SFSA CASTEEL REPORTER

Steel Founders' Society of America

a monthly publication
serving SFSA steel casting industry Members

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Casteel Commentary Highlights:

Last Month, I discussed the limits of six sigma as a quality metric when production is limited. While I still think that is accurate, I failed to acknowledge that six sigma tools and methods are valuable to all production processes no matter what quantity is being produced. This month's Commentary promotes the use of six sigma approaches as an efficient and profitable approach to process improvement.

Technical & Operating Conference

There is still time to register for the Technical & Operating Conference. It is being held in December at the Drake Hotel in Chicago. 39 papers will be presented on a variety of subjects, and a member workshop is being held on the Wednesday prior to the Conference. Information has been sent to all SFSA members and is also available online here: http://www.sfsa.org/sfsa/toconf

Safety Awards

Six SFSA member companies will receive safety award certificates for their safety record in 2006 (better than the national average for all manufacturing); these are American Centrifugal, Amite Foundry & Machine, Atchison Steel Casting & Machining, Wisconsin Investcast, Southern Cast Products (Meridian, MS), and Talladega Castings & Machine Co.

Innovation

Recent results in our high alloy test program show that 6 Mo super austenitic cast grades have corrosion performance that is equivalent to rolled products when properly heat treated. This is big news. It shows that cast material is not inferior to these grades as pipe or other rolled products. It also demonstrates the need for relatively basic research to achieve this performance.

In observing the ability of cast grades to provide equal or better performance, there is good reason to believe that cast materials should in many environments give the best service. The cast structure with relatively slower solidification and subsequent cooling rates are closer to equilibrium conditions than mechanically and thermally processed materials. Heat resistant alloys are often supplied as cast to optimize their rupture life. Careful control of composition and processing should allow the technically savvy producer to achieve remarkable performance.

Specification Note

Mechanical tests are normally required for each heat when material for castings is ordered using an ASTM specification. There are exceptions but when tensile properties are material requirements, tests of each heat are required. This requirement is often misunderstood, particularly by designers and purchasers. They frequently believe that the test is to establish the actual properties and to guarantee that level of mechanical performance in the casting. This is wrong

Mechanical tests for steels ordered to ASTM requirements are to establish that the steel in the heat was capable of achieving the properties expected for that

composition. Since the chemical analysis does not ensure that detrimental undetected contaminants are identified, mechanical tests show the steel is capable of meeting the requirements. ASTM materials are normally given mechanical requirements based mainly on the yield strength and if the steel meets that requirement, the other requirements should be easily met.

The part may have different properties than are achieved in the test bar. The difference in section size, solidification pattern, and geometry may all influence part performance. Design engineers use the specification minimum and not the actual test results for their evaluation. Bars cut from castings are not expected to meet the specification requirements unless special arrangements and agreements have been made.

Mechanical tests are in fact a test of the quality of the steel and not the performance of the part.

Orders for capital goods remain stable and relatively high. Orders remain stronger than shipments indicating some bias to growth. Inventories however have shown continued growth that will dampen market response if conditions improve. Steel shipments recovered after some slowness in the beginning of the year. The shipments of steel have not recovered to the higher levels of 2006. Iron and steel castings reported by Census also show improved orders and shipments but also have not recovered to year earlier levels,

Shipments of steel castings have remained at near last year levels. High alloy castings have seen strong increases in shipments and especially bookings. Carbon and alloy steel castings have seen a slowdown in bookings. Large steel castings and high alloy products remain in short supply but many plants have seen some slow down in smaller steel casting production.

Other economic news, along with a report on ferroalloy prices, is available in the SteelGuru document on the Casteel Reporter web page.

Market News

Casteel Commentary

Six Sigma is a programmatic approach to improving operations. It is one of the later in a series of initiatives that is promoted as a key element for process and product improvement. The disciplines and practices of a Six Sigma program build on the developing tools and insights of designed experiments, statistical analysis, team approaches and production leadership. Like lean manufacturing, six sigma is a recent program that updates many of the traditional tools needed for successful production.

