

## Case Study #6

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**The following series of slides document the results of using Redux EF40L fluxes at 15 International Foundries to eliminate slag buildup on refractory walls of coreless induction furnaces, extend refractory life and clean ladles. Additional details on increases in refractory life are presently not available because of the COVID-19 pandemic.**

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**Case Study 6 - REDUX EF40L**  
**Objective: Clean slag build-up from**  
**Coreless Induction furnace walls**



**REDUX EF40L at International Foundry “F”  
Producing Grey and Ductile Iron Castings**



# Redux EF40 Test Conditions

- **Furnace type – Medium frequency Coreless Induction Furnaces**
- **Furnace Capacity – 2 - 1.5MT's and 2 - 1.0 MT furnaces**
- **Plant capacity – 1000 Ton/Month**
- **Charge Mix –**
  - Pig Iron – 15%**
  - Steel – 20%**
  - Boring – 30%**
  - Foundry Returns – 35%**
- **Furnace Lining – Silica Lining- Dhaka.**
- **Average Lining life – 350 heats**



# Observations before the Redux Trials began



Lining condition before trial

- Due to excessive use of foundry returns and turnings/borings, more slag was generated on lining and continues to increase on subsequent heats.
- High temperature -1500°C is required for slag cleaning, and it is possible only with SG iron tapping, (gray iron melting generates more slag on lining).
- Number of heats taken - 81 before trial.



# Trial Details

- **Addition Rate-** 0.05% REDUX EF 40L
- Redux is added along with charge and with 10% of charge material in furnace
- **Melting-** done as per their regular practice- no change in charging/melting process
- **Slag cleaning-** Done as per their regular practice with pearlite ore
- **Tapping and pouring-** As per regular practices



# First Heat with Redux EF 40L



Lining condition  
after first heat with  
– Redux EF 40L

- Slag still was sticking on upper part of furnace refractory
- No slag was found in lower half of the furnace after the first heat that was treated with Redux
- A second heat was then made with Redux



# Second Heat with Redux EF 40L



Lining after second  
heat with- Redux  
EF 40L

- After the second Redux addition, there was no slag adhering to the furnace lining.
- All of the liquid slag that was generated on top of metal was removed by skimming
- No extra time and temperature was required for melting
- No added process – practices were needed

