Details of Technology

Name of Technology	Joining technology by enclosing casting between cast iron and heterogeneous materials	Metal
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Key words	cast iron, heterogeneous material, enclosing casting	

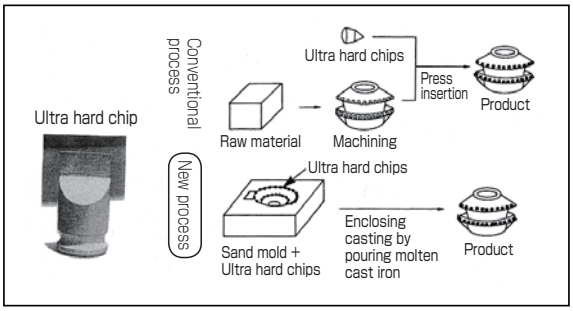
What kind of technology is this?

Outline

Using the enclosing-casting joining method, joining between cast iron and heterogeneous materials becomes possible.
***Development of joining technology with simple process and low joining costs**
***Joining between fractured part and base material becomes possible.**

Cutter cone is a cutting tool attached to the head of a tunnel-drilling machine. In the past, it was manufactured by first machining raw material to have a cutter cone shape, then boring holes in it and finally pressing ultra hard chips into the holes. In this process, many inserting holes need to be bored according to the size of chips, requiring time-consuming work, and another problem was that those chips came off during the drilling operation in tunnel. For this reason, the development of a simpler and cheaper joining method has been requested.

In this study, using the enclosing casting joining technology, the development of a joining technology that enabled to realize an integral molding of spheroidal graphite cast iron and ultra hard chips was attempted. In this newly developed method, ultra hard chips are first set in a mold in advance and then molten spheroidal graphite cast iron is poured into the mold, causing the adhesion between the chips and the molten cast iron. That is, the method is quite simple but very effective.



Applicable to the cutting tool of tunnel drilling machine

What are its applications?

Besides its application to cutter cones, the technology is expected to apply for various car and machine components.

Related patents	
Related materials	New Industry Creation Technical Research Development Project Result Report: Edited by Iwate Industrial Promotion Center (2002)

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