

Burner engineers work with refinery to maximize oil firing with minimum cost and emissions

John Zink Company leads global industry in developing advanced, clean combustion systems that are renowned for superior performance and reliable, cost-efficient operation. Now, we've engineered HERO™, the patented high efficiency residual oil gun that's revolutionizing fuel oil combustion with proven performance that's as environmentally focused as it is economically driven.



THE CHALLENGE

Hyundai Oilbank Co., Ltd. needed to increase the processing capacity of its No. 2 Crude Distillation Unit located in Daesan, South Korea. However, as operators increased the burner heat release in the heater, the oil-flame length increase created a potential for flame impingement. As an added objective, the refiner wanted to minimize atomizing steam consumption to reduce energy costs.

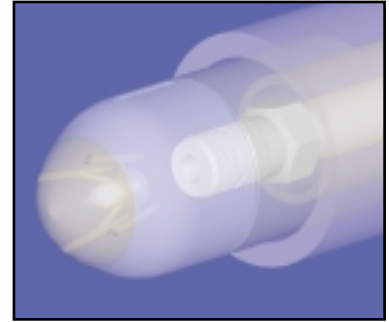
THE APPLICATION

The refinery contacted John Zink Company to help assess current operations and develop a solution to address flame length and operation expense. The heater nameplate capacity was 200 TBPD, however, the actual conditions of operation were at 280 TBPD by installation of an APH system. The crude unit was fitted with 64 sets of John Zink® PMA-22 oil and gas combination burners, firing vertically upward with No. 6 oil and refinery fuel gas. The design heat release per burner was 3.013 MMkcal/hr.



ZINK® SOLUTION

Zink engineers recommended the refiner replace its conventional EA-type oil guns with the new HERO oil guns. Zink's breakthrough design employs phased atomization of fuel oil to efficiently atomize the liquid fuel with less steam consumption. The result is shorter flame lengths, reduced soot formation, increased turndown and lower NOx emissions. Hyundai plant engineers removed the existing oil guns and installed the new HERO oil guns without any burner modifications. The crude unit was brought back on line in less than two days after shutdown.

**HERO RESULTS**

- Up to 15 % shorter flame lengths at design rate.
- 36 % less atomizing steam consumption; steam-to-oil ratio reduced from 0.40 to 0.27 kg-steam/kg-oil.
- 5 % less NOx emissions; 210 ppm NOx before change and 200 ppm NOx after change.
- Hyundai Oilbank Co. will recover its capital investment of the 64 HERO guns over 15 months in reduced energy costs alone.



HERO oil guns can be retrofitted to fit most any manufacturers' burner element, without burner modification and with significant reduction in emissions and energy to atomize the liquid fuel.

→ **We're engineering value for global industry.**

Europe

+352-518991
+44-1932-769830
+39-02-6698-1232
+33-1-4119-4100

Asia-Pacific

+81-3-5435-8551
+65-6732-7555
+61-2-8833-4600

Americas

+1-918-234-1800
+1-800-755-4252



www.johnzink.com

11920 East Apache, Tulsa, OK 74116 Voice: +1-918-234-1800 Fax: +1-918-234-2700