



SFSA CASTEEL REPORTER

Steel Founders' Society of America

a publication serving
SFSA steel casting industry Members

780 McArdle Drive Unit G, Crystal Lake IL 60014
Tel: 815-455-8240 Fax: 815-455-8241
<http://www.sfsa.org>

April — 2015

Casteel Commentary

This month's commentary reflects on the possibility of unbundling our sales of steel castings to demonstrate the value added inspections and finishing operations required by our customers. In particular, like rental car companies selling insurance, we should sell services that reduce the risk of buying a casting. We should, also like the rental car company selling gas, sell ancillary services like machining to make buying and using steel castings easier for new users. A link to a paper on services and industrial products is referenced and available for your enjoyment.

Steel Foundry Performance Benchmarking Study

Last month, SFSA sent out an e-mail notice requesting all members to participate in a performance benchmarking study administered by the Michigan Manufacturing Technology Center (MMTC). MMTC has extended this opportunity in the past for SFSA members and the results have provided a wealth of information on profitability, competitiveness, performance measures, productivity, and more. To date, MMTC reports that they have had several SFSA members respond but we would like to have every member participate to realize the value derived from this study. A representative from MMTC will be presenting the study results at the Spring Leadership Meeting in May and identify next steps you can take to improve your bottom line.

Please click here: <http://www.sfsa.org/sfsa/news/2015/benchmarking.pdf> for the survey. The pdf survey has fillable form fields. Upon completion, you may either e-mail or fax the survey to MMTC as follows: E-mail Michael McGray at transformationplanner@mmtc.org or fax to (734) 451-4201.

Market News

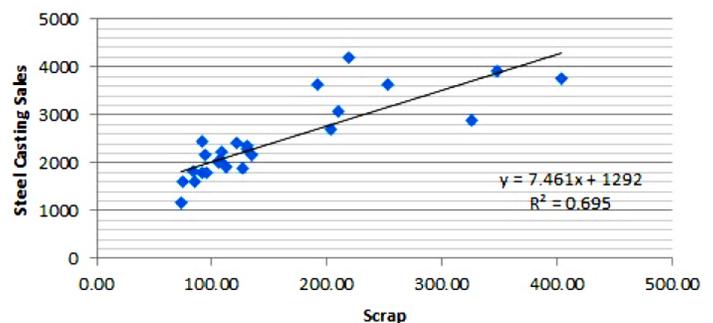
A friend of mine at a meeting in January suggested that I look at the relationship between scrap prices and steel casting sales. I had in the past thought briefly about this but failed to ever actually do the work. So last month I took some time and got the price of scrap and did the calculations. The correlation from 1996 through 2011 is shown in the graph. There is a 69% correlation of annual steel casting sales and scrap prices reported by the US Gov.

The time series plot also shows the close relationship of steel scrap prices and steel casting sales. The recent fall in scrap prices is troublesome. For this reason, I am including in the weekly postings the price of scrap. I am also posting the price of stainless scrap, assuming that it is correlated to stainless production and stainless casting demand. Steel castings and steel production are not necessarily correlated because they are used in the same end markets but could be because they are

Scrap Price and Steel Casting Sales



Scrap Price



subject to the same general market forces.

The SFSA trend cards for January show shipments of steel and stainless steel close to zero compared to the prior year. Bookings are below the prior year.

Backlog for steel and stainless castings have fallen for the past two years. In January of 2013 steel casting backlog was reported at 9 weeks and stainless casting at 11 weeks. Stainless casting backlog for January 2015 stands at 7 weeks and steel castings at 8 weeks.

