

ALTERNATIVE SOURCES FOR HIGH ALLOY METALLURGY: AN ALTERNATIVE FOR OEM PARTS

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The topic of the paper is extremely valuable for any operating facility, since OEM parts can cost 2 to 10 times their actual cost. It is good to see the recommendation to ask the operating and maintenance staff for their input to the redesign. The staff at Commerce has also provided valuable design suggestions.

Specific comments include:

- (1) Please provide a better background of the magnitude of the problem by providing a table showing: name of the major parts which were redesigned, quantity in each furnace, original cost/life/material of the part, and history of cost/life/material of each change.
- (2) A more detailed description of the costs to make a pattern would be useful. At approximately \$2,000 for each pattern, the quantity of parts made have to be high enough to bring the overall cost down.
- (3) Provide a cost/lb from the foundries standpoint as the number of pounds in a single order goes up.

AUTHORS' REPLY

This reviewing author presented good questions. On the following page I offer a chart showing the rough estimates in retrospect of the dimensions of the cost, life, and materials of all the cast iron parts we modified to cast SS parts during the period described in the paper.

The cost of a pattern varies depending on size, complication, and other factors which can only be determined at the time when the purpose is known and the part can be analyzed. To check on a specific part, one must contact a pattern maker, typically by contacting the foundries that might be doing the parts. They should be quite helpful when a plant operator calls.

It is only possible to determine the costs of the foundry pour per unit weight by contacting the foundry with the specifics of the potential job. It is fair to say that the frequently replaced components of a typical waste fired furnace will constitute a reasonably economic run of parts pouring on an annual basis. Parts which are only infrequently replaced might be better fabricated out of stainless steel at local machine shops (as the paper also suggested.)

| PART NAME | LIFE PER PART IN YEARS BEFORE CHANGE | LIFE PER PART IN YEARS AS SS FAB. | LIFE PER PART IN YEARS AS CAST SS | NUMBER/ FURNACE | NUMBER/ PLANT | NUMBER REPLACED EACH YEAR (CAST SS) | CAST SS WEIGHT PER EACH | CAST SS WEIGHT REPLACED PER YEAR | ESTIMATED CAST SS PATTERN COST (ONE TIME COST) | ANNUAL BUDGET PER PLANT BEFORE CHANGE | ANNUAL BUDGET PER PLANT AFTER CHANGE |
|-------------------------|--------------------------------------|-----------------------------------|-----------------------------------|-----------------|---------------|-------------------------------------|-------------------------|----------------------------------|--|---------------------------------------|--------------------------------------|
| Grate Box | 1 | 1 | 2 - 3 | 77 | 231 | 80 | 60 lbs. | 4800 | \$1800 | \$70,000 | \$47,600 |
| Grate Box Cover | .7 | 1 | 2 - 3 | 154 | 462 | 160 | 15 lbs. | 2400 | \$720 | \$36,000 | \$18,560 |
| Kiln Inlet Plates | 1 | 1 | 2 | 24 | 72 | 36 | 65 lbs. | 2340 | \$600 | \$20,000 | \$10,440 |
| Kiln Outlet Plates | .7 | .7 | 2 | 24 | 72 | 36 | 65 lbs | 2340 | \$625 | \$25,000 | \$13,860 |
| Grate End Guard | 1 | 1 | 1.5 | 14 | 42 | 30 | 65 lbs. | 1950 lbs. | \$1100 | \$15,000 | \$10,500 |
| Diversion Gate Sections | 2 | 2 | 3 - 5 | 24 | 72 | 18 | 100 lbs. | 1800 | N.A. | \$10,000 | \$6,500 |
| Bull Nose Assembly | 3.5 | 2 | 6 - 8 | 1 assembly | 3 ass. | .4 ass. | 1200 lbs. | 480 | \$1900 per set | \$3,000 | \$1,720 |