

Application Report

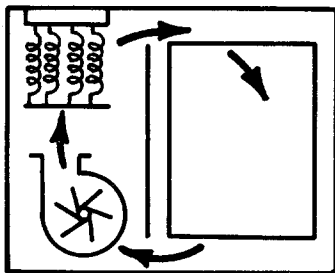
AR-65
August, 1971

Customer EUCLID HEAT TREATING COMPANY
CLEVELAND, OHIO

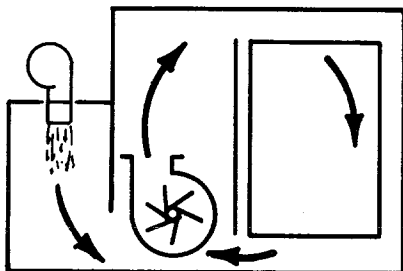
Description of
Application

The customer, a commercial heat treating firm, had a Lindberg electrically heated Pit Draw Furnace - 33" diameter x 36" deep, 1250°F., 440/3/60 - 70 KW - which was used for tempering and stress relieving operations. They desired to add 36" to the working depth, and at the same time, convert the furnace to gas firing and modernize the temperature control equipment.

A gas burner chamber was added to the furnace (see Fig. 1 and 2) and connected to the suction side of the recirculating fan. It was decided to utilize a sealed-in Air Heat Burner (see Fig. 3) in order to take advantage of its high turndown and relatively short flame length.



LINDBERG ELECTRIC DRAW DESIGN
FIGURE 1



LINDBERG DRAW WITH BURNER CHAMBER
FIGURE 2

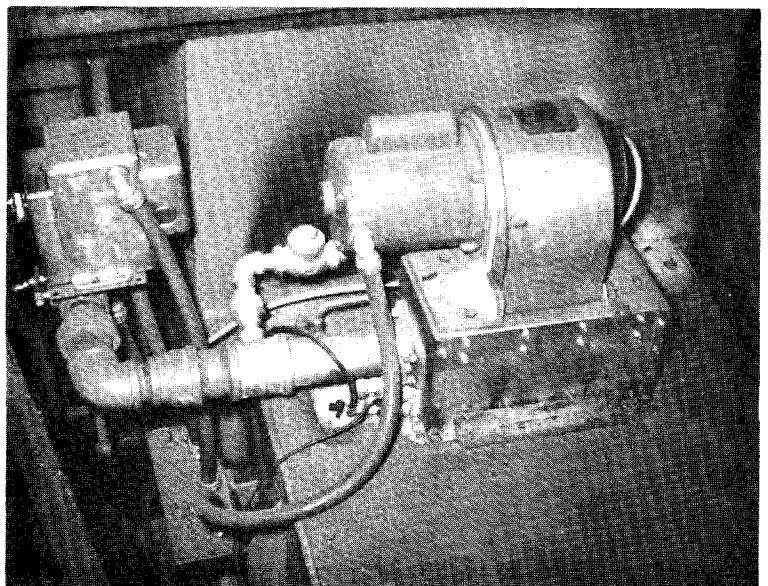


FIGURE 3



ECLIPSE INC.
ROCKFORD, ILLINOIS 61103

Fuel Specifications

Natural gas at 6 oz. pressure.

Equipment Installed

- 1 - Eclipse #80 AH Burner
- 1 - 1-DAS-3 Eclipse Pilot Solenoid Valve
- 1 - Ignition Transformer
- 1 - 6BV-AR Eclipse Reduced Port Butterfly Valve with Leeds & Northrup #10218 Proportionating Control Motor (Fig. 3)
- 1 - 306MV-3 Eclipse Motorized Shut-off Valve
- 1 - RV-81 Gas Pressure Regulator, 1-1/2"
- 1 - 6642-VB Protection Controls Flame Safety Relay
- 1 - Leeds & Northrup Speedomax "H" Strip Chart Indicating Recording Controller with proportional control (Fig. 4)
- 1 - Barber-Colman High Limit Instrument (Fig. 4)
- 3 - Mercoid Pressure Switches
- 1 - Autogas Shure-Vent Air Flow Switch

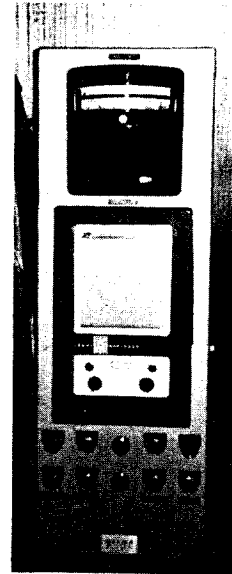


FIGURE 4

Problems Encountered

We were concerned with service life of the "AH" Burner in a totally sealed application at temperatures up to 1250^oF. However, this burner has been in operation over a year and appears to be holding up perfectly. (See Fig. 5)

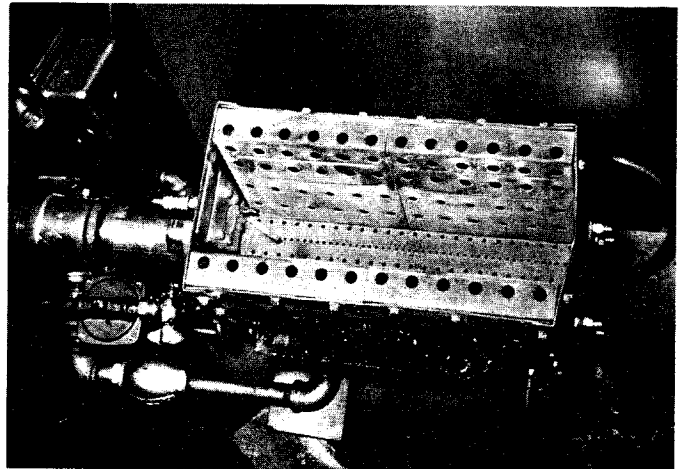


FIGURE 5

Results

The customer is extremely well satisfied with the resultant fuel economy of the conversion - a 60% savings - and with the significantly improved temperature uniformity attained with the "AH" Burner and proportioning controls ($\pm 10^{\circ}$ F. or better) over the previous heating elements and contactor system ($\pm 15^{\circ}$ F.). This was accomplished even though the furnace volume was increased 100% and the same recirculating fan used.

Submitted by

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