FEATURES OF THE MICROSTRUCTURE AND MECHANICAL PROPERTIES FORMATION OF HEAVY PLATES WITH THICKNESS UP TO 100 MM FROM LOW CARBON MICROALLOYED STEEL AFTER THERMOMECHANICAL PROCESSING

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Abstract

Thermomechanical controlled processing (TMCP) is used in production of heavy plates of low carbon microalloyed structural steels with strength grade of S420 - S460. Final thickness of plates can be up to 100 mm and the plates are used in welded constructions such as bridges, offshore units and wind turbines. For such big final thickness TMCP can be very complicated process as it is necessary to ensure a high uniformity of mechanical properties and proper formation of final microstructure (grain refinement). During the process a number of things are to be taken into consideration, for example, unequal temperature and deformation conditions in different layers. Unequal conditions occur because of a large temperature gradient and uneven accumulation of deformation throughout the thickness of material.

Keywords: low carbon microalloyed structural steel, heavy plates, thermomechanical controlled processing, uniformity, grain refinement

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