DALKEITH
Plastics Pty. Ltd.

P.E. Fabrication & Pipeline Technology

Sector:	**Mining**
Project:	**GLNG Upstream Project**
Client:	**Santos**
Location:	**Roma. Qld.**

In September 2013, Dalkeith Plastics Pty Ltd were awarded the contract to construct five individual water reticulation systems for the GLNG Upstream Project in Roma, Queensland.

Each welder had to pre-qualify to work on the project having test welds carried out on each pipe diameter which were destructively tested and ToFD (*Time of Flight Diffraction*) tested.

The materials used on the project were delivered in three truckloads. Every individual fitting and length of pipe required a batch number and picking ticket recorded on the fittings/pipe. This number was then recorded by the welder at the fabrication stage allowing for total traceability of every fitting and length of pipe that was used in completion of on the project.

This project consisted of fabricating sections of pipe ranging in diameter from 315 DN, 250 DN, 225 DN, 160 DN, 140 DN, 125 DN, 110 DN, 90 DN, 75DN, 63 DN and 50 DN. There were over 1,000+ welds completed to Single High Pressure welding parameters. As part of the QA, each weld performed had to be logged along with the batch numbers for items used, these logs were then collated and submitted to the client on a daily basis.

A *'Bend test'* was carried out every day prior to commencement of fabrication. This is a non-destructive test method carried out in Dalkeith Plastics Pty Ltd test facilities. A test weld was completed every morning by the pre-qualified welder using the relevant diameter pipe he would be welding that day. The weld was then cut into a *'test coupon.'* This is a strip (30 mm x 150 mm) which is then run through the thickener to fit in the Hydraulic bend machine. Once the coupon has been exposed to the correct pressure, it is removed and visually inspected to see if any defects are visible from the cross section of the butt weld.

Each weld was individually ToFD tested by NDT-Innovations Pty Ltd. ToFD testing is a testing method adapted from the steel industry that can detect defects in the material and welds. This technique using 'phased array' technology has been successfully adapted to the HDPE industry. It is a process that involves sending a 'signal' from a probe on one side of the material/weld to a receiving probe on the opposite side of the material. Any inconsistencies with the reading will show on a graph measuring the size of the defect.

Dalkeith Plastics Pty Ltd were then required to complete Hydrostatic testing of the fabricated works. Dalkeith Plastics Pty Ltd hydrostatic testing unit had to meet the strict criteria before operation. Two test gauges had to be calibrated and within range of the test pressure reading. A pressure relief valve was fitted and calibrated to 1.6 bar as a safety mechanism throughout the testing procedure. Each spool being tested had to be held for one hour and witnessed by an independent inspector.

The entire Dalkeith team worked well together to complete this project with the co-ordination of recording every single fitting used with an MDR (*Material Data Record*) that correlated with every weld completed.

www.dalkeithplastics.com
manager@dalkeithplastics.com
(08) 8347 4244