



# SFSA CASTEEL REPORTER

Steel Founders' Society of America

a publication serving  
SFSA steel casting industry members

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## November — 2020

### Casteel Commentary

Steel castings are required for every future envisioned. We will provide the equipment needed for the mining and building and maintaining the infrastructure required for an advanced economy. While there are likely to be some severe economic dislocations to remove excesses embedded by poor policies, steel castings will be demanded in increasing volumes to build and maintain the infrastructure required.

### National Technical & Operating Conference December 7-10

*Registration closes on November 30<sup>th</sup>*

The virtual T&O will be held Monday, December 7th through Thursday, December 10th with two-hour paper sessions in the morning and afternoon (9-11:00 a.m. CST and 1-3:00 p.m. CST). Sessions will include topics on Next Gen Mfg., molding, melting, heat treatment, quality, EHS, HR, management, technical and featured research. One-hour workshop sessions will be held in-between morning and afternoon sessions Tuesday through Thursday and Thursday afternoon; and with topics on hardness, chemical analysis, casting properties, and casting simulation. Contact Hayley [hbrown@sfsa.org](mailto:hbrown@sfsa.org) to enter your team for the Casting Simulation Workshop competition and submit your narrated results by December 3<sup>rd</sup>.



Complimentary registration will be provided to member locations who contributed a paper. Other members can register to attend for \$1,250. Registration includes up to five “seats” for the virtual event. Online registration is now available:

<https://sfsa.site-ym.com/event/2020to> (contact Kimberley [kschumacher@sfsa.org](mailto:kschumacher@sfsa.org) for assistance).

Thanks again to all who contributed to make the 2020 T&O the world's premier steel casting event!

### Future Leaders Webinar Series: Data and How to Use it

*Part 4 – Nov 17, 10AM CDT and Part 5 – Jan 12, 10AM CDT*

A webinar series about data analysis is being hosted with the Future Leaders Group. Raymond Monroe presents about what data means, how to set up a good experiment/research, knowing signal from noise, and how to do data analysis beyond linear regression. Part 4 of this “Data and How to Use It” webinar series will be on Tues, 11/17, 10AM CDT and Part 5 will be on Tuesday, 01/12, 10AM CDT. If you missed Part 1 to 3, the recording is available to all members on the Steel Casting Wiki at [https://wiki.sfsa.org/index.php/Steel\\_Casting\\_Technology\\_Videos#Data\\_Analysis\\_-\\_What\\_is\\_Data.3F\\_What\\_does\\_it\\_mean.3F](https://wiki.sfsa.org/index.php/Steel_Casting_Technology_Videos#Data_Analysis_-_What_is_Data.3F_What_does_it_mean.3F)

The Future Leaders Group is intended for people who are new to the steel foundry industry and who have the potential to hold greater responsibilities in the foundry. The FL Group provides an opportunity for these individuals to meet and interact with peers from other member foundries. If you have employees at your foundry that will become your future leaders but are not currently participating in this group, we encourage you to introduce them to the FL group. For more information about FL and this webinar series, please contact Diana David [ddavid@sfsa.org](mailto:ddavid@sfsa.org).

## **Cast in Steel Update: Preliminary Plans Due Dec. 31<sup>st</sup>**



Registration continues for the Thor's Hammer competition. This year student teams are challenged to utilize the casting process and their creative design talents to the fullest extent. The aim is for the best quality, unique features, and near net shape. Specs and FAQs can be found on the Cast In Steel website and 'Hints' will publish by the end of this month.

Industry partners assist with project guidance and fabrication. They are vital to the program. If your location is assisting a team, their preliminary plan is due by Dec. 31<sup>st</sup>. Plans from students that are using the program for senior projects have already been received. If your member location is interested in becoming an industry partner, or if you would like to support the program's scholarships with a donation, contact Kimberley [kschumacher@sfsa.org](mailto:kschumacher@sfsa.org).

### **Research Highlight**

Iowa State University (ISU) is studying the effect of surface finish on the fatigue performance of steel castings. ISU is running fatigue tests of as-cast and machined samples of both carbon steel (WCB in the normalized condition) and low alloy steel (8630 in the quenched and tempered condition) after thorough surface and radiographic inspection. Preliminary results show that the surface roughness is not a limiting factor for fatigue performance of steel castings. Jeff Tschertter, who successfully defended his Master's Thesis at ISU last month, showed that the fatigue performance of steel castings could be reasonably correlated with the size of the crack-initiating feature. This is a positive finding since this relationship supports the development of NDT-informed performance prediction, which is a major thrust of both the DID and SPI programs. Thanks to Jeff for his high-quality work in support of the DID program, and congratulations!

