not a real geographic shift)

2. Impact on EPC Industry



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So what this mean for our industry.

Project Impacts

- ◆ Significant increase of projects with TIC over \$1 Billion in last two years
- ◆ Project complexity increasing
 - More Consortium/JV/Alliances, Owners and Contractors
 - Projects in remote locations – often unstable political environments, local content, etc.
- ◆ Immense resource demands
 - Owner teams
 - Contractor teams
 - Equipment/Material
 - Construction labor

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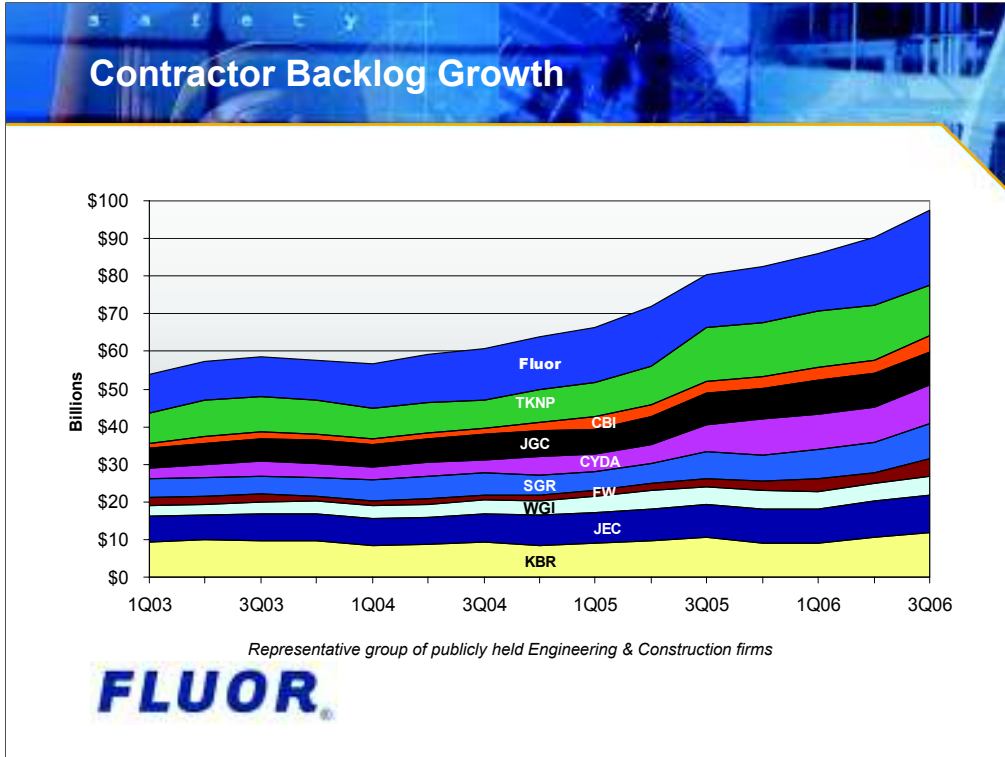
As all of you know the market is loaded with “elephant” projects in the upstream sector, the downstream sector (bottom of the barrel) and the petrochemicals sector.

As an example of the project complexity and resource demands:

Fluor has a project in house for which we assisted our client with definition of the master plan and approaching potential partners for the investment. One of the potential partners took over the whole refinery, and awarded us the project single source.

We in turn developed an execution model that included subcontracting of a significant part of the scope to partner to meet resource requirements and manage exposure. In addition we anticipated to share the work with one of our Global Execution Centers.

