



SFSA CASTEEL REPORTER

Steel Founders' Society of America

a publication serving
SFSA steel casting industry Members

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Casteel Commentary

The Casteel Commentary this month summarizes the results of the SFSA Board of Directors strategic planning session. They identified new product development, customer education and workforce development as key issues we must address. They have started to set up committees to address these challenges. We need your help and support in this effort.

SFSA Master Recognition

We would like to encourage each SFSA member company to identify anyone in their plant that is a master at some aspect of the steel casting process, a molder or melter, a welder or inspector, a foundry engineer or maintenance specialist. We want to consider them to be recognized as a master in their skill by SFSA. Recognition is a powerful tool we are failing to utilize to encourage and motivate our artisan workforce that creates the castings we produce. We want to recognize them. Please contact Ryan Moore for additional information. rmoore@sfsa.org

Western T&O Division Meeting

The SFSA Western meeting will be held on Thursday, April 16th and Friday, April 17th in Salt Lake City, UT. The meeting will feature presentations on tooling and innovative uses of Additive Manufacturing, and a tour of May Foundry & Machine Company. Mike May will speak about integrating solidification analysis with low cost Additive Manufacturing to make a casting. Frank Peters will present on utilizing 3D technology for Reverse Engineering and creating digital surface reference standards. Gary Burrow will present on innovative uses of Additive Manufacturing for fixtures and cost-effective, production cores. To RSVP or for questions, please contact David Poweleit at poweleit@sfsa.org.

Also, advance notice for the North-Central T&O Division Meeting (5/14-15 at ME Global in Duluth, MN).

2014 T&O Best Papers

SFSA would like to congratulate the best paper winners from the 2014 T&O conferences. The recipients are:

- David Jolin, Spokane Industries, Robert G. Shepherd Award for his paper on "Spokane Industries' Experience Converting from Film-Based to Computed-Radiography Inspection"
- Anoop Balakrishnan and Kyle Long, Harrison Steel Castings Company, Robert G. Shepherd Award Co-Runner-up for their paper on "Energy Savings and Sustainability in the Foundry"
- Jessica Okhuysen, Corporación POK, Robert G. Shepherd Award Co-Runner-up for her paper on "Implementing an ERP... and Actually Making it Work"

It should be noted that all of the awardees are also first time presenters. The conference had a high percentage of first time presenters, which bodes well for future conferences to come. The T&O Committee is honored to showcase these papers by making them available for download [here](#). We appreciate the support provided to the steel casting industry through papers such as these. To receive

the full conference proceedings and hear the authors firsthand present their material, please make plans to attend the 2015 National T&O Conference on December 9th – 12th.

GIFA and Turkey Steel Foundry Tours

Last call for participants in GIFA (Dusseldorf, Germany) or the steel foundry tours in Turkey. GIFA will take place the week of June 15th and the foundry tours will be during the week of June 22nd. To RSVP or for questions, please contact David Poweleit at poweleit@sfsa.org.

SFSA Research Portfolio

SFSA is involved in the following research projects for the steel foundry industry. While SFSA is often a minority partner in consortium activities or within the research portfolio at a given university, SFSA is considered an asset when it comes to providing industry support and guidance, along with strong technical steering. SFSA is proud to participate in the latest R&D, which has a multi-million dollar annual value and leverages the technical resources of SFSA. Several of the research projects are incorporated into the Marketing Committee's steel casting market plan.

- University of Iowa: riser sleeves, casting dimensions and distortions, Mn steel porosity, development of high-performance crankshafts, modeling microporosity
- Iowa State University: Rapid Pattern Maker, mapper, digital surface standards, casting designer feedback tools, reverse engineering, CA6NM transformation, CA6NM cold spray repair, duplex ferrite prediction
- University of Northern Iowa: 3D printing, modeling thermal expansion of silica sand
- Missouri University of Science & Technology: heat treatment and porosity impact on high strength steel properties
- University of Alabama at Birmingham: heat treatment and porosity impact on high strength steel properties, casting cost modeling, ASTM NDE methods, rigging for clean steel
- Lehigh University: CES welding procedure, high strength steel welding procedures, HA castings for HF, heat treatment of CN7M
- Penn State University: database of properties of high strength steels
- University of Arizona: 4340 as-cast dendrite structure
- Eglin AFB: porosity forming and coalescing

SFSA will be conducting an R&D project review with University of Iowa, University of Northern Iowa, and Iowa State University on March 9-11 (meeting to be held at UI in Iowa City, IA). The SFSA Annual Research Review will again be held in Chicago on July 27-29. If you are interested in either of these meetings or to join the Carbon & Low Alloy or the High Alloy Research Committees, please contact David Poweleit at poweleit@sfsa.org for more information.

