

DIRECT FROM MIDREX

3RD QUARTER 2007

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TECHNOLOGIES, INC.



Commentary

We've Come A Long Way

The growth of MIDREX® Iron production has been truly remarkable over the years. In 2006, MIDREX® Plants produced nearly 36 million tons of DRI. In July of this year, cumulative output of MIDREX Iron surpassed 500 million tons. In the article "Lawnmower to the Stars," Robert Hunter takes a light-hearted look at the magnitude of this achievement.

The 500-million-ton milestone has special significance for me personally, since my career coincides with the growth of the Midrex family. When I started as a mechanical design engineer on the old drawing board in 1974, there were only four MIDREX Plants operating: Oregon Steel Mills, Georgetown Steel, Hamburger Stahlwerke and Sidbec I. The total rated capacity of those plants was only 1.5 million tons per year and the cumulative output of MIDREX Iron to that time was only 2.2 million tons. We have gone through several waves of business, with some very bad times, but through the years, the overall growth of the business has been remarkable. Since 1969, there have been 64 MIDREX Modules built (or now under construction) in 21 countries, representing a cumulative rated capacity of 46 million tons. MIDREX Plants are now being built to produce 1.76 million tons per year of product, over ten times the capacity of the first modules at Oregon Steel. We continue to develop new technology, including hot charging of DRI to the electric furnace for productivity and energy benefits. This growth and development of our technology has been possible because of the innovation and dedication

of Midrex personnel, our MIDREX Process Licensees, our construction partners and last but certainly not least, the 24 years of consistent support from our owner, Kobe Steel, Ltd.

For now, the future still looks bright, with continued growth of the steel industry and need for metallic charge materials. Midrex plans to remain at the forefront of this exciting industry and we are now working with Kobe Steel on commercialization of coal-based technology. This includes the FASTMET®, FASTMELT® and ITmk3® Processes. These technologies are suitable for use of iron ore and also can process iron-containing wastes, so there is an environmental advantage as well.

It has been an honor for me to have played a role in the growth of Midrex over the last 33 years. I am very fortunate to have worked with so many outstanding professionals, colleagues and friends around the world. We fully expect to pass one billion tons of MIDREX Iron around the year 2015. I hope to share that moment as well.

As I said, "we've come a long way" and there is lots more to come. I'm looking forward to it!



Jim McClaskey
President & CEO

MISSION STATEMENT

Midrex Technologies, Inc. will be a leader in design and integration of solids and gas processes. We will meet or exceed performance expectations, execute projects on time, enhance existing product lines, and provide value-added design, procurement, logistics and field services to our clients. We will develop new business opportunities that will challenge our employees and maintain the economic vitality of our company. Our employees are the key to our success, and we are committed to encouraging them to grow professionally and personally.

DRI Solutions for Russian Steelmakers

By Stephen Montague, Vice President -
Commercial and Technology Development
John Koppfe, Director - Corporate Development
Midrex Technologies, Inc.

Editor's note: this paper was presented at
Metal Bulletin's Russian Steel Summit in June 2007

INTRODUCTION

From 1998-2006, world steel production via the electric arc furnace (EAF) grew by over 50 percent, as shown in Figure 1. This growth occurred because of the EAF's capital and operating cost advantages, flexibility and low environmental impact. The availability of scrap and alternate iron sources, such as direct reduced iron (DRI) and pig iron, as well as access to reasonably priced electricity, facilitated this growth.

Since DRI is an excellent EAF feedstock and about 90 percent of all DRI is used in the EAF, the dramatic rise in EAF production stimulated more DRI output. World DRI production increased from 37 million tons (Mt) in 1998 to about 60 Mt in 2006. DRI in pellet and lump form or hot briquetted iron (HBI) is an easy-to-use iron source with extremely low levels of metallic residuals. DRI and HBI enable EAF steelmakers to produce high quality flat and long products. DRI now comprises over 13 percent of the feed for EAFs worldwide and Midrex forecasts this proportion will rise to nearly 18 percent by 2015.

There are two ways for steelmakers to secure a supply of DRI. For those located in areas with inexpensive natural gas, an on-site direct reduction plant provides a secure source of low cost metallics. For those not requiring large quantities of DRI or located where natural gas is not abundant, it is possible to buy HBI or DRI on the merchant market.

ELECTRIFYING THE CIS

The CIS countries have also seen dramatic growth in EAF production since the late 1990s. As Figure 2 shows, production has more than doubled since 1998.

