



SFSA CASTEEL REPORTER

Steel Founders' Society of America

a publication serving
SFSA steel casting industry Members

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February — 2014

Casteel Commentary

This month's Casteel Commentary forecasts conditions to expect this year. It includes projections from last year and I was again surprised at how close the forecast was to reality. I cheated this year since I was ill and fully booked and failed to get out a newsletter last month, so I am forecasting the year ahead late.

Steel Construction Market Development

SFSA has continued to work with the American Institute for Steel Construction to find applications for steel castings in this large market for steel. In a recent meeting, AISC raised again the possibility of predesigned and tested standard components cast from steel which fabricators and architects could select from a catalogue. SFSA is interested in developing that market and are seeking member companies that are interested in participating. Please let me know if you are interested in this market development effort. Email me at monroe@sfsa.org.

Investment Casting Group Meeting

The meeting scheduled for March 12th & 13th will be rescheduled. Remet's technical staff will not be able to attend for our tour so they have asked for it to be postponed until April. Specific dates have not been scheduled as yet but we will keep you informed as soon as more information is available. We have prepared two white papers for projects concerning modeling properties and raw materials purchase specifications. We plan to discuss raw material specifications.

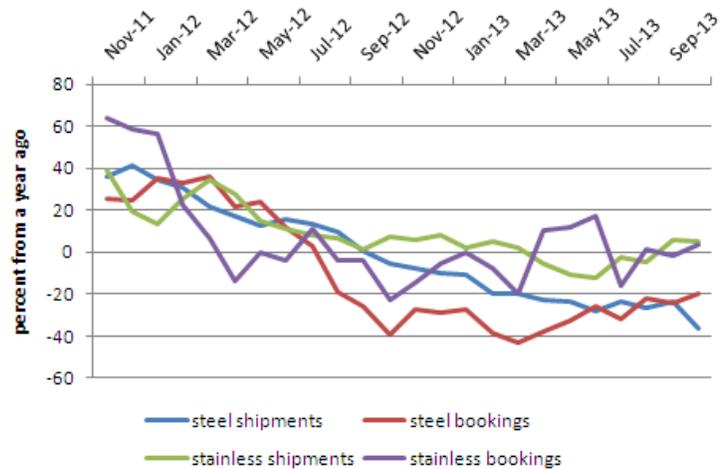
Luncheon at AFS Casting Congress

SFSA is planning to host a Dutch treat lunch for members who are attending the AFS Casting Congress at noon on April 10th at the Convention center. RSVP to Raymond Monroe, monroe@sfsa.org if you plan to attend.

Spring Management Meeting

The SFSA Spring Management meeting will be held at AFG in Oklahoma on May 21 and will include a foundry tour and business session. We have already booked B. Lashinsky for an economic forecast and are lining up other speakers. Mark your calendar and details will follow as speakers and arrangements are made. The SFSA Board and Marketing Committee will be held with the Management meeting. We plan to have someone from AISC talk about potential markets in building construction.

SFSA Trend Cards



Future Leaders

The SFSA Future Leaders group is meeting in Boston on May 1 and 2. The group will tour both DW Clark and Wollaston Alloy. A Seminar on organizing improvement efforts in steel foundries will be presented by R. Monroe. Contact Dave Poweleit if you plan to attend, poweleit@sfsa.org

Eastern Division Meeting

The SFSA Eastern Division Meeting is scheduled for May 12 and 13 at Fischer Cast Steel. The meeting will emphasize solidification modeling. Let Rick Boyd know if you are planning to attend, boyd@sfsa.org

