



# SFSA CASTEEL REPORTER

Steel Founders' Society of America

a publication serving  
SFSA steel casting industry Members

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## June — 2019

### Casteel Commentary

This month's Casteel Commentary describes the success of our Cast in Steel Competition. We are encouraging all our members to consider helping form a team to compete next year.

### SFSA Research Review – July 16-18

Please make your plans to attend the annual SFSA Research Review July 16-18 at the [Four Points Sheraton Chicago O'Hare](#) (Room block cutoff July 1).

(<https://www.marriott.com/events/start.mi?id=1556217511237&key=GRP>)

With two major programs, Digital Innovative Design (DID) and with AMC's Innovative Casting Technologies (ICT), along with other steel casting research, we are planning for three full days (the agenda will be finalized soon). The Review covers the latest steel casting research, and is your opportunity to interact with the researchers and provide industry steering. The event features both Carbon & Low Alloy and High Alloy topics; it is the R&D featured at the National T&O but covers the complete portfolio of research and with no cost for the meeting (travel, hotel, meals, etc. are the attendees' responsibility). For questions, contact David Poweleit at [poweleit@sfsa.org](mailto:poweleit@sfsa.org). [Please RSVP here.](#)

(<https://sfsa.site-ym.com/events/EventDetails.aspx?id=1238307>)

### Fall Leadership Meeting – September 7-10

The Board of Directors of Steel Founders' Society of America invites you to attend the Fall Leadership Meeting September 7-10, 2019, at the Kimpton Shorebreak Resort in Huntington Beach, CA. This is an essential meeting for leaders in the steel casting industry to learn, strategize and network.

This year's business sessions will include a keynote from [Tom Morrison](https://www.tommorrison.biz) on disruptive technologies and what you need to drive innovation, Southwest Research Institute on the latest in foundry robotics, Wil Tinker on new equipment technology, Pinson Valley Heat Treat on a costing model for heat treatment, Skip and Martha Guimond will provide an EHS Regulatory Update, SFSA market forecast, and a hot button topic industry roundtable.

The Society has also arranged several optional group activities for members and spouses which include the Newport Beach bike tour, outrigger canoe race, and SFSA beach Olympics.

Online registration and hotel information can be found here – [FLM2019](https://sfsa.site-ym.com/events/EventDetails.aspx?id=1224103) (<https://sfsa.site-ym.com/events/EventDetails.aspx?id=1224103>). Early registration rates are available now through June 30, 2019. Also, companies sending more than one attendee will receive a \$500 discount for each additional registrant. If one person registers all the attendees at the same time, the discount is automatically calculated by the registration website. If each attendee registers separately, each additional attendee will need to use the following discount code: **FLM2REG**.

### SFSA Tech Resources

Prof. Dave Van Aken of MS&T provided the latest revision of his Hardenability workbook which was developed using equations in ASTM A255. The modifications include calculation of: hardenability with or without a prior austenite grain size contribution, volume change during martensitic transformation over the range of temperatures from martensite start ( $M_s$ ) to the quench bath temperature, and boron effectiveness directly from the chemistry. The workbook is available [on the wiki](#)

([https://wiki.sfsa.org/index.php/2016 Technical %26 Operating Conference#Workshop Materials](https://wiki.sfsa.org/index.php/2016_Technical_%26_Operating_Conference#Workshop_Materials)) and on the [SFSA website](https://www.sfsa.org/folio/downloads) (<https://www.sfsa.org/folio/downloads>).

## **Market News**

The SFSA trend card show modest growth with a slowdown in the markets. Bookings for all casting are still positive but at 5% rather than over 15% as has been the case. Shipments for stainless products are growing but steel products are slowing. Troubling is the indication that booking changes are lower than shipments, suggesting a slowdown in activity.

Our backlog levels however continue to show strength. They are at 10 weeks for stainless and 11 weeks for steel castings.

For steel mill products, production has flattened out while prices are sliding. This shows also a softening market for steel castings. Iron and steel casting still show a positive trend through April but our slowing markets and a slowing automotive market should dampen this growth in the next couple months.

Non-defense capital goods show slow growth. Copper prices and oil prices are down from recent highs also suggesting slowing conditions.

It is likely that we will see slowing demand for the second half of 2019.

## **Foundry Intern Scholarship Registrations Due July 1st!**

Recruiting students to join our industry and grow into leadership positions remains a critical need in the steel casting industry and a strategic initiative of the Society. The Steel Founders' Society Foundation aims to attract the next generation workforce by providing scholarships to student interns. To compete for the scholarships, interns are required to work at a member foundry and carry out a specific task or investigation and selected works are presented at the annual T&O conference. We encourage all members that employ interns in 2019 to give them an opportunity to receive a scholarship by registering these interns using the [forms found here](https://www.sfsa.org/scholarships.php) (<https://www.sfsa.org/scholarships.php>).

## **SFSA T&O Conference – DECEMBER 11-14**

SAVE THE DATE! The 2019 National T&O Conference will be held on December 11<sup>th</sup>-14<sup>th</sup> at the Loews Hotel in Chicago. Additional details on the program and registration will be sent to members in the coming months.

## **Casteel Commentary**

Our industry is an exciting opportunity for many young people if...

We can have them experience the excitement of pouring steel, the technology of solidification modeling, the 3D printing production of patterns, the heat treatment, finishing of a complex high performance part and personal testing demonstrating its performance capability.

