
FROM THE EDITOR'S DESK

The quest for materials with greater mechanical and resistance properties combined with fabricability, which are to be used in conjunction with new-generation welding hardwares for achieving higher productivity and economy, has given rise to multi-disciplinary research programmes in the industry. This is a must. Numerous statistics indicate the lack of relationship between production volume, cost and R&D expenditure in all industrial sectors. In the global R&D scenario India's share remains abysmally low. This concerns us all. In the market place, we can only compete on the basis of quality for quality with the support of planned R&D, and not by borrowing foreign technology for ever. We know it all !

However, one of the materials, the martensitic stainless steel of CA-GNM variety, is extensively used in the manufacture of high performance pumps, impellers and turbine components. This material, in tempered martensitic form, characteristically withstands wear and tear under service conditions. Welding of this material sample by SMAW and TIG processes, with PWHT thereafter, and assessment of structure-properties relationship were carried out with procedural meticulousness by M. K. Sharma et al as reported in their paper "Structure-Properties Correlation in Welded CA-GNM Stainless Steel". The authors conformed to welding parameters generally in use, and have characterised the end product : the weldment as a whole including the HAZ. Hardness values were related across the weldment for evaluating structure-property relationship. The three dimensional relationship, within limits (thickness direction), would be of interest for formability.

Ultra high-strength materials such as Hy-100, AISI-4340 (& 4130) and maraging steels are being used to satisfy high strength/weight ratio demand criteria. These materials' good fabricability is also a factor for the demand. However, post-weld solidification cracking in these materials remains a problem to be tackled. In their paper "Solidification cracking studies on Steel", the authors T. Mohandas et al have compared three different steels, as mentioned above, after conventional GTA and pulse mode GTA for solidification cracking. Observed tendency to cracking has been explained on the basis of possible differences in the weld thermal history between the two processes used in their work.

Author B. N. Nandan's paper "Health Hazards in Welding Application due to Fumes and Gases and its control" engages our attention for the thoughts contained in it. The author has examined the broad chemistry of the choking fumes and particles, physics of the volatile substances and mechanics of inhalation of the micron size particulates in a lucid manner. Generally health hazards are present in all industrial practices. Some are within the means of our industry to control. The author's approach is for attaining the means for controlling all kinds of hazards.

Resistance spot welding process is widely used in automobile and sheet joining industries. For fast and accurate control of the process, suitable gadgetry is employed to automatically monitor the welding and the quality of the weld while joining is in progress. In their paper "Study of Dynamic Resistance Based Controllers for Resistance Spot Welding Process", the authors, Madhubala et al have assessed the dynamic resistance based controllers namely (1) Proportional Integral Controller and (2) Fuzzy logic controllers under different external disturbances. Mechanical tests on the welded samples were carried out to judge the quality of the spot-welded joints. It emerged clearly that dynamic resistance is convenient to measure and the controllers based on dynamic resistance (resistance across the feying two metal surfaces) provide sound spot welding. This is a very welcome study particularly for those concerned with joining of sheet metals.

Automation in welding is being continuously upgraded for increase in productivity, reducing cost and less work-fatigue. It is an encouraging thought that any automated welding process also takes greater care to reduce health hazards. Authors B. Jaiganesh et al, in their paper "Consumables for FCAW-an Overview", have critically viewed processes such as SMAW, GMAW and SAW while elaborating advantages in using the FCAW process for several applications. At the outset the authors have illustrated the Advantages and Disadvantages of the FCAW process in a Table. With growing interest in the FCAW process, manufacturers are trying to keep pace with the demand for different consumable specifications thus making the selection of the consumables for specific application possible. This paper which could be helpful to the users for selection of consumables, also highlights some of the process variables.

In conclusion, readers are reminded of our President, Mr. M. K. Mittal's speech at the AGM of the IIW on 3rd March when he said that it would be a very good idea for the IWJ to start a page dedicated to indigenous developments in welding technology. We earnestly request your help in producing this beneficial page.

Thank you,

Dr. P. Majumdar

— Editor