

Durable, custom shutoff valves meet demanding requirements for Saudi Arabian oil refinery

RESULTS

- Reliable valve solution successfully meets requirements for harsh operating conditions
- Valve achieves superior lifespan and reduces equipment footprint



APPLICATION

Petrochemical refinery furnaces

CUSTOMER

A global manufacturer of industrial combustion equipment

CHALLENGE

This application involves the construction of a new oil refinery in Saudi Arabia. It will result in the creation of one of the largest, most modern oil refinery owned by one of the biggest oil companies in the world.

As part of this project, a global OEM of combustion equipment was tasked with supplying hundreds of industrial burners — including the air and gas supply lines and instrumentation — for eight vertical hearth furnaces within the refinery. This OEM was in the market for safety shutoff valves, which it would integrate into its burners.

These valves had to meet a number of requirements related to the refinery's harsh operating environment. For example, they needed to withstand saline and explosive atmospheres (IECEX certification), as well as high ambient and fluid temperatures. The valves also had to meet the European Standard for automatic shutoff valves for gas burners and appliances (EN 161).

SOLUTION

Emerson had a previous relationship with a burner manufacturer who was also consulted for the project. The burner manufacturer brought Emerson into the opportunity due to our established reputation for quality service and reliable brand image.

The Middle East refinery was able to successfully install 8 vertical hearth furnaces, heated by hundreds of burners using mainly Propane at 100°C. The specific fuel train design allowed air consumption reduction and higher level of safety at the burners.

To meet these requirements for the new oil refinery, we provided the OEM with custom ASCO™ Series 290 Angle Body Piston Valves, which feature durable 316L stainless steel bodies for use in harsh environments. These reliable valves handle high temperature media and can operate in saline atmospheres. They are also certified for ATEX Zone 22 environments with explosive dusts and tested to EN 161 standards. Other notable features include:

- Valve size: 1 and 1.5 inches.
- Media: Butane at 97°C or propane at 55°C (average). For safety reasons, the customer asked for 100°C resistance.
- Flanged for process piping.
- Certificate 3.1 for material detail.

We outfitted these flanged, stainless steel units with a custom signaling box, as well as our ASCO™ Series 327 solenoid valves:

- **Custom signaling box.** The switchboxes mount on top of the valve operator in place of a standard visual indicator. As the valve cycles, cams operate the mechanical switches to provide electrical signaling of the valve position. These switches are encapsulated in this aluminum box, providing protection against explosive atmospheres.
- **Series 327 valves.** Ideal for power plants, refineries and chemical processing facilities, Series 327 units meet IECEx standards and integrate a balanced poppet construction, permitting high flows at minimum power levels.

Compared to competitors, this durable valve package — including the Series 290, series 327 valves, and a signaling box — features a longer life span, smaller footprint and better overall price point. In fact, air consumption is three times lower than ball valves, providing additional energy savings. We also delivered this package, fully tested and already assembled, according to EN 161 standards.

The OEM was satisfied with our solution and supplied over 500 shutoff valves as part of the refinery burners.

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