Last month in the Casteel Reporter, I mentioned the challenge of applying the quality measurement metrics of parts per million typical of six sigma approaches to products that have annual requirements less than 100,000. Higher volume stable production requirements allow part quality to be meaningfully measured. It allows the design and process investment, the process development, and the continuous improvement needed to achieve a robust six sigma quality. Lower levels of production may not afford the time or resources or the production quantities to hit six sigma.

However, even in those production environments where the quantities limit the application of six sigma metrics as a measure of quality, there is no limit on the use of six sigma tools and techniques to improve quality irrespective of quantity. The use of these tools is wise without

regard to product quantity or even the quality requirements. Six sigma approaches to record keeping, data analysis, process improvement, and quality management are valuable.

Even where six sigma as a quality metric is not helpful or required, six sigma tools are efficient and disciplined methods for lasting improvement.

Available online here: http://www.qimacros.com/golf is an example of using six sigma methods that many of us need. It is a pdf (http://www.qimacros.com/pdf/golf.pdf) of using six sigma techniques to improve your golf game, sent by a member to show me how useful and general the tools are to life.

Raymond

STEEL FOUNDERS' SOCIETY OF AMERICA

MEETINGS CALENDAR

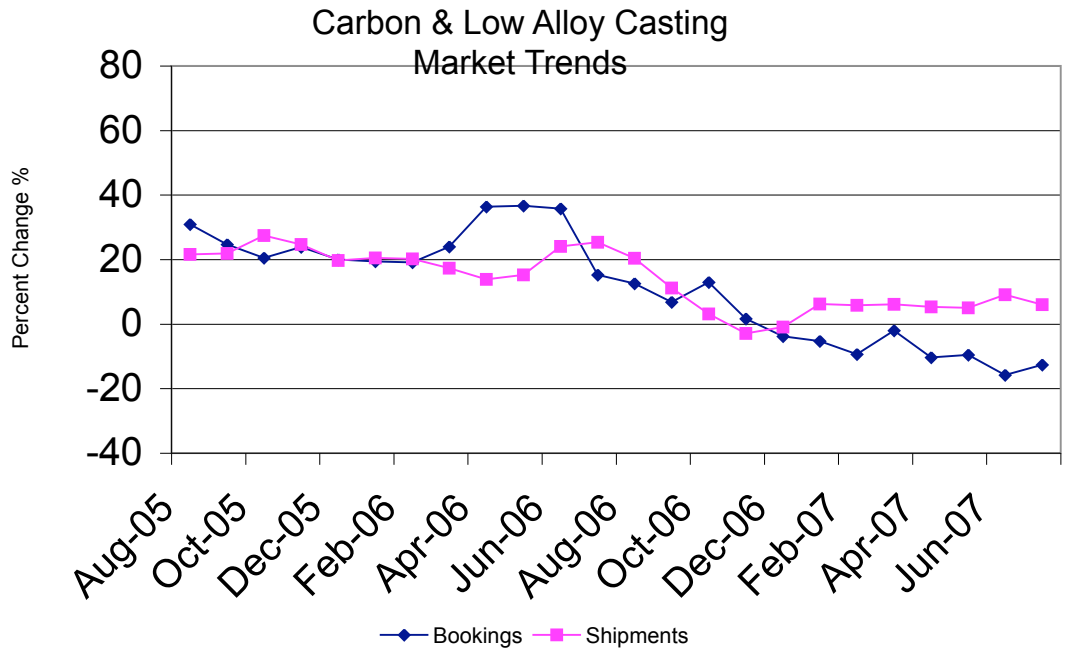
2007

December

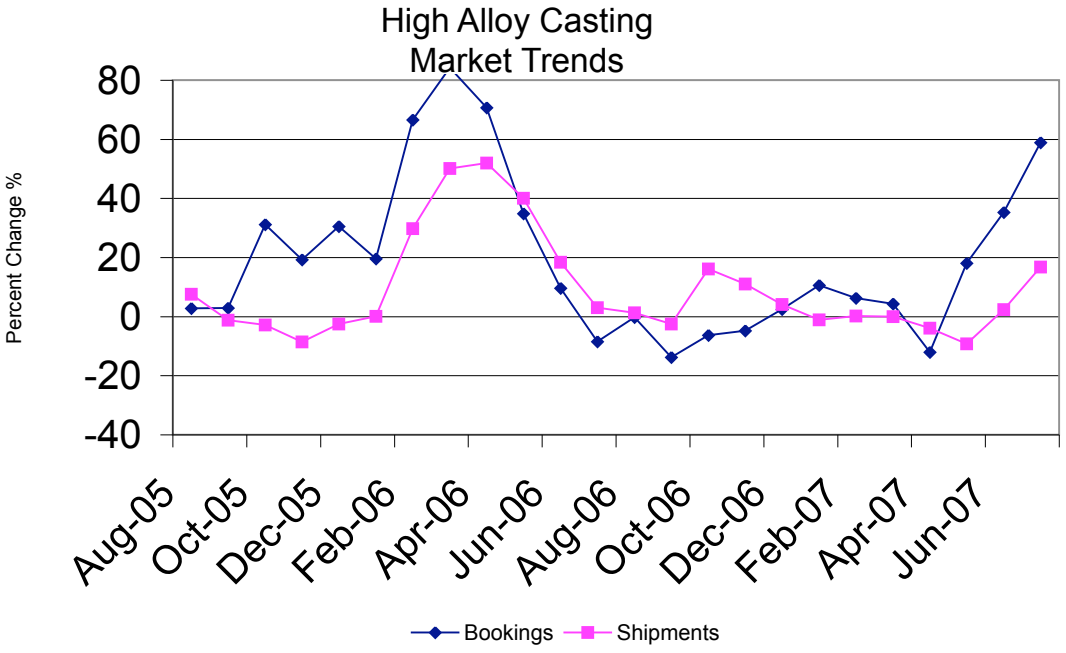
12/15 National Technical & Operating Conference, The Drake Hotel, Chicago, IL

STEEL FOUNDERS' SOCIETY OF AMERICA
BUSINESS REPORT

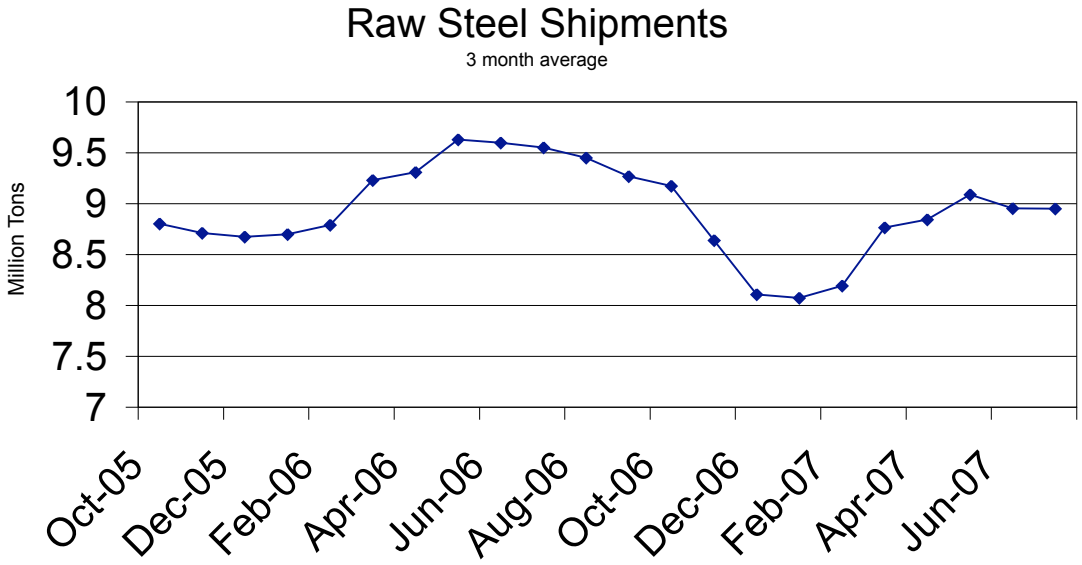
SFSA Trend Cards (%-12 mos. Ago)	12 Mo Avg	3 Mo Avg	Jul	Jun
Carbon & Low Alloy				
Shipments	5.2	6.0	11.7	13.3
Bookings	-3.8	-12.6	-8.4	-8.9
Backlog (wks)	11.0	11.4	11.5	10.2
High Alloy				
Shipments	6.9	16.8	38.8	10.6
Bookings	12.8	58.8	35.6	27.9
Backlog (wks)	11.5	12.2	12.0	11.5
Department of Commerce Census Data				
Iron & Steel Foundries (million $)				
Shipments	1,598.3	1,614	1,622	1,628
New Orders	1,589.0	1,614	1,613	1,593
Inventories	2,358.0	2,517	2,544	2,509
Nondefense Capital Goods (billion $)				
Shipments	66.4	66.1	66.4	65.7
New Orders	77.7	77.1	81.1	77.4
Inventories	117.0	121.7	122.2	121.5
Nondefense Capital Goods less Aircraft (billion $)				
Shipments	61.0	60.5	60.3	60.4
New Orders	63.2	62.2	62.6	62.0
Inventories	96.7	98.0	98.4	97.9
Inventory/Orders		1.57	1.57	1.58
Inventory/Shipments		1.62	1.63	1.62
Orders/Shipments		1.03	1.04	1.03
American Iron and Steel Institute				
Raw Steel Shipments (million net tons)	8.8	9.0	8.8	8.9



