

# Hitachi Metals, Ltd. – The Magnet Industry Newsmaker

*By* Walter T. Benecki

In 1983, NdFeB rare earth permanent magnets were invented independently by two teams, one headed by Dr. Masato Sagawa of Sumitomo Special Metals and the other by Dr. John Croat of General Motors (now Magnequench). In the late 1980's, the first legal issue regarding NdFeB magnets surfaced between Sumitomo and GM. The two companies settled their differences early, with Magnequench having the rights to bonded and hot pressed NdFeB, while Sumitomo obtained domain over the sintered version of the remarkable new magnet material.

So here we are....thirty years after the invention of NdFeB, and today, Hitachi Metals (the successor to Sumitomo Special Metals) continues to pursue patent and licensing issues related to sintered NdFeB magnets. And there is a lot at stake.

## **Hitachi Metals, Ltd. Hits the Limelight**

In December, 2011 Hitachi Metals first made the following announcement:

**“Tokyo, Japan, December 21, 2011—** Hitachi Metals, Ltd. has today announced plans to construct a new plant in the United States that will produce neodymium magnets designed for use in hybrid and electric vehicles. The facility will be located at Hitachi Metals North Carolina, Ltd., the company's magnet manufacturing base in the United States. The launch of this neodymium magnet production facility will bolster the ability of Hitachi Metals to satisfy the expanding demand projected for this type of magnet not only in the United States, but throughout the rest of North America and Europe as well.”

The above announcement was well received by many industry participants and magnet users because it represented the first domestic production of sintered NdFeB magnets since the US magnet industry, under intense competitive pressures for Chinese magnet producers, was forced to shut down their production operations more than ten years ago. Hitachi's new NdFeB magnet operation in North Carolina has now been in operation for about six months.

Then, in August of 2012, the permanent magnet community was rocked with the following announcement:

**“Tokyo, Japan, August 20, 2012 –**Hitachi Metals, Ltd. announced today that on August 17, 2012, it filed a formal complaint with the United States International Trade Commission (ITC) against 29 manufacturers and importers of sintered rare earth magnets and products containing sintered rare earth magnets. Hitachi Metals seeks exclusion orders from the ITC prohibiting the entry into the United States of unlicensed, infringing sintered rare earth magnets and products containing those magnets and cease and desist orders prohibiting certain activity within the United States.”

## **The Battle Begins**

In the August 20 announcement, Hitachi listed four issued US patents (Patent Nos. 6,461,565; 6,491,765; 6,527,874 and 6,537,385) which they considered key to their position. These patents were filed during the period March, 2001 - July, 2002 and have a lifespan of 20 years.

At least three of these patents are “process patents” that detail a wide variety of process claims which Hitachi argued were essential to the production of high-performance sintered NdFeB magnets. It is worth noting, however, that the ‘874 patent does have a composition of matter claim. In addition, Hitachi no longer referenced the “651 patent” (which expires in July 2014) under which their previous licensees were authorized to produce sintered NdFeB magnets.

One assertion reportedly made by Hitachi’s lawyers was that Hitachi could determine, by examining a finished magnet, whether it was manufactured in violation of the Hitachi patents. A number of technical magnet experts (with much more technical savvy than this writer) were skeptical of this claim, particularly as it related to the “process” patents.

Shortly after the ITC filing, a number of the 29 manufacturers, distributors and users of NdFeB magnets quickly “settled” with Hitachi. The details of these settlement agreements are not available to the public, but many industry followers have speculated that some of the early settlements involved companies who did not have the financial capability to engage in the anticipated legal process.

As the months wore on, the five Chinese companies who had originally been Hitachi licensees gradually agreed to new licensing agreements that permitted them to manufacture and sell NdFeB magnets under the newly cited Hitachi patents. As the traditional licensees began announcing their new agreements with Hitachi, the momentum clearly began to favor Hitachi.