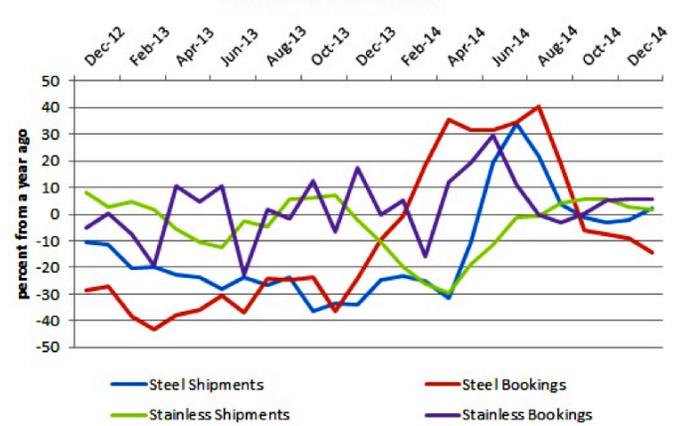
This is consistent with steel mill production reported by AISI that showed steady production levels through February. Since steel casting production tends to lag, the sharp drop in steel production since February suggests that steel casting demand should show weakness in the coming months.

Steel mill shipments have been trending down since October based on the Commerce manufacturing report. The orders and shipments of iron and steel castings have been declining during the same time period.

Capital goods new orders and shipments excluding aircraft have also flattened out and are declining in the last quarter of 2014.

All the indicators of near term demand are negative. Oil, copper, stainless scrap and steel scrap prices have all fallen sharply to lower levels. Steel production for the past 4 weeks has fallen to levels last seen in 2009. While some recovery is possible toward the end of the year, steel casting producers should be prepared for difficult market conditions in the near future.

SFSA Trend Cards



STEEL FOUNDERS' SOCIETY OF AMERICA - BUSINESS REPORT

SFSA Trend Cards	12 Mo Avg	3 Mo Avg	January	December	November
(%-12 mos. Ago)					
Carbon & Low Alloy					
Shipments	0.8	2.3	5.1	5.8	-4.0
Bookings	12.4	-14.2	-29.7	-10.0	-3.0
Backlog (wks)	7.8	8.1	8.2	8.0	8.0
High Alloy					
Shipments	-5.7	2.0	8.0	0.0	-2.0
Bookings	7.3	5.7	10.0	2.5	4.5
Backlog (wks)	7.6	7.3	8.0	6.0	8.0
Department of Commerce - Census Data					
Iron & Steel Foundries (million \$)					
Shipments	1,771.3	1,788.0	1,761	1,809	1,794
New Orders	1,818.3	1,836.0	1,881	1,838	1,789
Inventories	2,258.9	2,251.3	2,235	2,271	2,248
Nondefense Capital Goods (billion \$)					
Shipments	78.4	79.6	80.5	79.5	78.9
New Orders	85.6	78.0	79.9	73.0	81.2
Inventories	183.0	186.7	186.8	186.7	186.5
Nondefense Capital Goods less Aircraft (billion \$)					
Shipments	69.4	70.1	70.3	70.2	69.9
New Orders	71.0	70.5	70.7	70.3	70.6
Inventories	122.0	122.7	122.5	122.7	122.8
Inventory/Orders		1.7	1.73	1.75	1.74
Inventory/Shipments		1.7	1.74	1.75	1.76
Orders/Shipments		1.0	1.01	1.00	1.01
American Iron and Steel Institute					
Raw Steel Shipments (million net tons)	8.2	7.8	7.8	8.0	7.6

Casteel Commentary

In renting a car, the agent will inevitably ask you two questions in an effort to extract more money from you. Would you like to buy the gas? Which insurance coverage do you need?

Buying the gas is rarely a good investment since the rental company gets to keep the gas left in the tank. To make this a good investment you must run the car almost out of gas, have a flight or travel commitment with a schedule so tight that filling the car prior to return is impractical or be so highly compensated that the effort and time of filling the tank on your part is not worth the savings. At least you get something, the gas, for your charge.

Buying the insurance is virtually pure profit for the rental company. Most renters are already covered by their personal insurance, business insurance or by the credit card company. Coverage can be bought from a third party that is much less costly with equivalent or better coverage. While there is a real liability when you rent, the insurance is not economically efficient but intended to generate profits.

So when I sell steel castings, how can I generate the added profits like car rental companies? What can I sell that is a valuable addition like gas? What services like insurance can I sell?