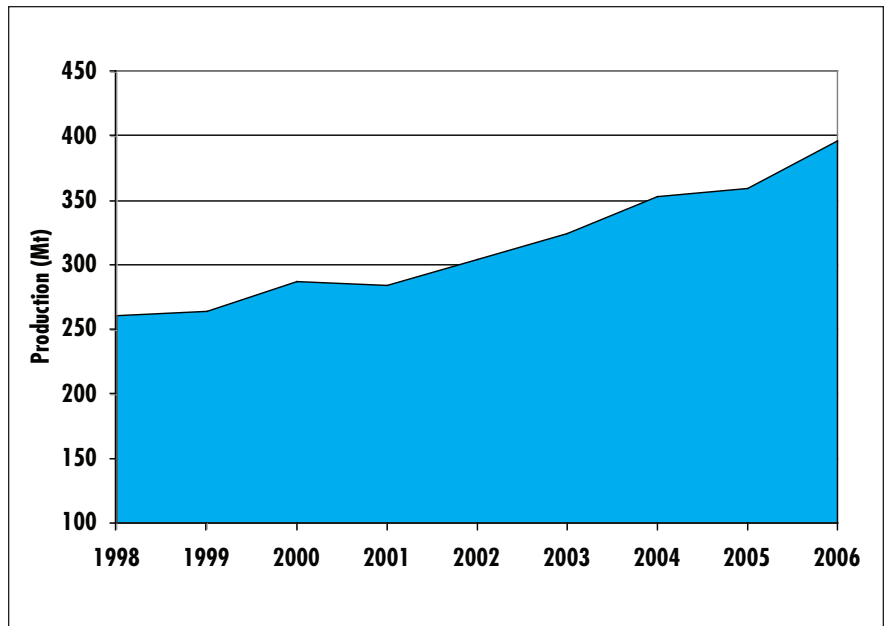


Figure 1- World EAF Steel Production

Source: IISI

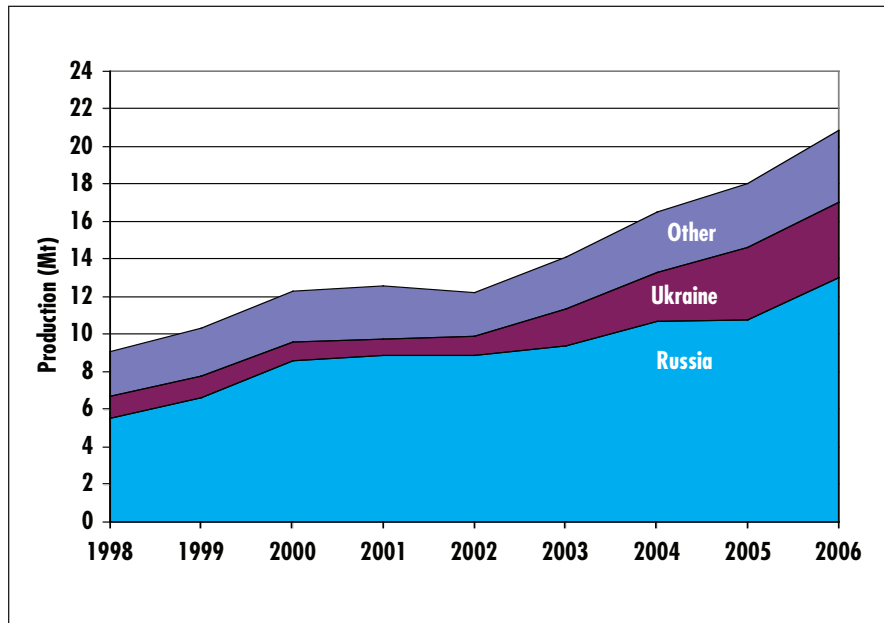


Figure 2 - CIS EAF Steel Production

Source: IISI

Mill	Capacity (Mtpy)	Start-up
Amur Metal	1.00	2007
Maxi Group	1.50	2007
MMK	0.75	2007
Novorometal	1.50	2007
TMK	0.35	2007
Yartesevo	0.22	2007
Beloretskaya	0.75	2008
Maxi Group	6.40	2008
OEMK	0.50	2008-2010
OMK	0.62	2008
Sibirsky	0.60	2008
TMK	0.50	2008
Ural Mining & Metallurgical	0.60	2008
Ural Steel	1.00	2008
Chelyabinsk	1.00	2009
Maxi Group	2.00	2009
Maxi Group	2.50	2010
Gurjevsk Metallurgical	0.50	2010
OMK	1.20	2010
Total	23.49	

Table I - Planned Russian EAF Capacity

Source: Metal Expert

	2005	2006	2007
Scrap consumption	17	20	23
Scrap exports	13	9	5-6

Table II - Russian Scrap Flows (Mt)

Source: Steel Business Briefing

The availability of scrap and low-priced electricity, plus the economic advantages of the electric furnace, facilitated this growth. As the CIS economies continue to grow, steel demand will also rise. Russia's GDP is rising at a six percent annual rate.

Russia will play a dominant role in the increase of EAF production in the CIS and steelmakers have plans for substantial new capacity through 2010. Table I lists proposed new mills.

Were all this capacity to come on-line, it would require 25-30 Mt of new metallics, either scrap, DRI/HBI or pig iron. From whence will this material come? Russia has significant scrap resources and scrap will undoubtedly play a role. Russia has been a major exporter during the last three years, as Table II shows.

As demand from EAFs continues to grow, this will put even more pressure on scrap supplies and eventually domestic scrap sources will be unable to meet the entire demand. In the Ukraine, the situation is more severe. Some observers see the Ukraine as a net importer of scrap in just two to three years, as growth in EAF production continues.

BUILDING ON STRENGTH

Russia has significant advantages for ironmaking, with tremendous reserves of iron ore and natural gas. These natural resources are the key elements for selection of the best technologies to support the country's rising steel production.

In Russia, there are proven economic iron ore reserves of 20 billion tons. Proven natural gas reserves are 47 trillion cubic meters, by far the most of any country. This is over 80 years of supply at present usage rates.

With these abundant supplies of iron ore and natural gas, the country is one of the world's lowest-cost locations for producing DRI and HBI as feedstocks for domestic and overseas EAFs. In 2006, Russia produced almost three million tons of DRI and HBI. The DRI is used at the Oskol Metallurgical Kombinat (OEMK) and the HBI is sold on the merchant market, much of it exported.

