USE DELIVER SUBSTANTIAL DOWNTIME AND DIRECT COST REDUCTIONS

Unit Superheater Engineering (USE) recently completed an extremely challenging repair and upgrade of two high-pressure steam drums for the HRSGs at a CCGT plant in Runcorn, Cheshire.

Projects of this nature are normally undertaken in situ, at the 22m level of the HRSG, however, working at this height with the drums in fixed positions creates an inefficient and hazardous working environment.

With these challenges in mind, the Client elected for an off-site approach which entailed USE craning both 120 tonne drums from their positions above the HRSG and removing them from site.

The benefits of this approach are considerable. Not only is it far safer, but the engineering efficiencies involved enabled USE to deliver a substantial direct cost saving and to complete the project in 76 days; a significant reduction compared to an in situ repair at a similar CCGT plant which took 136 days.

Having conducted detailed crane studies and risk and method statements to ensure the drums could be removed safely and without damage to surrounding structures, USE transported each of the two 15m x 2m, 120 tonne drums back to its engineering facility in South Wales.

After initial NDT and internal inspection it became apparent that both sets of steam separators required replacing. Two new sets of internal baffles were manufactured and installed with zero impact on the schedule plus design improvements were made which would enable easy nozzle access during future inspections and facilitate easier handling at height.

A major advantage of performing this type of repair and upgrade work off site is the ability to rotate the drums. This allows the nozzle positions to be manipulated, which in turn allows the use of optimum excavation and welding techniques and creates a safer working environment.

The existing internal welds to 62 nozzles were excavated by oxy-fuel gouging before being subjected to Magnetic Particle Inspection.

Re-welding of the nozzles under electric braid pre-heat was undertaken using the FCAW process, with the weld profile being re-designed by USE - in accordance with ASME Div. VIII Section 1 - to avoid the original weld failures reoccurring. The completed welds were then dressed and subjected to Ultrasonic and Magnetic Particle Inspection.

PWHT of the drums was performed using LPG fired burners with the treatment cycle for each drum taking 90 hours; far quicker than the estimated 240 hours taken by electric elements used in situ.

After final NDT and re-fitting of internals, the drums were returned to USE’s site installation team where they were re-welded to the existing large bore piping, small bore pipework was installed, and steel platforms and equipment re-fitted. All of this activity was carried out in a high-risk area with no lost time injuries or harm to the environment.

Importantly, USE’s sequencing of these activities was critical to achieving the aggressive schedule required by the Client.

We are pleased to announce that in August the UnitBirwelco group of companies was acquired by ArchOver, a Peer-to-Peer Business Lending Platform. Through ArchOver, the business becomes a member of the Hampden Group, which manages over £2.3 billion of investments.

This is an exciting time for the business, with both ArchOver’s financial backing and encouraging prospects for the future providing an excellent platform from which to grow.

archover.com
BIRWELCO SHOWS ITS GLOBAL FLARE

International demand for Birwelco’s flare system expertise, including patented Sonajet® flare tip technology, continues unabated with flares and skids bound for Australia, Vietnam and Norway.

Australia: Following on from the last offshore flare tip and ignition skid order from Woodside Energy, the team at Birwelco have been asked to supply a Birwelco designed high energy type FFG ignition skid to replace the existing less reliable high tension skid currently in service. The new skid for the onshore Pluto LNG plant in Western Australia will be winging its way half way around the world in December.

Vietnam: On the back of previous orders, work is currently underway on a combined LP and HP flare package for PTSC (Petrovietnam Technical Services Corporation) in Vietnam. The package, which includes ignition and propane bottle skids, is bound for the new offshore central processing platform for the Sao Vang and Dai Nguyet gas and condensate fields in the South China Sea and will be delivered to Vietnam in March 2019.

Norway: Highlighting its superior flare tip design, Birwelco recently won a project to inspect and recommend either replacement or refurbishment of three sonic/LP type flare tips, originally supplied by Birwelco for Equinor’s Heidrun gas platform in the North Sea.

On inspection, the flare tips, which were last refurbished over 11 years ago, were found to be in a condition warranting straightforward refurbishment, thus saving the Client the cost of replacement.

Carl Blewer, Birwelco’s General Manager commented: “Given the industry-norm flare tip refurbishment cycle of 3 to 5 years for this extremely harsh offshore environment, we’re really please to see a Birwelco tip providing 11 years of uninterrupted service. We engineer them to last, which makes them very cost effective”.

SUPERHEATER DEPARTS

August saw the delivery of a 25 tonne two-stream superheater to CF Fertilisers for their Ince plant in Cheshire. The superheater for the ammonia plant furnace exhaust was a group effort with the redesign by Birwelco and manufacture by USE.

