

Self-shielded arc welding

By Dr. Tad Boniszewski

Abington Publishing,
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association with The Welding
Institute, Cambridge, England UK
222 pages-1992.

To be precise this is not a book but a treatise on self-shielded arc welding (SSAW). The author is an authority on welding consumables, particularly welding fluxes. Therefore, I am not competent enough to review this book but however I would like to appraise the readers with the contents of this book briefly, so that any one who is interested in further details can go through the book in detail. The author indicates that the purpose of this book is to put SSAW process on the map as a distinct process in its own right and this book is for a broad readership as it deals with various aspects of this topic.

The book begins with an introduction of this process and goes on to deal with Process Metallurgy in depth, which covers particularly the effects of killing, nitrogen pick-up, core ingredients in the flux and their effects. A large

volume of data is given on these aspects including fluxing ingredients in various types of AWS A 5.20/5.29 SSAW consumables, which should give lot of useful hints for the consumable designers.

Continuing the metallurgical investigations and discussions the book then deals with the physical metallurgical aspects and the resultant properties. The subsequent chapter discusses the procedures for achieving high fracture toughness in welds, which gives practical data for the welding procedures. A separate chapter discusses the development of AWS specifications for SSAW consumables particularly A5.20 and 5.29. The book also highlights the specific advantages of SSAW in production welding and how to exploit the advantages of this process in actual jobs and lists the jobs in which this process has proved highly useful.

The book concludes with significant conclusions like

- a) The process relies on protection of molten metal by fluxing ingredients of molten metal by fluxing ingredients
- b) The oxygen content of the weld metal is very low
- c) Since the nitrogen picked up is fixed as nitride particles, the free nitrogen is much lower as compared to other arc weld metals
- d) Ideal process for outdoors and ideal for several typical applications in industry.
- e) The Al content of the weld metal does modify transformation characteristics and it is possible to get tough weld metals using suitable welding procedures.

This book was first published in 1992 and lot of progress since then has been made in SSAW process and its consumables. But I am of the opinion that this process at least in India has not made significant strides and is not being used very widely like the gas shielded flux cored wire process in spite of its merits. It is in this context, this book becomes a must read for every one associated with welding in general and SSAW process in particular so that the benefits of this process can be reaped to the maximum.

By R.RAVI

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