However, some of the “named companies” who did not settle were apparently willing to launch a legal challenge to the four patents cited in Hitachi’s ITC complaint. Technical experts were lined up by both sides and a lengthy period of discovery and depositions began. It has been reported that two camps actually formed to challenge the four Hitachi patents – one group of US-based companies and a smaller group of Chinese magnet producers. Many industry experts observed that the challenge by the Chinese companies was unexpected.

A trial was scheduled for mid-June 2013 with the ITC judge presiding. Many observers not involved in the proceedings began to opine that some prior art had reportedly been discovered and speculation arose within the technical community regarding the validity of some of Hitachi’s patent claims.

## **The Battle Ends**

A few weeks prior to the June 2013 trial date, Hitachi abruptly announced that settlement agreements had been reached with nearly all the remaining companies and withdrew their petition to the ITC. In addition, three new Chinese licensees were announced – Earth Panda Magnetic Material Company, Ningbo Jinji Strong Magnetic Material Company and Yantai Zhenghai Magnetic Material Company.

## **The Apparent Winners**

On July 1, 2013 Hitachi emerged as a winner as they issued the following announcement regarding new licensees:

“1. The following manufacturers are licensed or authorized to manufacture and sell sintered rare earth magnets under certain Hitachi Metals’ patents worldwide, except Japan.

Advanced Technology & Materials Co., Ltd.

Anhui Earth-Panda Advance Magnetic Material Co., Ltd.

Beijing Jingci Magnet Co.  
Beijing Zhong Ke San Huan High-Tech Co., Ltd.  
Ningbo Jinji Strong Magnetic Material Co., Ltd.  
Ningbo Yunsheng Co., Ltd.  
The Morgan Crucible Company plc  
Thinova Magnet Co., Ltd.  
Yantai Zhenghai Magnetic Material Co., Ltd.

2. The following manufacturers are licensed to manufacture and sell sintered rare earth magnets under certain Hitachi Metals' patents worldwide, with limited rights to manufacture, sell and ship to or in China.

Shin-Etsu Chemical Co., Ltd.  
TDK Corporation

3. The following manufacturers are licensed to manufacture and sell sintered rare earth magnets under certain older Hitachi Metals' patents.

Magnetfabrik Schramberg GmbH  
Neorem Magnets Oy  
Vacuumschmelze GmbH

Hitachi Metals has not licensed nor authorized any third party to manufacture or sell sintered rare earth magnets using its Dy diffusion and Dy-saving related technology or HILOP™ (Hitachi Low Oxygen Process) technology.”

Magnet users everywhere appeared to be winners in the fact that they now had an expanded list of potential suppliers of sintered NdFeB magnets. The new licensees, in particular, are winners because they can now export product into their authorized geographic areas.

Molycorp and Lynas should also benefit in the sense that applications for NdFeB magnets should continue to grow and provide demand for their rare earth oxides.

And let there be no doubt regarding the ultimate beneficiaries of Hitachi's ITC action – the lawyers made millions!

### **The Apparent Losers**

Many of those companies named in the August 2012 ITC petition continue to claim that they were not violating the Hitachi licensing agreements in effect entering 2012. To the extent that this was true, they were certainly victims of a “random shooting”. It has never been explained why some companies were selected to be “named” and others were spared the embarrassment and cost, even though industry participants suspected many others of purchasing unlicensed material. This reminded me of the old adage I was taught as a young man, “Nobody ever said it had to be fair”.

Chinese producers without licensing privileges certainly were disappointed that a successful legal challenge to Hitachi's patent claims did not materialize. That would have meant that, effective in mid-2014, the world market would have been available to all of them.

Hitachi was considered a loser to the extent that they did not “go to the mat” and successfully defend their four patents in the courtroom. Some experts opined that Hitachi had concern that a number of their patent claims might not stand up if they went to trial. That strategic withdrawal did leave the door open for someone to dispute those patents in the future. And then it happened...

