

# GREEN FOUNDRY CASE STUDIES

## WASTE MANAGEMENT & BENEFICIAL REUSE

### Dropout Coke Injector



**BEFORE**

#### Description

This foundry generates cupola dropout material that was classified as hazardous waste. Initially this material was disposed of as hazardous waste at great expense. A process was implemented where the dropout material waste was shipped to a third party for briquetting with a binder and then returned to the facility. Briquettes were charged into the cupola to recapture the coke fines (carbon) and iron fines (feedstock) contained within the original dropout material. This method of disposal required the part-time services of one forklift and one payloader operator, up to 1,600 cubic yards of storage space for loose dropout material stockpiled for shipment to the third party, and 100–300 pallets of briquettes. In addition, approximately 25% of the briquetted material deteriorated due to handling during storage and charging. To further improve the process described above, a dropout coke injector system was installed. In the new closed-loop process, the cupola dropout material is collected in the dropout chamber, transferred to the storage/cooling hopper where it is stored for up to 5 hours before being injected directly back into the melting zone at the cupola tuyere. This new system avoids the use of an outside briquetter and subsequent handling.

#### Environmental Benefits

- New cupola injection system eliminates the handling, storage, and shipping of 1,500 tons of dropout material each year.
- Reduced environmental regulatory reporting liability.
- Diminished visible emissions and stormwater exposure from material handling.
- Reduced diesel usage from forklift and payload equipment.

#### Cost & Savings

- Cost of Implementation: \$60,000 in equipment costs, \$15,000 in installation costs.
- Cost of Operation: Natural resources operating cost using direct injection (compressed air and electricity) estimated at \$6.25/ton and \$10,000/annually.
- Savings from disposing as hazardous waste: over \$600,000/yr.
- Savings over previous disposal method (briquetting): \$239,540/yr.
- Return on investment (ROI), based on the costs and savings presented here, was approximately 4 months.

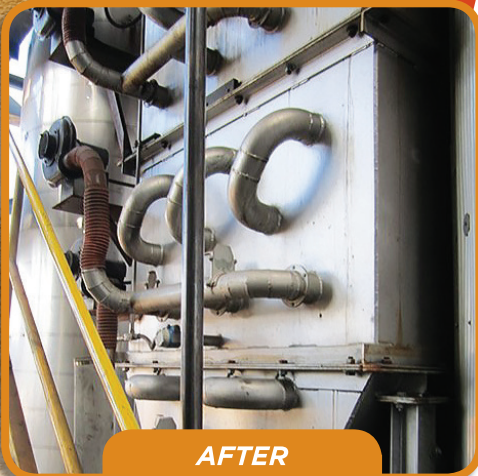
#### Other Benefits

- The facility takes pride in this innovation. The system is simple to operate resulting in minimal down time.
- System runs simultaneously with the cupola operation. Increased coke ratio by 1.5 due to the high amount of coke breeze injected.

#### Applicability

Applicable to metalcasting facilities equipped with cupolas.

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**AFTER**



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