Designed to cope with varying temperatures as economically as possible, the pressure parts, which also included new inlet and outlet pipework, was manufactured in accordance with ASME B31.3, API 530 and API 560 out of 1.25% Chrome, 2.25% Chrome, 5% Chrome alloy steel and type 304 stainless steel.

As well as the superheater and ancillaries, a lifting frame was designed and manufactured to allow for rapid installation to meet the Client’s tight shutdown schedule.

DAMPERS FOR LINDSAY

Drawing on Birwelco USA’s efficiency expertise, Birwelco has been tasked with improving heater efficiency and safe operation as part of a major Summer 2019 refurbishment at Total’s Lindsey Oil Refinery in Humberside.

The contract, to supply replacement dampers for six existing process heaters, resulted from survey visits undertaken over the past three years by teams from Birwelco and Birwelco USA.

The team’s recommendations focused on the use of automatic modulating dampers to improve the safety and efficiency of the process units. Critically, the new damper assemblies will fully satisfy the ATEX workplace directive, relating to equipment used within potentially explosive atmospheres, that was introduced after the original heaters and damper units were installed in the 1980s.

For news updates, featured projects and videos, visit the website at: www.unitbirwelco.com
Dow Refurbishment

The off-site refurbishment of two large heat exchangers for Dow Silicones in Barry is currently underway. The first unit, a 55 tonne methyl chloride Heat Exchanger, involves tube replacement and tube-to-tubesheet welding of 3,900 tubes. The second, a 62 tonne Condenser Heat Exchanger, involves the replacement of the tubesheets, baffles and 4,476 tubes. Both units are due back on site in November.

Just in

Drax

USE have secured a 2-year contract to supply Drax Power Station with Superheater inlet manifolds and Attemperators. The order follows a successful 3-year contract manufacturing Economiser inlet manifolds.

Huntsman

USE have won and started work on a pipework contract for Huntsman Corporation’s manufacturing site in Llanelli. The order is to fabricate and install pressure pipework on the plant’s new distillation column.

Harp International

USE recently welcomed an order for testing and refurbishment of refrigerant drums from Pontypridd based Harp International, a major producer of refrigerants to the refrigeration and air conditioning industry.

Uec on site

Phillips 66, Total UK and Cristal have been keeping UEC Immingham busy across the summer with a steady flow of engineering and maintenance projects.

Now in the ninth year of working with Total UK at its Lindsay Oil Refinery, the summer saw UEC undertake a diverse range of maintenance activities from small scale steelwork and equipment replacement through to fabrication and installation pipework and major outage preparations across various areas of the refinery.

UEC also continues to assist Cristal, a leading producer of titanium dioxide pigment for paints and plastics, at its Stallingborough Plant in Lincolnshire. As part of an on-going plant upgrade and renewal project, the summer saw UEC undertake a wide range of construction, maintenance and shutdown activities including major demolition works, lifting activities and fabrication and installation of carbon steel pipework.

Work continues apace at Phillips 66’s Humber Refinery with outage enabling activities, vessel dressing, pipework fabrication and major IPS fire water activities amongst other on-going maintenance and engineering works.

Road Trip to Russia

In July USE waved goodbye to a radiant shield boiler section as it set off on its 4,230 mile journey by road to Tomsk in Siberia.

Normally produced in two sections, the 8 x 6m carbon steel boiler section was designed and fabricated as a single unit to significantly reduce site works, allow more of the welds to be completed in a controlled workshop environment and to reduce installation time. The single section design did, however, pose a transport problem, which was solved with the fabrication of a transport frame to ensure the load conformed to UK and European height and width restrictions. The order from ENCE in Switzerland was destined for SMD Chemicals in Tomsk and comes off the back of previous superheater orders for the same plant.
PIPE MANIPULATION DEMAND GROWS

USE’s pipe manipulation experience is now paying dividends with a steady increase in orders from a number of waste-to-energy clients for Inconel 625-overlaid pipe manipulation.

The weld-overlaid Inconel 625, which provides superior corrosion resistance to high temperature chemistry, requires highly specialised manipulation techniques which USE have now demonstrated they can provide to waste-to-energy clients both here in the UK and in Europe.

REPORTING STATISTICS

The Group is continuing to prove its exemplary commitment to safety, with latest statistics highlighting the fact that there have been no Reportable Incidents in 2018. The Group has always enjoyed an enviable safety record and the diligence and dedication we see across our teams day-in, day-out is something we can all be proud of. A positive safety culture benefits us all and it is pleasing to see it embedded into our company ethos.