Specifications

Specifications and standards are integral to our business. ASTM, ISO, NACE, API, ASME, EN, DIN, AMS, mil specs, internal customer specs, etc. all set requirements for the cast steel product that creates revenue. Not understanding these specifications and the hierarchy of requirements imposed by referenced standards will cost you money. One of the best ways to secure an understanding of these specifications is by getting involved. Membership in ASTM costs only \$75 and you also receive a free copy of one book of standards (Volume 01.02 is on Ferrous Castings). The SFSA Specification Committee meets in conjunction with the ASTM A01.18 steel casting subcommittee. The next meeting will be held in Anaheim, CA on May 19th. Please contact David Poweleit at poweleit@sfsa.org for more information on this meeting or to join the Specification Committee. All members should also be aware of a free reference on steel casting specifications, which should be shared openly with customers – Steel Casting Handbook Supplement 2, Summary of Standard Specifications for Steel Castings. It can be downloaded at <http://www.sfsa.org/sfsa/pubs/hbk/s2.pdf>

Future Leaders

Recent announcements and surveys have noted SFSA's involvement with the NIST foundry industry roadmap, which will develop an industry-wide plan for future development to insure the longevity of the metalcasting industry. That said, who will be running your foundry in 10 or 20 years? Who will be your floor supervisors, your engineers, your metallurgist? Plans are great, but unless we have the people to get the work done, the plans are meaningless. SFSA for well over a half dozen years has offered an opportunity to help grow this most critical resource through our Future Leaders group. The group meets twice a year with opportunities ranging from networking, to solution sharing, to mini-seminars, to presentations from SME, to foundry tours. The group consists of people that are new to the industry and includes both technical and operations background. The next meeting for the Future Leaders group is tentatively scheduled for May at McConway & Torley. To get someone from your foundry on track to take over greater responsibilities, please contact David Poweleit at poweleit@sfsa.org to RSVP for the meeting and get on the roster for this group.

Market News

SFSA trends show clear sign of falling back to slow or no growth for the end of 2014. This slowdown is also seen in the Commerce reports for iron and steel mill products, steel and iron castings and capital goods orders. The dramatic drop in oil and copper prices suggests a weaker economy going into the first half of 2015 with the possibility of a severe downturn.

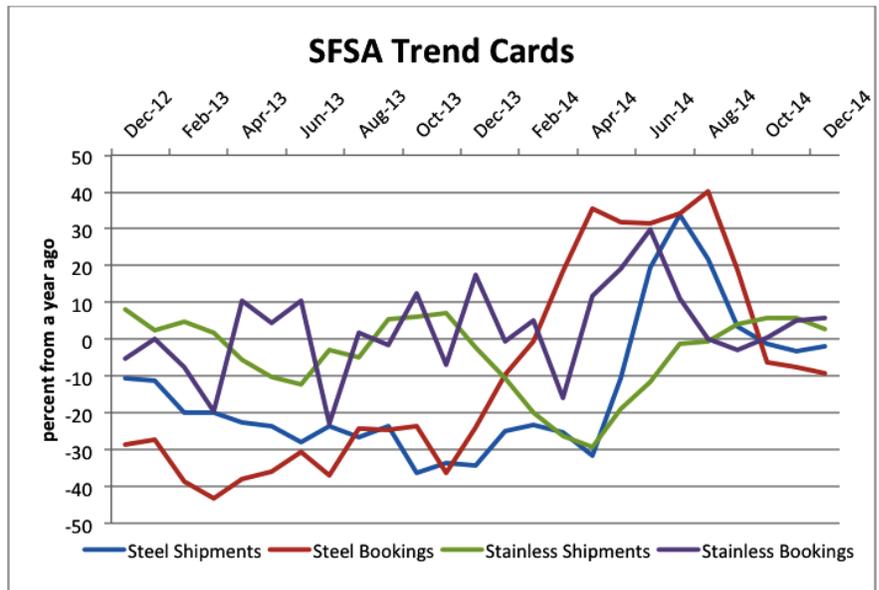
Casteel Commentary

Our SFSA Board of Directors based on their insights and input from the survey from our members late last year engaged in a strategic planning session to identify the compelling issues that face us in the coming years. After brainstorming and prioritizing the Board identified 5 issues that face us:

1. New Product development
2. Customer Awareness and capability
3. Workforce development
4. Adequate capital funds for investment
5. Regulatory pressures

