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Update on LNG Facility Construction

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Abstract

Global gas demand continues to rise at a rate of over 2% per year. Most forecasts indicate no shortage of available gas supplies on a global basis; however, challenges exist in matching the available gas in one region to demand in another. This mismatch is driving increased demand for LNG as a method to transport available gas supplies over significant distances. Several LNG liquefaction facilities are due to come online by 2012 to satisfy current needs, but no new facilities have been committed since the beginning of 2006 to address needs after 2013. Rising facility costs coupled with uncertainty in the delivery of projects have caused owners to re-evaluate the attractiveness of proposed projects.

During the 1980s and 1990s, the oil and gas industry suffered a major downturn and no major projects were initiated to replace older equipment and technology. During this time, there was a drop of new graduates coming into the engineering and construction arenas while simultaneously there were many experienced individuals retiring – shrinking the total resources. The early 2000s saw capital expenditure projects to revamp existing plants to meet environmental regulations, but these projects did nothing to help increase production capacity for the growing demand for oil and gas.

Starting in the 4th quarter of 2005, all facets of the energy industry began scrambling to meet the world's needs. The numerous, large, global projects in upstream, downstream and chemical markets have put massive strains on resources, escalating the costs for the facilities, as well as increasing the competition for internal funding for other projects.

Contractors report record backlogs and shortages of qualified technical project resources, both in home office environments and among construction field labor. Material and equipment suppliers are operating at near capacity and face a scarcity of skilled labor. Highly qualified construction labor is in short supply on a global basis. Host-country requirements, the need to source engineered equipment globally and earlier in project schedules, complex partnerships, and environmental constraints place ever-increasing economic and political pressures on projects.

In today's global market, the challenges of engineering, procurement and construction (EPC) of LNG liquefaction facilities consist of the contractor industry's design and management resource capabilities, the supply industry's availability of material, and the construction workforce's craft constraints. This paper reviews these issues in light of the demand for LNG globally. It offers new strategies to meet the industry's demand in an economic and timely fashion.

Introduction

Between 1995 and 2005, the volumes of delivered LNG grew by a rate of 7.3% per year. The numbers of exporting countries and importing countries each grew by over 60% to truly globalize the LNG market. This growth was driven by a combination of an increasing need for clean energy supplies and a steady decrease in the cost of LNG production, liquefaction and transportation. These cost advantages were driven by improvements in LNG related technology and economies of scale.