Russia is poised to greatly expand its DRI capacity for use in EAFs on site (captive use) and those in other locations (merchant sale). Metalinvest is building a second HBI plant in Gubkin (LGOK II) using MIDREX® Technology, scheduled to start up in late 2007. This will increase its HBI capacity to 2.4 Mtpy. The company has announced plans to build four more HBI modules by 2013, to give it a total capacity of over 10 Mtpy and make it the world's largest supplier of HBI. There is a need for even more direct reduction capacity to feed the growing EAF industry in Russia and to supply offshore mills. Several companies are seriously considering building direct reduction plants.

GET IT WHILE IT'S HOT

Midrex has developed a number of "solutions for steelmakers," particularly with regard to DRI form and use. A solution for merchant plants or for captive plants that may have excess product is to produce HBI, which is well-accepted in the market. MIDREX Plants worldwide now produce over five million tons

of HBI annually. Table III shows MIDREX HBI Plants in operation and under construction.

For MIDREX Plants built to supply an adjacent EAF, an excellent option is to discharge the DRI from the shaft furnace without cooling, transport it hot to the meltshop and charge it directly to the EAF at 600° C or higher. This concept holds good promise for Russian EAF steelmakers.

There are two main benefits of charging hot DRI (HDRI) to the EAF: lower electricity consumption and increased productivity. The energy savings occur because less energy is required in the EAF to heat the HDRI to melting temperature. In addition to a lower-energy requirement, it also takes less time to melt, so more heats can be made each day. This allows higher production through a given size EAF.

The rule-of-thumb is that electricity consumption can be reduced about 20 kWh/t liquid steel for each 100° C increase in HDRI charging temperature. Thus, the savings when charging at over 600° C are 120 kWh/t or more. Additional benefits of the electricity savings are reductions in electrode and refractory consumptions. Generally, electrode consumption is 0.004 kg/kWh.

The increased productivity from HDRI charging can be significant. Use of HDRI reduces the tap-to-tap time, allowing a productivity increase of up to 20 percent versus charging at ambient temperature.

There are also environmental benefits of HDRI charging. Retaining the sensible heat in the DRI rather than dissipating it to the atmosphere lowers overall emissions two ways. First, the lower electricity demand reduces power plant emissions per ton of steel produced. Second, for those mills employing carbon injection, reduced energy requirements in the EAF result in less CO₂ released. The DR/EAF combination for steelmaking produces 50 percent less CO₂ per ton of steel than the conventional blast furnace/BOF route.

Midrex has now developed three options for hot charging DRI to the EAF: HOTLINK®, a hot transport conveyor and hot transport vessels. The options are shown in Figure 3 on the following page. MIDREX Plants are commissioning or under construction for all three of these configurations.

The three options are needed to provide the flexibility of pairing a MIDREX Plant with new or existing EAFs in a variety of arrangements to suit the project requirements. For a greenfield plant in which the meltshop can be located adjacent to the MIDREX Plant, HOTLINK is the best solution because of its simplicity. If the meltshop is less than 100 meters from the MIDREX®

Plant	Country	Start-Up	Total Plant Capacity (Mtpy)
Operating			
Antara Steel Mills**	Malaysia	1984	0.65
Essar Steel I & II*	India	1990	0.88
Planta de Briquetas**	Venezuela	1990	1.00
VENPRECAR**	Venezuela	1990	0.815
Essar Steel III*	India	1992	0.44
LISSCO 3**	Libya	1997	0.65
COMSIGUA**	Venezuela	1998	1.00
Essar Steel IV*	India	2004	1.00
Essar Steel V*	India	2006	1.50
Qatar Steel II	Qatar	2007	1.50
Subtotal			9.435
Construction			
IGOK II**	Russia	2007	1.40
Lion Group*	Malaysia	2008	1.54
Shadeed*	Oman	2008	1.50
Subtotal			4.44
Total			13.875

* Also designed for HDRI production
** 100% HBI production

Table III - MIDREX HBI Plants

Shaft Furnace, a hot transport conveyor is a possibility. For locations where the meltshop is more than 100 meters from the shaft furnace, hot transport vessels are used. These vessels can be transported by rail or truck. In all three options, the DRI is charged to the EAF at 600-700° C.

Table IV shown on the following page lists the MIDREX Plants that include hot charging systems. The first was Essar Steel and there are four new plants employing the three hot charging options.

Ultimately, the most important consideration for the steelmaker is that HDRI charging increases profitability. An example shows the magnitude of the benefits. Use of HDRI at 600° C enables an increase of 20 percent in liquid steel throughput, plus a savings of \$8/ton in liquid steel production cost. Assuming a steel profit margin of \$150/t, the combination of the two benefits provides an increased steel mill profit of \$54 million per year.

