



The Iron & Steel Technology Conference and Exposition
May 7–10 • Indianapolis, Ind., USA

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President's Award Breakfast Keynote Address

Keith E. Busse, chairman and chief executive officer, Steel Dynamics Inc.
May 9, 2007 • Indianapolis, Ind.

AIST President Richard P. Teets Jr. presented Keith E. Busse with the 2007 AIST William T. Hogan, S.J. Lecture Award in appreciation for his keynote lecture presented before a sold-out crowd of 1,050 people at the AISTech 2007 President's Award Breakfast in Indianapolis, Ind.

Out of the Ashes: The 21st Century Transformation of the American Steel Industry



Good morning, ladies and gentlemen. I thought I would begin today by taking a stroll down memory lane.

After World War II, the American steel industry was the largest, most modern and most powerful producer of carbon steels on earth. The '50s and '60s were boom times, but unfortunately, as evidenced in Figures 1 and 2, the late '70s began a period of decline, and the mighty began to fall.

The obvious question is: What happened? As in so many other instances, the answer points to

no one thing, no one cause. There were, in fact, many causes that led to the declines and eventual bankruptcies for many companies.

Some industry leaders blamed the "Marshall plan" and other programs that rebuilt the German and Japanese steel industries. Many believed that these new, cutting-edge facilities gave the Germans and the Japanese a huge efficiency and productivity advantage, coupled with cheaper labor costs. Others believe that onerous labor agreements, which sharply damaged labor costs and productivity, coupled with exploding health care costs for current workers and retirees, and pension benefits that could not and would not be properly funded, led to the eventual decline and demise of this proud industry (Figure 3). Others would argue that it was the rise of the much more nimble and productive minimill segment of the marketplace, both at home and abroad, that led to the decline and demise of the once-powerful integrated steelmakers in America. Still others would argue that foreign currency manipulation and government subsidies were the culprits. I would argue that it was all of the above, and it only got worse in the '80s and '90s.

As nations everywhere were rebounding from the catastrophes of World War II, America should not have rested on its laurels. Dividends became more important than reinvesting in one's future, vis-à-vis gutting the old and redeploying new, cutting-edge technologies.

The leadership of the day was too concerned with America's huge growth in automobiles, homes, appliances, defense spending, etc. People reasoned that they could ill afford labor confrontations in an effort to restrain the runaway labor costs and benefits.

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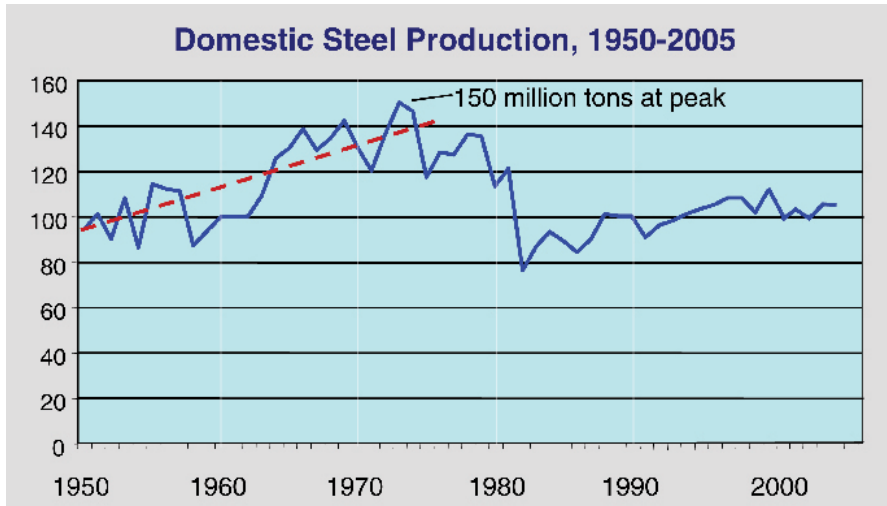


Figure 1 — Growth after World War II.
 Source: American Iron and Steel Institute.

