**Effect of Welding Processes and Heat input on Corrosion behavior of 409M Ferritic Stainless Steel**

Sachin P. Ambade1\*, Awanikumar P.Patil2, Anand Sharma1, Yogesh M. Puri3

1Department of Mechanical Engineering, YCCE, Nagpur

2Department of Metallurgical & Material Engineering, VNIT, Nagpur

3Department of Mechanical Engineering, VNIT, Nagpur

Email : sachinamb2@rediffmail.com

**Abstract**

In the present work, 409M Ferritic stainless steel is welded by shielded metal arc welding (SMAW), gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW) with welding current 90A, 100A and 110A. Six mm thick plates were used as base material and single V-Butt joint was prepared for welding. Single pass welding was applied. Microstructures in the transverse section were observed for base metal, HAZ and weld joint. Corrosion rate of welded joints have been evaluated by weight loss method in sodium chloride (NaCl) solution. From this investigation it is found that, corrosion rate of welded joint is more than the base metal. It is also found that corrosion rate increases on increasing welding current. It is observed that corrosion rate is more in GMAW than SMAW and GTAW. Results are discussed in the light of microstructure. Increased corrosion rate is attributed to welded structure, formation of Heat Affected Zone (HAZ) due to heating during welding.

Keywords: - 409M FSS, SMAW, GMAW, GTAW, Heat input, Corrosion rate