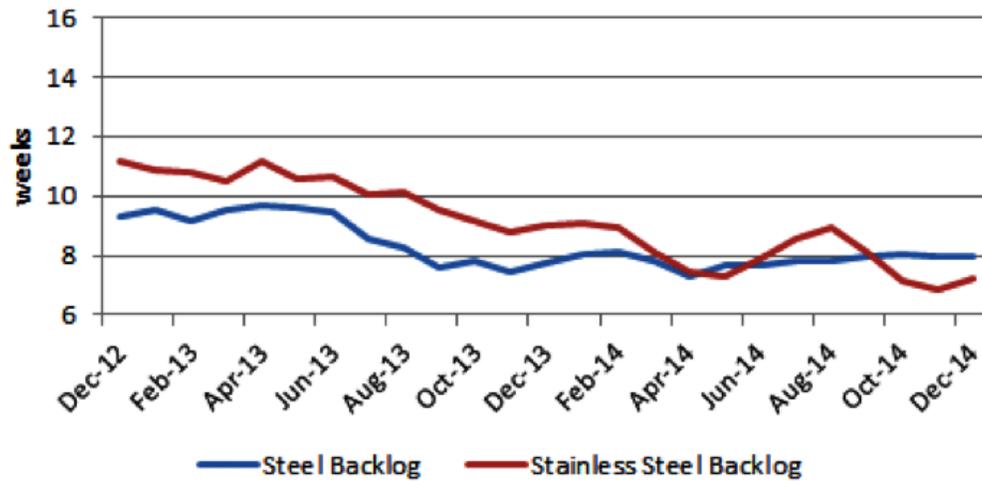
New product development is key to industry growth and profitability. Designing castings is still based on experience and industry practices and not subject to quantitative analysis to assure performance. This traditional approach has made the use of castings relatively inaccessible to the next generation of engineers. They are expected to accept industry practices on margins of safety, casting factors, quality levels and performance capabilities based on experience and industry practice. They have no way of plugging our NDT levels or solidification models into their calculations or FEA models. We need new design methods and standards to allow design engineers to create new high performance parts and assure their performance with capable NDT.

This first challenge of new product development is compounded by the problem of the loss of capability at our customers. Our customer base is rapidly losing their existing subject matter expertise



in the use of steel castings and is not replacing it. Their process system approach assumes that some management structure will obviate the need to understand the components and their manufacture. This provides us with a threat that they will cease to use steel castings in justified applications. It gives us the opportunity to utilize our expertise to create more value and profit from it. Our binomial workforce demographic of a generation of older employees rapidly retiring and being replaced or failing to be replaced by younger staff with different skills and vocational expectations is a fundamental challenge. In the process, this means we need to develop a skilled workforce that is capable of ever more sophisticated and complex production processes and products. It means finding ways to modify our processes and products to de-skill or reduce the human effort and skill and replace it with automation and information technology. We need to reduce the amount of human touching castings and the human effort and manual skill required to make products. At the management and technical level, we need subject matter expertise and leadership to grow and profit. These three challenges are intertwined and will require new and innovative thought. The last two challenges will be significant but likely not amenable to SFSA efforts. Our SFSA Board has determined to set up some short-lived committees to plan and act to move our industry forward. If you are interested in supporting one of these efforts or have ideas in how we can effectively make a difference, please contact Raymond Monroe.

SFSA Trend cards-Backlog



Iron and Steel castings and steel mill shipments



**STEEL FOUNDERS' SOCIETY OF AMERICA
BUSINESS REPORT**

SFSA Trend Cards (%-12 mos. Ago)	12 Mo Avg	3 Mo Avg	December	November	October
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Carbon & Low Alloy

Shipments	-1.0	-1.9	5.8	-4.0	-7.5
Bookings	14.9	-9.2	-10.0	-3.0	-14.6
Backlog (wks)	7.9	8.0	8.0	8.0	8.0

High Alloy

Shipments	-7.8	2.7	0.0	-2.0	10.0
Bookings	4.2	5.7	2.5	4.5	10.0
Backlog (wks)	7.7	6.8	6.0	8.0	6.5

**Department of Commerce
Census Data**

Iron & Steel Foundries (million \$)

Shipments	1,766.6	1,825.3	1,861	1,794	1,821
New Orders	1,816.8	1,878.7	1,929	1,789	1,918
Inventories	2,258.0	2,261.7	2,245	2,248	2,292

Nondefense Capital Goods (billion \$)

Shipments	77.9	79.3	79.2	78.9	79.8
New Orders	85.5	79.1	73.6	81.2	82.4
Inventories	182.3	186.4	187.2	186.4	185.6

