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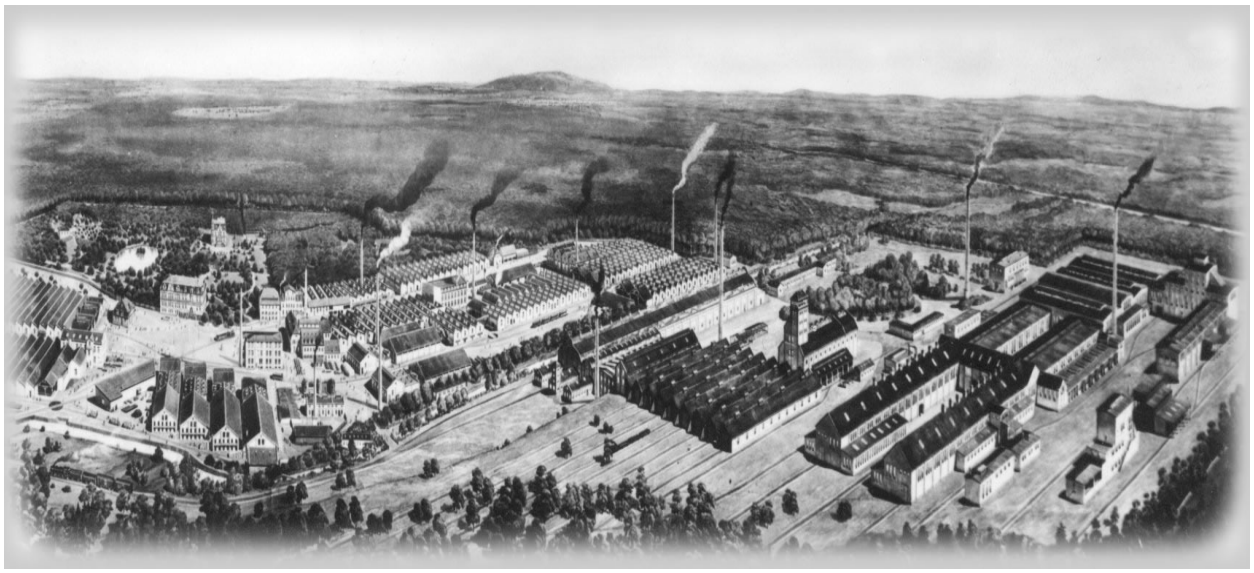


Based in Germany with history of around 150 years Graphite COVA is amongst the top Carbon and Graphite Manufacturers in the world. Certified with ISO 9001:2008. With around 200 people it produces and machined graphite for various industry .Having customer spread over more than 50 countries it has one of most comprehensive product basket.

As Manufacturer of Carbon and Graphite, We offer feedstock or parent materials and machined components supplied directly to the end customers according to their drawing.

The Continuous Casting process

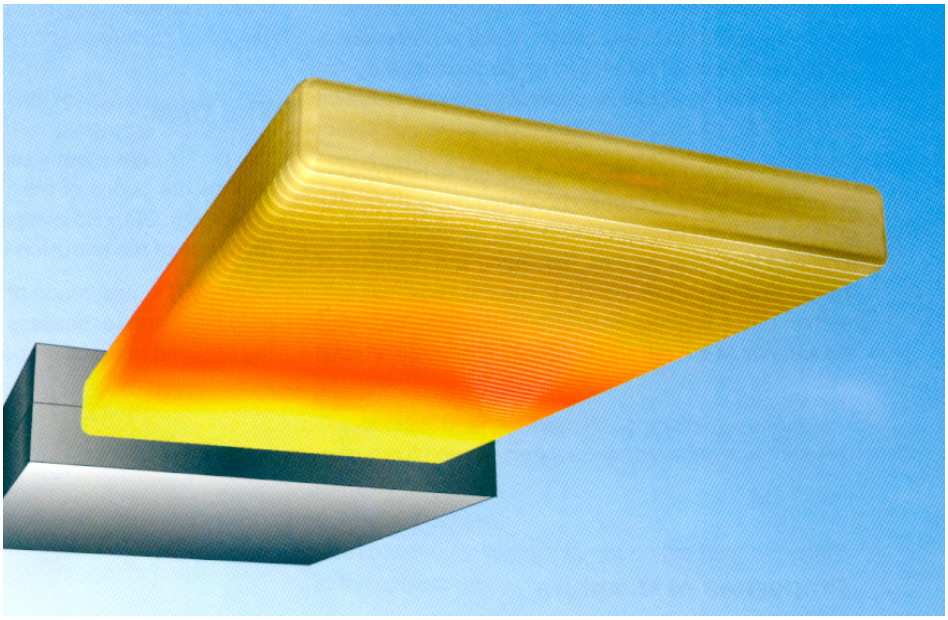
Continuous casting of non ferrous metals, noble metals and grey cast iron has become increasingly widespread ,due to its favourable costing as a flow-line process and the high quality of semi-products obtained. The rods, tubes and strips produced by continuous casting require very little subsequent treatment and their structure is even and flawless.

