

# Pipeline

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# CORROSION POSES MAJOR CHALLENGES FOR THE OIL AND GAS SECTOR

Corrosion costs the oil and gas industry trillions of dollars and Imad Makhzoumi, executive VP Asia for Future Pipe Industries explains how FPI is helping meet the challenges posed to conventional pipe material

According to the World Corrosion Organization, corrosion costs US\$2.2 trillion to the global economy, and almost 45 per cent of the cost is attributable to the oil, gas and petrochemicals industries. As corrosion poses major challenges for conventional pipe material in high-pressure upstream applications, the excellent non-corrosive characteristic of fiberglass has made it the clear material of choice. In particular, fiberglass piping systems have repeatedly demonstrated their superiority for usage on ships and vessels, offshore platforms, and in the dredging industry.

Many factors can cause pipeline failures, including overpressure, weld resistance, joint issues and construction damage. Yet in the oil and gas industry, corrosion accounts for more than 25 per cent of failures, according to a NACE International-the corrosion society report. More than half of these failures are associated with sweet (CO2) and sour (H2S) producing fluids.

Corroded pipe repair or replacement costs the oil industry alone more than \$7 billion per year, based on estimates from the National Association of Corrosion Engineers.

The annual cost of oil and gas corrosion damages due to equipment failure and lost production time can be astronomical. Tubing, pipelines, fasteners and equipment are subject to the punishing effects of chemicals, water and sea salt spray, and therefore the demand is increasing for materials that can better withstand these environments. Governments and nations have no choice but to invest in pipes, however the drive now is to invest in the most efficient pipe system.

With escalating world energy demand, the oil and gas industry has become a rapidly growing



Imad Makhzoumi, FPI

market for Future Pipe Industries (FPI). The vast increase in exploration and production, both onshore and offshore, ensures a substantial need for pipe systems which can efficiently transport resources directly to consumers.

The oil and gas production industry will be requiring higher-pressure rated and larger-diameter piping to control corrosion problems in produced fluid lines (i.e., water contaminated with salt, sulphur and other corrosive elements).

The GCC has the largest penetration rates of fiberglass (22 per cent), from an overall pipe market perspective, and 5 per cent within the oil and gas industry and with FPI driving and leading the conversion we estimate the number to go as high as 20 per cent

### Fiberglass solutions

As all metals have a tendency to dissolve or corrode to a greater or lesser degree, fiberglass becomes attractive because it provides superior corrosion resistance, improved reliability, reduced maintenance costs, and lower capital costs. FPI composite corrosion free fiberglass pipes cover applications in exploration and the

production. The firm's high pressure fiberglass pipes are used on offshore platforms and rigs and floating production and storage of oil (FPSO), oil fields, flow lines, injection lines and disposal lines.

Through its integrated model of providing end to end services that covers manufacturing and supply from various locations to installation and maintenance, FPI has been able to provide bespoke, technically viable and cost-effective systems.

### Project Showcase

FPI was awarded the contract to deliver 30km of 25 mm to 1,200 mm of fiberglass pipes with a design pressure of 16 Barg on the New Jazan Refinery project in Saudi Arabia. It will be a grassroots facility with an anticipated capacity of up to 400,000 bpd. It will be located in Jazan and is expected to support the future development of Jazan Economic City. The additional refined products from the facility will satisfy the growth in domestic demand within Saudi Arabia.

Jazan Refinery and Terminal Project	
Project Name	Jazan Refinery Expansion, Package 312
FPI Project Value	US\$2.5 Million
Location	Saudi Arabia
Industry	Petrochemical
EPC Contractor	JGC Corporation
Consultant	KBR
Project start date	2013
FPI Scope of Work	<ul style="list-style-type: none"><li>• Thermal analysis</li><li>• Project management</li><li>• Manufacture</li><li>• Packing and delivery according to Saudi Aramco specifications</li><li>• Packing and delivery according to Saudi Aramco specifications</li><li>• Site supervision and inspection</li></ul>