

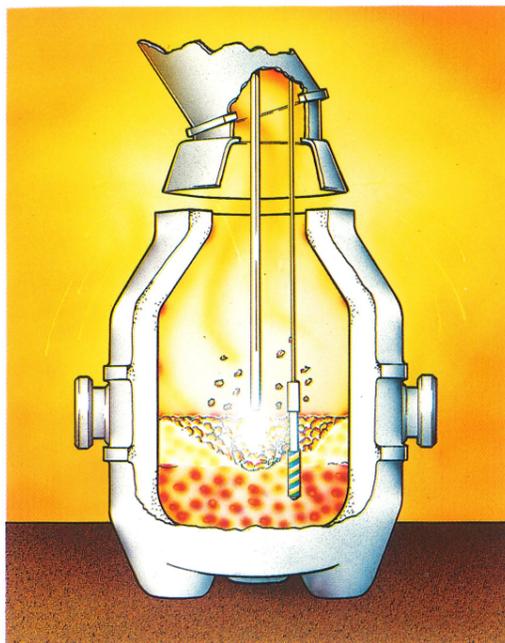
Quick and reliable steel production with help from Combi-Sensor

Fast and Accurate Analysis

Mekinor Metall has many years of experience in the development, production and use of sub-lance sensor systems and today offers a complete range of sensors for use in LD converters. Mekinor Metall sensors are manufactured to the high standards demanded by the steel industry and are supported by a quality system documented in accordance with ISO 9001. All the Combi-Sensors measure bath temperature, carbon content of the melt and collect a "dual thickness" (DT) steel sample for spectroscopic analysis.

The Combi-Sensor TSC is used during the blow when the steel has a carbon content greater than 0.2%. The sensor is used to monitor the cooling curve of the steel in a special solidification chamber in the sensor itself. A process computer detects the temperature "plateau" during cooling at the point when the sample solidifies. The carbon content of the steel can be determined with extreme accuracy since the solidification temperature is proportional to the carbon content.

The Combi-Sensor TSO is used to monitor steel in the final stages of conversion or whenever a carbon content of less than 0.2 % is expected. In this case, the carbon content can be established more accurately by measuring the oxygen activity in the melt.



Higher Steel Quality at Lower Cost

Measurements in the melt can be taken directly by the sub-lance sensor which means that the converter need not be tilted to take readings. It is thus possible to lower the tapping temperature, thereby reducing energy costs and wear and tear on the converter lining. The Combi-Sensor can supply DT steel samples for conventional analysis extremely quickly. The metal captured in the sensor's solidification chamber can also be sectioned for analysis if it proves impossible to analyse the DT sample.

By continually monitoring the output from the sensor along with DT analysis, the dynamic behaviour of the

converter can be better understood by the operating personnel; more charges can be directly tapped without re-blowing; production planning becomes more reliable.

When the charge consists of a high proportion of scrap steel, the Combi-Sensor can quickly give the necessary information on carbon content and temperature required for effective processing of the melt. Again, production management is improved.

Mekinor Metall has a proven track record in the manufacture of sub-lance sensors.

The Combi-Sensors TSC and TSO are the result of many years' work and offer state of the art process control and increased profitability!

Advantages of Using Combi-Sensors

- Fewer re-blows
- Lower tapping temperature
- Increased life of converter lining
- Lower-priced charge can be used
- Steel samples can be taken without tilting the converter
- Improved profitability

Intelligent Design

The Combi-Sensor range: TSC, TSO and TSC without a DT sample collector, are of a modular design. The sensor body consists of a number of fireproof paper composite tubes giving a low total weight and flexibility when using the sensor.

All the sensors have similar operating parameters for example: immersion depth, time to collect a steel sample.

The thermocouples used in the TSC and TSO sensors have the same characteristics. This can be valuable if software compensation is carried out to obtain the "true" temperature when both TSC and TSO measurements are made during the same blow.



Sectioned Liquidus chamber and DT sample

Mekino Metall AB

Mekino Metall AB began operations in the early 1980s, developing a unique method of gravity die-casting using graphite moulds; this has become known as the Mekino Method. Today, Mekino Metall supplies precision castings made using this technique to a wide range of manufacturing companies within Scandinavia.

A range of sub-lance sensors started to be developed together with the Mekino casting method. This development has continued to date and has resulted in the current range of sub-lance sensors.

Mekino Metall provides a quality system documented in accordance with ISO 9002.

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Combi-Sensor

