

PROJECT REPORT

PR3117/96



HiTRAN[®] Thermal Systems Technology

DEBOTTLENECKS CONDENSATE STABILISER TRAIN AT WOODSIDE OFFSHORE PETROLEUM

PLANT

Hydrocarbon condensate stabilisation unit, LNG plant, onshore at Karratha, Western Australia

SERVICE

Stabiliser inter reboiler

EXCHANGER

TEMA type BES, 1 tube pass
1113 tubes: 25.4 x 2.64 x 4877
(1 in. x 12 swg x 16ft.)
Shell diameter = 1210 mm

PROBLEM

An existing inter-reboiler was failing to vapourise sufficient C₃₊ hydrocarbons. This bottleneck threatened to severely restrict capacity at a time of rapidly increasing offshore gas production and LNG delivery to the market. A tightly scheduled turnaround presented limited opportunities to remedy this situation.



SOLUTION

Analysis by Cal Gavin engineers identified both film boiling and fluid mal-distribution as contributory factors. Predicted heat transfer coefficients, when corrected for the likely film boiling condition, gave reasonable agreement with actual performance. Hydraulic analysis indicated that tubeside frictional pressure drop would be insufficient to ensure uniform fluid distribution.

Installation of customised HiTRAN Matrix Elements would address both problems. Firstly, film boiling would be suppressed, enhancing the boiling coefficient substantially. Secondly, all the installed surface would be made effective by manipulation of the hydraulic characteristics of the tube bundle to improve fluid distribution.

BENEFIT

A HiTRAN Thermal System retrofit could meet the installation milestone on the critical path to start up. Cal Gavin responded rapidly to the client's ultra fast-track programme, manufacturing and shipping the Matrix Elements in record time, for 5 units consecutively. A substantial increase in vapouriser performance was realised which enabled the client to take maximum advantage of the gas supply and demand for LNG.

INSTALLATION

November, 1996

Cal Gavin Limited

Process Intensification Engineering
Telephone: 44 (0) 1789 400 401
Facsimile: 44 (0) 1789 400 411
Email: email@calgavin.co.uk
Web site: www.calgavin.co.uk