Research Review

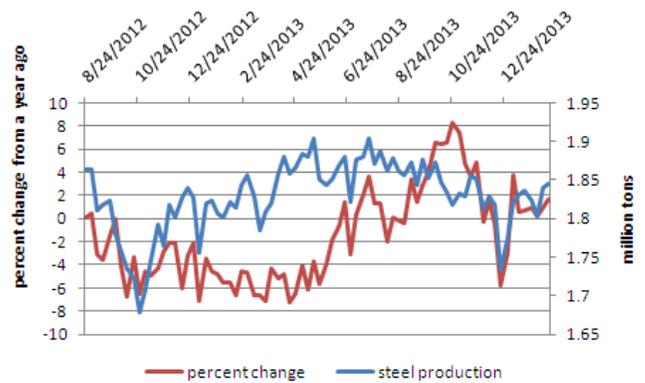
Our summer research review meeting is scheduled for July 15 through 17 in Chicago. This year we are including both the carbon and low alloy and high alloy projects in the review. Mark your calendar and plan to attend.

Market News

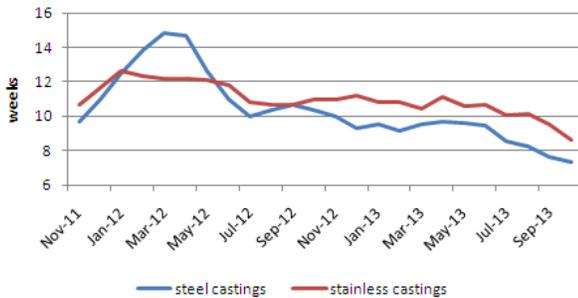
The SFSA Trend Cards through October of 2013 show continued slowing activity based on the percentage change from a prior year. Steel castings are continuing to underperform last year and stainless castings are break even. One challenge with the SFSA percent change is the distortion of actual production levels.

This comes two ways; it amplifies the cyclical activity of the market year to year by minimizing the month-to-month cycle and it makes the up-cycle bigger than the down cycle. A 50% down is bigger than a 50% up in production. You can see this effect in the AISI weekly number graph. Through most of 2013, steel production was increasing month to month but was negative most of that time compared to the prior year. Then in October 2013 the percentage change peaked with 8% growth but only because October 2012 troughed at -8%.

AISI Weekly Steel mill Production

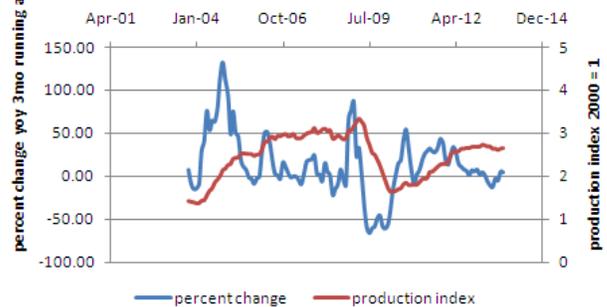


SFSA Trend cards-Backlog



In an effort to make our trend card information more representative of production levels, the year 2000 monthly production was set to 1. This level then was allowed to change with the SFSA trend card information based on the steel shipments. (Geek's note: I allowed each month to change independently and plotted a 12-month rolling average. The percent change is a three month rolling average) The production graph for the past ten years that results shows a reasonable picture of production. A strong increase starting in 2004, staying at a peak production 2006 and 2007, falling sharply in mid 2009, recovering sharply in 2010, peaking in mid 2012 and falling since then. This is confirmed by the continuous decline in the backlog reported on the SFSA trend cards. Stainless has a longer backlog but both stainless and steel have declining backlog showing slowing markets through the end of 2013.