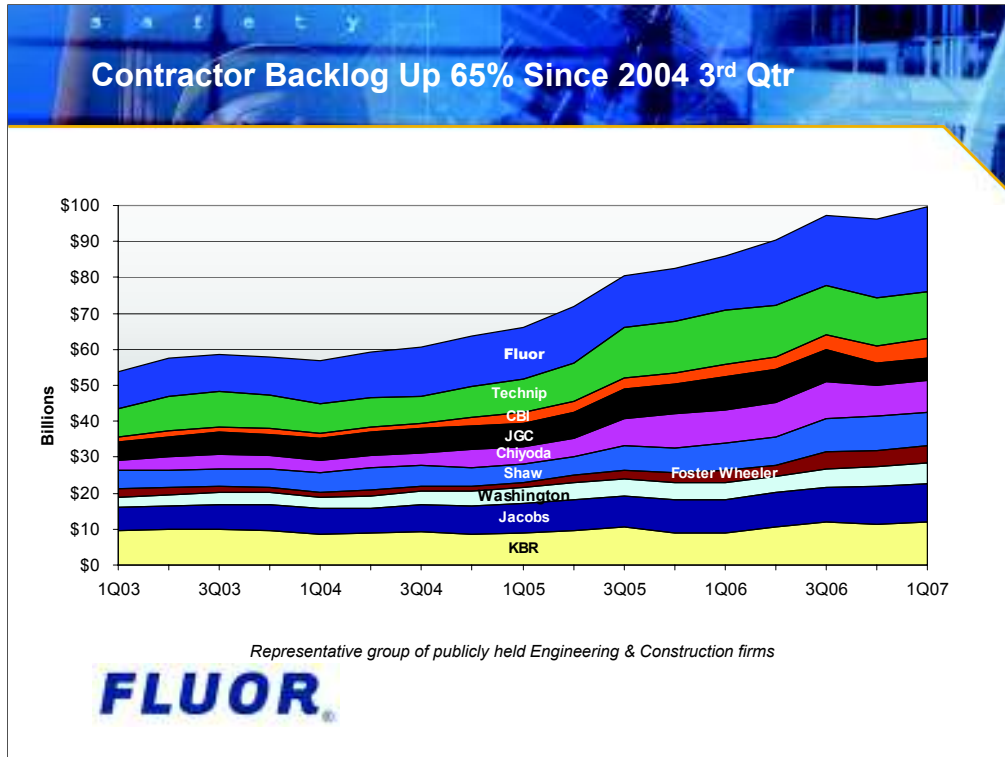
That same client purchased long lead equipment before the front-end engineering had even started.



This represents a slice of the contracting industry, but shows a trend that is industry wide.

Backlog has grown over 40% collective with these major industry players, even while some have remained relatively flat (KBR)

This backlog reflects all industries served by these companies, but the majority are significant E&C players.



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Supplier Landscape

- ◆ Consolidation (example: 21 key suppliers consolidated down to 4)



SIEMENS



- ◆ In the current market they are very risk averse
 - Contract terms
 - Payment terms
 - Delivery commitments
- ◆ Lack of investment in last 20 years
 - Reluctant to invest now

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Tenaris: 8 established producers of steel tubes

As an example, Flowserve was created in 1997 through a merger of 2 firms and since then it acquired 7 players in the fluid motion and control business.

Risk averseness clearly shows through flow-up risk clauses than the flow-down risk clauses we used to see in the past. Suppliers are facing raw material scarcity and resource constraints.

Many suppliers are facing extremely high shop loadings. Having gone through significant under-utilization in the past decades, they are not very eager to grow too fast now. As said, resources are limiting them as well.

Supplier Escalation and Deliveries

Market Outlook Summary						
Commodity	2004 Actual Price Increase	2005 Actual Price Increase	2006 Price Increase Forecast	2007 Price Increase Forecast	2005 Delivery Time (wks)	2006 Delivery Time Forecast (wks)
Fabricated Structural Steel	30%	5-10%	10-15%	10-15%	8-20	26-30
Pressure Vessels and Heat Exchangers	5-12%	7%	6-12%	8-15%	24-72	30-155
Compressors	2%	6%	6-10%	7-15%	12-60	30-80
Pumps	2%	6%	4-10%	7-20%	6-60	12-75
Pipe Material – Seamless	15-25%	20-30%	20-40%	10-20%	8-40	12-60
Pipe Material – Welded	15-25%	20-30%	20-35%	15-40%	10-30	12-44
Valve Material	6%	10%	20-30%	10-30%	12-36	12-52
Control Systems	2-3%	2%	2-10%	6-30%	2-46	2-46
Electrical	2-8%	4-10%	6-17%	6-17%	1-52	1-60