CONCLUSION

Electric arc furnace steelmaking continues to grow worldwide because of its capital and operating cost advantages, flexibility and low environmental impact. The rise in EAF steelmaking in the CIS countries has been especially dramatic, with production doubling from 1998-2006. In Russia, there are plans for a substantial increase in EAF capacity, but there is not enough scrap to feed this growth. This shortfall can be met by

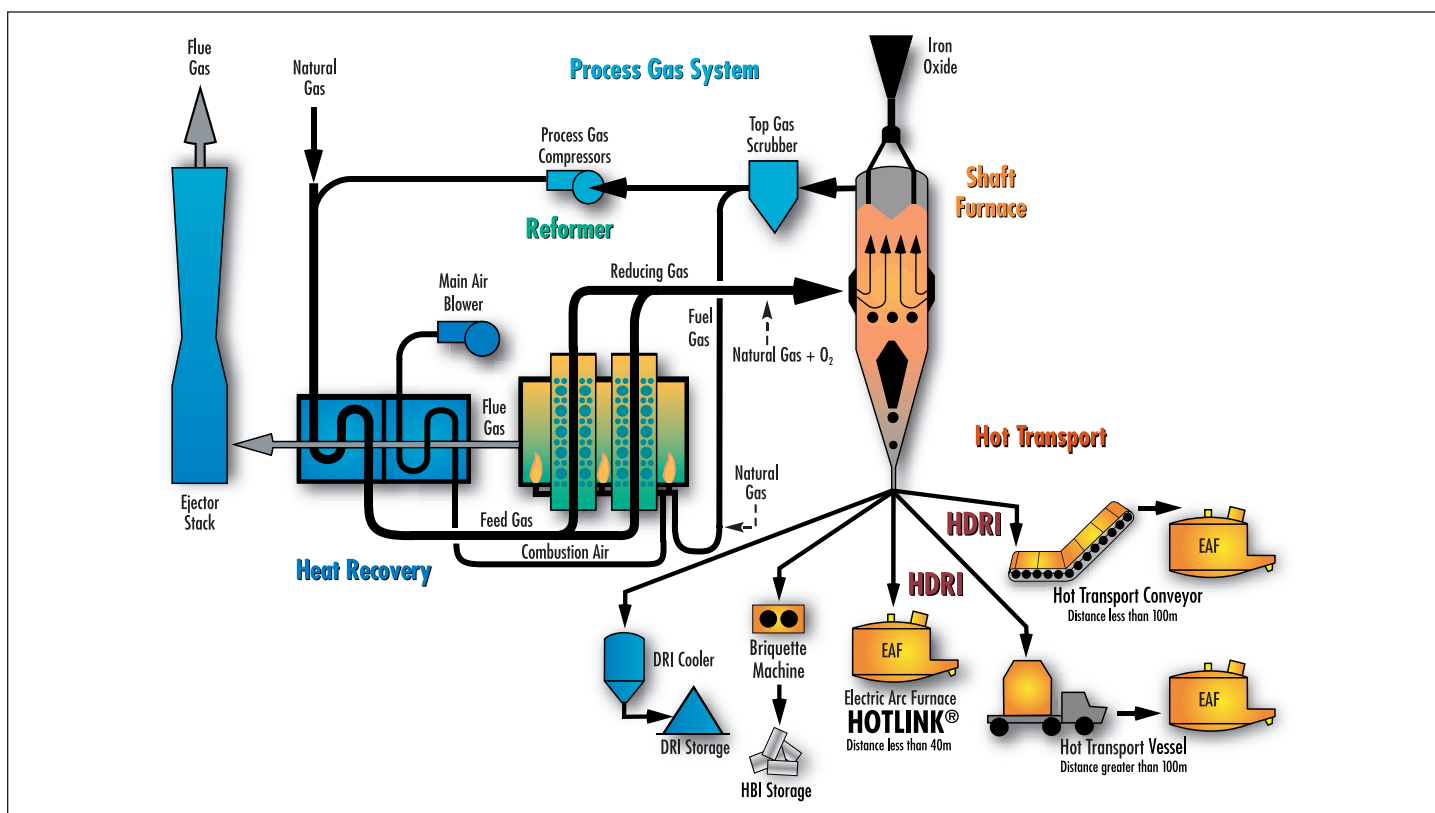


Figure 3 - Hot Discharge/Transport/Charging Options

Plant	Location	Start-up	Total Plant Capacity (Mtpy)	Type system
Operating				
Essar Steel I & II	India	1999	0.88	Vessels
Essar Steel III	India	1999	0.44	Vessels
Essar Steel IV	India	2004	1.00	Vessels
Essar Steel V	India	2006	1.50	Vessels
Hadeed	Saudi Arabia	2007	1.76	Hot Conveyor
Subtotal			5.58	
Construction				
Lion Group	Malaysia	2008	1.54	Vessels
Shadeed	Oman	2008	1.40	HOTLINK
ESISCO	Egypt	2010	1.76	HOTLINK 2G
Subtotal			4.70	
Total			10.28	

Table IV - MIDREX Plants Employing Hot DRI Charging

DRI and HBI produced using the country's abundant reserves of iron ore and natural gas. Building on these key natural resources, MIDREX Direct Reduction Plants in Russia have among the lowest operating costs in the world. HBI can be produced to serve the merchant market domestically and offshore. For direct reduction plants designed to feed an

adjacent meltshop, use of hot DRI has significant economic advantages. Midrex has three systems available for discharge of hot DRI, transport to the meltshop and hot charging to the EAF. These solutions for steelmakers will enable the EAF steel industry in Russia and worldwide to continue its growth.

Lawnmower to the Stars

500 Million Tons of MIDREX® Iron

By Robert Hunter
 Product Applications Manager
 Midrex Technologies, Inc.

It's been a little over 40 years since Don Beggs conceived of the MIDREX® Process. Legend has it that he was mowing his lawn when the idea came to him. Even though it's been less than 40 years since the first commercial scale plant began operation at Portland, Oregon, remarkable progress has been made in the past four decades. On 25 July of this year, the cumulative production of MIDREX® Iron surpassed 500 million, or one-half half-billion tons.

