

Look. Listen. Do!
Intelligent steelmaking.



Look.



Listen.



Do!

Course Outline

EAF Electrics for Electricians



BSE
ACADEMY
Education for Excellence

Course Outline

EAF Electrics for Electricians



What it is

A training seminar giving special electrical know how required for mini mills/electric arc furnace industry covering power supply, automation and maintenance. The course is focussing on electricians who wish to enhance their technical understanding in EAF electrics for their daily job.

The participants will be able to judge the strengths and weaknesses of electrical systems in order to manage and develop within their field of responsibility.

Who it is for

Experienced electricians, electrical and maintenance engineers who wish to gain a specific understanding of electrical know how for an electric arc furnace plant.

What is required

Pre-qualification: Technical background with knowledge in electrics is required or a minimum of 2 years relevant experience of working in a steel plant.

What is in it

Power Supply

- | | |
|--------------------------------|---|
| - The electric arc furnace: | Design and electrical requirements |
| - EAF power supply: | Configuration |
| - Network disturbances: | Voltage fluctuations, harmonics, flicker |
| - Reactive power compensation: | Improvement of power quality |
| - Step down transformer: | Medium voltage |
| - MV Switch Gear: | Power distribution |
| - EAF switch gear: | Vacuum furnace breaker, motor operated disconnect |
| - EAF transformer: | Principal design, voltage tap changer |
| - Series reactor: | Arc stability, reactance tap changer |
| - Secondary system: | External/internal delta closure |
| - Surge protection: | RC filter, surge arresters |
| - EAF power control: | Intelligent electrode regulating system |
| - BSW power supply: | Electrical infrastructure, equipment |
| - EAF operation: | Power profile |
| - Theory of EAF electrics: | ECD, circle diagram, short circuit calculation, exercises |

Automation

- Automation levels
- Bus systems and structures
- Human machine interface
- Integrated safety for process and factory automation
- Basic of explosion protection
- Drive systems and components
- Remote maintenance and data reporting
- Process instrumentation
- Structure of PLC programming
- Delay recording and analysis
- Automation at BSW

Maintenance

- Concept and philosophy for minimills
- Organisation
- Costs
- Planning
- Optimisation
- Spare parts
- Cooperation, communication
- Weak point analysis
- Electrical maintenance BSW

Plant visit of Badische Stahlwerke (BSW)

Duration

4 Days

Course language

English

Detailed Program

	Day 1	Day 2	Day 3	Day 4
Morning	<ul style="list-style-type: none"> - Introduction - The electric arc furnace - EAF power supply - Network disturbances - Reactive power compensation (SVC) - Step down transformer - MV switch gear - EAF switch gear 	<ul style="list-style-type: none"> - Theory of EAF electrics - Automation levels - Bus systems and structures - Human machine interface 	<ul style="list-style-type: none"> - Process instrumentation - Structure of PLC programming - Delay recording and analysis - Automation at BSW 	<ul style="list-style-type: none"> - Cooperation, communication - Weak point analysis - Electrical maintenance BSW
Afternoon	<ul style="list-style-type: none"> - EAF transformer - Series reactor - Secondary system - Surge protection - EAF power control - BSW power supply - EAF operation 	<ul style="list-style-type: none"> - Integrated safety for process and factory automation - Basic of explosion protection - Drive systems and components - Remote maintenance and data reporting 	<ul style="list-style-type: none"> - Concept and philosophy for minimills - Organisation - Costs - Planning - Optimisation - Spare parts 	<ul style="list-style-type: none"> - BSW safety instructions - BSW plant tour - Concluding discussion

Look forward to additional evening events that will enrich the program.

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EAF Electrics for Electricians



Your key lecturers

Manfred Bock

- Diploma Degree in Electrical Engineering/Dipl.-Ing. (FH)
- Project Manager Consulting Electric
- Specialist for Electrical Power Supplies, Controls and Process Automation



Since 1988 Manfred Bock has been working for the Badische (BSW) group and its engineering company (BSE). Manfred Bock was project manager for process automation, general manager of the electrical maintenance department and also president of a subsidiary for information technology. Currently, Manfred Bock is mainly working as a consultant for the electrical equipment of steel plants, specialised on power supplies, controls and process automation.

Dirk Riedinger

- Diploma Degree in Electrical Engineering/Dipl.-Ing.(FH)
- Senior Manager Consulting
- Electrical Engineering
- Maintenance



Since 1995 employed at BSE, Dirk Riedinger is presently in the position of a senior manager consulting electrical engineering, maintenance. He has participated in more than 60 consulting projects in steel plants and rolling mills worldwide. On the electrical side Dirk Riedinger's fields of responsibility cover the analysis, assessment and conception of complete steel plant power supply and automation facilities. On the maintenance side he executes similar consulting projects to explore in general the optimisation potentials of customer maintenance systems. Further activities are in the area of AC and DC electric arc furnace power input optimisation, including power measurements and computer simulations. Dirk Riedinger has published several technical articles covering his fields of responsibility.

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