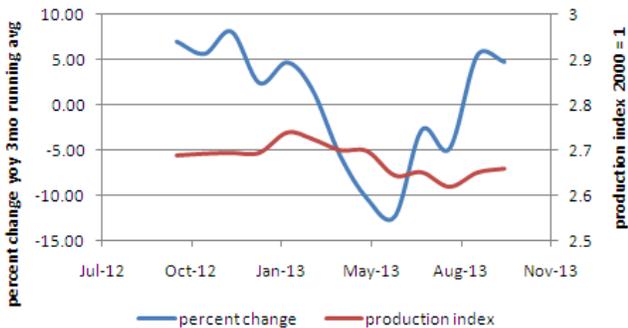
Stainless Production and Percent Change



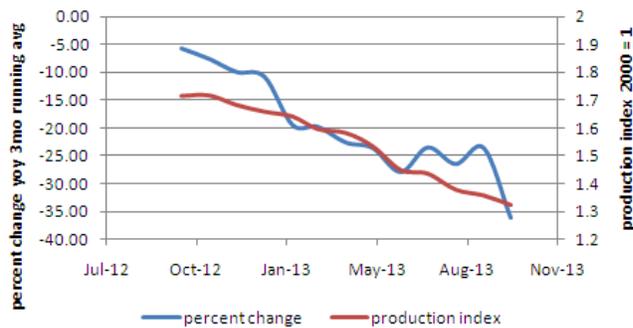
So for the last year on the graph, Steel percentage change has declined continuously and steel casting production has also declined about 23% on an annual basis measured by the proposed

production index. The same type of treatment can be applied to the trend card data for high alloy production. (Old-timers note: SFSA has consistently called the market segments- carbon and low alloy and high alloy. This has for years struck be as awkward and no less informative than the naïve

Stainless Production and Percent Change



Steel Production and Percent Change

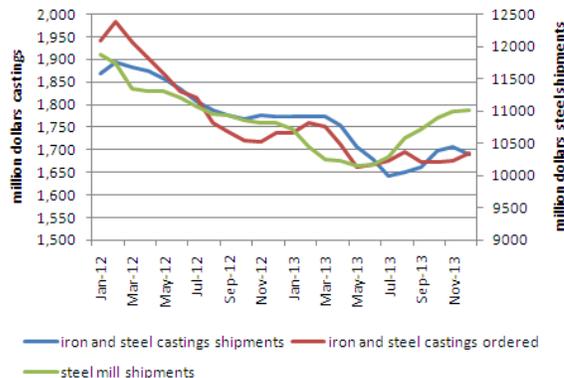


designations of steel castings and stainless steel castings. So I am planning to use steel and stainless as I have for months in the commentary. This is an invitation to take issue and plead, argue or yell in favor of the traditional names.)

As you can see the stainless (high alloy) casting percent change and index are growing more than the carbon and low alloy steel casting segment. In the financial correction (large drop) of 2009, steel and stainless castings fell over 40%. Stainless though for the past two years has seen no sharp drop and shows a recent slowdown.

In general the stainless market being smaller and the SFSA trend cards with fewer participants show more volatility, bigger swings in percentage change. When converted to an index, the index seems to match the production experience with a strong post 2004 market, at or near capacity in 2006-2008, a slower but big decline from mid 2009 into 2010 and a slower recovery after but no strong decline post mid 2012. Much of the variation from steel casting is likely due to the sharp drop in mining capital equipment purchases. The graph of the percent change and production index for the past two years shows stable production levels in stainless casting production with a small decline of less than 5% overall. The AISI weekly graph above is indicative of where our markets may be going. Production of steel on a weekly basis has declined since mid 2013. There was a sharp dip at the end of the year but some recovery. It is not clear whether the recent production figures suggest a bottom and improving market, a stable and stagnant demand or a slight growth trend for the future. Steel shipments and iron and steel casting numbers from the Census bureau show declines from early 2012 until mid 2013 with a modest recovery since then as shown on the graph.