HOW BIG?

One-half billion tons immediately brings to mind the question, "How much volume does that amount of iron represent?" Playing with numbers and using a bulk density of 1.8 tons per cubic meter, it would equate to almost 280 million cubic meters. Stacked as a conical pile (angle of repose about 33 degrees), it would be approximately 500 meters tall and 1,500 meters across, see Figure 1. Laying down the pellets in a line with one touching the other (assuming three grams per pellet and a diameter of 12 mm per pellet), the string of pellets would extend for two billion kilometers, which would be 50,000 times around the world or to the moon and back 2,600 times. Laid out one-pellet deep, it would cover 24,000 square kilometers, about the size of Belize, or Macedonia.

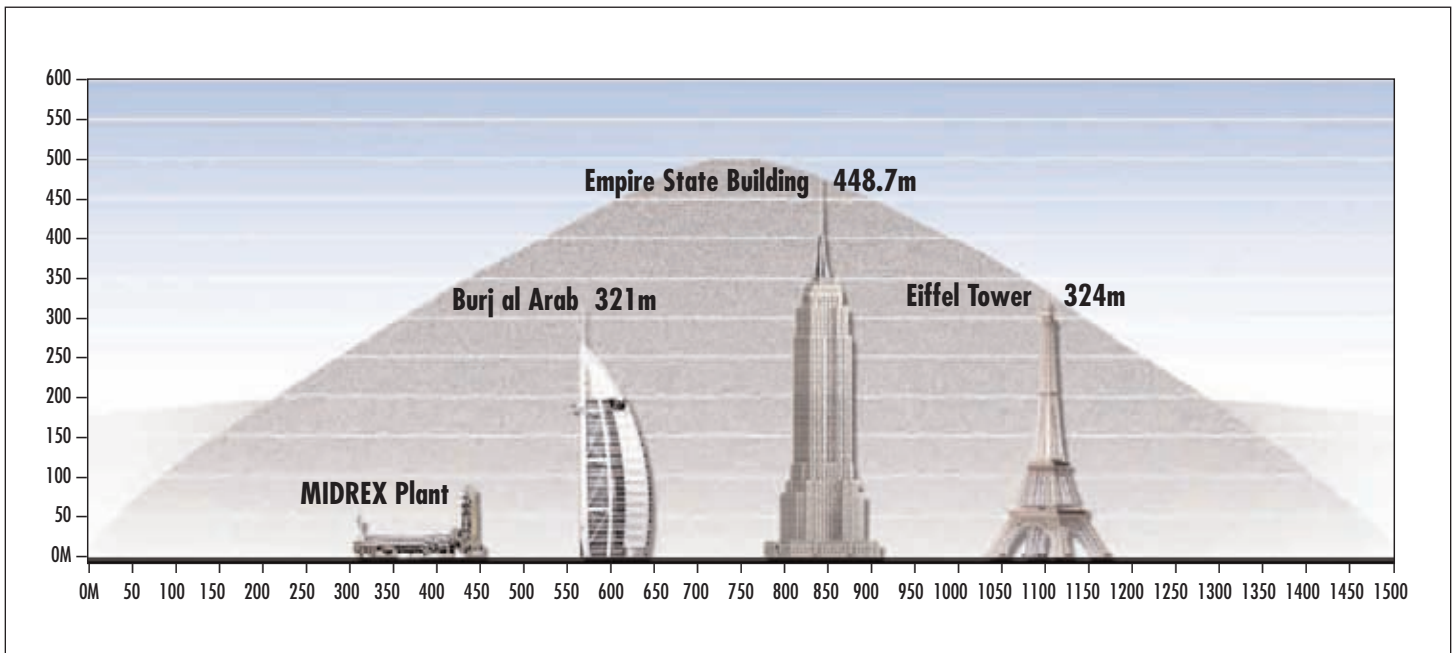


Figure 1 – Volume of 500 Million Tons of DRI

Structure/Vessel	Location	Tons Steel	How many?	Notes
Trans Siberia Railroad	Russia	1,355,000	340	From Europe to Pacific Ocean
Trans Alaska Pipeline	Alaska, USA	550,000	800	1,300 kilometers long
Three Gorges Dam	China	463,000	1,000	World's largest dam
Akaishi-Kaikyo Bridge	Japan	200,000	2,250	World's longest suspension bridge
RMS Queen Mary 2	England	150,000	3,000	World's largest ocean liner
Nimitz Class Aircraft	USA	100,000	4,500	Largest naval vessels built
Burj Dubai	Dubai, UAE	75,000	6,000	World's tallest building
Eiffel Tower	Paris, France	7,300*	60,000	World's tallest structure from 1887- 1930

* iron

Table I - Possibilities for 450 Million Tons of Steel

HOW MUCH STEEL?

Another way of thinking about it is, “How much steel could that make?” Allowing a yield of about 90 percent, thereby producing 450 million tons of steel, Table I shows how many of each of the famous structures or vessels could be built.

AN HISTORICAL PERSPECTIVE

The most impressive aspect of this half billion tons is to compare it, in historical perspective, to the history of world ironmaking. When did the cumulative ironmaking of mankind exceed one-half billion tons? The Iron Age began slightly more than 3,000 years ago. Abraham Darby I demonstrated the application of coke to ironmaking in 1709. His descendents also were involved in the industry. His grandson, Abraham Darby III, built the world's first cast-iron bridge shown in Figure 2.