We, as an industry bundle too much of our value into the price of the casting. We charge a piece price for our casting production when it includes added inspections, additional finishing, special heat treatments, etc. Our customers then evaluate us like we are making a commodity and compare our price per pound with other products and vendors.

Added operations like added finishing or machining should be separated on our pricing and billing to show the cost and value of these added operations. More importantly, we need to sell the services required by the customer to manage their risk.

Certifications, quality audits of first article, NDT inspections, additional finishing to meet these requirements are like selling insurance. These should be sold like insurance, to mitigate the risk of failure for the customer. Charging separately for these services allow our customers to gain confidence in using castings and allows us to recover the full cost of these services while demonstrating our production efficiency in the casting process.

One approach is to move onward providing a finished component with all the machining and limited assembly done so the customer has a final price. Then we are not selling a widget casting but a final widget.

An alternative approach is to actually sell or include warranty insurance for our products. While not universally applicable, we should seriously look at developing insurance pools that allow us to profit from managing the risk of casting performance. If we are able to profitably manage the risk, then we could develop value added NDT directed at performance requirements. Now we often do excessive inspections unrelated to performance to meet customer requirements set ignorantly to reduce their perceived risk of failure.

I think we should look carefully at the potential of unbundling services and directing them at our customers real needs, managing the risk of casting acquisition and performance. There is a great pdf on services and industrial products here:

http://ebusiness.mit.edu/research/papers/242_Cusumano_Theory%20of%20Services.pdf

I would recommend that you read it and together we should explore the possibility of leasing, insurance, warranties, etc. as a way of expanding our markets and improving our profitability.

Raymond

SFSA Membership Dinner at the AFS Metal Casting Congress

SFSA is hosting a dutch treat dinner for members and invited guests at the AFS Metal Casting Congress in Columbus, OH on April 22, Wednesday. The dinner will start at 6PM. The cost per participant is \$30 and includes a two-entree meal, salad, and 2 sides. If you will be joining us, please RSVP to Diana David at ddavid@sfsa.org. This is an opportunity to catch up with other SFSA members and exchange notes on the show. We are also planning a roundtable discussion after dinner.

SFSA Spring Leadership Meeting

The Spring Leadership Meeting has been scheduled for May 6th from 8am - 4pm in Rosemont, IL. This year's program will kickoff with an industry roundtable discussion followed by a full day of presentations of interest to foundry senior management and marketing personnel including an economic update from William Strauss, Senior Economist and Economic Advisor with the Federal Reserve Bank of Chicago. The following speakers have also been confirmed for this event:

- Michael McGray, MMTC – Steel Foundry Performance Benchmarking
- Neal Elliott, ACEEE - Energy
- Dean Bartles, DMDII - Digital Manufacturing Technology
- Steve Kohl, Warner, Norcross & Judd - Regulatory Update

The SFSA board will meet the day prior on May 5th and the marketing committee will meet the day after on May 7th. The meeting will be held at the Embassy Suites Chicago O'Hare. Click here (<https://www.sfsa.org/meetings/spring15>) for additional information.

Reservations may be made through the following link <https://www.loewshotels.com/madison/Steel-Founders-Fall-Leadership-Meeting?corpcode=SFS911>

Tentative Schedule Events:

Saturday, September 12

8:00am Executive Committee Meeting
12:00pm Group Outing (optional)
6:30pm Welcome Reception

Monday, September 14

8:00am Business Session
9:00am Spouse Breakfast
1:00pm Group Outing (optional)
6:30pm Dinner

Sunday, September 13

8:00am Board of Directors Meeting
12:00pm Group Outing (optional)
6:30pm Dinner

Tuesday, September 15

8:00am Business Session
9:00am Spouse Breakfast
6:30pm Reception

We look forward to seeing you in Washington DC!