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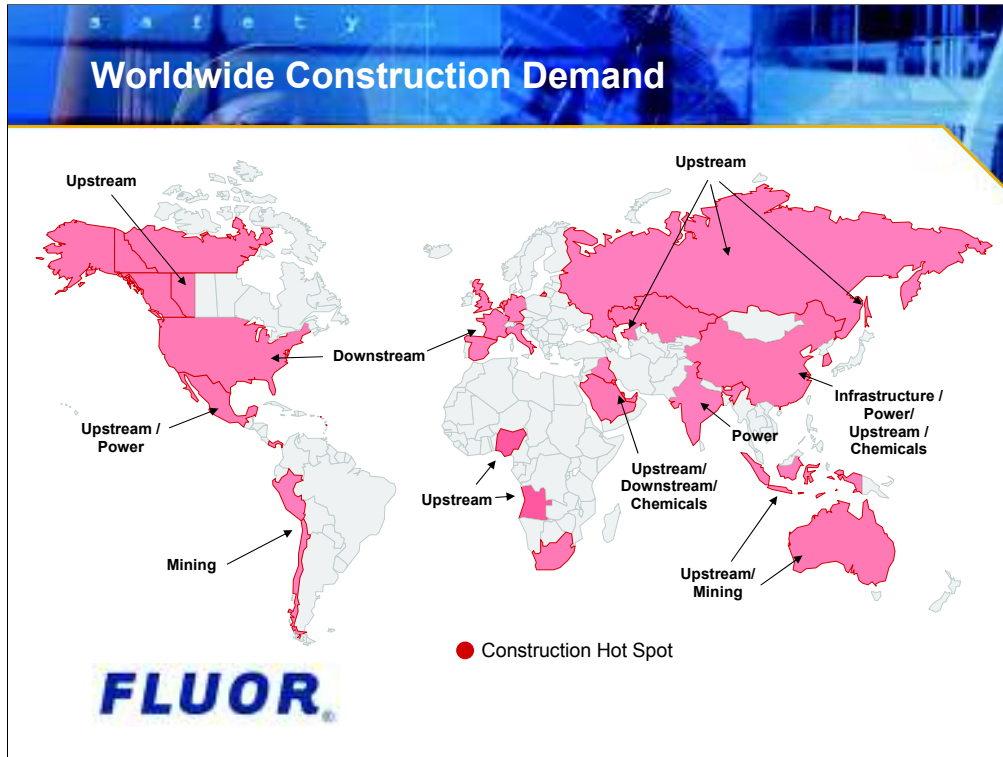
This table shows you development in terms of price and delivery times.

Key contributors to escalation and delivery time extension are:

- First of all raw material availability and price. You may have noted that steel price is declining, however this does not translate to the types of steel needed for our industry. Commodity type steel (lighter weight) sees high inventory levels. No or low inventory levels for the types of steel Fluor purchases.
- As discussed on the previous slide, shop loading is high. Many shops are running at well over 100% utilization already.
- Supplier selectivity with regards to risks and supplier consolidation contribute as well.
- Strong end market pressure obviously determines price to a large extent

As you can see, increases in price and delivery times will be the norm in 2006. The question is not whether they will increase but how much they will increase.

Projects feel the impact in both price and schedule delay and uncertainty.



As you can see the world is almost one big construction hot spot.

1. Worldwide construction resources are becoming increasingly stretched
 - Global demand for heavy construction equipment expected to increase 6% per year through 2010
 - Qualified construction management teams are very scarce
2. In addition, construction projects are more frequently occurring in remote regions with difficult environments (climate, cultural, political, economical)

3. Meeting the Challenge



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So we all have quite a challenge.