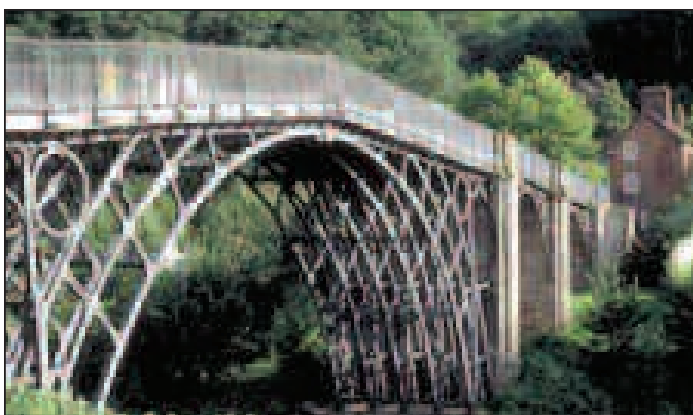


Figure 2 - Iron Bridge

It is believed that prior to Darby, the entire world typically produced less than 30,000 tons of iron per year. Following Darby, ironmaking began to grow, slowly at first, but steadily accelerating. By 1800, world production was on the order of 150,000 tons per year and around 1820 it surpassed one-half million tons per

year. With the advent of tonnage steelmaking, it started to grow very fast indeed, passing ten million tons per year in the early 1860s.

The result was that cumulative world ironmaking did not exceed a half-billion tons until some time in the late-1870s or early 1880s! During this time, Clerk Maxwell was predicting the existence of radio waves, based upon his famous equations. Western Union invented the telegraphic money transfer. Edison made the first telephone call. Cleveland, Ohio installed the first city electric street lights. Japan adopted the western calendar and England legalized trade unions. Bizet wrote Carmen and Tchaikovsky presented Swan Lake at the Bolshoi. The Third Republic was started in France, following the Franco-Prussian war. Lenin, Trotsky and Stalin were children (and so was my grandfather). Rockefeller organized the Standard Oil Trust and Mendeleev published the periodic table. The telephone was invented. And...mankind finally surpassed one-half billion tons of iron (cumulative).

TO THE STARS

Let's return to the idea of how much steel. Made into 12 mm reinforcing bar, our 450 million tons of steel would be 510 million kilometers long – enough to wrap around the earth 12,750 times. Or, we can strive for really great length. Kobe Steel has manufactured ultra-fine steel wire as small as 15 microns in diameter. If we make 450 million tons of such wire, it would extend for 326 trillion kilometers, almost 35 light-years! The closest stars, the Alpha Centauri system, are only 4.3 light-years distant. As we can see, Don Beggs was truly a visionary and we are now literally riding his lawnmower to the stars.

What about the future? At the current rate of growth, the cumulative production of MIDREX® Iron will add another half-billion tons, thereby surpassing the one-billion-ton mark, in about eight more years, sometime in the year 2015. At that point, we'll have to find another universe to conquer.

Riding the Supercycle



By Robert Hunter
Product Applications Manager
Midrex Technologies, Inc.

Much has been written about economic cycles. This article does NOT take sides in the general debate about which types of cycles exist or do not exist (Mr. Kondratieff will not debate Mr. Elliot nor Mr. Juglar, nor any other of the Wave Theorists). We will point out a cyclical aspect of the pricing of scrap steel over the past century. As often noted in previous issues of *Direct from Midrex*, the price of scrap steel reflects the price levels for DRI, HBI and other alternate irons.

Figure 1 shows the price of Number 1 Heavy Melting Steel Scrap (#1 HMS) from 1895 through the present as reported by *American Metal Market*. The prices shown are in US dollars per gross ton (GT).

Data for 1895 through 1958 is for Chicago and the second line, from 1955 through the present, shows AMM's three-city composite (Chicago, Philadelphia and Pittsburgh). From this graph, very little can be learned other than that the price of scrap, over the long term, seems to always rise and as time progresses, seems to rise ever more rapidly. While prices rose in nominal terms (actual dollars), prices expressed in real terms (inflation-adjusted) were essentially level over the past 100 years. Although constant, the prices had MUCH volatility and the following analysis is intended to describe an element of that volatility.

Repeating the data shown in Figure 1, but this time plotting on a logarithmic scale (see Figure 2), a pattern appears.

The pricing remains somewhat level for prolonged periods of time. Admittedly, it's a bit difficult to see. So, let's

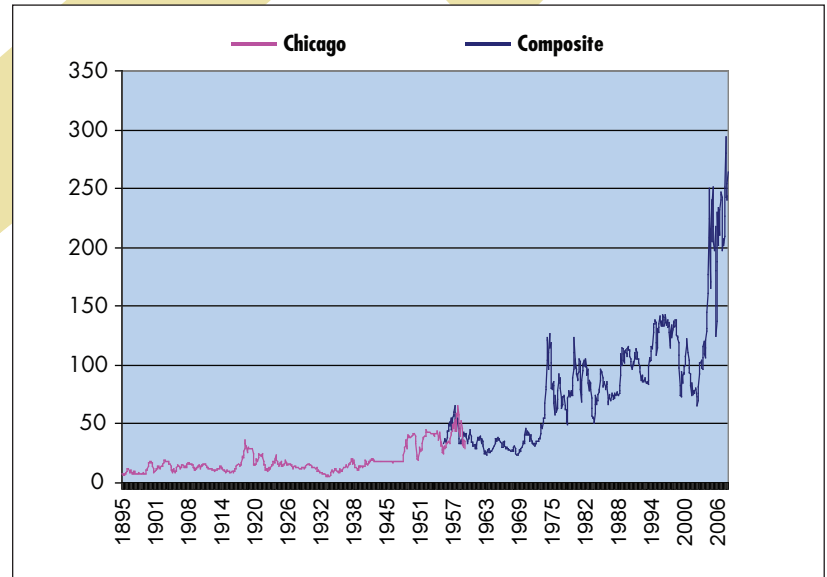


Figure 1 - No. 1 HMS Price (\$/GT)

