All Aboard!

A ship's engine room is a complex arrangement of machinery and systems carefully positioned for optimum performance. With an ever increasing emphasis on safety of ship and crew, fitting a boiler in these particular circumstances requires experience. "SA Mechanical Engineer" caught up with the team at Combustion Technology to find out about their latest marine installation.

Understanding the maritime environment and its boiler needs is one thing. Delivering, installing and commissioning a boiler on a vessel another.

Cape Town-headquartered Combustion Technology can attest to this. Experts in the field of boiler installations and conversions the team is not new to the maritime sector.

The company recently successfully completed the installation and commissioning of a new steam boiler on board the Desert Diamond, a vessel belonging to the largest fishing company in Africa, The Oceana Group.

Far more pro-active approach to maintenance and more cost-effective in the long run

According to Combustion Technology CEO Riaan van Biljon the company has a long-standing relationship with The Oceana Group already responsible for the servicing and maintenance of boilers at their other processing plants.

"Knowing our service level, our experience and what we bring to the table they asked us to look at the boiler on one of the vessels and find a solution for some of the problems they were experiencing," says Riaan. "But, in the maritime industry it is not as simple as just going out to look at the old boiler and quote for an upgrade or a new one. We had to wait for the vessel to come into port before we could gain access to it."

After a thorough inspection it was agreed that a repair was not going to suffice and a new boiler was indeed required for the Desert Diamond.

The decision was taken to install a Alfa Laval Model Aalborg OS 6500 Steam Generator, which allows for steam production of 6500kg/hr, plus 2000Kg/hr from the exhaust boiler configuration on the vessel. With a total combined generating capacity of 8 500 kg/hr this would sufficiently address the steam requirement on the vessel.

Project planning

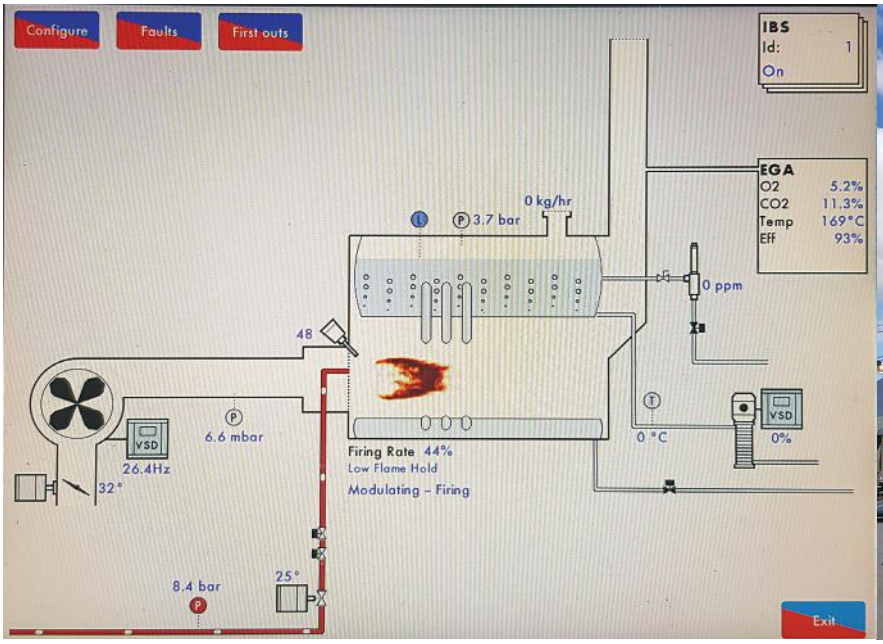
"When it comes to a successful installation on board a vessel the most important element by far is planning," explains Riaan. "The vessels are out at sea for long periods of time and when they come into port they are only there for a set time during which numerous activities and upgrades have to take place. Also, the longer the vessel is in port, the less the revenue is for the fishing company."

Combustion Technology did not just install a new boiler, but also upgraded the entire system introducing the latest technology.

"We installed the Autoflame Combustion Management System with data transfer interface (DTI) that allows us to now monitor the system's operation remotely."

While land-based boiler systems can be accessed at any time, the operations on vessels can only be logged onto when the vessel is in port.

"The decision to introduce this system, even though it cannot be accessed and monitored as often as is the case with boilers on land, is because the maritime environment is harsh. A remote monitoring system



such as this ensures that the boiler is working at continuous levels of efficiency and allows us to pick up on any irregularities much quicker. It is a far more pro-active approach to maintenance and more cost-effective in the long run."

The system is monitored whenever the vessel is in a port anywhere along its fishing route and allows the Combustion Technology team to plan ahead to address any concerns when it returns to home port.

A Riello P450PN ECO fully modulating burner with variable speed drive on the fan motor as well as water and oil flow metering with remote logging was also installed. In addition oil detection equipment for the feedwater tank, dual feedwater pumps, salinity and dissolved O2 detection with alarm equipment, a flue gas temperature measurement and transmitter, an Automatic Bottom Blowdown System, TDS Control System with automated top blowdown and an exhaust gas oxygen probe and interface were all part of the upgrade.

Says project engineer Pieter Wentzel, "Planning for this installation began months ahead of the actual fitting. We knew we would have a limited time to do the installation on board the vessel and needed to ensure that everything to the last detail was ready and in place once the vessel came to port."

With no room for error every piece of equipment was pre-tested. "We could not take the risk of arriving at the installation phase to only see it was the wrong piece of equipment or that we needed something else. We had to have all of the elements including the assembly of the steam generator, the engineering and the electric panels ready."

Vessel installation

The biggest challenge of the project, adds Pieter, was the actual installation. Working in extremely tight confines the team only had 25 days to install and commission the boiler.

"We also had to wait our turn as there was an order of other jobs that had to take place and other contractors on board," he says.

Measuring 7 metres long with a 2.8 metre diameter getting the 15 000kg vertical boiler into the vessel was a challenge and a detailed rigging study had to be performed.

With hardly any manoeuvring room, Oceana opted to cut open the deck and lower the boiler into position using two 200 ton cranes, a process that took around 13 hours.

Working long hours the boiler was commissioned on time on January 26 this year.

"Our extensive experience in boiler installations really did contribute," emphasises Riaan. "this is not the first time we have done something like this and we had a very good idea of what the challenges would be and could plan ahead of time to mitigate against it."

There are several benefits to the upgrade, says Riaan. "The decision to opt for the Alfa Laval Aalborg boiler with the Autoflame Combustion Management System was very intentional. Not only does it conform to stringent DNV marine regulations, but it is also robust enough to withstand the harsh conditions of operation at sea while delivering safer and more efficient operations to The Oceana Group while the Autoflame Combustion Management System will improve overall performance, efficiency, reliability and reduce operating costs"

Brian Taylor, Marine Superintendent at The Oceana Group, commended the team for a job well done. "Combustion Technology was very professional in the acquisition, supply and installation of the boiler. The project went very smoothly and was completed on time. The Combustion Technology technicians went out of their way to make the project and commissioning successful," he concludes.

Combustion Technology
Riaan van Biljon
Tel: (021) 715-3171
Email: info@combustiontechnology.co.za
www.combustiontechnology.co.za