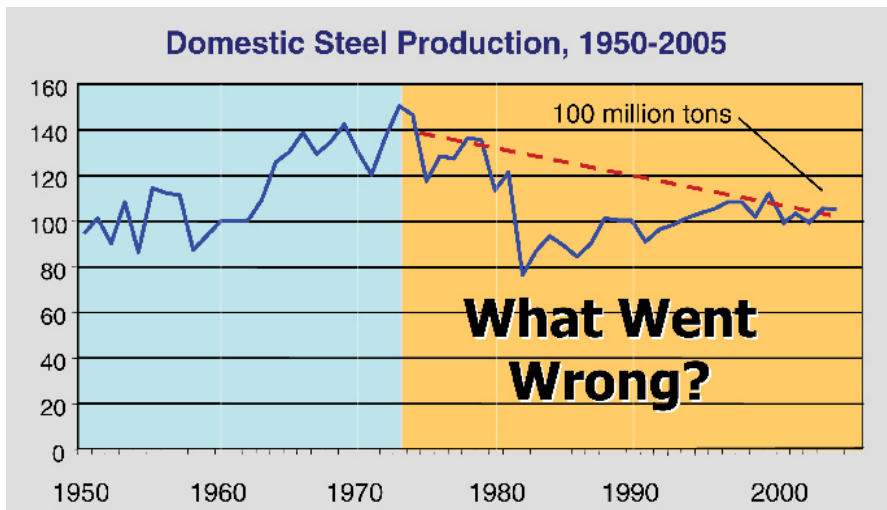


Figure 2 — Volume decline.
 Source: American Iron and Steel Institute.

Figure 4 shows the trend of labor productivity in the U.S. steel industry, starting with data from a study done by the U.S. government in the 1970s. It shows that it took an average of nearly 10 man-hours to produce a ton of steel in the country's integrated steel mills in 1969. During the past 30 years, the industry has made good strides in reducing labor costs. We do not have public data today for the industry, but by various accounts,

some of the large steel companies now have achieved 2 to 3 man-hours per ton. Perhaps 3 hours is typical. By contrast, when Steel Dynamics started up, our man-hours per ton began at less than 1 man-hour per ton. Since then, we have trimmed the man-hours per ton in half (Figure 5).

Taking a closer look at SDI's flat roll labor productivity, one can see the continual improvement in our performance. Notice that, even today, our technology, our processes and our operating culture result in labor utilization that is a tenth of the man-hours required by some of our competitors in the manufacture of flat rolled steels.

The answer for these and other problems outlined was not all that complex, but required better vision and a willingness to engage labor in nontraditional ways — i.e., incentive systems that reward people for being the best at what they do. In other words, pay people well, but only if it results in their being "world-class" from a productivity perspective.

Management, at the same time, should never have allowed their facilities to become second-class citizens. Huge investments were required to remain world-class, and the industry was not making them, but was rather content to "clip coupons."

Our government's unwillingness to recognize or address subsidies and currency manipulation played a large role in the decline, as well. These global abuses continue today, with China emerging at the turn of the century as the major manipulator/abuser. More detail will be provided on that later.



All of these issues opened the door of the world's largest consumer market and led to a continuing avalanche of imports, some fairly traded and some unfairly traded. These issues also led to the creation of the more nimble, more productive and more cost-effective minimill segment of the U.S. steel industry.

The minimills of the '70s, '80s and '90s deployed cutting-edge technologies in melting, casting and rolling. They were championed by young and aggressive entrepreneurs who were fed up with yesterday and wanted a better tomorrow. One of the principal weapons deployed by these new companies was culture. It was the '70s, and we were experiencing the beginnings of an American cultural revolution in steelmaking.

The esprit-de-corps of the day was "can do." Management teams began to engage and challenge their workforce. They involved them in decision-making, evoked trust and rewarded them well for superior performance. What a novel idea!

So what happened? Did the fairy princess survive, or did she succumb to forces at play that were beyond her control? As we pick up the story in the '70s, imports are increasing and the minimills are growing in the shapes arena.

Eventually, the shapes market, which was smaller and enjoyed the least amount of new capital, began to be abandoned by the integrated segment of the industry. The minis at first produced rebar and small shapes, but by the late '70s and '80s, the minis were also extraordinarily adept and profitable in the production of large shapes and structural sections. Much of the growth in this era was driven by the advent of the electric arc furnace and continuous casting. In these product fields, the minis had not only captured the market from the integrations, but had

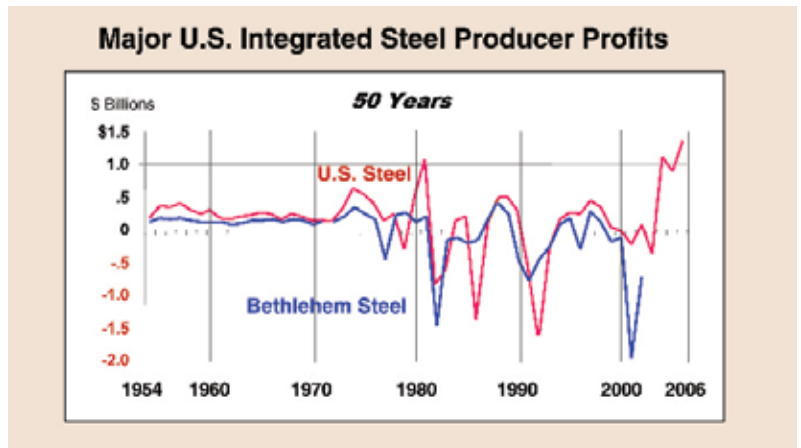


Figure 3 — Profit decline.

