INITIAL METHOD OF FILTER REMOVAL

The initial filter removal operation at the site was to use the tried and tested "traditional methods" for pulling the filters free of the vessels. This consisted of using the permanent 5T overhead crane while operators used hammers and wedges simultaneously to loosen the filter. Once the site crews had managed to lift the filter to a small gap they would then insert larger wedges in place of the smaller fox wedges then use chain pulls, turfers, pinch bars etc to physically try and prise the filter clear of the vessel. It was at this point that the damage was inflicted to both the vessel and filter flange faces with gouges, dents and scratches which of course required on-site repairs. Also to note is that the operators were working in a very close proximity to the crane while under load. There was also another issue to consider as each filter removal team consisted of at least 5 men, again all working in restricted area while trying to remove the filter. Apart from the obvious safety issues and risks to consider there is the time taken and damage inflicted on the equipment while trying to remove each filter.
EQUALIZER SOLUTION

To design, test, supply and commission a bespoke hydraulic lifting tool set to pull-free the filter bundles so they can be extracted safely, efficiently and with the minimum number of site staff to carry out the operation. Equalizers main remit was to provide a modular type tool set capable of lifting a maximum load of 20T that was portable, easily set up and also operated at a safe distance from the vessel and filter. Client has safety, time and cost concerns regarding the current method used to pull-free each bundle, arising from the restricted lifting capacity and tooling they currently have available at the site. Equalizer designed, tested and manufactured a bespoke lifting solution that eliminated the issues incurred at site. The solution consisted of a set of hydraulic lifting tools that are operated in a controlled and safe manner.

The tooling set consisted of 6 x 3.5T interconnected tools and ancillary components coupled through multi-port hydraulic manifolds to enable a maximum lifting load of 21T. Safety blocks and pins were supplied as an integral part of the kit to enable a total lifting height of 40" carried out in stages of 6" per occasion. The full bespoke lifting kit was supplied in 4 x hand carry cases enabling the kit to be hand carried directly to the vessel site without the need for a crane. This enabled down time to be kept to an absolute minimum but more importantly was fully operated and controlled by 2 site persons only. By having only 2 persons operating the lifting kit this enabled the risk to be dramatically reduced. A 3rd site person was assigned to the overhead so when it was evident the load had reduced sufficiently for the crane to take over, the bespoke lifting tools transferred the load to the overhead crane to lift the filter out and clear of the vessel. The time required to lift the filters free of the vessel was reduced by up to 90% with zero damage inflicted on either the vessel or filter flange faces.

Equalizer also supplied a full documentation pack including but not limited to a site specific operational procedure, maintenance manual and risk assessment along with all appropriate ancillary tooling to safely operate the equipment. The final tool fit, site commissioning and safety awareness training were successfully carried out by the Equalizer team prior to the job execution date.

From the initial meeting and site survey to delivery of the kit from Equalizer Head Office in Aberdeen to Equalizer Americas Office in Houston was a total of 10 weeks.

OUTCOME/MOVING FORWARD

The customer incorporated the bespoke lifting tool during their next turnaround as a solution for the safe and cost efficient removal of the 16 filters. All 16 filters were removed, cleaned and installed safely with zero incidents, zero damage and on time.

CUSTOMER BENEFITS

- Improve overall plant safety during filter removal task.
- Reduce the risk to personnel and plant.
- Reduce the exposure to operators during the actual filter removal operation.
- Eliminate the use of traditional hand tools and use best practice.
- Reduce turnaround down time and personnel required for the filter removal operations.

TECHNICAL ENQUIRY?

Please visit our website www.equalizerinternational.com/contact