

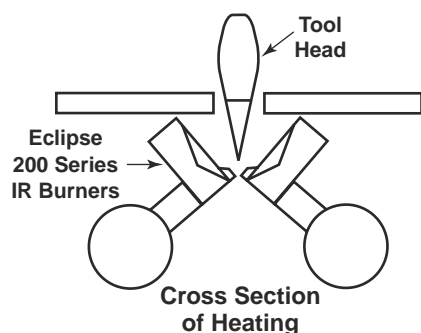
Application**brief**

Eclipse Product: 64 IR Burners
Submitted by: Ron Strickler – The Walling Company
Application: Parts hardening

Description:

A Midwest tool manufacturing company was unhappy with their method of hardening the working surfaces of their product line that includes axes, picks, etc. They were using a salt pot to perform this function and were having to rebuild/reline the pot every 60 days at a cost of approximately \$2,500. They were looking for a process to maintain or increase product quality, while reducing downtime and cost. We proposed the use of Infra Red and ordered two 64IR burners and a mini-mixer for the customer to test. They found the desired temperatures and hardness could be obtained using infrared.

Through testing done at Eclipse concerning the amount of time to do their various products, a preliminary proposal was submitted to the customer. The system included (2) zones in a straight line. The first was a dual 6-1/2 foot length of 64-IR burners firing at each other to form a trough for the parts to run through, while the second was a 3-1/2 foot length of dual burners. Zone one functions as the heat-up zone while zone 2 is the soak. As each piece indexes off the end of the line, it is quenched in an automated water tank.



There was a concern about premature burner failure due to possible over heating caused by mounting the two burners facing each other to form a trough (see figure 1). Moldable insulating material located down the middle of the two burners proved to afford adequate protection. The customer has many sizes of products to run through this process and the conveyor line is stationary, so they needed to devise a way to be able to move the burners up and down as well as left and right to accommodate each of their products. The customer built the entire combustion/burner system on a rack that can be moved by hydraulics to properly position the burners for each product they run.

In November of 1999 we received an order for the system and in January 2000 the system was completed and started up. After start up, and follow up a couple of weeks later, the first time we heard from the customer on this line was in February of 2002 when they ordered replacement ceramics for the burners. It has operated flawlessly, reduced maintenance costs dramatically, and improved the consistency of product quality throughout their entire product line.



Hardening Process Line



Air and Gas Piping



Hardened parts leaving quench tank

<i>Item</i>	<i>Qty</i>	<i>Description</i>
1	2	64IR-13 Burner
2	2	64IR-7 Burner
3	4	Plain End
4	2	End Plate w/ spark
5	25	End Plate w/ flame
6	26	Cross load assembly for ignition
7	1	SMJ 6621-3 Blower, 18,300 scfh @ 31" w.c.
8	1	Air Filter
9	1	Zone 1 Mixer, 86-27
10	1	Zone 2 Mixer, 84-20
11	1	FM Valve Train
12	1	1-1/2" Ball Valve, Zone 1
13	1	1" Ball Valve, Zone 2
14	1	3" Reduced Port BV, Zone 1
15	1	2-1/2" Reduced port BV, Zone 2
16	2	Mounting Kits
17	2	EMP424-4 Control Motor
18	1	Air Flow Switch, KDI 1/4" bottom
19	1	6642 VLT, 2 burner flame safety
20	1	A10 Ignition Transformer
21	2	Type K Thermocouple
22	2	UDC2300 T- Control
23	25	(Feet) Hi Temp Ignition Wire
24	12	(Feet) Thermocouple wire
25	4	90° Raja connectors
26	1	Custom Wiring Diagram, Low Fire Start