

Application**brief**

Eclipse Product: AutoRecupe SER version 3
Submitted by: Brad Neuliep - Greyhound Combustion and Controls
Application: Atmosphere Controlled Batch Furnace

Description: Specialty Heat Treat a Commercial Heat Treating Company in the Houston area wanted to build a new Atmosphere controlled Batch Furnace. The required operating temperature range would be 1400°F to 1950°F. Specialty Heat Treat already had this type of furnace in operation. Because of the company's continued growth, an additional furnace was necessary to maintain production levels.

The existing furnace is insulated with Insulating Fire brick throughout the entire furnace. The burners are Eclipse 4.5" Ver.1 SER's with 45" Effective tube length. The arch in the roof detracted from the effective tube length. The furnace recovery after loading a 2000 lb. load is 2-1/2 to 3 hours.

Tom Moore has been the President of Specialty Heat Treat since 1993. They have experienced a phenomenal growth rate and wish to continue with this expansion in an increasingly competitive market. They are committed to utilizing the latest technology and surrounding themselves with extremely competent people and suppliers.

Tom wanted to keep the same silhouette of his existing furnace. He turned to Duane Osterhaus from D & P Technologies and Brad Neuliep from Greyhound Combustion and Controls, the Eclipse local Rep. for advice on how to improve the furnace. During the initial design phase they discussed ways to improve the recovery time over the existing furnace. Several options were examined and we subsequently ruled out utilizing the existing Ver.1 4.5" SER and Refractory method. Jim Roberts of Eclipse was contacted and after reviewing the data, he determined the 6" SER Ver.3 utilizing Inex ceramic outer tubes and Schunk sectional ceramic inner tubes to be the preferred choice. Use of the new Ver. 3 SER would allow the same number of burners (8) to be maintained while dramatically increasing the net input to the furnace. The burners were specified to provide sufficient input while maintaining conservative dissipation rates. The goal was to ensure long tube life and yet increase input to realize enhanced production rates. Fiber insulation blocks of 10" 8 lb. density were utilized in lieu of the brick refractory. This allowed removal of the roof arch, thus allowing an additional 15" of effective tube length. It was felt that with this new design criteria, load recovery and thus load cycle times would be dramatically improved.

Tom Moore has approximately 18 direct fired furnaces of various shapes and sizes utilizing Eclipse ThermJet burners and is thrilled with the tremendous reliability and performance of these burners. Because of Tom's belief in the ThermJet (and the new SER's design similarity to the ThermJet) he was convinced of the new SER's capabilities. (Continued on page 2.)



Upon completion of the furnace fabrication and startup, the initial feedback indicates overwhelmingly that all goals were met. Production Rates to a commercial heat treater mean greater profits along with greater customer satisfaction and saving energy along the way certainly does not hurt anybody's feelings. They have documented that a load of 2,000 lbs. will recover to 1700° F in approximately 40 minutes. This represents a time savings of approximately 2 hours over their existing Batch Atmosphere furnace. This time savings means more loads per day and thus more production and faster turnaround. Sam Moore stated, "This new furnace recovery rate is almost the same as an open fired furnace". Tom Moore replied, "we have a winner".



Photos illustrate design, installation and operation of the new atmosphere controlled batch furnace with Eclipse AutoRecupe SER ver. 3 burners. Use of fiber insulation allowed removal of the roof arch making it possible to increase each tube 15" in length over the previous design.