FITZROY
ENGINEERING
GROUP

AICA NZ – H-101 DOWTHERM CONDENSER REPAIR PROJECT

AICA RESIN PLANT, RICHMOND, NELSON, NEW ZEALAND

CASE STUDY

Fitzroy ENGINEERING

Fitzroy ENGINEERING

The Opportunity

In April 2014 AICA NZ Ltd noted some steam leaks from their Dowtherm Condenser (H-101). A crack was located on the tubesheet to shell attachment weld.

AICA contacted SGS who supplied an NDT Technician to complete an MPI survey, which identified a total of 7 transverse cracks in the weld material.

AICA supply wood resin to the neighbouring Nelson Pine plant, for use in their MDF (Medium Density Fibreboard) and LVL (Laminated Veneer Lumber) manufacturing lines.

The Dowtherm Condenser is a critical piece of equipment, and without it, the plant cannot manufacture Formalin – a key ingredient in the production of wood resin.

This vessel was manufactured in 2007 by Fitzroy Engineering, as a replacement to the plant original vessel, which had suffered a number of tube and stay bar failures over its 10 year operating life.

The Project

The project was originally considered as a straightforward weld repair - excavating and burr grinding to remove cracks, followed by re-welding. The excavation of the cracks proved difficult and the cracking was extensive. It was proposed that the affected shell section be removed and a new patch installed. On the same day as the decision was made, the patch had been cut, rolled and dispatched for next day delivery.

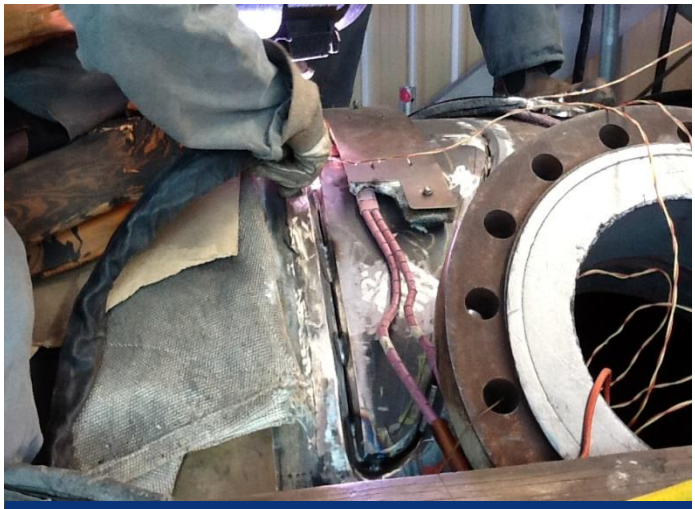
Fitzroy mobilised a team of welders, led by an experienced QC Welding Inspector. A team of Heat Treatment Technicians were also mobilised to provide controlled pre-heating for welding. Due to the high importance, the project was operated on a 24 hour basis. As the tubesheet cracks were removed and inspected, then the tubesheet was built-up and dressed to create the correct weld preparation profile.

The SGS Statutory Inspector was present for the project and was regularly consulted on the repair strategy. When the patch was fully welded and all temporary attachments removed, then the repaired section was wrapped in insulating material and left to cool slowly. When at ambient the vessel was subjected to a hydrostatic test, and after a 24 hour stand down (for possible hydrogen cracking), NDT was repeated, followed by Handover.

The fast response and successful repair were greatly appreciated by the AICA management team, who managed to keep the supply of wood resin to their key client.

Key Features

- Successful plant repair, available for operation just 8 days after site mobilisation
- Flexible approach, with supervision and project resources supplied to suit project demands
- Fabrication support from Fitzroy's workshops



Shell Patch Tacked and Pre-Heated – Welding Commenced

The Completed Shell Patch Installation

FITZROY ENGINEERING GROUP LIMITED

Head Office and Workshops
Devon Road
Private Bag 2053
New Plymouth 4342, New Zealand
Ph +64 6 759 5252
Fax +64 6 759 5253

Auckland Office
139 Cryers Road East Tamaki
PO Box 58-096 Greenmount
Auckland, New Zealand
Ph +64 9 272 8460
Fax +64 9 272 8470

Taupo Office
579 Rakaunui Road
Taupo
New Zealand
Ph: +64 9 272 8460
Fax: +64 9 272 8470

Brisbane Office
1294 Lytton Road
Hemmant, Brisbane
QLD 4174, Australia
Ph: +61 7 3900 4500
Fax: +61 7 3393 9232