

# ConocoPhillips Oil Terminal at Seal Sands

The ConocoPhillips oil terminal at Seal Sands stabilizes crude oil by separating the Natural Gas Liquids (NGLs) and unwanted impurities.

The terminal receives crude oil from the Ekofisk complex and several other Norwegian and UK offshore fields. The operation stores, meters and exports separated NGLs (ethane, propane, normal butane and isobutane) worldwide. The terminal imports approximately 800,000 Barrels of Oil per Day (BOPD) and processes 67,000 Barrels Per Day (BPD) of NGLs.

The Teesside operation employs six stabilizer trains to stabilize the crude. Each of these up-fired process heaters employ 16 register burners, eight gas burners and eight oil burners. As part of a continuous energy and product life cycle assessment, ConocoPhillips personnel identified the following key issues; a pending end of life, obsolescence and rising fuel costs. Site personnel concluded that the existing burners and the associated hard wired relay-based control systems needed to be replaced to overcome these potential problems. This exercise would take the form of a five year, six stage refurbishment program, with each heater being refitted with eight low Nox gas only fired burners.

Given the critical status of the stabilizers to the operation and the significant costs attributable to unscheduled down time, which could result from false alarms or poor fault/alarm diagnostic information, it was essential that the successful suppliers

understood the rigorous demands of the process, to ensure such instances were minimised.

Another factor to consider as part of the overall philosophy was the exposed location of the plant and the environmental conditions to which the installation would be subjected, high winds and heavy storms.

Given these strict terms of reference, ConocoPhillips sought a specialist burner OEM and a specialist integrator of Burner Management Systems (BMS). The BMS is an integral part of the stabilizer train process and is critical to the safe operation of the plant and it is imperative that the BMS provides intelligent and concise real time data and diagnostic information about the process, burners and the associated peripherals employed in the stabilizer.

The specification also required the replacement BMS to be supplied within a standalone shelter to protect the control equipment and site personnel from the environmental conditions experienced at the site. The shelter required segregated maintenance and operator areas, to facilitate different levels of system access and information provision.

The maintenance section enabled access to the control system, while the operator section was fitted with an operator interface, lamps and pushbuttons to announce alarms and detail historical and real time data to



enable personnel to operate the stabilizer safely and efficiently.

Charter Tech, a specialist project management and system integrator with an in-depth knowledge of fired processes was selected to provide the BMS in conjunction with a leading global burner manufacturer, both appointed by ConocoPhillips.

Each BMS employs PLC technology operating with a HMI to provide the increased functionality and reliability demanded by ConocoPhillips.

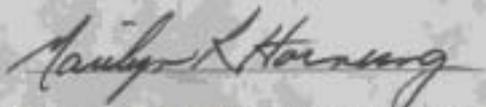
The BMSs give plant operators a much improved overview of the status of the plant via detailed mimic diagrams. The purge and burner sequencing processes are also fully displayed with the provision of enhanced fault detection/diagnostics, plus facilities to safely perform certain on-line functional tests.

**CERTIFICATE  
OF  
SUPPLIER  
EXCELLENCE**

*This is to certify that*

**Charter Tech Limited**

*has been recognised by  
ConocoPhillips Petroleum Company U.K. Ltd  
(Teesside Operations)  
for  
Outstanding Supplier Performance*

  
Manager, Teesside Operations

*3 March 2003*  
Date