SFSA Postcards



SFSA Postcards



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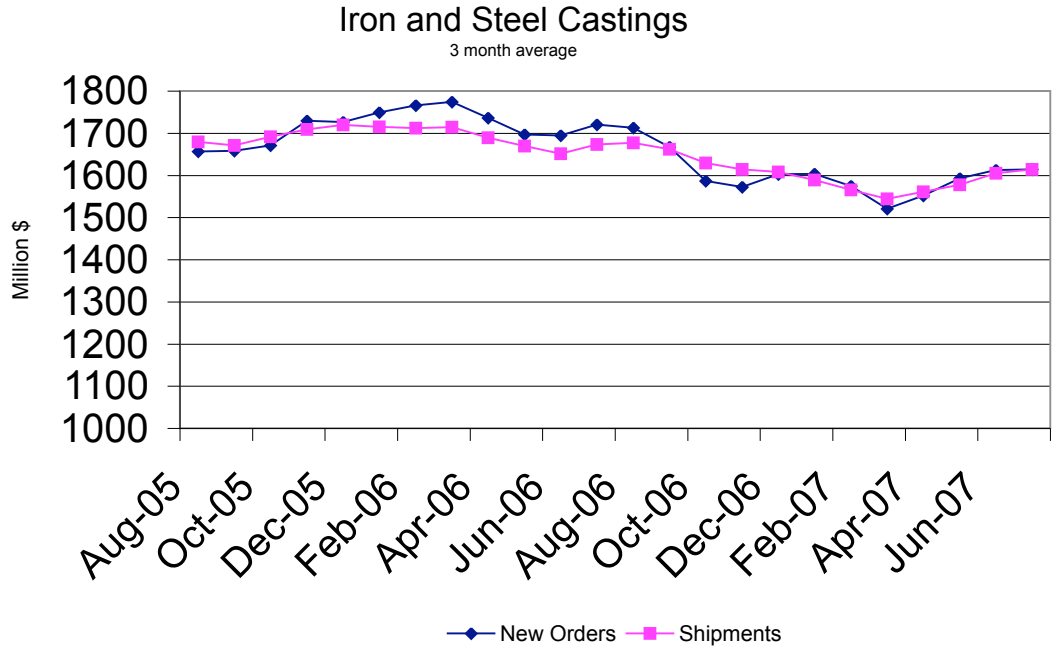