**Nondefense Capital Goods
less Aircraft (billion \$)**

Shipments	69.1	70.1	70.0	69.9	70.3
New Orders	70.8	70.7	70.6	70.6	71.0
Inventories	121.8	122.9	123.0	122.8	123.0

Inventory/Orders		1.7	1.74	1.74	1.73
Inventory/Shipments		1.8	1.76	1.76	1.75
Orders/Shipments		1.0	1.01	1.01	1.01

American Iron and Steel Institute

Raw Steel Shipments (million net tons)	8.2	8.0	8.0	7.6	8.5
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Safety News

True Cost of a Workplace Accident

The foundry industry is like any other industry in that its most valuable resource is its workforce. That is why it is important to have an effective safety program and culture in place to protect your most valuable organizational asset. The challenge is when a worker gets injured, the costs can be significant.

The direct costs of injuries and illnesses are apparent: claims under worker's compensation, health, and disability insurance. But the indirect costs can often be much more severe than direct costs, with some experts claiming a ratio of indirect to direct costs as high as 20:1. Indirect costs include the lost time of the injured employee, management's time to investigate the accident, damage to equipment, training other employees to cover injured party, dealing with regulators, legal fees, etc. The National Safety Council estimates that the lost time associated with the average injury costs nearly \$30,000 and the most injury-prone jobs are in manufacturing and healthcare.

A majority of workplace accidents are attributed to human error caused by rushing, frustration, fatigue, and complacency. Establishing a safety culture that addresses these issues can have a profound impact on workplace safety and the bottom line. Aside from the human aspect of safety awareness, given the high and often hidden costs of accidents, employers are increasingly turning to PPE and other safety products for preventing injuries or making them less severe. A Liberty Mutual Workplace Study showed that executives reported that \$1 invested in injury prevention returned \$2 or more.

There are a variety of PPE and other safety products that you can provide for your employees. Commit the time and resources to evaluate what is best for your foundry operation. If you are not sure, talk to industry peers. You can also take advantage of the Grainger program for SFSA members. Grainger provides sound advice on their products and as a member of SFSA enrolled in the program, you receive a minimum of 10% discount on all catalog items and free shipping on all orders. Safety is the right thing to do for your employees. It's also the smart thing to do for your company's bottom line.



SFSA members save an average of \$4,300 a year using the SFSA Grainger Discount Program.

Steel Casting Wiki

SFSA staff recently updated both the design and content of the steel casting wiki. The front page of the wiki was completely redesigned for better usability and overall visual appeal. In addition, links to the casting design tutorials and other items of interest were added to make them more accessible for members.

As for content updates, an additional 205 technical reference documents were incorporated into the site. These consist of research reports in the areas of carbon & low alloy steel castings, high alloy steel castings, SFSA Research Foundation reports, and SFSA Technical Service Reports. The Technical Service Reports are case studies of the causes of defects in actual production parts. Other useful references that have been added include publications on ultrasonic testing of steel castings, and fracture toughness in relation to steel casting design. In addition, the wiki now has a full copy of the 4th Edition Steel Castings Handbook, a valuable resource that will be used as a reference to improve the breadth and depth of many of the existing wiki articles.

Finally, SFSA connected the wiki and the SFSA website so that logged-in users of the wiki also have access to member-only areas on the SFSA website <http://www.sfsa.org>, and to the Directory of Steel Foundries supplier database. A link to this resource can be found on the wiki's front page.

If you haven't already, we urge you to sign up for an account on the wiki and start using it. Go to http://wiki.sfsa.org/index.php/Get_an_account and sign up.

Safety/HR Meeting

All safety and HR personnel should plan 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. [Click here for additional information.](#)

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:

- Neal Elliott, ACEEE - Energy
- Ford Turrell, Warner, Norcross & Judd – Regulatory Update
- Dean Bartles, DMDII – Digital Manufacturing Technology

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 for additional information.](#)

AFS Metalcasting Congress Dinner

This year's AFS Metalcasting Congress is April 21-23 in Columbus, OH at the Greater Columbus Convention Center. SFSA is hosting a Dutch treat dinner for members and invited guests on Wednesday, April 22nd. Please look for a future email with details and registration form. This will be an opportunity to catch up with other SFSA members in attendance and exchange notes on the Congress. We are also planning a roundtable discussion after dinner.

Fall Leadership Conference

Please save the date and plan to attend the SFSA Fall Leadership Conference will be held September 12-15 at the Loews Madison Hotel in Washington, DC. The meeting will include industry learning sessions, roundtable discussions, dinners, and group social events for networking with industry leaders. SFSA is looking forward to a strong program, which will include key topics like globalization, workforce development, trade issues, and steel markets analysis. Additional details will be made available soon.