Iron and Steel castings and steel mill shipments

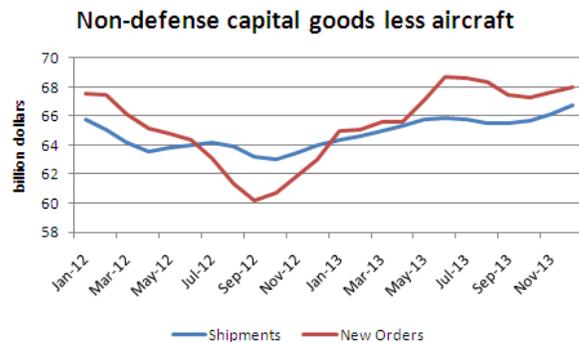
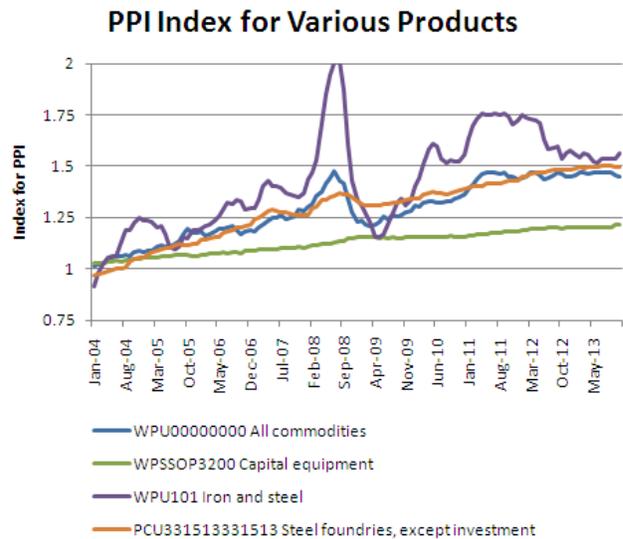


Capital goods orders have continued to show improvements in both shipments and new orders with orders outpacing shipments portending further increases in market demand.

Casteel Commentary

Last year's projections:

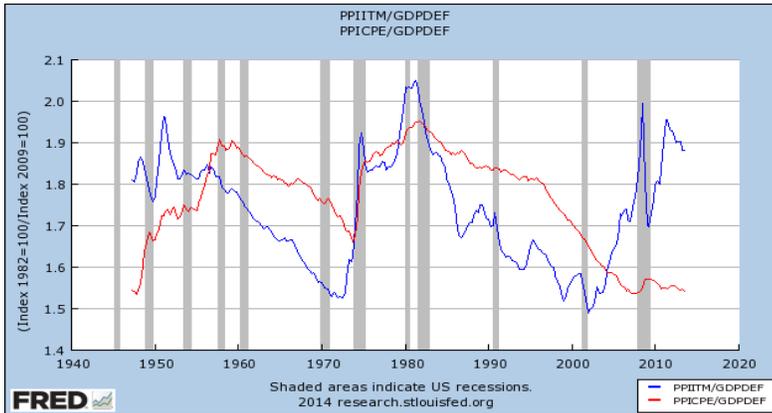
1. Steel casting demand should be slow for most of the year, not falling below levels for the end of 2012 and holding the promise of some improvement in the second half of the year.
2. The price difference between natural gas and oil will lead to the development and investment in new infrastructure to allow natural gas to fuel fleet vehicles and will continue the trend to purchase and install new small gas generators for electrical production.
3. China and India will continue to slow as a result of continued domestic mal-investment, slowness in demand from North America and Europe, rising domestic costs, and financial constraints. The growth rate will remain above 5 but below 10% for the year.
4. Steel Foundries will slow but continue to plan capital reinvestment in North America. This will not be in new plants but will be in the revitalization and modernization of the existing sites.
5. Commodity prices will stabilize at a threshold level, not requiring continued dramatic investment but still providing strong and steady demand. Oil should remain around \$80-90 per barrel and copper should continue above \$3 a pound.
6. The North American economy will see slow almost no growth with recession conditions for the first half of the year. Barring a dramatic change in political consensus; the liquidation of bad debt, restructuring of financial institutions, rationalizing of housing, and responsible Federal budgeting will not occur. This will lead to the effort to maintain the current structures that are incapable of providing the opportunities for change and growth. Construction spending will improve modestly.
7. Steel casting suppliers will find opportunities to improve their business through supplying machined parts and taking responsibility for part performance. Large critical castings will be needed and companies that can manage to assume responsibility for design, liability, and performance with profitability will grow by expanding the market.