2015 SFSA Awards

One of the privileges we have as an industry is to recognize our friends and peers for their service to our industry. SFSA has a number of awards we have established to recognize these contributions. We urge all members to please take a moment and consider who we should recognize for their work. The following is a list of possible recognitions from SFSA:

Frederick A. Lorenz Memorial Medal – awarded to an employee of a member of the SFSA for outstanding service to the industry.

Charles W. Briggs Memorial T&O Medal – awarded to an employee of a member of the SFSA for contributions toward the technical or operating advancement of the industry.

Thomas E. Barlow Award of Honor – awarded to person that has made a distinguished contribution to the industry but is not eligible for the Lorenz or Briggs awards.

Robert G. Shepherd Award – awarded to the two best papers appearing in the T&O proceedings, authors must be an employee of a member of the SFSA.

Honorary Membership – awarded to SFSA past presidents and SFSA medalist on their retirement from full-time activity with a member company. Members may also nominate retirees from member companies.

More information on SFSA awards: <http://www.sfsa.org/sfsa/news/2015/SFSA Awards 2015.pdf>

Our current Awards Committee includes:

Jack Lilley jack.lilley@metaltek.com George Hartay gahartay@wi.rr.com

Ed Kaczmarek ekaczmarek@spokaneindustries.com

Your nomination can be sent to any one of them or to Ryan Moore at rmoore@sfsa.org.

SFSA Fall Leadership Conference

The Board of Directors of the Steel Founders' Society of America invites you to attend the Fall Leadership Conference September 12-15, 2015. The meeting will be held in Washington DC with opportunities to connect with lawmakers as well as enjoy our nation's capital. We look forward to your attendance and participation in this educational and networking meeting and welcome the opportunity to share new developments in the steel casting industry with you. The planned schedule of events is below.

The meeting will include industry business sessions with presentations from:

- Richard Brandt, Iacocca Institute-Lehigh University - Globalization Going Backward
- Joe Trauger, National Association of Manufacturers - Workforce Development, Lobbying, Healthcare
- John Anton, IHS Global - Steel Markets Update
- Ron Lorentzen, International Trade Administration - Manufacturing Trade Issues
- Max Schumacher, German Foundry Association - German Foundry Business Climate and Trends

Registration is currently being offered at a discounted rate through June 1 -

<https://www.sfsa.org/meetings/fall15>. Reservations may be made through the following link

<https://www.loewshotels.com/madison/Steel-Founders-Fall-Leadership-Meeting?corpcode=SFS911>

Future Leaders Meeting

The Future Leaders group will be meeting on May 28-29 in Pittsburgh, PA. This group truly is the future of our industry. People that have participated early on are now supervisors, managers, or even vice presidents! Give some thought to who you feel is the future to your foundry. The group is made up of both technical and operating people. Meetings focus on a foundry tour (McConway & Torley will be featured at the upcoming meeting) and opportunities to learn through networking with peers and from Subject Matter Experts. In May, Raymond Monroe will present on steel casting alloy selection and performance. Please contact David Poweleit at poweleit@sfsa.org for additional information and to RSVP.

T&O Western Division Meeting

The T&O Tooling meeting will be held April 16-17 in Salt Lake City, UT and include a tour of May Foundry and Machine. As tooling is essential to making our product, the presentations will focus on pattern making technology such as Additive Manufacturing and other uses of 3D technology in the foundry. This meeting will serve as a good opportunity for your patternmakers, Magma users, and QC personnel to discuss current opportunities and challenges. Please contact David Poweleit at poweleit@sfsa.org for additional information and to RSVP.

North Central Division Meeting

The T&O Troubleshooting meeting will be held May 14-15 in Duluth, MN and includes a tour of ME Global. "Troubleshooting the Steel Casting Process" is a SFSA Green Book that was published several decades ago. Green Books were a compilation of lectures on a given topic at the T&O Conference. The upcoming meeting will look at different challenges in making steel castings and how to resolve them. Topics will range from inclusions to gas to sand with presentations made by member foundries talking about their experiences. Attendees will also share their troubleshooting techniques as part of a roundtable discussion. Please contact David Poweleit at poweleit@sfsa.org for additional information and to RSVP.