### **The Battle Continues...**

On August 8, 2013, The China Daily newspaper made the following blockbuster announcement:

#### **China Rare Earth Alliance to Fight Japan's Patent Barrier (Excerpts)**

“A dozen Chinese rare earth companies have formed an industrial alliance to sue Japan’s Hitachi Metals for holding invalid patents and infringing patent rights of Chinese companies. The legal process could start in early September in the United States and China.

Sun Baoyu, president of Shenyang General Magnetic Co. and head of the coalition, said Hitachi Metals no longer has any right to claim the patents. He said the Japanese company’s patent extension, which he thinks is invalid, has hindered the market expansion of Chinese rare earth manufacturers. “Hitachi Metals’ action has severely affected China’s rare earth industry, especially for the exports of China’s downstream rare earth products,” Sun said.

Zhao Hu, lawyer and partner of Beijing’s Eastbright Law Firm, said Hitachi Metals’ patent extension blocks technological progress. “Based on Chinese law, no patent extension is allowed. All patents expire after 20 years. Internationally, patent extension can happen based only on reasonable, effective and strong causes,” which Zhao thinks do not apply in Hitachi Metals’ case.

Gao Yunhu, chief of the Rare Earth Office under the Ministry of Industry and Information Technology, said the government will provide assistance to the Chinese companies if asked. “We respect the intellectual property rights. But what Hitachi Metals has done is to set up trade barriers,” he said. So far, each member company of the alliance has paid US\$1.5 million to cover possible costs of the lawsuits. Chinese and US legal teams will act on behalf of the Chinese companies in the courts of the two countries.”

This legal battle will likely go on for years. The Chinese consortium has apparently established an \$18 million war chest and will potentially have the backing of the Chinese government! It’s difficult to predict the outcome, other than the fact that some outrageous legal bills will undoubtedly be racked up! In fact, one industry participant has reportedly speculated that \$18 million “May not be enough”.

### **The Future**

The lineups for the coming legal battle are impressive. On one side line we have twelve Chinese NdFeB magnet producers backed by the Chinese government. On the other side we have Hitachi Metals supported with the licensing income from fourteen newly-signed licensees.

We will have to wait for the outcome of this patent contest. As noted earlier, some have questioned certain of the Hitachi patent claims, but we have not heard anyone predict that all four patents would be determined to be invalid. This legal battle will take considerable

time...probably years to resolve. And it would probably be dangerous to speculate on the final outcome.

It is possible that some unlicensed Chinese magnet producers may begin to claim that their manufacturing processes do not infringe Hitachi's newest patent claims, particularly for mid-range performance NdFeB magnets. Hitachi will undoubtedly counter by suggesting that such magnets are "inferior". Such initiatives by unlicensed Chinese producers could complicate the future magnet sourcing landscape.

Market demand (and production) for NdFeB magnets should continue to grow at an average pace of 4-6% per year and this should benefit both magnet producers and users.

As NdFeB magnet demand continues to grow, rare earth raw material prices should stabilize and may exhibit a gradual upward trend. However, future rare earth price increases will likely be tempered as new suppliers of REO's, especially Lynas and Molycorp, fully come on stream.

It is worthy a final note that all of the above activities have no impact regarding Magnequench NdFeB powders utilized for the production of compression and injection molded magnets. These powders currently enjoy basic patent coverage through mid-2014. Magnequench is now owned by Molycorp and they do have additional patent coverage for many of their products through 2017-2025.

**About the Author** - *Walter T. Benecki was president of Arnold Engineering (now Arnold Magnetic Technologies) from 1989-2001 and served as president of the Magnetic Materials Producers Association from 1994-1997. In 2001, Walt established his consultancy serving the global magnetics industry. He is author of "The Global Permanent Magnet Industry" published in 2012. Walt has been a principle or strategic advisor for more than fifteen successful acquisitions, dispositions or joint ventures within the global magnetics industry. For additional information, visit: [www.waltbenecki.com](http://www.waltbenecki.com).*



**Published in Magnetics Business & Technology Magazine • Winter Issue 2013**