

# Physico-chemical study of a welding assembly of the low alloy steels

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**Abstract :** The welding is inevitable in the realization of electric centrals, several processes of welding were developed, with the extension of the branches of industry, whose choice depends on several parameters in particular the nuance of metals to be assembled, the thicknesses of parts to be welded, the position of welding, the type of preparation of parts and available energy source. The realization of the resistant high-security junctions on the severe mechanical conditions of corrosion, resistance and creep requires to make numerous study. Our study consists in making a weld on a low alloy steel, used in power plants, by using two processes in the electric arc, GTAW (Gas Tungsten Arc Welding) and SMAW (Shielded Metal Arc Welding). This joint of weld was characterized by the various techniques usually used such as, the optical microscopy, electronic microscopy with sweeping scanning (MEB) coupled with the EDS, as the mechanical characterization by the macro-hardness Vickers.

**Keywords :** welding, GTAW and SMAW, physico-chemical, element of addition, low alloy steel, Metallography, SEM.