



Marathon Ashland Specifies Bolt-On Jacketing for Garyville Coker Unit and SRU Unit

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Case Study Summary

Customer Profile

Marathon Ashland Petroleum refines crude oil by utilizing a coker process and a sulfur recovery unit.

Customer Need

To find a thermal heating method for their process pipes, tanks, and valves that is efficient and cost effective. System designer must also coordinate with all involved engineering companies.

Solution Overview

CSI's complete engineering services include design, thermal analysis, jumpover routing and stress analysis.

Products

- *ControTrace Bolt-On Jackets for pipe*
- *ControHeat Bolt-On Jackets for valves, pumps, and other equipment*
- *Fully-Jacketed pipe*
- *Flexible metal hose jumpover connections*

CSI gains broader use for its Bolt-On Thermal Maintenance Products following years of successful operation on the "ROSE" Unit at a Marathon Ashland Refinery. The efficient heating system keeps molten sulfur flowing and is more economical than fully jacketed pipe. And cross-contamination of the product with the heating medium is virtually eliminated.

Market Challenge

Most large refineries are designed to process light liquid feedstock and can't digest heavy crude. Since heavy crude is more plentiful and less expensive, many refineries are adding delayed coker facilities to convert heavy crude oil into fuel-grade petroleum coke, kerosene and diesel fuel.

Marathon Ashland in Garyville, LA had been working with Controls Southeast, Inc. (CSI) for two years to design thermal maintenance systems for their new coker and sulfur extraction unit (SRU). CSI's products were specified for their superb temperature maintenance capability and cost savings over fully fabricated-jacketed pipe.

Marathon Ashland Petroleum LLC refinery is the 4th largest petroleum refiner in the US. The Garyville, LA location has a capacity of 232,000 barrels per day. The new coker facility is scheduled to open in 2002. When Marathon went out for construction bids, CSI's Bolt-On products were already specified in the plans to be installed throughout the new facility. The engineering firms who bid on this job were requested to use CSI for the design, engineering, and fabrication of ControTrace and ControHeat Bolt-On Jackets. ControTrace and ControHeat were specified on the coker plant tanks, piping, and valves as well as to jacket the sulfur piping and valves.

Solution: CSI

CSI teamed up with several large engineering firms, who were contracted by Marathon Ashland, to add their skills in thermal maintenance design, fabrication and installation. *Bechtel Engineering* of Houston, TX awarded the entire Coker plant's thermal maintenance system to CSI. Marathon Ashland directed *RPM Engineering*, and



“Working with CSI, we were able to utilize their Bolt-On products with our technology. They coordinated everything on the heated process side from design analysis to fabrication and installation. It saved us significant time and reduced our costs.”

TPA Engineer

Salmon and Associates to use CSI's thermal maintenance system in their overall heated piping process design.

TPA Inc, a sulfur technology company in Dallas, was chosen by Marathon to be responsible for the design and function of the sulfur recovery plant. If they had not felt comfortable with CSI, TPA wouldn't have risked their reputation of a guaranteed throughput at the facility.

ControTrace Bolt-On Jackets (used for piping and tanks) were supplied for 1100 linear feet of pipe ranging from 8 to 12" diameter on the coker plant. **ControHeat Bolt-On Jackets** (used for pumps, valves, and other components) were also installed on 25 - 8", 300 lb. Velan gate valves, Vortex 3" shedding meters, and pumps within the inside and outside battery limits of the Garyville facility. In the sulfur extraction plant, CSI also installed Bolt-On Jackets on a 7 ft. diameter nitric acid knockout drum and pipe ranging from 3 to 24" diameter for a total of 3400 linear ft. ControHeat was used to jacket the valves in the molten sulphur lines.

ControTrace Bolt-On Jackets will keep the molten sulfur vapor lines at 270°F, using saturated steam as the heating medium. However, a special application area, the "ROSE" (Residual Oil Supercritical Extraction) Unit, which takes the tails off the heavy crude during the refining process, had new design criteria. It specified an operating temperature of 900°F and 385 psi. Normally, ControTrace is fabricated from SA178 Carbon Steel Pressure Boiler Tube. To accommodate this severe service condition, CSI engineered and fabricated the ControTrace for the ROSE Unit out of seamless 321 Stainless Steel pipe, drawn to fit the O.D. of the pipe required to be heated. In this case, the Bolt-On Jackets used hot oil as the heating medium for the 3000 ft. of 8" pipe. ControHeat Bolt-On Jackets were also installed on valves in high temperature service up to 725F.

Engineering firms have several options for thermal maintenance:

- 1) Tube tracing is a common way to heat process pipelines. In the past, problems occurred for Marathon when tube tracing was used for anything other than freeze protection. During shut downs, pipelines plugged with sulfur as they cooled and the tube tracing was unable to bring the system up to temperature at process start-up.
- 2) Fully fabricated-jacketed piping works well, but Marathon had experienced problems with cross-contamination (sulfur getting into the steam system and solidifying in the pipeline).
- 3) ControHeat Bolt-On Jackets from CSI provide proven performance and allow the use of standard valves rather than custom fabricated weld-on jackets. Specifying jacketed valves using a standard valve and a ControHeat jacket optimizes the system design for operability, maintenance, and economy.

ABOUT CSI

CSI is proven as the industry leader in providing temperature control systems for heated processes. Controls Southeast, Inc. in Charlotte, NC designs, fabricates and installs thermal maintenance systems specified by the world's largest chemical and petro-chemical companies. Let us help you maintain the flow at your facility. Contact CSI at: 704-588-3030 inside the U.S. or visit the Website at www.csiheat.com