Additionally, SFSA has been working with the Fatigue Design & Evaluation (FD&E) committee to launch a steel casting fatigue project, which aims to provide a better material fatigue performance estimation more quickly and affordably than current methods. This is a step towards providing designers using advanced fatigue prediction methods the tools needed to more reasonably estimate the capability of the casting in service without just assuming the most conservative condition.

### **Keeping the Team Sharp: Helping Customers Choose a Foundry**

What decisions do customers make when selecting your organization as their supplier? "Steel Casting Supplier Development and Selection" (<https://www.sfsa.org/education.php#source>) is a valuable resource for purchasing professionals. It pulls back the curtain to consider how customers make decisions about the supplier they choose. It is also a resource for salespeople to illustrate the value added found when working with SFSA members.

Another resource for buyers, purchasing professionals, and salespeople is found on the SFSA webpage, "Information for Casting Buyers." (<https://www.sfsa.org/buyers.php>) This page provides articles on how to order steel castings, specifications used in the casting industry, and a link to the steel casting producer's directory. According to google analytics, the directory receives more traffic than most other SFSA webpages.

Keep the team sharp by sharing these trainings, inform customers of the value added they enjoy, and make sure your SFSA Directory listing is up to date. If it is out of date, contact Kimberley [kschumacher@sfsa.org](mailto:kschumacher@sfsa.org).

### **Compass Partners Acquires PRL, Inc.**

Provided by Pat Herschkowicz, PR Director, Compass Partners Capital LLC.

Compass Partners Capital LLC, a Stamford-based investment firm, is pleased to announce the acquisition of PRL, Inc., a leading manufacturer of high-tech alloy castings. PRL will be combined with Micro Precision Inc., a Compass portfolio company, to create a best-in-class enterprise serving the US Navy, nuclear power, and railroad industries. Vice Admiral John Morgan (USN, ret.), currently President & CEO of MPI, will serve as the CEO of the combined platform.

Headquartered in South Windham, CT, Micro Precision is a tier-one, Level 1/SUBSAFE supplier of critical components and assemblies for the US Navy's Virginia and Columbia-class submarines.

Family owned since 1972, PRL is headquartered in Cornwall, PA and comprised of PRL Industries, Regal Cast, and Lebanon Tool Company. A vertically-integrated enterprise, PRL and its subsidiaries have capabilities to pour a wide variety of ferrous and nonferrous alloy castings, conduct conventional to close tolerance machining on small to large components, and provide in-house non-destructive examination and upgrading services. Collectively, PRL's team prides themselves on their decades of supplying high quality product and work to the US Navy and nuclear power industries.

The full press release can be found here:

<https://www.sfsa.org/news/2020/PRL%20Press%20Release%20Nov%202020.pdf>

### **Casteel Commentary**

Many fundamental conditions that determine our business success are beyond our control. While we as individuals may have strongly held ideas and ideals about what should happen, what is the best path forward, how we should respond to the challenges we face; our opinions will have little impact on the political, economic and cultural environment. We will however need to anticipate and be aware of the environment we are in to manage our operations and respond to the challenges of providing value in turbulent times. Given the current uncertainty on the pandemic, the election in the U.S., the global changes in trade and power, and the economic path forward; we will need to prudently structure our businesses for the future.

The dramatic polarization of our political environment is the culmination of philosophical and cultural forces that have undermined the commonality that provided a functional structure for our society. We might have disagreed on the best path forward but agreed that we were working together for the peace and prosperity of our communities with shared values, historical understandings, and future aspirations. That consensus no longer exists and will make agreement on policies and programs to respond to our challenges difficult and perhaps not possible. There are no obvious leaders or movements that are providing a way to resolve these fundamental disagreements and provide a path forward.

We will need to recognize that we will be essential suppliers to any future that develops but must operate in today's market and prepare for tomorrow. With the modern movement to low interest rates and service goods dominating the economy, our industry and our suppliers and our customers have suffered for decades with low profitability and unfavorable business conditions. The culmination of poor fiscal and monetary policy, trade practices, cultural expectations, population demographics has dramatically reduced the global supply of capital equipment goods in the developed economies and made our future depend on foreign sources that are not allies.

