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HEATEC BULLETIN

Product news from Heatec Inc., an Astec Company 5200 Wilson Road, Chattanooga, TN 37410 Phones 423-821-5200 800-235-5200 www.Heatec.com

Tanzanite offshore platform in the Gulf of Mexico

Offshore platforms demand safety and longevity

Equipment on offshore platforms is not ordinary equipment. The top concerns are safety and long life. The equipment must have special safety features not usually required when it is used at land facilities.

These features are intended to minimize the risk of fire and explosions on platforms where highly combustible oil and gas are present. The equipment must also have special construction features to ensure long life in a salt-water ocean environment.

Those were the priorities when Heatec recently designed heater systems for use on two new oil production platforms in the Gulf of Mexico. The platforms are owned and operated by Anadarko Petroleum Corporation, a major oil producer. One platform is named Tanzanite and the other is Hickory.

Heatec provided one heater system for each platform. The heart of each system is a helical coil thermal fluid heater with an output of 5 million Btu/hour. They perform a variety of functions on each platform:

- Reduce the viscosity of recovered crude oil for separation of water.
- Heat glycol solution in a re-boiler to remove water from gases.
- Heat amine solution in a re-boiler to remove CO_2 and sulfur from gases.

The safety features of each heater system meet safety codes of NFPA (National Fire Protection Association), API (American Petroleum Institute) and ASME (American Society of Mechanical Engineers). Their codes cover electrical components, pressure relief devices and pressure vessels.

One important safety feature is the CO_2 fire suppression system for the combustion chamber of the heater. When activated it instantly extinguishes the flame in the combustion chamber and cools hot surfaces. A temperature sensor in the heater exhaust stack automatically activates the system if stack temperature exceeds its limits.

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Heatec 5 million Btu/hour heater system on Hickory offshore platform

Other heat sensors are at strategic locations on the heater. They, along with other heat sensors throughout the platform, are connected to the main platform fire suppression system. They have melt-plugs in a sealed pneumatic loop. In case of a fire on the platform, the plugs melt at specified temperatures and trigger the platform fire suppression system. The heater systems have several other safety features:

- The helical coil inside each heater is built and tested to ASME code.
- The exhaust stack on the heater has a spark arrestor that eliminates any live sparks in the exhaust gases.
- All liquids and gases from pressure relief devices and drains are sent to the platform's flare system and burned.
- Level switches, temperature sensors, and other electrical devices are designed for an explosion-proof environment.
- A purge control panel is provided to purge heater electrical panels.

Equipment longevity is achieved by using special protective coatings on all surfaces subject to rust and corrosion. Exterior surfaces of the heaters are first seal-welded and sand-blasted to bare metal. They are then coated with a zinc primer. Finally they are sprayed with a finish coat of special corrosion-resisting paint designed for marine use.

Heater platforms, ladders and railings have a hot dip galvanized coating. Platform and walkway gratings are made from non-skid fiberglass. Piping jackets and other components are made of stainless steel. Conduit is coated with plastic. A skid-resistant coating is applied to deck plates.

Hickory offshore platform and Gorilla VI drilling rig

Building equipment for use on an offshore platform is a challenge Heatec meets exceptionally well. Offshore customers are very demanding. The products they want put extraordinary demands on a company's engineering experience, quality control capabilities, and manufacturing expertise. And it must be thoroughly documented. Unlike products for most industrial sites, nearly everything is special. It's something we are used to.

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