

LOADTEST O-Cell® Technology in the Sultanate of Oman



Project: **Sohar Aluminum Smelter**

Location: Sohar, Oman

Client: Bechtel & Co.

Foundation Contractor: STFA

Project Description: **Summary:**

Oman is located at the Northern end of the Arabian Sea and the new smelter is sited just inland from the Gulf of Oman, halfway between Muscat and Dubai. Unlike many other countries in the region, Oman is not a major oil producer. To boost the economy, the country's government is encouraging foreign investment in light and heavy engineering such as aluminum smelting.

Aluminum is the World's most abundant metallic element, commercially available in the form of bauxite. With the World market in metals booming, the aluminum industry requires more output to meet the demand. It is hoped that the construction of a new aluminum smelter in the Sultanate of Oman will meet much of the industry needs.

Project:

An aluminum smelter comprises of three main sectors: Carbon, Potlines and Casthouse. It is in the potlines that the aluminum is actually produced. The new Sohar Aluminum Smelter under construction in Oman will feature the World's largest potline. The \$1.4 billion project will contain 360 pots and will be able to produce 350,000 tonnes of aluminum annually. In addition to the potline, the project under construction by Bechtel, includes a carbon plant, a metal casting facility, a port and facilities for shipping and storage.

The pile testing programme originally conceived consisted of top-down static load testing. However, constraints such as availability of reaction beams in a country outside their normal field of operations lead STFA to consider bi-directional testing as a more cost effective solution for this project.

Bi-directional load test arrangement:

Six preliminary bored piles were required to be tested at this site, three 600mm diameter piles and three 1000mm diameter bored into weak sandstone rock at depths of up to 35 metres.

The O-cell configuration in the smaller 600mm pile size used a pair of 230mm O-cells to provide the maximum test load requested of 7.5 MN. Two 405mm O-cells were used in the 1000mm test piles to provide the required maximum test loads of up to 20 MN.

Summary:

The testing of six piles on our first visit to the Sultanate of Oman, three of which were of a small diameter for bored piles, was a success, proving that size, loads and numbers of tests are no obstacles for Loadtest and bi-directional testing.



600mm pile under test



1000mm pile under test

Sohar Aluminum Smelter,
opened June 2008



Source: www.power.alstom.com