Project Objectives and Challenges

Execute Projects to meet requirements for:
Cost – Schedule – Quality – Safety



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Challenges:

- ◆ Scarcity of resources
- ◆ Equipment Material Supply
- ◆ Project Management Teams
- ◆ Maintaining Quality

Key objective is to maintain the prime business interests for all partners involved in the realization of the capital projects. Doing so, Fluor intends to continue to be a reliable partner meeting cost, schedule, safety and quality targets.

To be able to do so we have to respond a number of key challenges. I will address the following challenges: < see bullets >



Maintaining Quality

- ◆ Managed Growth
- ◆ New employees assimilated into Fluor's global work processes and systems
 - Same work processes in every office
 - Regimented training programs (throughout career)
- ◆ Increased Project Oversight: Project audits and management reviews based on risk assessment
- ◆ Implement actions for retaining employees

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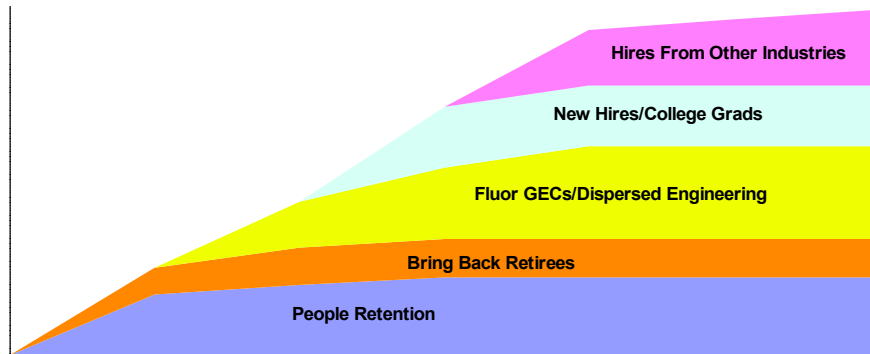
Key to maintaining quality is proper and timely risk assessment followed up with associated mitigation strategies.

We manage growth such that we continue to be able to deliver on target. We support global growth through a consistent set of aligned work processes and tools that are the same across the globe. New employees receive training in work processes, tools and specific subjects via a structured approach.

Fluor applies a very strict risk management approach to all projects and defines mitigation measures for identified risk areas. With a steep growth of the number of employees, we have increase project oversight through audits and reviews.

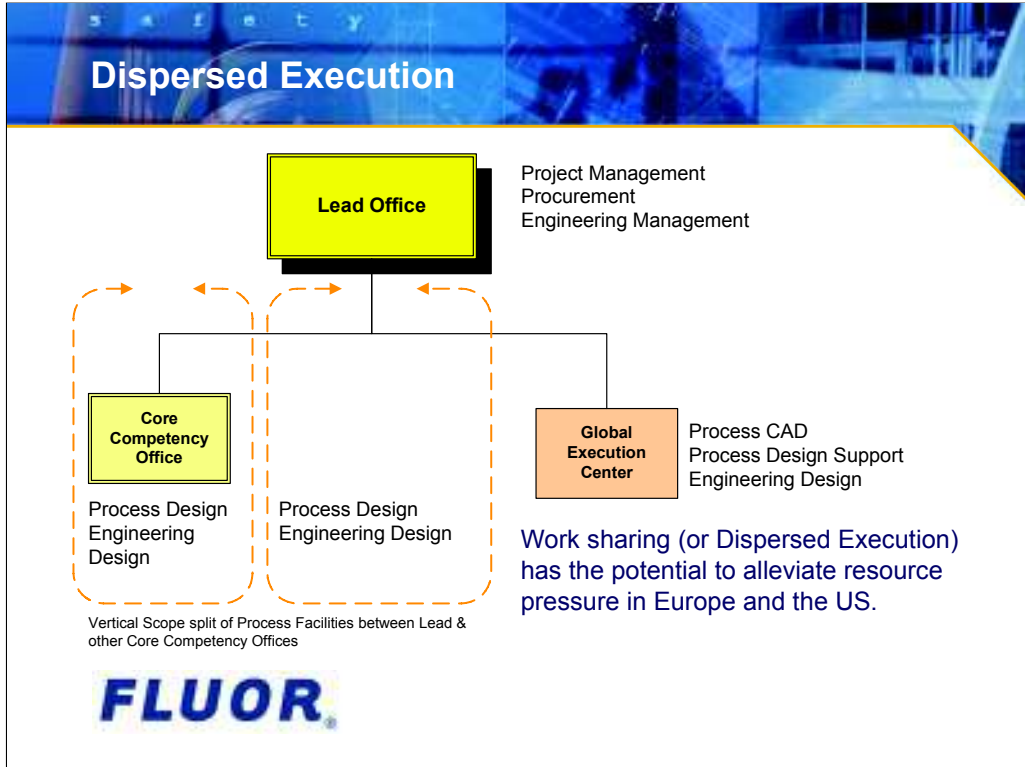
Recently we announced an across the board salary raise for all employees and agency personnel worldwide. This is in addition to review of individual cases.