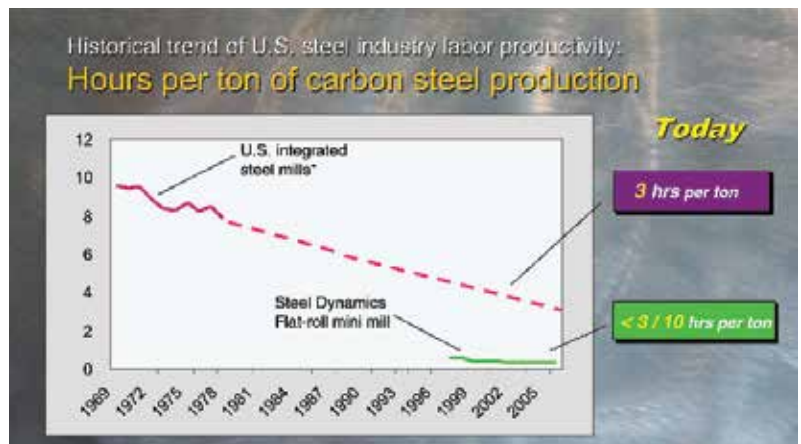


Figure 4 — Man-hours per ton, yesterday and today.
 Source: 1969–1979: World Steel Dynamics, Core Report, 1979.



Figure 5 — Man-hours per hot band ton at Steel Dynamics Inc.

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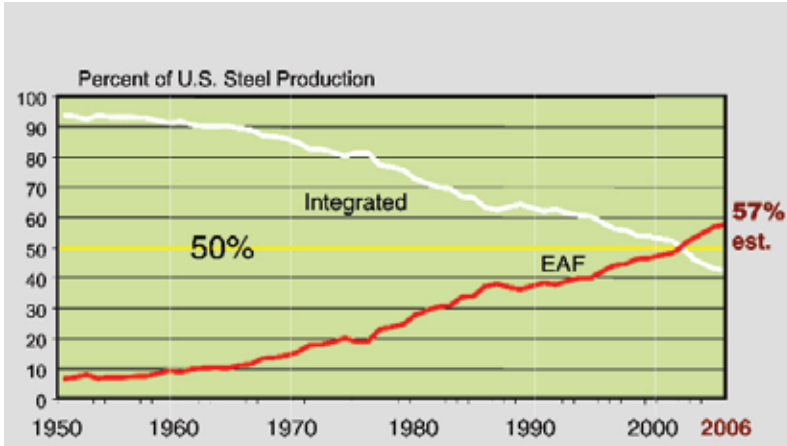


Figure 6 — EAF versus integrated steel capacity.
 Source: American Iron and Steel Institute.

also run most of the foreign competition off the road.

In the '80s, I had the pleasure of doodling on the back of a cocktail napkin with Ken Iverson of Nucor, an American legend, concerning the subject of a new mini sheet mill. The mind-set of the day was that it was impossible to build a minimill to make sheet goods for less than \$1 billion. The scholars of the day also believed that it was impossible to make quality sheet steels electrically.

Iverson, on the other hand, believed that it could be done for less than \$300 million, but would require new leap-frog casting



Keith Busse presents his keynote address before a sold-out crowd of 1,050 at AISTech 2007 in Indianapolis, Ind.



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Figure 7 — Compact strip production.

technology that would allow the producer to bypass the traditional roughing and finishing processes. Thus, today, thanks to Nucor and a German engineering company by the name of SMS, we now successfully and profitably make about one third of all domestically produced sheet steels via the electric arc furnace and thin-slab casting (Figures 7 and 8).

Iverson was a great businessman and a true visionary. I, on the other hand, was extraordinarily fortunate to have had the opportunity to pioneer his dream. Other companies initially had an opportunity to work with SMS to pioneer this technology, but passed. Nucor pursued it. Today, this technology is successfully deployed all over the world. If I only had that cocktail napkin back, it would be priceless! On the other hand, if the integrated had embraced the technology, I would not be standing here today.

As a result of all of this pioneering of new technologies, Mark Millett, Dick Teets and I have had the opportunity to build a world-class company. When Steel Dynamics was born in the mid-'90s, there were approximately 58 primary steel producers. We were the smallest. Partly because of the failure to embrace better technology and adapt to new market realities, numerous big-name steel companies have vanished (Figure 9). Today, there are approximately 30 of us left, and SDI is now the fifth largest carbon steel producer in the United States.

