

## Application**brief**

<b>Eclipse Product:</b>	Emission Reduction System
<b>Submitted by:</b>	Allan Roughton, Wirth Gas Equipment
<b>Application:</b>	Aluminum Heat Treating
<b>Description:</b>	Retrofit of Aluminum Heat Treating Furnace with Flue Gas Recirculation

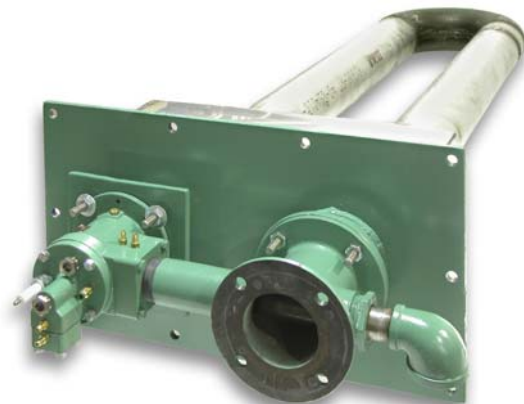
A southern California aluminum heat treating facility wanted to increase production on their 1000°F Drop Bottom Aluminum Heat Treating Furnace. The furnace was originally equipped with twelve Eclipse 84HRT burners with a maximum firing rate of 500 KBtu/hr each or possible 6MMBtu/hr for the furnace.

The company enlisted the assistance of Robertson Instrument Company, Inc. of southern California to rebuild the furnace with 24 U tubes and Eclipse TFB075 ThermThief burners similar to another furnace on the same site. Each burner was to fire at 325 KBtu/hr each giving a total gross input of 7.8 MMBtu/hr.

The South Coast Air Quality Management Department (AQMD) in California insisted that the total NOx production could not be increased. The TFB075 burners on the similar furnace were emitting around 80ppm @ 3% O<sub>2</sub> (.101 lb/MMBtu) or .57 lb/hr NOx requiring the NOx on the new furnace be reduced to 60ppm @ 3% O<sub>2</sub> (.073 lb/MMBtu) or .57 lb/hr NOx.

Eclipse utilized a flue gas recirculation (FGR) device installed at the exhaust of the U-tube to reduce the NOx to the required levels. The FGR unit entrains flue gas with the combustion air and supplies that to the burner. The effect reduces peak flame temperature and local oxygen concentration thus lowering NOx emissions.

The Southern California Gas Company was on site during the commissioning and monitored the emissions. The NOx emissions were measured at an average of close to 45 ppm with only 5 of the 24 burners emitting over 50 ppm. The installation was a success. The gross input was increased by 28% over the similar application while lowering the NOx emissions.



*Eclipse Emission Reduction System*



---

**Eclipse Combustion**

[www.eclipsenet.com](http://www.eclipsenet.com)