Fluor's Approach to Meeting the Industry's Staffing Requirement



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Strong focus on people and people development is even more key in today's environment than in the past. Corporate and local programs are in place for training, stretching, mentoring and retention.



Give example of project currently in house for a petrochemical client.

Fluor's Approach to Supplier Market

Procurement Risk Mitigation Strategies

- Implement construction driven procurement plan
- Commit to long lead equipment early
- Leverage spend to generate more supplier incentive to deliver
- Reserve Shop space as possible
- Utilize Market/Sourcing Intelligence
- Supplier Relationship Agreements
- Low Cost Country Sourcing (LCCS)
- Logistics & Export/Import Compliance

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HIGH

LOW

Project Procurement Risk

Manageable Risk

As a result of the developments in the suppliers and contracting market, many of our projects are procurement and contracting driven. Fluor has a global team of experts supporting the local procurement organization with a number of key items.

So, how will we combat these ever increasing risks? Fluor uses a variety of methods, and I will cover just a few of them today:

Market/Sourcing Intelligence - Fluor has dedicated teams of product experts called product directors who are responsible for Fluor's collective supply chain intelligence.

Escalation Initiatives - Escalation initiatives remain a top priority for our Procurement group - is also recommended.

SRAs/CSRAs – Fluor Procurement currently has 150 strategic Supplier Relationship Agreements & 15 strategic contractor agreements in place. Our SRAs average 7% - 9% price savings across all categories of materials and equipment we purchase, against next lowest bidder on a competitive bid basis. Both SRAs and CSRAs reduce risk; SRAs through price, quality, performance, and schedule certainty, and CSRAs through their zero claims clauses, shared risk of schedule and cost growth, safety, quality, and performance certainty.

Low Cost Country Sourcing - Along with great cost advantages and opportunities, LCCS comes with some risk. Fluor considers the balance of risks vs. benefits in each and every country we do business, and we are particularly thorough when evaluating the balance of tradeoffs when engaging in LCCS.

Some risks to consider with LCCS include: long lead and delivery times, delivery reliability, unforeseen add-on costs such as taxes and import/export charges, unknown supplier performance, lack of quality guarantees, and differences in local laws and regulations that may or may not protect a company to the same degree as when engaging in business in the U.S. or Europe.

4. The Shift in Approach



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Only through shifting our approach to projects we can capitalize on the many opportunities and continue to deliver to expectation.

The Shift

- ◆ Further increase in globalization
- ◆ Join forces
 - Matching / complementary skills
 - Risk profile
- ◆ Innovative project execution



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Traditionally projects were almost exclusively executed out of a western location.

