Kobe Steel's Research and Development in Welding Consumables, Robotic Welding System and Welding Process

Welding and joining using an arc as the heat source is a technique absolutely necessary for constructing ships, bridges, construction machines, building structures, offshore structures, transport, boilers, and reactors. Kobe Steel is developing arc welding and joining technology for ferrous and non-ferrous materials. 

Kobe Steel has been using advanced technology to develop energy-related products. These fall into two categories. One is a heat exchanger typified by the LNG vaporizer type, and the other is a rotating machines for, related products. These fall into two categories. One is a heat exchanger as another example, refrigerators. This issue introduces the latest technologies in the field.

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A high-intensity X-ray imaging apparatus was used to observe the blowhole formation phenomenon in the GMAW (Gas Metal Arc Welding) of galvanized steel sheet. Fig.1 is an example of a still image. The moving images clearly show the growth behavior of blowholes caused by zinc vapor from the root of the overlapped plate. The effects of wire and shielding gas composition and the current waveform on the blowhole formation phenomenon were understood by using this apparatus. As a result, a new GMAW process “J-Solution” has been developed for the welding of galvanized steel sheet.

The photos on the left side of the cover shows welding robots that contributes to welding automation and improves equipment - to meet the needs of customers.

The photo in the lower right is the small-scale unit for a binary-cycle-power-generation system. These units can utilize exchanger (DCHE) small channels. The plates are diffusion bonded to realize the same level of structure of plates made of stainless steel or some other materials with high strength as the base materials, making the DCHE excellently resistant despite its high strength.

The upper right photo is a radial turbine power generation system.

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