

Get the most out of your steelmaking facility:

*Facts & Figures*

*Scope:*

- 1. On Site Investigation for Concept
- 2. Supervision of Commissioning and Start-Up

*Achievement:*

	Before	After
Power On (min)	43	
Average Power Input (MW)		
Tap-to-Tap time		
Heats/day		
Heats/day average		
Electrode Consumption		

# Engineering and Products for Plant Optimisation by BSE



# BSE

BADISCHE STAHL-ENGINEERING GMBH

**Excellence in Steelmaking**

**Engineering and products for optimisation  
of EAF, LF and CCM:**

# Trust in decades of engineering experience!

When steelmakers start to realise that they could get more performance out of their facility, there are many good reasons why BSE is the first to be asked. An integrated engineering approach, backed by the operational experience of BSW – one of the world's most efficient mini-mills – helps us to always see the complete picture and so to come up with solutions that by far exceed the customer's expectations.

No matter if you are thinking about revamping only parts of your production line, a complete makeover or even an entirely new facility – BSE's long standing experience in green- as well as brownfield projects will make things happen for you!

**Electric Arc  
Furnaces**



**Ladle  
Furnaces**



**Continuous Casting  
Machines**



**Our project approach fulfils your expectations:**

# In **B**udget. In **S**chedule. In **E**xpected results.

## Basic principles.

- Dedicated steelmaking-process-oriented approach, based on the operational experience of our own BSW steel plant, one of the world's most efficient mini-mills.
- Close partnership with the customer for incorporating their invaluable know-how and setting of goals for mutual success.
- Implementation of state-of-the-art technology under close consideration of all neighbouring equipment.
- Design and solutions selected under strict consideration of the "easy to maintain and operate" aspect.
- Optimum utilisation of already existing equipment.
- Calculation of expected performance values, benefits and payback estimations.

## Project concept.

- Detailed investigation of current situation on site, customer needs and process requirements.
- Elaboration of individual and tailor-made solutions.
- Project execution and management in close cooperation with the customer.
- Applying the "KISS" (Keep it simple and stupid) principle for maximum operational reliability.
- Start-up and commissioning with personnel with operational background from our own production facilities.

## Your key advantages.

- Increase of efficiency and productivity.
- High availability at lowest possible operation and maintenance cost.
- Optimum capital planning and employment by:
  - Meeting the warranted contract price and estimated customer budget
  - Meeting the delivery time and required downtime for installation
  - Meeting the calculated and expected performance figures and economical results



*BSE provides solutions that even exceed the customer's expectations.*



*Detailed investigation on-site and...*



*...engineering excellence at BSE...*



*...combined with local experience of the customer...*



*...are all key factors for successful projects!*

Engineering and products for EAF optimisation:

# Time to re-invent your EAF!

BSE provides mechanical and electrical engineering as well as hardware key components or complete furnaces of many types and operations:

- Power source: AC or DC
- Operation: Single shell or twin shell
- Tapping system: EBT or spout
- Input material: all mixes of scrap, hot metal and DRI/HBI
- Product: all steel grades

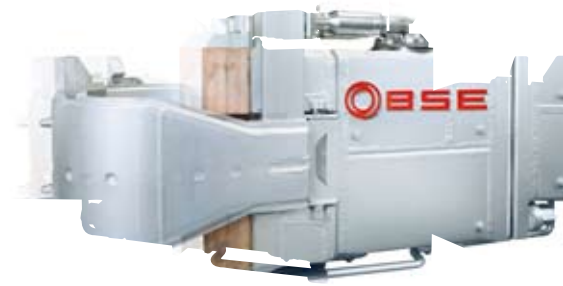
We have what YOU need!



*BSE offers solutions for a wide range of furnace types and operations.*

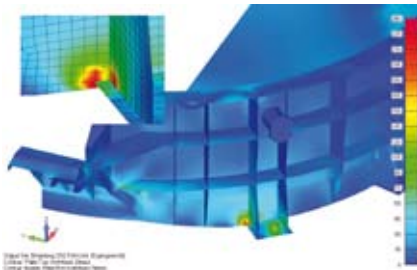


Smart solution at the "heat of the action": Aluminium electrode arms with removable electrode head allow for quick and easy maintenance.



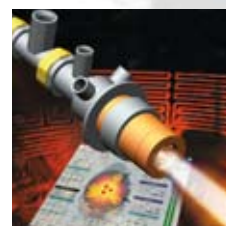
## Scope of supply.

- Gantry with columns, guiding rolls and electrode lifting mechanism.
- Rocker frame with foundation design.
- Hydraulic system.
- Entire shell, roof, elbow and other water-cooled EAF parts.



Seeing the complete picture, yet having an eye for detail: Our engineering excellence masters every challenge.