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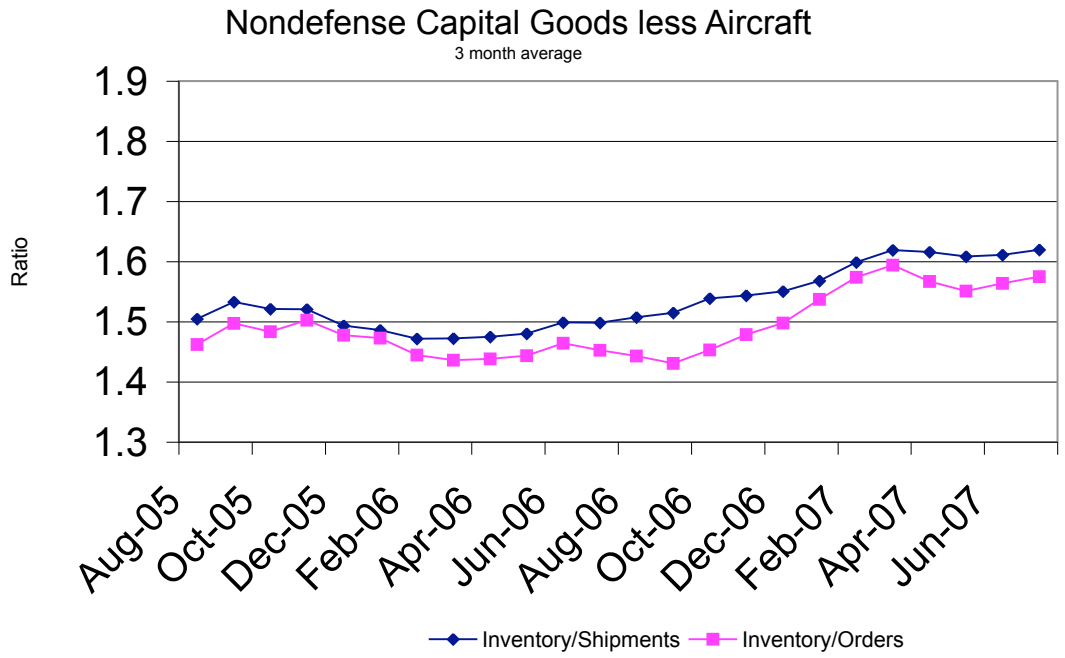
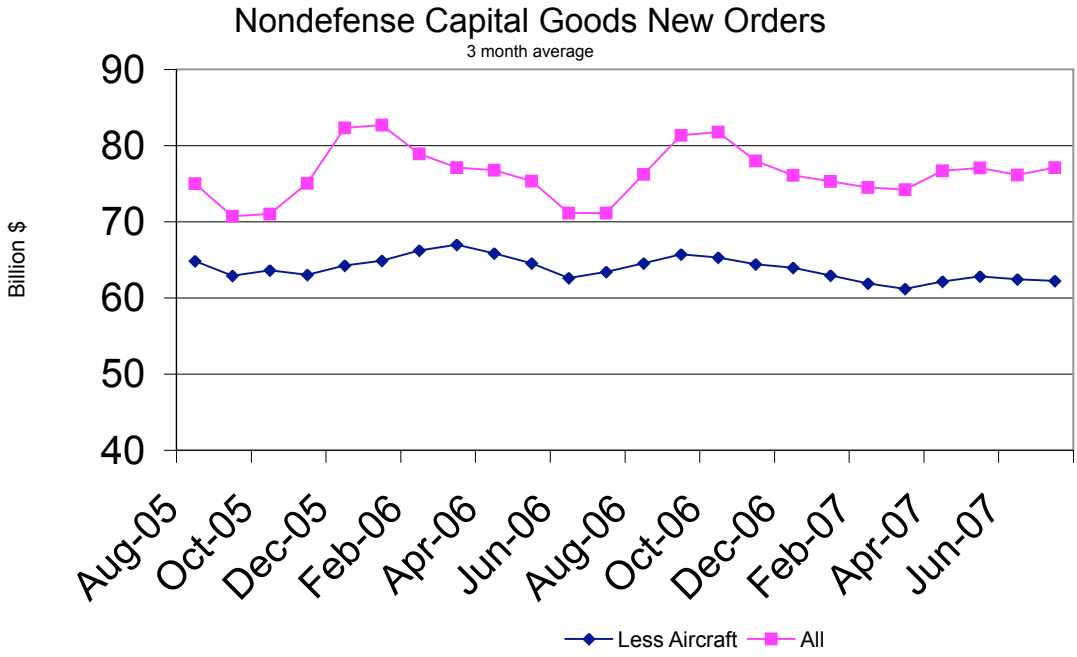


Department of Commerce



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