

Brazing Operation for Aluminium Semi-Products by Heat Treatment

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Nowadays, there is an effort to increase the economic effectiveness, including manual work, from the aspect of the modernization of production technologies. The brazing operation is one of the operations requiring skills and experience and therefore, the paper deals with modern brazing technology of aluminium alloy semi-products which are heated only in the electric furnaces. Application of heat can lead to the formation of the perfect join of semi-products based on such materials as A 3004 and AA 4045. A thin layer called Clad is deposited on one component of the AA 4045 material while the mentioned thin layer is molten to the prescribed temperature in the furnace but the most important fact is that there is not occurrence of melting in relation to the base material. After cooling, Clad creates a perfect metallurgical join between the joined surfaces. The resulting microstructure corresponds to silumin alloy. The transition between silumin alloy and aluminium matrixes of the component is continuous and without any defects in the form of discontinuities or pores and this fact was confirmed by the evaluation of the microstructure. This technology is used in the production of battery coolers in electric hybrid cars. Tightness of brazed join is controlled by pressure and helium tests. Analysed cooler was suitable from the aspect of the performed testing procedures.

Keywords: cooler, aluminum alloys, silumin, brazing.

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