Details of Technology

Name of Technology	Diffusion joining technology between cast iron and heterogeneous materials	Metal
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Key words	cast iron, heterogeneous material, diffusion joining	

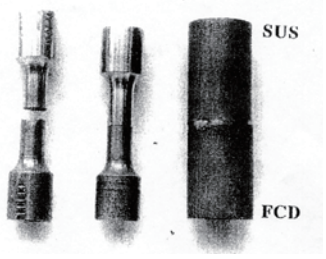
What kind of technology is this?

Outline

Using the diffusion joining method, it becomes possible to join cast iron and heterogeneous materials such as soft steel together, which is generally difficult to achieve.
The important point and features are as follows:
***Selection of insert materials**
***No formation of chill structure**
***No deformation, no formation of burrs after joining**
***High dimensional accuracy in joining**

In the automobile industry, demands for energy saving, high performance and weight reduction have been growing stronger. In particular, demands for the reduction in the wall thickness and weight of cast iron components are high. Therefore, it is necessary to make composite components by joining cast iron and heterogeneous materials together.

In this study, using the diffusion joining method as one of solid-phase joining methods, the development of a joining method between spheroidal graphite cast iron and heterogeneous metals, in which no chill structure was formed, was attempted. The diffusion joining method is a joining method based on the use of the diffusion of atoms. By placing an insert material in the interface between spheroidal graphite cast iron and copper alloy or stainless steel, the diffusion joining method was applied for the joining of those two different materials. As a result, joining with no chill structure was achieved.



What are its applications?

It becomes possible to manufacture composite mechanical components by joining cast iron and heterogeneous materials such as stainless steel together.

Related patents	
Related materials	Journal of Japan Foundry Engineering Society. Vol. 68, No. 11, 956-962 (1996) Imono. Vo. 67, No. 5, 336-341 (1995) Imono. Vo. 66, No. 5, 338-344 (1994)

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