

Masatsu kakuhan setsugo – “Friction Stir Welding – Complete aspects of FSW”

Japan Welding Society

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It is just fifteen years ago that the Friction Stir Welding (FSW) method was proposed by TWI. Because FSW is a solid state welding method, the peak temperature reached during FSW welding is lower than the traditional welding methods. This mitigates the degradation of mechanical properties in the heat-affected zone of the welds. Moreover, FSW doesn't require a shielding gas during the joining of aluminium and its alloys. In many cases, there isn't any significant evaporation of alloying elements from the welds. FSW is an innovative process which has many applications - this book gives readers the latest information on the technology and its uses.

The book consists of two parts: academic and industrial, which are contributed by the experts of this field in Japan. Because it begins with a description of the basis of FSW and ends with the viewpoint of industry, it covers almost the whole field of FSW, with much content, covered in a logical order. The book should therefore be useful not only to beginners in the subject, but also to scientists in universities or managers in factories to deal with their questions about FSW.

It is well known that FSW weldments can be inconsistent in a direction perpendicular to that of welding, because of the heat and plastic strain generated during welding. It is quite important, therefore, to discover the weakest regions in order to properly assess the mechanical properties. This is nicely demonstrated in Chapter 3, which clarifies the problem using three physical parameters as follows: whether a base metal is annealed or mechanically produced, what the strengthening method of the base metal is, and the nature of the welding conditions. I believe that such systematic explanations will help readers, even beginners of this field, to understand the science of FSW.

One slight difficulty is that the book has a broad coverage and hence is limited in the detail necessary to deal with all the issues. However, there are appropriate sets of references provided for further reading. The other is that this book is written in Japanese! An English version is expected in the not too distant future. But, my overwhelming impression is that the book is well produced and would fulfil many intellectual requirements.

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