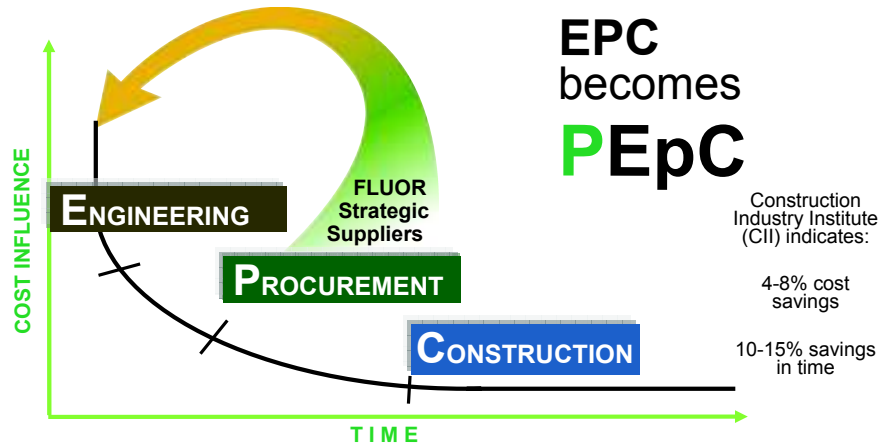
Some 10 plus years ago we and others shifted towards an approach including worksharing; i.e. part of the work was executed by offices in lower cost countries. Now we see a trend to more and more dispersed execution models with primary (mostly western) offices, regional offices, GEC's and possibly partners. We have recently completed our ME regional organization and are proceeding with other regions. Our ME organization consists of a main centre in Abu Dhabi and satellite offices in other key countries.

In addition we see that the Western European and US labor markets are becoming exhausted when it comes to engineering talent. As a result and as preparation for the further geographic shift we are pushing our Global Execution Centers up the value chain and we have embarked on various coordinated international recruiting campaigns.

The shift towards more challenging regions and projects with higher risk profiles opens opportunities to share work with partners. Partner selection is a critical process in which the partner's complementary skills and company strength support the make-up of a strong consortium that leads to a manageable risk profile for all parties involved.

The current supplier and sub-contractor market pressure drives innovative

Supplier Integration – The PEpC Process



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Supplier Relationship agreements allow early selection and joint design development resulting in reduced cost and reduced schedules. You can imagine what this means to the engineering process.

5. Boundary conditions



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The owner-contractor relationship and contractual conditions are also changing to meet the challenges of this market.

The typical contractual conditions from a couple of years ago would limit the possibilities for this Shift in Approach.

Changes in the Owner – Contractor relationships

Changes in Contracting Trends

- ◆ Owners (Majors and Nationals) trending away from Lump Sum
- ◆ Some owners trending toward Reimbursable Cost with Lump Sum conversion
- ◆ Most owners trending toward Reimbursable contracts
- ◆ Increase in Sole Source awards
- ◆ Movement toward contractor's fees based on % of TIC / % of subcontracts
- ◆ Most owners releasing full FEED and EPC scope as one award

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Owner's Assistance in Meeting the Challenge

- ◆ Early Communication on Upcoming Projects
- ◆ Acceptance and implementation of Dispersed Execution Platform
- ◆ Utilization of Industry experienced personnel vs. only contractor specific experienced personnel
- ◆ Consideration of significant scope award to attract contractor resources
- ◆ Experienced and capable resources to meet key decision making milestones
- ◆ Balanced Risk / Reward Standard Agreements

You can read these at your leisure, I will just pick out a few developments that support a new client-contractor landscape.

-Trending away from lump sum (e.g. COP, Borouge)

-FEED/EPC award in one go (e.g. COP)

-Early communication (e.g. Borouge FEED and EPC acceleration, Ineos's early requests for capacity, etc)

-Scope award to attract resources –name PIC/DOW.

It is an extremely exciting time to be in engineering. In the past 15 years that I am with Fluor I have never experienced more exciting times.

6. Impact on Estimating



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Now what is the effect of the market on our ability to provide quality estimates?