- Electrical and automation systems.
- Current conducting Aluminium Electrode Arms.
- Chemical Energy System for injection of oxygen and solid material from sidewall, EBT and slag door:
  - Virtual Lance Burner (VLB)
  - CarbJet®/LimeJet
  - Lance Manipulators (LM)
- Measurement & control devices:
  - Temperature and Sampling Manipulator (TSM)
  - Delay Recording System (DRS)
  - DC monitoring software (DC-Online)
- Rigid construction and design for high productivity and performance.
- Design, layout and movements for optimum efficiency of energy and consumables with conventional technology.
- Components and features designed from steelmakers for steelmakers – making operation easy, safe and efficient (e.g. user-friendly HMI).
- Engineered for defined input materials and/or mixtures, yet providing flexibility for future capacity increase.



BSE's Chemical Energy Concept offers a wide range of solutions for sidewall/EBT (left) and slag door injection (above).

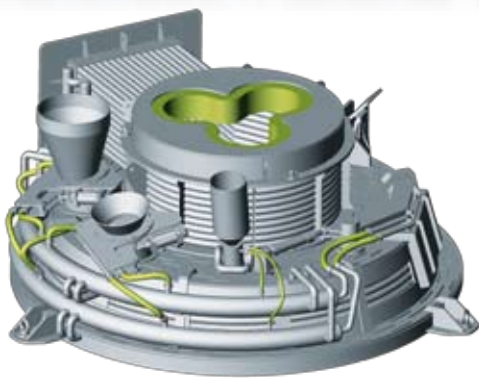
Engineering and products for LF optimisation:

# Time to re-invent your LF!



## Scope of supply.

## Your key advantages.



*Easy, precise and safe LF operation via user-friendly HMI design.*

- Gantry, mast and guiding systems.
- Electrode arms (current conducting or conventional).
- Platform structure and roof lift.
- Roof, elbow and other water-cooled LF parts.
- Hydraulic system.
- Ladle car.
- Electrical and automation systems.
- Alloy and wire feeding system.
- Temperature and Sampling Manipulator.
- Foundation engineering.

- Optimum heating rate.
- Minimum space requirements.
- Optimum integration into process and material flow between primary melting unit and consecutive casting process.
- Optimum product quality.



Engineering and products for CCM optimisation:

# Time to re-invent your CCM!



## Scope of supply.

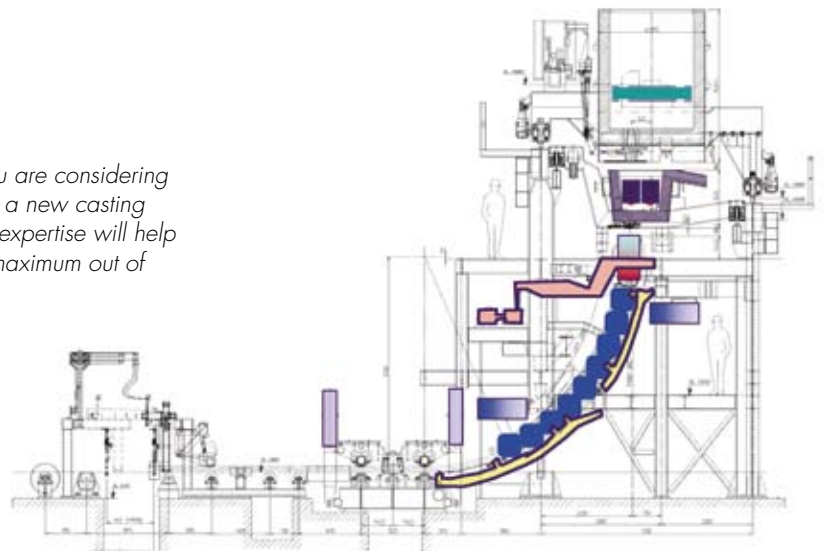
- BSE provides CCM solutions for:
  - Billet caster
  - Bloom caster
  - Beam blank caster
- Tailor-made solutions such as BSE's first world-wide stirrer-equipped spray mould (SM-EMS) or standard solutions such as mould water jacket cooling.

## Your key advantages.

- Stable casting operation.
- Productivity and casting capacity enhancement.
- Improved casting efficiency.
- Simplification of casting operation.
- Improvement of product quality.



*No matter if you are considering a revamping or a new casting project – BSE's expertise will help you to get the maximum out of your facility!*



# BSE: the Steelmaking Excellence Network.

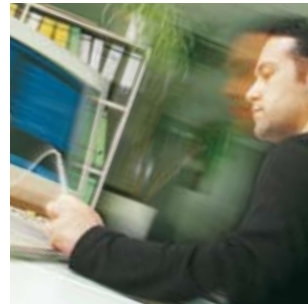
BSE is at the center of a world-wide active partnership that is driven by a common goal: to help steelmakers all around the globe in doing their good job even better. From raw material procurement to product portfolio and market analysis, from staff and management training and consulting to the most advanced EAF steel production soft- and hardware – the BSE Competence Network covers it all. Find out for yourself what BSE can do for YOUR excellence in steelmaking!

- **BSE consulting and training**
- **BSE concepts for chemical energy input**
- **BSE measurement and control solutions**
- **EAF, LF and CCM modernisation by BSE**
- **BSE environmental services**



*Kehl/Rhine, Germany: aerial view on one of the world's most successful EAF steel plants.*

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