What about this year?

I think to understand where we are it is helpful to look at the supply demand picture and the economic environment we are experiencing. I think it is helpful to consider the longer-term capital investment cycle shown in the graph. This shows two lines one for the change in relative value for intermediate materials used in manufacturing (PPIITM/GDPDEF- the producer price index for intermediate materials divided by the gross domestic product implicit price deflator) and one for the value of capital

equipment (PPICPE/GDPDEF which is the same except for capital equipment) This graph was prepared from the website of the St Louis Federal Reserve called FRED. The data only goes back to the 1950's but shows with the blue line that the value of our intermediate materials peaks in 1950, 1980, and 2010 around every thirty years. During the peak, capital investment to recapitalize production can occur. As you can see, the red line for capital equipment lags in 1950 and now in 2010 but not in 1980. The Capital equipment manufacturers were capable from 1960 to 2004 to maintain price realization and prosper in the variety of market conditions. In fact, the declines in value after 1980 were the result of failing to keep up with inflation, not due to radical price reductions.



PPI index numbers are available for a wide range of products and this allows us to see if steel castings are typical or exceptional. The numbers for steel castings only go back to 1980 so there is limited time data but we can look at steel castings for the last ten years easily. The graph shows the PPI for all commodities, iron and steel products, steel foundries and capital equipment. Steel castings appear to be typical of all commodities matching that trend closely. Iron and steel products have

more volatility and had much larger swings but have moderated, still at a level in excess of steel castings. Capital equipment has lagged badly and this would appear to be part of the reason those customers involved in capital equipment design and manufacture feel squeezed by the price increases from suppliers since they have not been able to match these increases in their products.

Next Year's Projections:

1. **Steel casting demand will be stable with modest increases. There is some potential for downside risk especially if equity prices drop dramatically from their current valuations.**
2. **Commodity prices will also remain stable creating continued demand for replacement parts for consumables and some equipment demands. There is also downside risk here since the developing countries may see economic slowdowns and put downward pressure on energy and mining products.**
3. **Energy markets will continue to be active while the price differential between oil and gas gets resolved through investment in conversions to use gas to replace oil and coal.**
4. **Stainless products will continue to see strong markets while infrastructure to expand capacity in the CPI industry is built to take advantage of the availability and price of gas.**

SFSA Business Report

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

Shipments	-23.3	-36.2	-45.4	-26.3	-37.0
Bookings	-29.1	-19.4	-29.9	-33.3	5.0
Backlog (wks)	8.8	7.4	6.5	7.6	8.0

High Alloy

Shipments	-0.2	4.8	4.6	21.1	-11.2
Bookings	-0.3	4.0	1.1	-31.7	42.6
Backlog (wks)	10.2	8.6	7.5	8.3	10.0

Department of Commerce Census Data

Iron & Steel Foundries (million \$)

Shipments	1,717.3	1,697.3	1,712	1,719	1,661
New Orders	1,699.5	1,672.0	1,686	1,665	1,665
Inventories	2,190.6	2,230.7	2,226	2,224	2,242

Nondefense Capital Goods (billion \$)

Shipments	72.8	74.1	74.1	74.2	73.8
New Orders	77.8	79.2	80.5	81.2	75.9
Inventories	172.9	173.2	174.4	173.2	172.0

Nondefense Capital Goods less Aircraft (billion \$)

Shipments	65.3	65.7	65.6	65.7	65.8
New Orders	66.6	67.3	66.8	67.2	68.0
Inventories	120.1	119.6	119.9	119.7	119.3
Inventory/Orders		1.8	1.79	1.78	1.76
Inventory/Shipments		1.8	1.83	1.82	1.81
Orders/Shipments		1.0	1.02	1.02	1.03

American Iron and Steel Institute

Raw Steel Shipments (million net tons)	7.9	8.2	8.3	7.9	8.3
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