Effects on estimate quality

- ◆ Scoping and quantification ability – unchanged
- ◆ Pricing volatility.
 - demand more market checks however response to requests for bids is low
 - In house data basis age quickly
- ◆ High demand on construction labour
 - Drives up costs
 - Effects productivity & quality due to influx un experienced labour and contractors
 - Increase of management

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Of course Fluors ability to scope and spec a project and to quantify the scope is not changed but the suppliers market has a major influence at on our work as estimators.

For a class 2 estimate (+/- 10%) we want to obtain bids from the market for a minimum of 70% of the equipment value in which at least the long delivery items are firmly quoted with a validity which is consistent with our over all project schedule.

In today's environment it is a major challenge.

By utilizing quotes obtained for similar equipment for different projects we manage to reach the 70% level in most case however we are stretching our own rules here and need to recognize this in our contingency analisys.

Also our in house data basis ages more quickly which again raises the uncertainty as does the demand for construction labour resources.

Effects on estimate quality

- ◆ Schedule increase > drive cost
 - Longer delivery times
- ◆ Escalation allowance for future price developments
 - unpredictable
- ◆ Accuracy ranges of estimates increases
 - Demand more qualifications
 - Drives up contingency allowances

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Schedules extend because of the longer delivery periods required by vendors adding additional cost for acceleration provisions , escalations, etc.

Yearly inflations for our market have become very unpredictable and thus raising the bar of uncertainty.

All in all accuracy ranges of estimates are enlarged and drive up the contingency. Uncertainty in estimate also demand for more qualifications, which basically defer cost to outside the scope of the estimate, i.e. becoming client costs.

All in all, as an estimator I have never experienced a market situation like this in my entire 20y + career.

Up to approximately 3 -4 years ago it was an ever eroding market with a highly stable yearly cost inflation between 0% and 3 % per year for many years, i.e. a reliable basis for an estimator.

Having seen price increases of 100% in 9 months, these were quotes by the same vendor, has chocked my foundation severely.



Summary

- ◆ Energy & Chemicals Market Demand
- ◆ Impact on EPC Industry
- ◆ Meeting the Challenge
- ◆ Boundary conditions
- ◆ Impact on estimating

Shift in approach is required to meet the challenges of today's and tomorrow's market

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Bullets:

We are living in exciting times with a lot of interesting challenges and opportunities for all, as we shift geographically and in how we work together.

Questions & Answers



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Fluor Corporation

- ◆ For nearly 100 years, Fluor Corporation has been a front-runner in the industries it serves.
- ◆ With a \$100 investment, it began as a family business, building paper mills, sawmills and icehouses for logging companies.
- ◆ Today, Fluor Corporation's business enterprises provide a broad range of technical services to customers worldwide.

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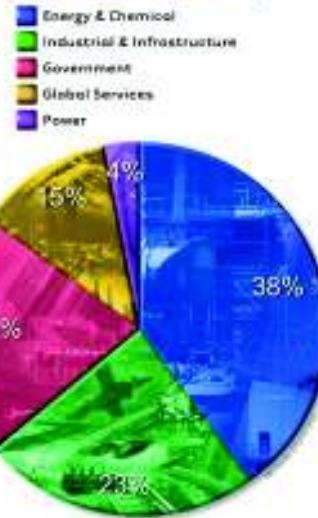


Founded in 1912, the diverse and client-focused offerings of Fluor strategically position it as a full-source service provider of exceptional industry expertise and technical knowledge.

Fluor Overview

- ◆ One of the world's largest publicly owned engineering, procurement, construction and maintenance companies
- ◆ 2006 revenues of **\$14.1 billion**
- ◆ 2006 new awards: **\$19.3 billion**
- ◆ 2006 backlog: **\$21.9 billion**
- ◆ **37,500** employees worldwide
- ◆ Offices in more than **25** countries
- ◆ Fluor's safety performance record consistently makes it one of the world's safest contractors
- ◆ Nearly **100** years of experience

2006 revenues by industry



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