Thanks to the vision of Ken Iverson of Nucor, Marvin and Clyde Selig of Commercial Metals, Bob Garvey of North Star, Jerry Heffernan and Ron Lincoln of Chaparral, Roger Phillips of IPSCO, and Phil Casey of Gerdau Ameristeel, the American steel industry began its transformation (Figure 10).

Along the way, the revolution was joined by Lakshmi Mittal, Lou Schorsch, John Surma, Wilbur Ross, Dan Dimicco, John Correnti, and yours truly, just to name a few.

These men also recognized another common enemy: fragmentation. In a fragmented, archaic and overcrowded industry, not everyone is going to be profitable, and the weak shall perish. But the desperate acts of dying men can take years to play out, and they did. Today's leadership recognized that older, less efficient facilities needed to close, and thus began the process of consolidation, which has been good for the industry.

Out of the carnage of 20 to 30 bankruptcies has emerged a better, more efficient and stronger world-class domestic steel industry led by men of vision, courage and determination.

In recent history, and today, America's reshaped and re-emerging steel industry deploys world-class technologies, re-invests in cutting-edge ideas, has



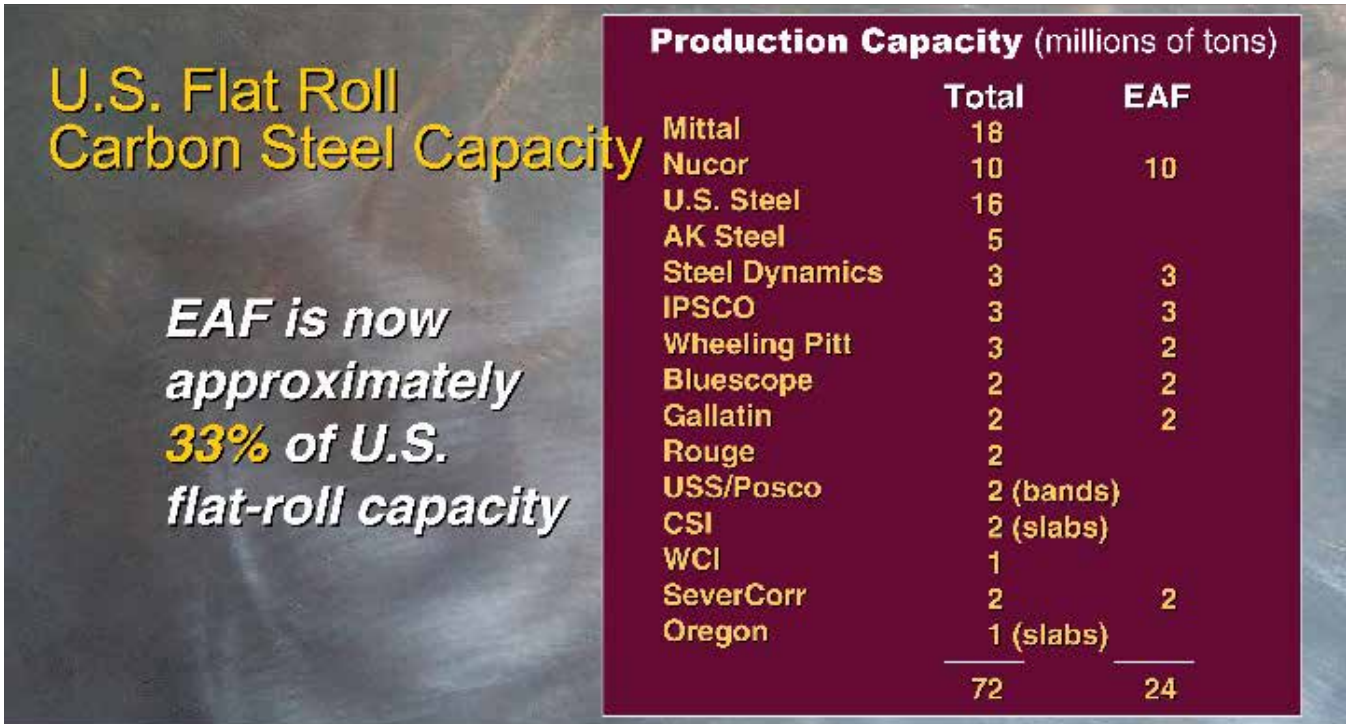


Figure 8 — EAF/integrated flat roll capacity.

exemplary management that recognizes threats and challenges to its future, and is profitable. SDI's structural and rail mill at Columbia City, Ind., is one of those success stories, having grown in five years to a shipping rate of more than 1 million tons a year. We are currently in the process of expanding this mill's capacity by 70%.