SFSA Research Review

After a great review and tech steering meeting for the Carbon and Low Alloy Research Committee and the High Alloy Research Committee in Iowa City, we will plan to review the full SFSA R&D portfolio at the SFSA Research Review on July 27-29. Please save the date!

Research Meeting Summary

SFSA conducted an R&D project review with University of Iowa (UI), University of Northern Iowa (UNI), and Iowa State University (ISU) on March 9-11 at UI in Iowa City, IA.

UI presented their research on the effect of core expansion on dimensional changes in steel castings. Stress simulations accurately predicted dilation of a thick walled cylinder casting. Additional distortion measurement on production castings will be done. Another project that was discussed was the Gage R&R of the revised new radiographic standard. Improved reproducibility and repeatability compared to previously conducted study was achieved. Their model development for porosity prediction in Mn steel was also presented. Simulations using the modified thermophysical properties seem to improve porosity predictions. UI also gave an update on the characterization of riser sleeves. Properties have been developed for all sleeves chosen to be analyzed except for 1 exothermic sleeve. Based on the modulus extension factor, which measures a sleeve's performance under a given condition, all risers performed similarly. Once all properties are obtained, the dataset will be provided to SFSA members.

UNI talked about their study on physical properties of 3D printed sands. Suggestions for future analysis include investigation of the effect of compaction and determination of binder-resolution relationship. Current results of their work on developing tools to improve accuracy of casting dimensional prediction were also shown. It was concluded that the linear shrink model did not accurately predict the dimensions of the test casting. Additional analysis will be done using different geometries, sands, binders, alloys, and core dimensions. In addition, UNI is creating a thermophysical properties dataset for molding materials.

ISU completed their work on the effect of cooling rate on hardness for CA6NM. It was found that there is no significant relationship between the cooling rate from the solutionizing temperature and the quenching medium on hardness of CA6NM. Other on-going high alloy projects involve the investigation of the cold spray process to repair surface indications on CA6NM and the development of a method to predict ferrite in CD3MWCuN. ISU is also working on developing digital surface standards. Further work is still needed to incorporate comparison of the proposed standard with SCRATA and C9 standards. An advanced reverse engineering method through laser scanning for production of wood pattern tooling for a sand casting was also presented. Parting line analysis and core method will be done to further enhance this capability. An update on the design feedback system was also given. Participants for a design group study are needed to evaluate tool performance.

- Safety News -

Journey to Safety Excellence

The National Safety Council launched the Journey to Safety Excellence (<http://www.nsc.org/learn/NSC-Initiatives/Pages/journey-to-safety-excellence.aspx>) campaign last year — a workplace advocacy initiative focusing on continuous improvement to help employers make workplaces safer by reducing injuries and illnesses, ultimately helping businesses save money. OSHA has partnered with the NSC to spread word about the Journey campaign.

In 2012, the NSC reported that workplace injuries and fatalities cost our economy \$198.2 billion. The Journey to Safety Excellence provides an opportunity for employers to engage with, and benchmark themselves against other companies to learn best practices, and seek techniques to continuously advance safety within their own companies. Doing so can affect the bottom line since every avoided injury potentially saves \$39,000 and every avoided fatality can save \$1.42 million. Individuals interested in measuring safety in their workplaces can join for free and gain access to safety – improvement resources like assessing the effectiveness of your safety management system or evaluating your employees' perception of your safety culture.

Safety and HR Meeting

There is still time to attend the next Safety/HR meeting to be held April 14-15 at the Radisson Hotel Milwaukee West in Milwaukee, WI. Attendees will meet for dinner the evening of April 13 and the meeting will kickoff the following morning at 8am with a tour of Badger Alloys. Transportation will be provided to and from the hotel to the foundry. The safety topics and roundtable discussions will follow the tour on Tuesday. Wednesday will be a half day of HR presentations by guest speakers covering generation gap training, accountability in the workplace, and skilled workforce training resources for steel foundries. Please contact Ryan Moore at rmoore@sfsa.org to RSVP.