PRESS RELEASE

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Morgan Advanced Materials delivers rapid fire insulation for Statoil Mariner offshore platform

The rapid four-week installation of an ultra-lightweight fire insulation blanket from Morgan Advanced Materials is providing extensive thermal protection for three separator vessels on the Statoil Mariner offshore platform.

Morgan’s FireMaster vessel fire protection system is being used to maintain structural integrity of the separators against jet and hydrocarbon pool fires. Fire protection is crucial because these separators contain hydrocarbon inventory, which can become additional fuel to a fire in the event of structural failure. Thermal weakening and failure occur when the walls of the separator are heated by the exposing fire case. With increased temperature of the steel vessel shell, the applied stress on it increases, causing rupture. Morgan’s FireMaster protection ensures that the steel shell temperature does not reach breaking point as temperatures surge.

The design fire scenario stated that the separators should be able to withstand fire loads of five minutes of jet fire at 350w/m2, followed by five minutes of jet fire at 250kw/m2, and an additional 50 minutes of hydrocarbon pool fire. Morgan’s FireMaster solution was considered the most effective and easy-to-install option for the project, which had to be completed within the space of just one month.
A lightweight solution for faster insulation
The initial plan for the project prior to Morgan’s involvement was to use traditional cellular glass, alkaline earth silicate wool, and stainless steel cladding. However, the project party agreed that it would be more beneficial to seek out a lighter, more immediate insulation solution. Morgan’s FireMaster vessel protection system met this brief, chosen for its strong and proven resistance to fire, its ability to provide a tested and certified solution for vessels, and its low rate of water absorption. The approach was to provide fire protection using FireMaster blanket alone with stainless cladding applied over the blanket to provide the necessary protection against erosion from the jet fire.

Upon receiving the design information, Morgan used its significant database of jet fire testing to validate finite element modelling to calculate the specified insulation thickness required to satisfy the critical temperature requirements of the vessel shell. With the tight project timescale in mind, this process was accelerated and Morgan’s team of engineers advised that the first stage separator would require an insulation thickness of 50mm, with the second stage separator and test separator requiring a thickness of 63mm*.

The penetrations, which were to be insulated after erection, would require a coatback of 150mm to reduce the heat input into the vessels. Consideration also had to be given to the nozzle welds, which are inspected after one year and subsequently every five years following that. To facilitate easy access, the inspection hatches were installed according to Statoil’s own insulation handbook.

Three installation teams worked in tandem, to complete the insulation on time. Having all separators in one hangar allowed the teams to rotate around each separator in turn, by discipline. One team carried out the mesh work before moving to the next separator, while the insulation team came in behind on the separator that was vacated, followed later by the cladding team.
Collaboration key to meeting tight deadline

A key contributing factor to the fast and successful insulation of the separator vessels was the close collaboration between all parties involved in the project; Statoil, Daewoo Shipbuilding and Marine Engineering (DSME), and Morgan Advanced Materials. Utilising their combined experience of thermal insulation in marine and offshore systems, the businesses were able to remain instantly responsive to external factors surrounding completion of the work, from the outset.

The FireMaster vessel system uses stainless steel mesh to support the FireMaster blanket. To minimise any damage to the vessel paint coating and the potential for corrosion under insulation, the fixing mesh was set off from the vessel surface using strips of Teflon.

The subsequent air gap between the vessel surface and the wire mesh provided ventilation and reduced the risk of trapped water building up underneath the insulation. This further minimised the potential for corrosion under the insulation, which is a typical issue experienced in applied offshore insulation projects. The blanket was then encapsulated to reduce the potential for water absorption into the insulation system, helped by a FireMaster water repellent blanket.

Allan Beeston, Global Fire Protection Manager at Morgan Advanced Materials took the lead on the project. He commented: “This was a particularly challenging project due to the tight timescales we had to meet, and the restraints around insulating the penetrations on the top side of the separators. Indeed, one of these vessels is extremely geometrically complicated, so the use of a product that is easily adapted to suit complex shapes was key.

“We were fortunate in that the design of our FireMaster insulation blanket lends itself to fast installation, but we could not have made this project such a success without the co-operation...
and collaboration of all the parties involved. Everyone was open to suggested new ways of working to accommodate the short timescale, and this attitude led to a successful job completed on time, amid several challenges.”

For further information on Morgan’s FireMaster insulation blanket, please visit:
http://www.morganfireprotection.com/statoil

* DMSE and Statoil agreed to install the Lloyd’s Registry certified system of 88mm thickness.

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About Morgan Advanced Materials

Morgan Advanced Materials is a global materials engineering company which designs and manufactures a wide range of high specification products with extraordinary properties, across multiple sectors and geographies.

From an extensive range of advanced materials we produce components, assemblies and systems that deliver significantly enhanced performance for our customers’ products and processes. Our engineered solutions are produced to very high tolerances and many are designed for use in extreme environments.

The Company thrives on breakthrough innovation. Our materials scientists and applications engineers work in close collaboration with customers to create outstanding, highly differentiated products that perform more efficiently, more reliably and for longer.

Morgan Advanced Materials has a global presence with over 10,000 employees across 50 countries serving specialist markets in the energy, transport, healthcare, electronics, petrochemical and industrial sectors. It is listed on the London Stock Exchange in the engineering sector.

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