Details of Technology



Name of Technology	TIG welding technology between cast iron and heterogeneous materials	Metal
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Key words	cast iron, heterogeneous material, TIG welding, inocu welding rod	ulant coated
What kind of technology is this?		
With TIG welding using inoculant coated welding rod, the joining between cast iron and soft steel, which is generally difficult to achieve, becomes possible. The features are as follows: *Use of inoculant coated welding rod *No formation of chill structure *Joining between fractured part and base material becomes possible.		

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 TIG welding, the development of a joining method between spheroidal graphite cast iron and heterogeneous metals such as soft steel or stainless steel, in which no brittle chill structure was formed, was attempted. By using cast iron welding rod coated with inoculant that was used in the casting of spheroidal graphite cast iron, a joining method in which no chill structure was formed between the welded metal section and base metal was successfully developed.





Fig. Developed welding method

What are its applications?

It becomes possible to manufacture composite components such as exhaust pipes for cars by joining cast iron component such as exhaust manifold and stainless steel together. No flanges to be tightened with bolts are required, contributing to the reduction of fuel consumption due to lighter weight and lowering the environmental burden.

Related patents	Japanese patent laid-open Hei No. 10-258389
Related materials	Journal of Japan Foundry Engineering Society. Vol. 72, No. 7, 478-483 (2000) Journal of Japan Foundry Engineering Society. Vol.70, No.12, 860-865 (1998)