

Gas Processing Projects near the Coast – Geotechnical Issues and Foundation Design Solutions

State-of-the-Practice Lecture

By

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Abstract

Many of the world's offshore (and onshore) gas reserves are located in remote areas where there is no great demand for the gas, such as Australia, West Africa, the Amazon and Trinidad. The liquefied natural gas (LNG) and gas to liquids (GTL) industries provide a solution: they process the gas into liquid form and export it via tanker to markets such as Europe, Asia and (until recently) North America. But this industry requires large and complex processing facilities in remote locations, often in poor soil conditions, on the coast. The geotechnical requirements of the facilities can also be very demanding with low differential settlement tolerances.

This state-of-the-practice lecture will consider some examples of the geotechnical issues and the engineering solutions that were adopted. One example in Nigeria was to use piled raft foundations, following extensive ground treatment. Another project in Australia used cutter soil mixing (CSM) to reduce settlements of LNG tanks and to increase the overall stiffness of the site for seismic response. In another case, better site characterization allowed shallow foundations (avoiding piles or ground treatment).

The lecture will close with a discussion of some geotechnical and coastal engineering “surprises” encountered in these projects.