Case Study: Sand Removal from 3 Phase Production Separators and Vessels

Online De-sanding ‘Syphonvac’

• Sand removed whilst vessel in full production – no loss of production
• Reduces deferral costs
• Reduces critical path shutdown cleaning operation
• Reduces sand carry over to process systems
• Reduces confined space entry and overall risk to manpower
• Compact equipment footprint – modular system
• Capable of attachment to vessels operating at up to 80 barg
• Controls operating pressure to 1 Barg prior to sand collection system
Since its inception in 1893, Middlesex based Cape Plc has developed a global presence with well-established and reputed subsidiaries trading in the UK, Europe, CIS, North Africa, Qatar, Australia, Saudi Arabia, UAE, the Philippines, Singapore and Thailand. With its 18,000 competent and trained personnel operating across the globe, Cape Plc offers safe, reliable and intelligent solutions both on and offshore. Split into seven sectors, oil and gas onshore, oil and gas offshore, power generation, minerals and mining, chemical, steel, marine and other, the highly successful group trades on the main market of the London Stock Exchange and reported adjusted revenues of £697.1 million in the financial year ending 31st December 2013.

As part of Cape Plc, Cape Environmental Services (Cape ES) is a leading provider of onshore and offshore cleaning and decontamination services, having delivered pioneering solutions to its blue-chip client base within the oil and gas, heavy industry, petrochemical, manufacturing and pharmaceutical industries for four decades.

A proud integrator of a broad range of innovative, environmentally friendly, industrial cleaning techniques since 1969, the company complements its high pressure water jetting, high airflow vacuum services and chemical decontamination processes with waste management services and on-site waste handling capabilities; in addition, the company offers infrastructure monitoring and refurbishment.

Previously known as Cape DBI, Lovat Macgregor, business development manager of Cape ES states the company was rebranded in 2012 to strengthen its global appeal and ensure instant recognition across the markets it operates in: “The change was twofold, firstly to identify Cape ES as an environmentally sound contractor in heavy industrial cleaning and waste management, and secondly to distinguish between Cape Plc’s traditional core industrial services of scaffolding, insulation, asbestos removal and painting.”

As an independently trading division of Cape ES, itself a subsidiary of Cape Plc, Cape Environmental Services Offshore (Cape ESO) works in close partnership with clients such as Shell UK Limited, BP, Total, Apache NS, Maersk Oil, Nexan Inc. and Daewoo Energy on innovative industrial cleaning and decontamination services for process pipework, tanks and vessels. To ensure ongoing success, the company is a staunch supporter of utilising the most state-of-the-art technology and providing regular training to its highly qualified and skilled personnel, which results in time and cost efficient solutions that reduce downtime and boost overall production time. “Highly respected for its innovative solutions and exceptional safety and quality standards, Cape ESO has built an unrivalled reputation for its total integrated package delivery,” says Lovat. “We are viewed throughout the industry as a pioneer in safe, environmentally sound industrial cleaning techniques, with our full suite of technical solutions a key differentiator against our competitors. We also provide a one-stop-shop service to clients and facilitate customer shift to fewer, better resourced suppliers deploying best practice in addition to focusing on minimising downtime and total job cost reduction.”
An example of the company’s commitment to innovation is its award winning Syphonvac system, which facilitates the online removal of sand from production vessels without needing to shut down production or for confined space entry to the vessel by personnel. So far it has been operated without interruption on 14 platforms and 35 projects, notes Lovat: “Cape ESO has deployed Syphonvac for several leading international operators including BP, Shell UK E&P, Hess Ltd, Maersk Oil and Nexen Inc. BP engaged CES to install and operate the Syphonvac system to the LP Separator on the ETAP platform in the Eastern Trough Area of the UKCS North Sea. The ETAP has a crude oil production of 40,000 bopd. Cape ESO removed almost three tonnes of sand throughout the process, with the vessel remaining in full production for the duration of the procedure. Time saving achieved by this procedure was approximately 17 days in the turnaround period.”

Setup of the Syphonvac is generally possible within 12 hours, compared to a seven to ten day full vessel shutdown preparation period to facilitate confined-space entry directly by personnel. The system is fully certified to ATEX standard, and is compact to allow for deployment in any global region, making it capable of export to the full international oil and gas exploration and production marketplace.