Unfortunately, the consolidation of the U.S. steel industry and the transformation to a new operating model resulted in the loss of nearly 30 companies and hundreds of thousands of jobs. Today's labor climate, though, has dramatically changed for the better, as the steelworkers union is finding new ways for everyone to win. All of us together now understand that the path to survival and prosperity is unprecedented cooperation coupled with ingenuity and a commitment to being the best at what we do.



Figure 9 — Bankrupt companies. Over 35 filed for bankruptcy from 1998 to 2002.

Who would have ever thought that great names such as Bethlehem Steel, LTV, National Steel, Inland Steel, Armco, and many other smaller companies would no longer exist? In their place have emerged other great companies, such as Nucor, Steel Dynamics, IPSCO, Gerdau Ameristeel, Commercial Metals, and many others.

The job of rebuilding America's steel industry is not over, and threats still exist



Figure 10 — Steel companies of a new era.

today. The world, in its entirety, needs to play on a level field, but does not yet do so.

China's industrialization has resulted in rapid and reckless growth in steel production over the past decade. An emerging China, which does not play

ball by "world market rules," is today, and will be, our greatest future danger. As you see in Figure 11, imports of steel from China into the United States are a growing concern.

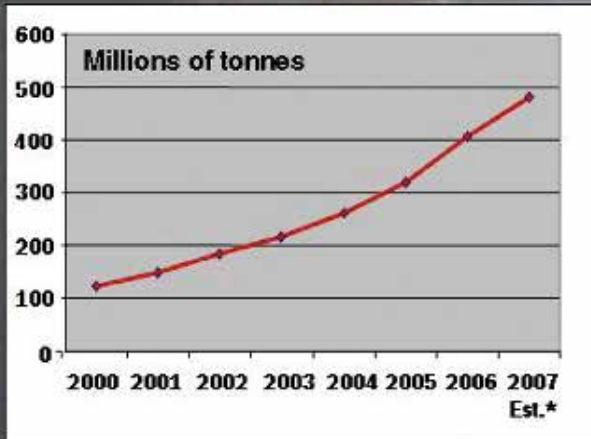
In large part, China's success in exporting steel results from government subsidies for Chinese steelmakers, favorable tax structures for steel exports, and currency manipulation. Currency manipulations by nations such as China still plague the industry.

It is my belief that if the Chinese RMB (the Yuan) floated in a freely traded market, it would shrink from 8-to-1 to only 5- or 6-to-1, removing an obvious 25–40% artificial advantage. If tomorrow morning Chinese producers were not getting 8 RMB for a \$1 basket of goods, but were now only getting 6 RMB, the flight to China for



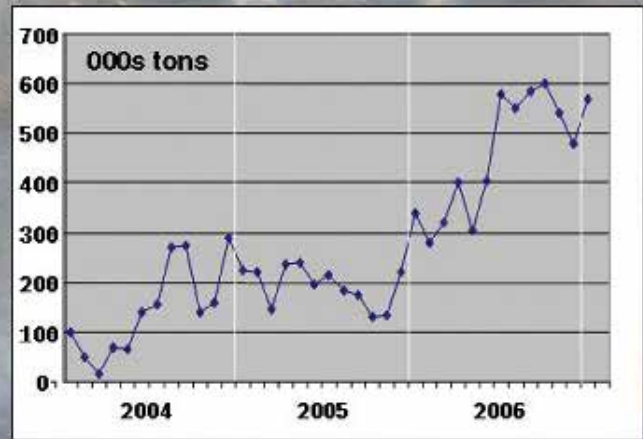
Growing Chinese steel industry a potential threat

Chinese steel production



Source: IISI

U.S. steel imports from China



Source: U.S. Census Bureau

Figure 11 — China's production growth and Chinese imports. Estimate: Goldman Sachs Global Equity Research.

manufactured goods would cease, and more goods would be produced domestically.

In closing, out of the ashes has risen a re-invigorated domestic steel industry with world-class tools, world-class employees, world-class leadership, and a commitment to grow, if you will, our own steels. America remains a market underserved by the American steel industry. I believe that we *can* still grow domestically, as long as it is not recklessly. There is no substitute for ingenuity, commitment and productivity. Foreign competition does not have a God-given right to this market. On a level playing field, even given certain resource disadvantages, I believe — and I hope you do as well — that the American, or maybe more importantly, the North American steel industry cannot be beaten.

Thank you and may God bless you. ♦



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