

ELKEM ÍSLAND – Grundartangi



SCOPE OF VERKÍS SERVICES

Projects for the Elkem factory at Grundartangi:

- Furnaces I and II:
 - Design criteria for the HV, MV and LV system. Programming part of the PLC control systems in auxiliary systems.
 - CPM-planning
 - Electrical site engineer.
- Furnace III:
 - Project management team member.
 - Project planning and cost estimate, pre-design, design criteria, tender documents for total electric-, control-, compressed air-, sprinkler- and cooling systems.
 - Quality control and contract closure consultancy for all of the above.
 - Management of the electrical and control contracts, design and process surveillance.
- Operations:
 - Consultancy on miscellaneous electrical, mechanical and environmental projects ever since 1979. Design and supervision of new capacitor banks, design and supervision of the renovation of MV circuit breakers, different control system design, e.g. filters-, raw materials- and furnace control systems.

DESCRIPTION

In 1977 Icelandic Alloys Ltd. (now Elkem Iceland) started the construction of a FeSi factory at Grundartangi. Initially the first phase design criteria assumed a factory equipped with only one furnace plus the necessary infrastructure, soon to be expanded by a second furnace. Both furnaces were producing at full capacity in 1980. The third furnace was added in phase two commencing in 1995 and furnace III was in full production by 1999.

The electrical furnace load of the factory is about 120 MV, annual FeSi production is 120 thousand metric tons, and the energy consumption is around 945 GWh per year.

General information

Elkem Iceland (former Icelandic Alloys Ltd.) was established in 1975 by the Icelandic government in cooperation with Union Carbide. In 1976 Elkem AS acquired Union Carbide's stake and then became the only shareholder in 2003. The original plan was to build 4 furnaces, but during construction it was decided to build only 2 furnaces in the first phase. The construction started in 1977 and the first two furnaces came on stream in 1979 and 1980. A third one was put into operation in 1999. In 2006 it was decided to start production of MgFeSi (nodularizers for iron foundries) at Elkem and the new MgFeSi plant began production in 2008.

TECHNICAL INFORMATION

- **Total power usage:**
150 MW
- **Main power transformers:**
1x 100 MVA, 3 ph 220/33 kV
1x 68.5 MVA, 3 ph 220/33 kV
- **Furnace transformers:**
3 x 20 MVA, for furnace I
3 x 20 MVA, for furnace II
3 x 28 MVA, for furnace III
All. 1 ph 33/0.2-0.345 kV.
- **Power transformer:**
3 x 10 MVA, 3 ph 33/6.6 kV
- **Aux. power transformers:**
8 x 1.6 MVA
3 phase 6.6/0.4 kV
- **Capacitor banks: 33 kV**
2 x 10 MVar, 2 x 20 MVar,
8.1 MVar, 16.2 MVar,
32.6 MVar, 2 x 12 MVar
- **Outdoor switchyard 220kV:**
Incoming field, 2 x outgoing
feeders, overhead bus bar
- **Power cables 220 kV:**
1x3x400mm²
- **Indoor switchgear 33 kV:**
Air isolated, 8 OM-CB and
4 disconnectors for furnaces
I&II
SF6 isolated, 6 vacuum CB and
2 disconnectors for furnace III
- **Indoor switchgear 6,6 kV:**
Air isolated cubicles with 16
OM-CB for furnaces I&II
Nitrogen isolated cubicles with
8 vacuum CB for furnace III
- **Emergency generator:**
2 x 630 kVA, 400 V and