Fully committed to research and development, the company also recently worked in conjunction with Apache North Sea to create the new ‘Torpedo’ unit – an environmentally safe internal overboard caisson cleaning system that can operate below sea level to remove scale and marine growth from the caisson back to the platform deck where the debris can be disposed of. “From our experiences using the Torpedo system to capture debris we have collected between 0.5 - 1.0 tonne of scale and marine growth during each internal caisson clean. This is material which pre the Torpedo innovation would have fallen to the seabed. By working in partnership with Apache North Sea, we have developed a safe, innovative and environmentally compatible system for undertaking caisson cleaning projects of any nature,” says Lovat. The Torpedo system awarded a Commendation Award for Innovation by the EIC (Energy Industry Council) in October 2014.

With ongoing long-term contracts with BP, Shell UK Limited and WGPSN in the cold cutting segment of the business alone, the future looks positive for Cape Environmental Services despite market challenges, as Lovat concludes: “The next 12 months will be demanding as operators will look to cut costs, gain added value and strive to reduce/eliminate periods of production downtime. We will use our experience, reputation and innovative technology to focus on realising these operational targets for our clients and prospective clients.”
The Leading Offshore Industrial Services Contractor

The Offshore Services division within Cape Environmental provides leading innovative industrial cleaning and decontamination services for process pipework, tanks and vessels to some of the world’s largest multi-national Oil and Gas companies.

The key to our success lies in having the most advanced technology and a team of highly qualified and dedicated people with the right skills, training and a can-do attitude. We work in close partnership with our clients to achieve the most appropriate solution, creating time and cost efficiencies, as well reducing downtime and increasing overall production uptime.

Our Services

Production Vessel Sand Removal – Online

Cape Environmental Offshore Services were first to conduct a live operation in 2003 and using the ‘Syphonvac’ system regularly enable clients to avoid having to shutdown simply to remove solids from a separator vessel, increasing client annual revenues by £millions.

- Sand removed whilst vessel in full production – with no loss of production
- Reduces deferral costs
- Reduces critical path shutdown cleaning operation

Services

- Production Separators: Online Sand Removal
- Production Separators: De-gassing and Offline Cleaning
- Process Pipe De-scaling: Online and Offline
- HP and UHP Water Jetting
- Tank and Vessel Cleaning
- Environmentally Safe Internal Caisson Cleaning

Additional Services

- Chemical Cleaning and Decontamination
- Heat Exchanger Cleaning
- Drain Cleaning and CCTV Survey
- Contaminated Material Separation (NORM/LSA)
- General Thermography: Scale Depth Analysis
- Cold Cutting
Production Vessel Cleaning – Offline

Cape Environmental Offshore Services can de-gas vessels and remove all solids and liquids in less time than it takes to simply prepare vessels for man entry vessel cleaning by traditional methods, saving considerable time on platforms that can either increase the tasks able to be done during a shutdown or, if on a critical path, can reduce the shutdown duration significantly.

Pipe De-Scaling

Cape Environmental Offshore Services’ ‘Aquadril’ system cuts through scale on the inside of pipes using only high pressure water. Using a single access point, ‘Aquadril’ can clean up to 300m, cutting around directional changes in a pipeline without the need for costly pipe work dismantling. Aquadril is an innovation that significantly reduces downtime and total job costs. Non-production pipe de-scaling can also be delivered online using Cape Environmental’s ‘Super Gun’ system.

Caisson Cleaning

Cape Environmental recently unveiled the new ‘Torpedo’ unit, an environmentally safe internal caisson cleaning system capable of operating below sea level to remove all scale and marine growth from the caisson back to deck level for disposal. This prevents debris from dropping to the seabed creating environmental contamination, or being sucked into the lift pumps on adjacent caissons.

HP and UHP Water Jetting

All aspects of HP and UHP water jetting from deck cleaning to surface preparation for recoating purposes. In addition we undertake hot water pressure jetting and remote controlled jetting techniques.

Heat Exchanger Cleaning

Heat exchangers and associated pipework can be de-scaled and fouling removed to regain full operating efficiency by high pressure or ultra high pressure water jetting and/or chemical cleaning depending upon the nature of the material build up.

FPSO Cargo Tank Cleaning

Using very efficient high head lift pumping equipment and low pressure and high pressure water jetting equipment, Cape Environmental Offshore Services can rapidly and safely clean cargo tanks and slop oil tanks prior to inspection and repair operations.

Chemical Cleaning, Decontamination and Material Separation

Cape Environmental Offshore Services have chemical and mechanical technologies to separate contaminants from solids and water to reduce, and in some cases eliminate entirely, third party waste disposal charges in a cost effective manner.