

Extension of BOF lifetime to reduce cost of all consumables



BACKGROUND
Customers needs



CONCEPT
Calderys solution



SUMMARY
Recap of
the solution



RESULTS
Concrete
benefits



The background situation

- Steel plants with 3 BOF at 350t-BOF each
- Single supplier for global solution (working lining & gunning repairs)
- Monopoly supply meant that no new innovation or evolution of concept was brought to the customer, meaning the complete supply was locked into a fixed position in regard to performance / costs delta.

The request from the customer

- Calderys to be in a position of a **global supplier for the initial BOF installation - working lining, masses.**
- The complete lining and masses would amount to **close to >600 tonnes of product.**
- **A comprehensive design** to meet the key parameters of the steelmaking process, in particular high FeO and high temperature.
- **A performance >4500 heats.**
- **A lower or equivalent total cost than the current price benchmark** - both in terms of the initial lining cost, and potential for a reduction of gunning consumption.



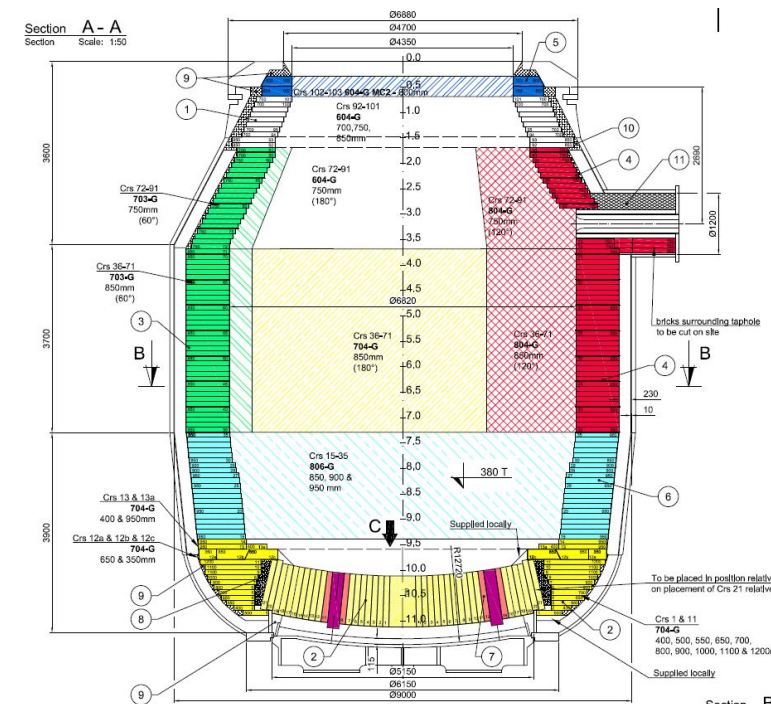


Analysis of the customer request

- To bring technical expertise, high quality products, technical support, after sales support, installation supervision and high grade repair products, all benchmarked against best in class global supplier.
- Lifetime benchmark **>4500 heats**

Calderys Solution

- To **create a balanced wear lining**, that brings high grades to the most crucial zones, and lower grades in less stressed areas.
- **Progression of pre assembly** of the bottom lining construction at manufacturing site.
- **Complete installation and terms of use contract**, that highlighted the acceptable technical parameters within the supply contract.
- **Strict customer inspection of the BOF lining** prior to despatch.
- **Supply of High Grade BOF Gunning** from Calderys Spain and Calderys Grecian Supply.

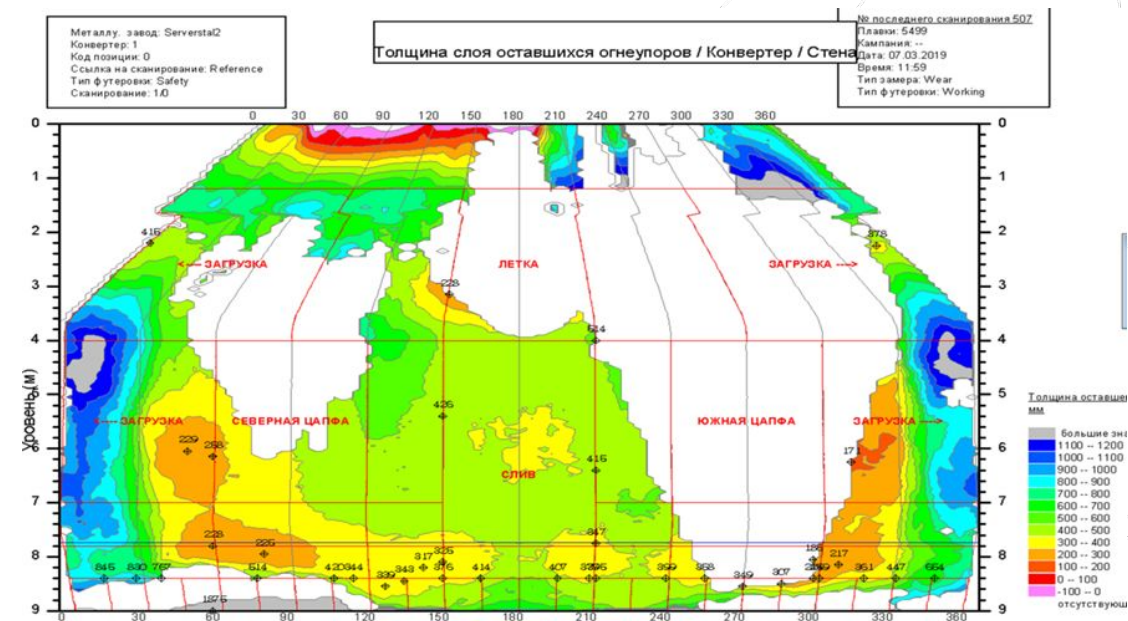




Benefits brought by the solution

- Calderys performance: **5,628 heats**, a campaign record.
- Lower gunning consumption: **320 tonnes of gunning consumed**, against the expect 450 tonnes (competitors requirements)
- Critical parameters: **28% of heats were above 1,700°C**. 3,496 reblows, 27.5% was average Fe within the slag. Wear rate of the lining was 0.18mm per heat.
- Two grades of gunning product were used: **CALDE MAG GUN SUPER C** for the critical zones, **CALDE MAG GUN G89** for the non critical. Specific consumption was 0.11 and 0.05kg/T of Liquid Steel respectively.

Calderys gained the position of recognized quality supplier for this customer, breaking the previous monopoly position.





Measurable results

- Campaigns duration: **5628 heats, a customer record.**
- Lower gunning consumption - **320 tonnes of gunning consumed**, against the expect 450 tonnes (competitors requirements)
- Campaign savings: when the costs of gunning / patching brick / dolomite and coke consumption were calculated, **a total saving of 938k euros** was realised.
- A gunning consumption was reduced by **37%**
- Two grades of gunning product was used: **CALDE MAG GUN SUPER C** for the critical zones, **CALDE MAG GUN G89** for the non critical. Specific consumption was 0.11 and 0.05kg/T of Liquid Steel respectively.

Services - Expertise

- A complete project management
- Full lining design
- Full global supply of refractories (bricks and masses)
- Full installation supervision and inspection
- Complete repair program, with reduced gunning consumption and time savings.
- Considerable savings on BOF operation consumables. (938k Euro)
- Calderys proved to be qualified supplier, provided high quality products, services and technical support.



Thank you for your attention

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