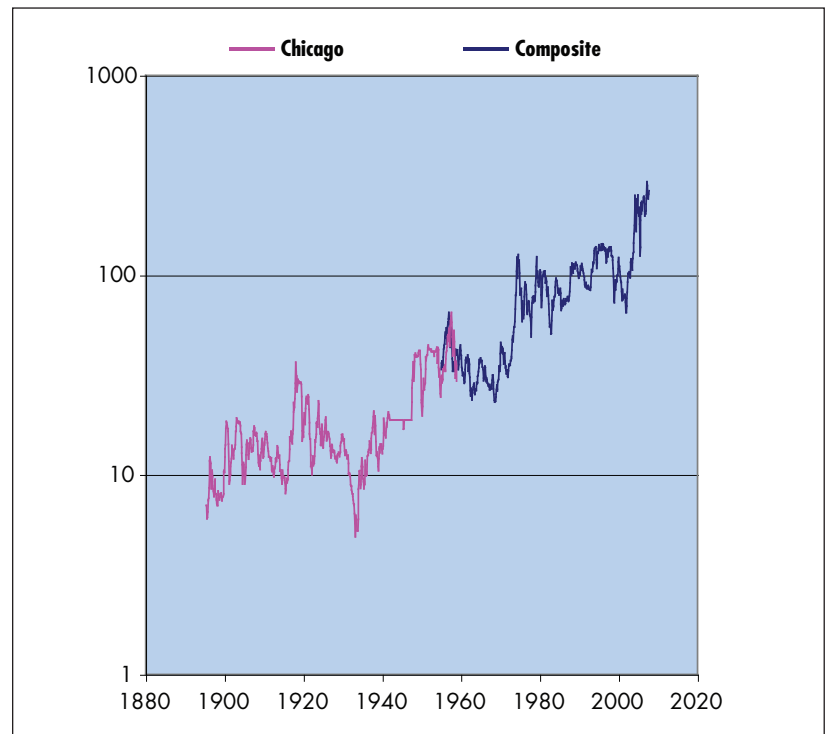


Figure 2 - No. 1 HMS Price (\$/GT) Logarithmic Scale

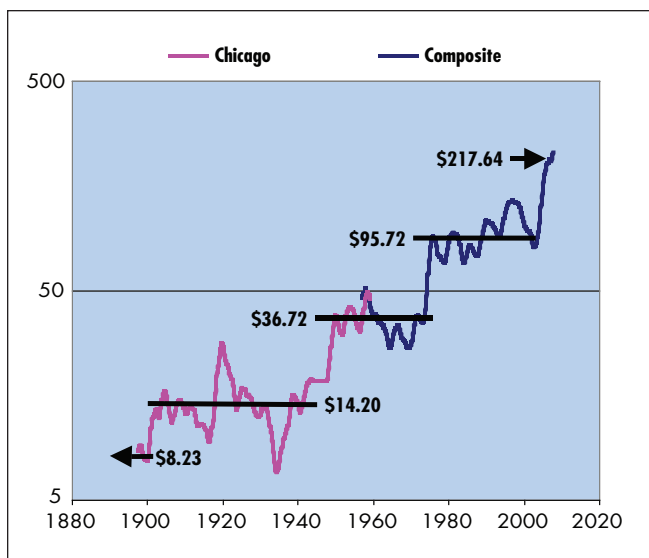


Figure 3 - No. 1 HMS Price (\$/GT) Logarithmic Scale 24 Months Running Average

decrease the volatility by smoothing the curve. Figure 3 repeats the data, yet again, but this time the points show the 24-month running average (each point shows the preceding 24 months).

Now, the “level” regions are more obvious. One is from 1900 through 1915. As World War I breaks out in 1917, prices rise rapidly and continue to rise after the war, but then begin a decline that goes through the depths of the Great Depression. Prices rise as the depression eases and the Second World War is fought and then enter into a period in the early-1940s that is strongly affected by governmental price controls. The net result of this entire period, 1915 through about 1947, is that prices continued to vacillate around the earlier (1900-1915) level of about \$14/GT.

Then in 1948, prices rose to a new range as the post-war boom propelled the world economy. A higher level of about \$37/GT was quickly established, which again remained the norm for 25 years, until 1973. This time it was the economic turmoil resulting from the removal of USA currency from the gold standard and the ensuing “oil crisis” that sent prices to a still higher level around \$96/GT. This new range remained the norm for thirty years, 1974 through 2003, inclusive. And, as everyone well knows, this range too has been far exceeded as the “China Boom” overtaxed world capacity for iron and steel making and scrap prices have achieved levels of \$300-400/GT.

