



STUDY AND CHARACTERIZATION OF INCLUSIONS IN STEELS OBTAINED FROM ESR AND CONVENTIONALLY ELECTRICAL INGOT PROCESSES

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This paper fits into the general pattern of an important European project entitled: "Effect of Inclusions and Carbides in high alloy Steels and Cast Irons, under severe mechanical conditions".

The aim of this research is to establish in a quantitative and statistically justifiable way the relationship between on the one hand, the cleanliness of the steel, the amount of carbides and the microstructure of the materials, and then on the other hand their mechanical properties in service.

Regardless of the melting practice (Electro Slag Refining, Conventionally Electrical Cast Ingot, or Centrifugation processes), or the atmosphere during the melting, inclusions are present in every commercial steel product in varying amounts.

Since inclusions significantly influence properties and behavior of materials and at the same time give indications on the quality of the steel, it is quite interesting to precise their nature and their origin. This requires methods of identifying the inclusions and a knowledge of the history during steel making (Melting, Hot working, Heat treating).

This paper deals with some methods (Acid Etch Test, Optical and Scanning Electron Microscopy) proposed to identify and characterize inclusions in high alloyed steels.