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ATIKOKAN PROGRESS

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Next-generation iron-making process produces high-purity iron nuggets World's first ITmk3 operation starts production in Minnesota

(Editor's note: Bending Lake Iron Group wants to build a "carbon copy" of the Hoyt Lakes plant described here at the Steep Rock mine site. The company has secured rights to the process from Kobe Steel.)

Press Release

Kobe Steel, Ltd. of Japan has announced the world's first commercial plan using the ITmk3® Process successfully began production of iron nuggets in the United States on January 12 at 6 pm CST. The next-generation ITmk3 Process was developed by Kobe Steel.

Kobe Steel and Steel Dynamics, Inc. (or SDI) constructed the plant at Hoyt Lakes, Minnesota. Production of iron nuggets, which are used in steelmaking, will gradually increase in accordance with operating conditions and is anticipated to reach the facility's annual design capacity of 500,000 metric tons in mind-2010.

ITmk3 is an innovative, next-generation iron-making process totally different in concept from the traditional blast furnace method. Since the discovery of the phenomenon in 1944, the process has undergone many stages of development resulting in the start of production of a commercial plant. The ITmk3 Process is noted for the following characteristics:

1. High-grade iron nuggets can be produced in an extremely short time of about 10 minutes.
2. The ITmk3 Process can use lower-cost iron ore fines and steaming coal, which are difficult to use in blast furnace iron-making.
3. In comparison to pig iron produced in a blast furnace, the production of iron nuggets using the ITmk3 Process emits about 20% less carbon dioxide due to its good energy efficiency.

With the start up of the commercial ITmk3 plant, Kobe Steel is moving quickly to popularize the ITmk3 Process in world markets. As a pioneer of this technology, Kobe Steel is working on iron nugget projects in North America, Vietnam, India, Russia, Australia and other countries, a cumulative production capacity of several million tons of iron nuggets.

Over the medium-to long-term future, steel demand is anticipated to continue increasing. Accordingly, electric-arc furnace steelmakers are faced with a growing need for cold iron units, namely clean iron units such as blast-furnace pig iron and direct reduced iron. Kobe Steel believes the ITmk3 Process is one of the most effective ways to meet this new demand.

The Itmk3 Process, with its lower carbon-dioxide emissions and capital investment, is highly suitable for growing environmentally friendly steel industries in developing countries. Moreover, the ITmk3 Process can use cheaper low-grade iron ore and coal, which are difficult to use in blast furnace iron-making, to keep raw material costs down for steel and mining companies. Along

with these advantages, the real value of the ITmk3 Process is that it produces high-grade iron nuggets with better meltability than blast-furnace pig iron when used in the steelmaking stage.

For mining companies, the ITmk3 Process enables them to produce iron nuggets to add value to their natural resources. As a result, mining companies can expand their markets to include electric-arc furnace steelmakers, in addition to their traditional customers, blast furnace steelmakers.

Grappling with environmental issues, the world steel industry faces a tight raw material market and higher costs due to the sharp increase in steel production. Under these conditions, the ITmk3 Process is an attractive alternative. Kobe Steel, with subsidiary Midrex Technologies, Inc., is the world's leader in direct reduction processes. Its MIDREX® Direct Reduction Process is used to produce nearly 60% of the world's direct reduced iron. As a member of the world steel industry, Kobe Steel has now commercialized ITmk3, a revolutionary iron-making process that, in step with the present age, contributes to society.

Project background

Following the completion of trials in July 2004 conducted at a demonstration plant in Minnesota, Kobe Steel and SDI formed a joint venture, Mesabi Nugget Delaware, LLC, to operate the commercial-scale plant. Full-scale construction of the facility began in November 2007. Mesabi Nugget Delaware will operate the ITmk3 Plant and sell the iron nuggets. Kobe Steel provided the ITmk3 process license, engineering services, primary production equipment, and technical support. The Mesabi Nugget plant will provide further data on plant and process operation.

SDI plans to use the nuggets produced by the Minnesota ITmk3 Plant in its steel mills.

The ITmk3 Process

1. Pulverized iron ore and pulverized coal are agglomerated into ball-shaped pellets.
2. The pellets are fed into a rotary hearth furnace. Reduction, melting and slag separation occur in about 10 minutes.
3. The resulting product is high-grade iron nuggets.

Advantages of the ITmk3 Process

1. In comparison to pig iron produced in a blast furnace, the production of iron nuggets using the ITmk3 Process emits about 20% less carbon dioxide due to its good energy efficiency.
2. Raw material pre-treatment facilities (coke ovens, sintering plants and pellet plants) are unnecessary.
3. ITmk3 is highly suitable for mining sites and can be profitable for even small mines.
4. Operation is easy and production adjustments are also easy.

Features of the Iron Nuggets

1. Iron nuggets are slag-free, high purity iron units of the same quality as pig iron. They have a metallic iron content of 96% to 97%.
2. Iron nuggets improve the productivity and energy efficiency of electric arc furnaces (EAFs). With better meltability than blast-furnace pig iron, iron nuggets can be continuously fed into EAFs.
3. Iron nuggets are easy to transport and handle. High in density, they do not re-oxidize or generate fines.

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