Two other “levels” are suggested by this graph: one that appears to exist prior to 1900, and the one that is developing now. The one before 1900 existed for such a brief period, about five years, that it is difficult to equate it to the others. Certainly, in the late-1890s, the value of #1 HMS in the Chicago area was generally considered to be around \$8 or \$9 per GT but prior to that, larger economic forces were in play that had always sustained the price of iron and steel scrap at much higher levels.

The other level suggested by this graph is the current one. But, the question arises, “Can we determine the current average level?” It may not have fully developed yet. We do not know if it will go higher, or lower, and we do not know what average it will move around. As yet, there is simply too little data to define it.

Perhaps it should be noted that the two previous quantum rises



Figure 4 - Kansai, Japan H2 Scrap Price (Yen/t)

in pricing that began in 1948 and in 1974 represented increases of 160 percent. **IF** that were to reoccur, #1 HMS in Chicago, Philadelphia and Pittsburgh could be expected to trade at an average of about \$250/GT, almost exactly where it is now!

Another interesting clue to prices in the near future may be found on the far side of the world from Chicago. The dramatic price increases for all steelmaking products and raw materials in 2004 were unquestionably linked to the massive construction surge in the Far East, especially China. The best, most accurate and longest standing indicators of scrap price levels in that region are the prices of H₂ scrap in the Kanto and Kansai regions of Japan. Figure 4 shows the pricing of H₂ in Kansai (Kanto pricing is very similar) since 1996 in yen per metric ton.

A remarkably strong growth trend can be seen originating with a minimum in the summer of 2001, around 7,000 yen per ton, when a minor recession was slowing some major world economies and continuing to the present with pricing over 38,000 ¥/t. During that period the price of H₂ has grown by more than five-to-one, typically rising by 300 to 400 yen per month. One interesting observation is that the price surge in 2004-2005 is quite a bit less marked than it is in scrap price graphs in the United States. That price surge occurred in reaction to a very minor shortage of some premium grades of scrap in the U.S. Midwest. Since H₂ is not a premium grade and since Kansai is almost 15,000 km from the U.S. Midwest, the effect was minimized. Yet, even without the dramatic price surge, Japanese scrap prices steadily increased from 2001-2007, with the rise even higher than in the US.

In general, the price rise in Figure 4 is, to date, showing no signs of slowing, less else ending. As long as economic growth continues in China at a rate resembling the rates of the past few years, we should expect to see scrap prices continue to climb. The forces most likely to stop or reverse this trend are recession (certainly a possibility) and inflation. Throughout this article, we have been looking at scrap prices in nominal terms. As noted in previous articles, when these prices are viewed in real (inflation-adjusted) terms, there is little change within the past century, only volatility around an average.

An article, “What is the Value of Iron?” published three years ago in DFM (3rd quarter 2004 Commentary) concluded that, “...we should expect relatively high prices to continue through 2005, 2006, 2007 and possibly beyond.” It now appears that they are here to stay, at least in nominal dollar terms.

Midrex News & Views

MIDREX® Plant at ArcelorMittal Steel Lazaro Cardenas Celebrates 10 Years with 16 Million Metric Tons of DRI

As of August 2007, the MIDREX® Direct Reduction Plant at ArcelorMittal Steel Lazaro Cardenas (AMSLC formerly IMEXSA) reached its 10 year anniversary with a record achievement of 16 million metric tons of DRI produced, a truly remarkable feat considering the nameplate capacity of the plant is 1.2 million tons per year.

“This achievement has been possible through the commitment and dedication of all our personnel,” according to Jose de Jesus Fernandez, Chief Operating Officer ArcelorMittal Lazaro Cardenas. “From workers to supervisors, heads of departments together with the support and confidence of the company’s top management, ArcelorMittal Steel Lazaro Cardenas has carved out a truly impressive legacy within its first 10 years.”

The MIDREX® MEGAMOD Direct Reduction Module was commissioned in 1997. It was able to set this production milestone thanks to a combination of increased hourly productivity and excellent plant availability. Operating at an average 224 t/h, AMSLC surpassed the 10 million ton mark after less than seven

years of operation.

“We are extremely proud of this MIDREX® Plant and its operators,” said Stephen Montague, Midrex Vice President of Commercial and Technology. “ArcelorMittal

Steel Lazaro Cardenas has been a shining example of what a MIDREX Direct Reduction facility can do.”

AMSLC’s MIDREX MEGAMOD Module produced its first product on August 25, 1997, one month ahead of the contracted schedule. This established a new record for engineering, construction and start-up of a MIDREX Plant – only 23 months from contract effectiveness to first production. The plant’s achievement is even more remarkable considering high natural gas prices that peaked in North America several years ago, crippling several other North American DR facilities.



AMSLC formerly IMEXSA

SMS Demag and Midrex Sign Alliance Agreement



SMS group

Midrex Technologies, Inc. and its parent company Kobe Steel, Ltd. recently announced a strategic alliance agreement with SMS Demag AG, a company of the SMS Group, Germany.

The purpose of the agreed cooperation is to achieve a joint market presence for suitable projects in order to implement mini-mill iron and steel plants on behalf of customers. The combination of the MIDREX®

Direct Reduction Process and the steelworks technology of SMS Demag with downstream CSP® (Compact Strip Production) facility constitutes an optimally tuned mini-mill concept for producing high-grade hot strip in a manner that efficiently reduces energy and costs.

The alliance between the two firms is extremely advantageous to customers because project realization is greatly simplified and optimum metallurgical results are achieved through close cooperation at the technical level, according to SMS Demag.

Christopher M. Ravenscroft: Editor

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