MELT EXPERT
NEXT GENERATION ELECTRODE CONTROL SYSTEM FOR ELECTRIC ARC AND LADLE FURNACES

MELT EXPERT – THE SUCESSOR OF ARCOS AND SIMELT

Melt Expert has been developed based on more than 35 years of experience with well known Arcos and Simelt Electrode Control Systems. The new system unifies the advantages of the previous solutions. New features like KPI indication, plant monitoring, customer orientated interfaces as well as sophisticated control strategies ensure most efficient production.

OPERATION DATA PROCESSING AND KPI EVALUATION

A novel touch screen design allows simple and fast access to process relevant data and displaying key values such as actual consumption figures, melting time, regulation quality etc. in the form of bench mark reports. Should there be a significant deviation from normal process parameters, related information comes alive and will be indicated.

ON BOARD PLANT DIAGNOSTICS

Acquired data from hydraulics, mechanics and electrics is put in relation to actual operating conditions. In this way the electrode control system itself and its auxiliary systems are permanently monitored.

So called health checks are performed automatically in regular intervals in which the functionality of measurement loops and output circuits are verified without disturbing the process. Continuous signal collection in combination with long-term-trend analysis allows the detection of shifts, deviations and creeping in malfunctions in a very early stage with the aim to predict a possible event or damage, before it happens.

CUSTOMER-ORIENTED USER INTERFACE

Target group orientated screens provide conditioned information for different user needs like melt shop management, electrical / mechanical maintenance, operators, etc. Designated screens support optimization and parameter tuning for process experts. Regularly revisions are simplified by a special maintenance mode.

ENHANCED CONTROL ALGORITHMS FOR INCREASED EFFICENCY

Based on actual process conditions, control parameters such as set points or controller gains are automatically adapted by the system. Arc length will be modified according to process needs. This results in a higher melting efficiency and reduced energy consumption.

A new algorithm is avoiding arc extinction and increaese the power input during boring phase.

An integrated loop gain linearization model transforms individual mechanical furnace characteristics and uniforms the control loops. Thus the parameter setup will be simplified which results in faster performance run ups and less time needed for optimization.

Standard state of the art protection functions are included as well as more advanced modules like countermeasures against electrode oscillation.

HMI of Melt Expert

OPTIONAL TECHNOLOGICAL PACKAGES

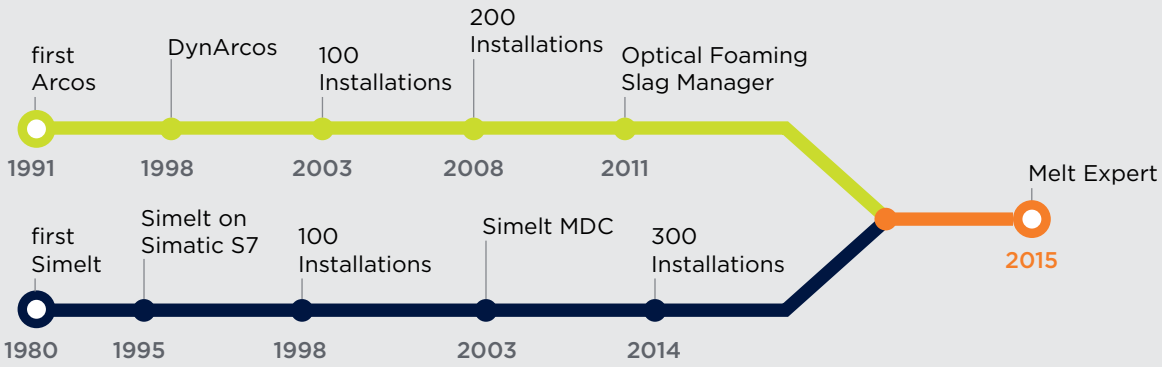
For fully automated process control additional packages like foaming slag control, melt down control and thermal furnace balancing are available.

NEW HARDWARE ARCHITECTURE AND PRECISE DATA ACQUISTION

Melt Expert is based on an embedded controller platform, in which the system is split in a PLC part and a PC part. This new concept unifies the advantages of both platforms concerning flexibility, robustness and computing power, which is necessary for fast and complex calculations as well as high dynamic HMI.
Control signal handling is done within the PLC part which simplifies the integration into the automation environment. Intelligent signal interface modules ensure very fast and accurate data sampling with on-board signal pre-conditioning.

MAIN BENEFITS

- Reduced energy consumption and increased melting efficiency due to auto-adaptive regulation algorithms
- Higher productivity ensured by automatic melting profiles and process parameter adaptation
- Highest reliability due to main focus on robustness and operational safety in an industrial environment
- Ensured process quality due to target group orientated screens and highly sophisticated data recording and evaluation
- Amortization within less than nine months



Evolution of Primetals Technologies Electrode Control Systems

Primetals Technologies Austria GmbH
A joint venture of Mitsubishi Heavy Industries and partners

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