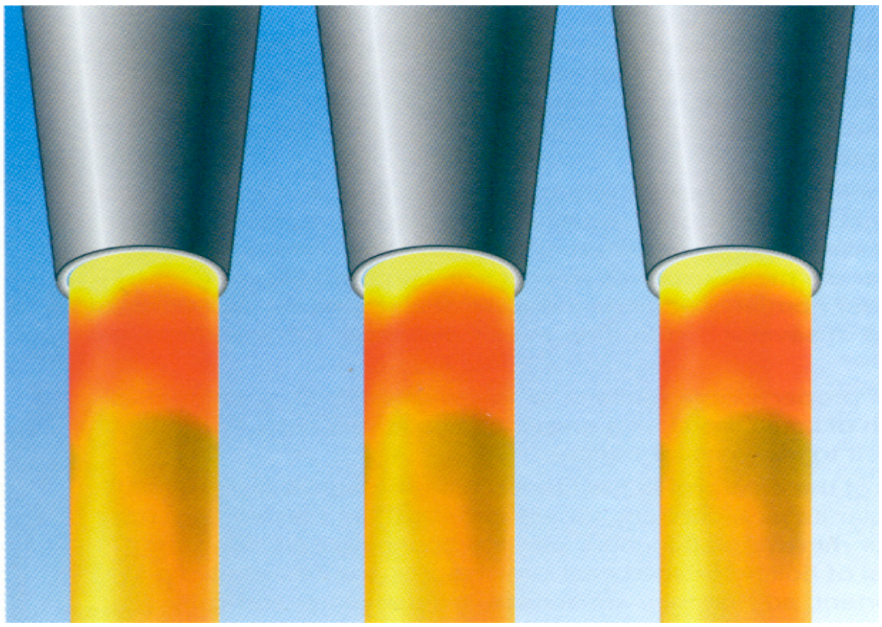
Continuous casting can be carried out either horizontally or vertically, Casting proceeds continuously or by the go-step method through horizontally or vertically arranged flow –through dies .The shape and diameter of the die opening corresponds to the desired cross-section of the finished metal .The intensive cooling of the exterior of the die solidifies the initially liquid metal rapidly and uniformly .The finished and shaped material can then be withdrawn continuously using a suitable traction device

The Dies

The profile cooler, consisting of a water cooled jacked and the die is one of the most important parts of the equipment .Graphite is especially suitable of the severe demands of the Continuous casting process

Graphite COVA dies, made of the fine homogeneous, low porosity graphite, processes an optimal combination of the required material properties





Properties of Graphite

Thermal Conductivity : Graphite with value of 80-120 W/mK, has a thermal conductivity about twice that of steel .With increasing temperatures this decreases and at 1000° C its values is about 50 % of the room temperature value. The thermal conductivity through the graphite die helps heat transfer both radially to the cooler and axially in the direction of the cast. Great heat removal by the working area of the die, as well as rapid cooling and solidified cast profile.

Thermal Expansion: Owing to its low coefficient of thermal expansion of ca. 2,5..4* 10-6 K-1 graphite has exceptionally good dimensional stability and is also insensitive to the demands made by rapid temperature changes .The distortion often observed with the other die materials does not occur with graphite even under thermal shock. Under normal conditions, the walls of a graphite die can withstand a temperature drop of several hundred degrees Celsius per cm wall thickness without difficulty.

Low Wettability: A further important property of graphite is its low wettability by liquid metals. The surface tension of liquid metal on a graphite base is very high. This prevents adhesion of the melt to the walls of the die.

Self-Lubrication: During withdrawal of cast profile the favorable tribological properties of graphite, in particular its high capacity of self –lubrication, play an important part. This allows for minimal wall friction, permitting unhindered sliding and smooth withdrawal of hollow or solid cast profiles .For graphite dies, the installation position is unimportant, so that they are suitable for use either vertically or horizontally.

Service Life of the Dies

As a result of its chemical and physical properties, graphite is an ideal die material .In spite of this it must be borne in mind that at high temperatures graphite does dissolve in certain molten metals forming carbides.

These reactions of graphite with molten metals are the main reasons for die wear. The reactivity is dependent on the wettability of graphite by the melt.

A measurement of wettability is the angle formed between graphite and a liquid metal droplet .The wettability of graphite by the grey cast iron is unfortunately relatively good and increases with increasing temperature. Another critical element is nickel. Alloys with high nickel content (>6%) almost completely wet graphite after a long contact time. Copper, with a graphite /drop angle of 160 degrees is very slow to react.

Further factors influencing die wear are the:

Draw speed
The contact time between the graphite die and the melt should be as short as possible such that the cast does not break.

Cooling system
The important influential factor on the heat transfer in the system are:

- The heat transfer from the hot cast to the die walls.
- The heat transfer from the graphite die to the primary cooler with account taken of the air gap.
- The heat transfer from the cooler, usually copper to the cooling water temperature.

Forms supplied :

Graphite COVA supplies continuous casting graphite either finally machined according to customer's drawing or as semi-fabricated graphite in shapes of round blocks or rectangular plates. Semi-fabricated graphite can be delivered according to customer's request unmachined or rough-turned. The separate data sheet-enclosed or available on request –informs of the technical data and the available dimensions of the different graphite grades.

Workability:

In the manufacturing of die with cylindrical , rectangular or U-shaped profiles ,it is a great advantage that the graphite can be machined relatively easy. In the instructions for machining, which we will gladly supply on request ,there is detailed advice on drilling , turning, milling and polishing etc..

Recommendations for the use of Graphite COVA Casting Dies :

In close collaboration with designers and users of continuous casting plants optimised graphite grades have been developed. The favourable combination of the properties of these grades enables practically all the metals used in continuous casting to be cast economically .General suggestions without obligation for use of the various graphite grades are given in a table provided as an appendix or on demand.
Various graphite grades are suitable for the manufacture of cores used in the casting of hollow profiles.

Other items: Graphite Cova also supplies graphite heating rods, contacts and Crucibles . Any other parts as requested by customer are also manufactured as per drawing.

Popular Grades:

Extruded Graphite–CCF/XN & CCF/XNX

Isostatic Graphite

B613XN/M -Mainly for Dies Cast Iron
B640XN -Mainly for Dies Copper & alloys
B645XN -Mainly for Dies for casting aluminium rings
B651XN -Mainly for Dies Copper & alloys
B654XN -Mainly for Dies Copper & alloys
B620DXT -Mainly demanding applications

Contact us :

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