Details of Technology

Name of Technology	Manufacturing technology of high-strength flake graphite cast iron from recycled high-manganese steel scrap	Metal
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Key words	high-manganese steel, scrap, recycle, high strength, flake graphite cast iron	

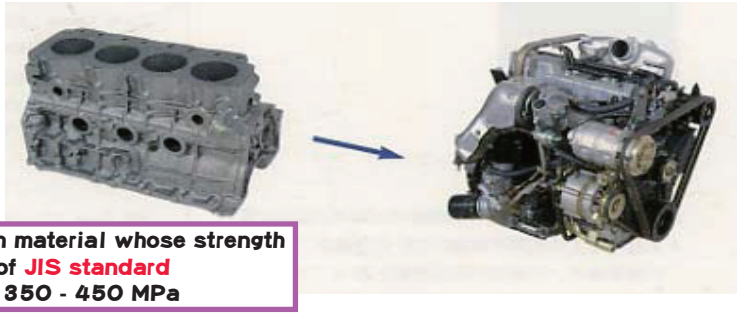
What kind of technology is this?

Outline

Technology to manufacture high-strength flake graphite cast iron whose strength far exceeds that of JIS standard by using high-manganese steel scrap generated in large amounts in the pressing process for car bodies

In Japan, to ensure the safety of passengers in the collision of automobiles, the use of high-strength, lightweight high-manganese steel has begun several years ago. In the future, the use of high-manganese (Mn) steel is expected to increase significantly. Scrap metals generated in the pressing process of car bodies are recycled to the foundry where they are used as raw materials for cylinder blocks, cylinder heads, etc. However, as high-manganese steel contains a large amount of manganese, if it is used directly as raw material for cast iron, the hardening of material called "chill" occurs to the cast iron. For this reason, it is necessary to develop a new manufacturing method of high-strength but less harder (with good workability) cast iron by effectively using high-manganese steel as it is.

This is a manufacturing technology of flake graphite cast iron having a strength of 350 - 450 MPa or higher without developing the brittle chill structure by using high-manganese steel scraps and alloying elements such as rare earth elements (RE), chromium (Cr), copper (Cu) and others.



New high-strength material whose strength far exceeds that of JIS standard
Tensile strength: 350 - 450 MPa

What are its applications?

The development of this high-strength flake graphite cast iron makes it possible to reduce the weight of cast iron products. The high-strength flake graphite cast iron can be used for manufacturing the cylinder blocks and cylinder heads of diesel engines. In this method, it is unnecessary to remove excessive manganese from high-manganese steel scraps before use, and therefore the effective recycle of high-manganese steel scraps becomes possible, with the expectation that this method will be applied to almost every cast iron product.

Related patents	Japanese patent laid-open No. 2003-171729 Japanese patent laid-open Hei No. 10-258389
Related materials	Journal of Japan Foundry Engineering Society. Vol. 75, No. 11, 743-748 (2003) Journal of Japan Foundry Engineering Society. Vol. 74, No. 9, 578-583 (2002) Journal of Japan Foundry Engineering Society. Vol. 71, No. 5, 314-320 (1999)

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