Project Engineering, Procurement and Construction in the Caspian Region

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Andrei Kalyuzhnov
General Manager, Amec Foster Wheeler
Amec Foster Wheeler in a nutshell and what is there for the Caspian Region

Who we are and what we do

- London Stock Exchange
- New York Stock Exchange

40,000 exceptionally talented people worldwide
150+ year history operating in over 50 countries

Markets
- OIL & GAS
- Clean Energy
- Environment & Infrastructure
- Mining

Collaboration and leveraging of skills around the world.

Offers
- Consultancy, engineering, project management, operations and construction services
- Project delivery, specialist power equipment

What drives us

Delivering value to our shareholders

Developer, the full potential of our people

Contributing to the community, we care.
- Supporting SOS Children for the 15th year running
- Donating to charities worldwide

Providing safe and sustainable power solutions for our customers

Developing the full potential of our people

Revenue

- Market mix
- Environment & Infrastructure
- Clean Energy/Power
- Business units
- Oil & Gas
- Mining

About us

- Americas
- Northern Europe & CIS
- Africa, Middle East, Asia (AMEA) & Southern Europe
- Global Power Group

- Full life cycle services to offshore and onshore oil and gas (conventional and unconventional), upstream, midstream and downstream
- Strong position in clean energy market, including full life cycle offering to nuclear sector from environmental studies and reactor design to decommissioning and clean-up

Employers by business units

AMEA & SE

Americas

19%

12%

9%

52%

39%

47%

GPG

50%

27%

8%

Oil & Gas

Environment & Infrastructure

Mining

Market mix

Connected
Partner of choice for our customers
Excellence
Consistent delivery of fit for purpose solutions

Scale
Revenues

£5.5bn
(c. $9bn)

Selected customers

To find out more
amecfw.com

“Our vision is to be the most trusted partner for our customers by consistently delivering excellence – bringing together the knowledge, expertise and skills of our people from across our global network.”

- Loading provider of circulating fluid bed steam generators, combined heat and power, electric power generation, steam generators, advanced air quality control systems and a wide range of aftermarket products and services
- Specialist skills in pharmaceuticals/processing, industrial infrastructure/transportation and environmental consultancy
- Well established relationships with International Oil Companies (IOCs), National Oil Companies (NOCs), energy, mining, chemicals and pharma customers

Principal offices locations.
## AMEC + Foster Wheeler deal rationale

A compelling combination across the Oil & Gas market

What could we take for the Caspian Region?

<table>
<thead>
<tr>
<th>upstream</th>
<th>AMEC</th>
<th>FW</th>
<th>Amec Foster Wheeler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offshore top side facilities</td>
<td></td>
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<tr>
<td>Onshore facilities engineering</td>
<td></td>
<td></td>
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<tr>
<td>Main. Mods &amp; Ops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil sands</td>
<td></td>
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<tr>
<td>Gas processing, LNG, GTL</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Refineries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petrochemicals</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mid &amp; downstream</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main. Mods &amp; Ops</td>
<td></td>
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<td>*</td>
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<tr>
<td>Project management consultancy</td>
<td></td>
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<tr>
<td>Environmental consulting</td>
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</tbody>
</table>

**AMEC**
- More exposure to NOCs
- Greater exposure to faster growing sectors

**Foster Wheeler**
- Exposure to wider portfolio of customers
- Broader exposer to wider sectors

**Amec Foster Wheeler**
- Serves the whole O&G value chain
- Opportunities for cross-sell from other three markets
- Combines two highly-skilled teams
- Global capability to deliver greater value to our customers

**Key:**
- Strong position
- Limited position
- No material position
- * Growth aspiration

Analysis is indicative and is not intended to represent the entirety of the market

Addressing our customers’ business objectives across the whole oil & gas value chain
Caspian market overview
A new era for Caspian oil and gas

- The recent decline in world oil prices is likely to constrain economic growth and investment in the Caspian region.
- The steep decline in global oil prices has dealt a blow to earnings for many energy-exporting states, pushing their finances and investment projects over the red line.
- They have suffered slowdowns since crude prices began to slide in mid-2014, but most of them still expect to weather the crisis and will draw on their significant currency reserves to keep their economies and projects floating.

Notes: undiscovered resources are mean undiscovered technically recoverable resources. "Former Soviet Union" includes all Caspian Sea Area resources except in Iran.

Sources: U.S. Energy Information Administration, USGS World Estimate of Undiscovered Resources 2012, USGS Assessment of Undiscovered Resources of Caspian Sea Area 2010
Caspian region: responses to the price crash

• Nobody knows with certainty when and how this prolonged and unexpected market fluctuation will end.
• Even if conditions were to stabilise soon, the consequences of the dramatic fall that has already occurred could be serious.
• If the market remains bearish, these countries could have a very hard time, not only with respect to recouping their losses but also in facing much tougher competition for new investment.

