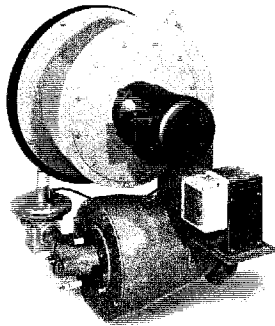
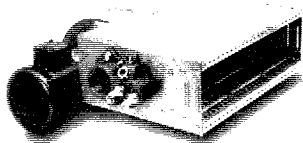


Application brief

- Eclipse Product:** ImmersoJet and AirHeat Burners
- Submitted by:** Hamilton Araujo – Engecorr Engineering Co. (Sao Paulo, Brazil)
- Application:** Air Heating and Liquid Heating in Automotive Plant
- Description:** *Customer's Needs and Expectations*



ImmersoJet Burner



Air Heat Burner

Due to several problems, Ford Motor Company decided to eliminate steam boilers from their plants in Brazil and use other means of heating. All systems heated by steam were converted to heating systems based on natural gas, available in the plants. The project consisted on converting the E-Coat and PAOB Tanks, and Repair Painting Booth at Sao Paulo's plant, and Steel Cleaning Parts Tank, Air Conditioning for Motors Testing Booths and Waste-Oil Tanks at Taubate's plant. All systems converted were to be reliable, turn-key, simple and with low maintenance costs. No stops during operation were allowed at all.

Application Solution

Sao Paulo's plant:

- E-Coat and PAOB Tanks: we installed immersion burners, all 6" size, with specific immersion tubes for each type of solution (alkaline and phosphate). Special attention was given to maximum time of tank heat-up (6 hours) and construction of a rectangular section of tube to fit in the 2nd Stage Tank without shellcar interference.
- Repair Painting Booth: an Air Heat burner was installed inside the main duct that feeds the booth with fresh air. Temperature should be kept at 70°F. The choice was an AH-400.

Taubate's plant:

- Steel Cleaning Parts Tank: installation of a 3" ImmersoJet burner for heating-up the tank to 140°F.
- Air Conditioning for Motors Testing Booths: two AH050 AirHeat burners were installed in each booth's air suction system to keep the air at 70°F. Low NOx and CO emissions must comply with NIOSH limits (< 25ppm NOx and <50ppm CO).
- Waste-Oil Tanks: 4" ImmersoJet burners were installed in each of two waste-oil tanks to evaporate the water used to carry out the oil from the plant to the Water Treatment Station.

Benefits to the customer

- *Steam Boiler Building Shutdown:* no more costs for maintenance and dedicated operators.
- *Energy Saving:* steam must be produced even when the plant had no demand. Energy losses in steam transportation to utilization systems and losses due to purged condensed steam were also saved. Direct heating systems use dedicated energy.
- *Ease of use:* old system required the operator to open the steam valve and watch tank temperatures rise. Actual heating system by burner with temperature control frees the operator to do other plant systems start-up.
- *Energy Control:* the measurement of natural gas consumption can be assigned to each process to determine costs. Sound planning at the plant level minimized costs and improved benefits. See page 2 for a list of equipment installed.

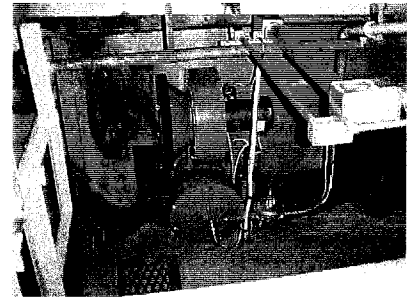
Equipment Installed

Sao Paulo's plant:

- 6 ImmersoJet 6" w/ High Pressure Packaged Blower (2,500,000 Btu/hr), natural gas, Eclipse Rotary Actuator ACT004, UV scanner self-check, Dungs AA-A2-4-5 switch for 2 to 20"wc, Ratio-regulator 1½" NPT;
- 2 ImmersoJet 6" Remote Blower (3,600,000 Btu/h), natural gas, Eclipse Rotary Actuator ACT004, UV scanner self-check, Dungs AA-A2-4-5 switch for 2 to 20"wc, Ratio-regulator 1½" NPT;
- 1 Air Heat AH400 w/ Integral Packaged Blower (4,000,000 Btu/h), natural gas, pilot, flame rod;

Taubate's plant:

- 1 ImmersoJet 3" w/ Low Pressure Packaged Blower (440,000 Btu/hr), natural gas, Eclipse Rotary Actuator ACT004, UV scanner self-check, Dungs AA-A2-4-5 switch for 2 to 20"wc, Ratio-regulator 1" NPT;
- 2 ImmersoJet 4" w/ Low Pressure Packaged Blower (830,000 Btu/hr), natural gas, Eclipse Rotary Actuator ACT004, High and Low Microswitch, UV scanner self-check, Dungs AA-A2-4-5 switch for 2 to 20"wc, Ratio regulator 1½" NPT;
- 2 Air Heat AH50 w/ Integral Packaged Blower (500,000 Btu/hr), natural gas, pilot, flame rod.



*Eclipse ImmersoJet Burner
on E-Coat Line*

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