We are likely to see for the future an increased demand and profitability as the economy adjusts to the excesses built into the current structure. The continued liquidation of capital investment in the production of real goods is unsustainable. Every advanced future economic model requires electrical power with advanced batteries that require increased mining for energy and equipment. The infrastructure needed for every future envisioned does not exist and will be fundamentally dependent on steel casting production at levels that are not possible with today's capacity.

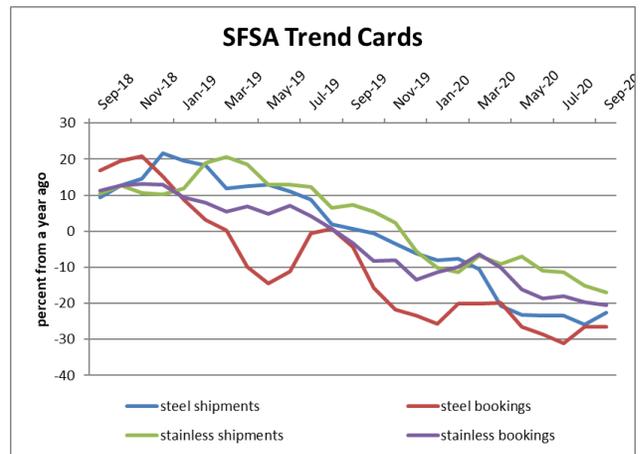
Before we get to that high demand profitable future, we may continue to see poor business conditions and economic market dislocations to wash out the excesses embedded in our current structure. So, we will need to manage our business to survive the next year while anticipating the need for investment and growth in the future.

## Market News

Steel casting demand is still down compared to a year ago but for steel castings there is a trend to being less depressed as seen in the steel bookings and shipments. Stainless activity remains on a downward trend. Improved market conditions are normally accompanied by higher levels of booking over shipments and this is not yet evident in the SFSA trends data. The backlog remains at a typical 8 weeks showing some stability of activity at these lower production levels.

A steel casting ratio estimate was introduced last month as a current indicator of market conditions. It is based on a correlation estimating the change in steel casting shipments compared to a year ago but is of limited use since it has only a correlation of about 50%. This estimate is based on the production and price of steel, the price of scrap and oil. This can be updated each week and is included in our weekly market update posting. This graph shows that the steel casting ratio is above one for the most recent weeks indicating an expectation of continued improvements in steel casting orders and shipments. This is driven primarily by the continued increases in steel mill production and pricing.

Non-defense capital goods are seeing higher levels of shipments and new orders compared to Spring but are still well below the levels of 2019. Improved conditions are also seen in the Census report on iron and steel casting orders and shipments since their low point in May 2020. The future is uncertain but the production required to sustain the economy will force improved market conditions and should allow improved demand for the coming months.



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

<b>SFSA Trend Cards</b> (%-12 mos. Ago)	12 Mo Avg	3 Mo Avg	September	August	July
<b>Carbon &amp; Low Alloy</b>					
Shipments	-15.8	-22.7	-8.0	-30.0	-30.0
Bookings	-24.7	-26.6	-15.0	-28.7	-36.0
Backlog (wks)	8.5	7.8	8.0	8.0	7.5
<b>High Alloy</b>					
Shipments	-10.1	-17.0	-15.0	-20.0	-16.0
Bookings	-14.8	-20.5	-18.0	-26.0	-17.6
Backlog (wks)	8.9	7.7	8.0	7.2	8.0
<b>Department of Commerce Census Data</b>					
<b>Iron &amp; Steel Foundries (million \$)</b>					
Shipments	1,291.8	1,201.7	1,122	1,243	1,240
New Orders	1,304.2	1,254.0	1,160	1,240	1,362
Inventories	2,148.7	2,079.7	2,076	2,077	2,086
<b>Nondefense Capital Goods (billion \$)</b>					
Shipments	70.3	69.5	70.3	70.2	67.9
New Orders	62.7	63.9	69.9	63.3	58.5
Inventories	193.5	193.2	193.7	193.0	192.8
<b>Nondefense Capital Goods less Aircraft (billion \$)</b>					
Shipments	66.4	67.1	67.6	67.3	66.3
New Orders	66.7	67.9	68.9	68.2	66.6
Inventories	128.6	127.4	127.2	127.3	127.7
Inventory/Orders	1.9	1.9	1.85	1.87	1.92
Inventory/Shipments	0.0	1.9	1.88	1.89	1.93
Orders/Shipments	0.0	1.0	1.02	1.01	1.00
<b>American Iron and Steel Institute</b>					
Raw Steel Shipments (million net tons)	7.0	6.4	6.7	6.5	6.0