According to the International Energy Agency (IEA), Kazakhstan exported about 1.69 million barrels per day of oil in 2014, while Azerbaijan exported 840,000 bpd and Turkmenistan 280,000 bpd.
# Caspian region refining and gas processing

## Caspian region refining

<table>
<thead>
<tr>
<th>Country</th>
<th>Operating refineries</th>
<th>Crude capacity (1,000 bbl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>&lt;100 miles from Caspian sea</td>
</tr>
<tr>
<td>Russia</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>Iran</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td>59</td>
<td>7</td>
</tr>
</tbody>
</table>

## Caspian Sea area operating natural gas processing centers

<table>
<thead>
<tr>
<th>Country</th>
<th>Total</th>
<th>&lt;100 miles from Caspian Sea</th>
<th>Major activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td>2</td>
<td>2</td>
<td>SOCAR runs gas processing plants for Caspian basin fields, including Shah Deniz.</td>
</tr>
<tr>
<td>Iran</td>
<td>40</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>14</td>
<td>3*</td>
<td>TengizChevron runs a gas processing plant to pick up associated gas from the Tengiz oil field. Agip KCO of NCOC building processing plant to handle associated gas from Kashagan.</td>
</tr>
<tr>
<td>Russia</td>
<td>37</td>
<td>2</td>
<td>Gazprom and LUKOIL run gas processing plants for natural gas from the large Astrakhan field and smaller gas fields in North Caucasus.</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>2</td>
<td>0</td>
<td>Iranian company Ramshir currently building processing plant for Korpezh field to service the Iranian market.</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>4</td>
<td>0</td>
<td></td>
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</tbody>
</table>

* Gas processing plant to service Kashagan field is under construction.

Sources: U.S. Energy Information Administration, IHS Edin, IHS Global Insight.
Project Delivery Platform
Caspian Region
Project Delivery Model

- Process Design
- Engineering & Design
- Procurement & Material Control
- Construction Contracts
- Fabrication Management
- Site Management
- Completion & Handover Mgmt

Project Management & Control Systems

Project Data Systems
Phases of Project Delivery – Critical Issues

- **Feasibility (preFEED)**: 6 to 26 weeks
- **FEED (Project Definition)**: 6 to 15 months
- **Detailed Engineering, Procurement, Construction**: 24 to 45 months
- **Commissioning**: 6 months
- **Operation and Maintenance**: 20 years +

**Time Line**

- **Feasibility Study**
- **Front End Engineering Design (FEED)**: Engineering, Procurement, Construction, Commissioning
Contracting strategy

Low Contractor Risk
- Reimbursable at cost rates
- Reimbursable fixed rates
- Lump Sum Engineering

Client has Maximum Flexibility
Owner controls Contingency

Client & Contractor Share Risk & Contingency

High Contractor Risk
- Lump Sum Engineering & Materials
- Negotiated Lump Sum EPC (CLSTK)
- Competitive Lump Sum EPC (LSTK)

Client has Minimum Flexibility
Contractor controls Contingency
## Traditional challenge in Caspian region – local content requirements

<table>
<thead>
<tr>
<th>Engineering &amp; project execution</th>
<th>Procurement</th>
<th>Logistics</th>
<th>Construction</th>
</tr>
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<tbody>
<tr>
<td>- Lack of experience in executing projects through EPC contractors</td>
<td>- Limited experience of EPC contractors working with local equipment and materials suppliers</td>
<td>- Lack of experience of dealing with Caspian logistic companies</td>
<td>- Difficulties experienced by EPC contractors in managing Caspian construction subcontractors</td>
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<tr>
<td>- Need to comply with local standards and norms</td>
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<tr>
<td>- Language barrier</td>
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<tr>
<td>- Lack of effective interaction and integration between Contractors and Design Institutes</td>
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<tr>
<td>- High local content requirements</td>
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EPC contractors still continue to experience challenges that are specific to Caspian market.
Building cooperation with Caspian contractors will allow more effectively mitigate these challenges and ensure EPC success in the region.

- Increasing requirements for local content should bring additional long term value added for Caspian region economies.
New challenges and opportunities in Caspian Region for EPC Contractors

• Low oil prices impacted on most oil&gas Upstream projects economics (especially offshore) and bring more severe competition for finance in projects portfolio. Still most projects are long term oriented so existing projects can not be easily stopped, but some new ones are postponed

• Low oil prices improve economics of high value added products in downstream making them more attractive

• New geopolitical changes – deteriorating relationships of Western Countries with Russia develop additional interest for alternative oil&gas supply to Europe

• New market conditions may bring new consortiums and M&A activities on the EPC market

• Early stages engineering becomes more important,

• High sulfur oil (Kazakhstan), decreasing oil production (Azerbaijan), brings additional strong demand for new effective technologies and State of the Art solutions
# Key conclusions

<table>
<thead>
<tr>
<th></th>
<th>Conclusion</th>
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<tbody>
<tr>
<td>1</td>
<td>Local content requirements increase, that may help to improve Caspian region economics</td>
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<tr>
<td>2</td>
<td>Low oil prices bring more severe competition for money and for projects</td>
</tr>
<tr>
<td>3</td>
<td>New market conditions and geopolitical changes bring new opportunities for cooperation and launch of new projects</td>
</tr>
<tr>
<td>4</td>
<td>Contractors who are able to implement entire project from early stage to project commissioning have better competitive position</td>
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<tr>
<td>5</td>
<td>Strong demand for new State of the Art technologies</td>
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