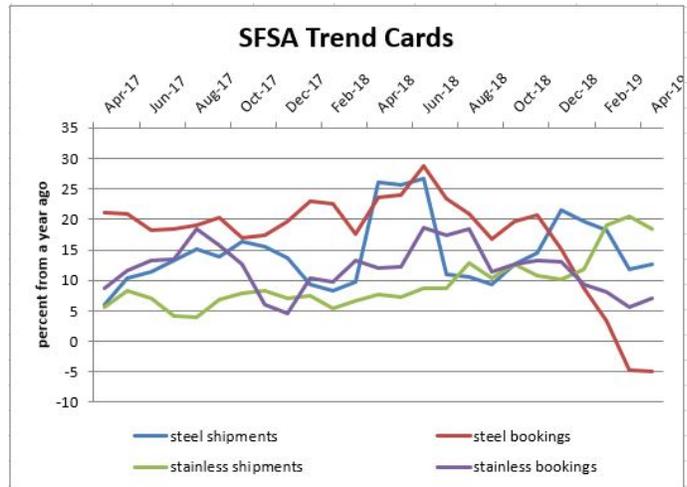
I know this to be true.

How?

Cast in Steel

SFSA sponsored the first annual Cast in Steel Competition this April in conjunction with the AFS Cast Expo. We challenged universities and steel casting members to collaborate to equip student teams to produce a Viking Ax for a performance competition. We had 20 teams from 16 universities produce axes for the competition.

The enthusiasm of the students who participated in the competition was inspiring. Students who did not know what a casting was and saw the competition formed teams to be able to compete. They learned CAD modeling and solidification simulation to design their dream ax. They learned to program 3D printing equipment to make the pattern. They built the pattern and made the molds. They melted



steel and cast their ax. They finished the ax and heat treated it. They documented their efforts in a submitted tech report. They got to test the ax in the competition chopping into a piece of steel 3 times and then cutting a one inch rope.

Their only disappointment was that they wanted more trials for testing their ax.

Wow!

The winning ax tech report was submitted by Texas State University. The report is available here:

<https://www.sfsa.org/doc/cis2019/Final%20Reports/Texas%20State/Final%20Report.pdf>

The winning ax performance was submitted by [Instituto Tecnológico de Morelia](https://www.sfsa.org/doc/cis2019/Final%20Reports/Morelia/Viking%20Axe%20Report%20(Fundidora%20Morelia-ITM-Rogelio%20Magan%20CC%2083a).pdf) ([https://www.sfsa.org/doc/cis2019/Final Reports/Morelia/Viking Axe Report \(Fundidora Morelia-ITM-Rogelio Magan%CC%83a\).pdf](https://www.sfsa.org/doc/cis2019/Final%20Reports/Morelia/Viking%20Axe%20Report%20(Fundidora%20Morelia-ITM-Rogelio%20Magan%20CC%2083a).pdf)).

A picture of the winning ax is shown in Figure 1.

All of the entries are shown on the website:

<https://www.sfsa.org/castinsteel/>

We were delighted to be able to have Ben Abbott, a two time champion and judge from Forged in Fire, assist in the competition and we intend to have him back next year.

SFSA collaborated with the Foundry Educational Foundation (FEF) in promoting this competition. Our intent next year is to have the competition included in the AFS Metalcasting Congress working with FEF.

I would encourage you to consider working with a college that you would like to collaborate with and recruit from to assemble a team for this event next year. As an industrial partner for a team, you get a number of advantages:

- Access to students early in their program who self-select to be interested in our type of industry who could be future interns or recruits,
- Collaboration with a local or targeted college to develop stronger working relationships,
- Ability to show the capability of a steel casting in a high performance task,
- Change in perception of the level of technology in production and ability to perform of steel castings with students, colleges and the community, and
- Excitement in your own workforce collaborating with students to make a casting that is cool!

If you are considering this, contact me or Diana so we make sure you get all the information for this next year's competition. This may be the best PR activity for our industry in years!

*Raymond*



**Figure 1 Performance Champion for the first Cast in Steel Competition**

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

<b>SFSA Trend Cards</b> (%-12 mos. Ago)	12 Mo Avg	3 Mo Avg	April	March	February
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**Carbon & Low Alloy**

Shipments	14.0	12.6	16.5	10.0	11.2
Bookings	10.4	-10.0	-20.0	-10.0	0.0
Backlog (wks)	9.6	11.5	10.5	12.0	12.0

**High Alloy**

Shipments	13.0	18.5	14.0	10.0	31.5
Bookings	11.6	7.0	8.4	3.0	9.5
Backlog (wks)	9.8	9.8	10.0	10.0	9.5

**Department of Commerce  
Census Data**

**Iron & Steel Foundries (million \$)**

Shipments	1,432.9	1,537.0	1,565	1,545	1,501
New Orders	1,461.2	1,524.3	1,561	1,538	1,474
Inventories	2,067.8	2,130.7	2,132	2,130	2,130

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

Shipments	77.9	77.7	75.9	78.3	79.0
New Orders	77.2	75.9	73.9	77.8	75.9
Inventories	180.8	184.9	185.9	185.0	183.7

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

Shipments	68.9	69.5	69.4	69.4	69.8
New Orders	69.1	69.1	68.7	69.4	69.2
Inventories	126.3	128.7	129.1	129.0	128.1
Inventory/Orders	1.8	1.9	1.88	1.86	1.85
Inventory/Shipments	0.0	1.9	1.86	1.86	1.83
Orders/Shipments	0.0	1.0	0.99	1.00	0.99

**American Iron and Steel Institute**

Raw Steel Shipments (million net tons)	8.0	8.1	8.2	8.3	7.7
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