North American Forging Outlook
Changes to the North American forging shipments outlook

• This outlook uses FIA supplied forging data through May 2014.

• Forging shipments have finally turned a corner. Shipments are expected to increase slowly on a year over year basis. The open die and rolled rings forecast has been revised slightly upward in the near-term.

• Demand for capital equipment continues to grow. Its pace is picking up and this should continue through the remainder of the year and into 2015.

• The strongest growth for forging shipments is still expected to occur during 2015 with slower growth in 2016.
Recent evidence affecting forging

- Pent-up/replacement demand remains a driving force behind equipment investment.
  - Machinery orders up 7.2% year to date through May 2014.
  - Construction machinery orders up 13.3% year to date through May 2014.

- The motor vehicles and parts industry outlook has been revised upward due to strong demand.

- The aircraft and parts industry is finally seeing consistent production increases.

- The US will have a competitive advantage in the manufacture of capital equipment. Logistics, skilled labor, and inexpensive sources of energy all play a role.

- Investment in the energy and chemical industries will have a long-term positive impact on the forging industry.
North American impression die sales

A turnaround anticipated in 2014 with more rapid growth in 2015 and 2016.
The rebound in 2014 has started and should accelerate as we move into 2015.
North American rolled rings shipments

Rolled Rings Sales, Dollars

Modest recovery for 2014, but much stronger growth in 2015 and 2016
Forging industry bottom line

• Bookings: Short-Term Outlook
  • New FIA data, through May, is stronger than anticipated for open die and rolled rings.
  • Second half 2014 growth to be up 5-10% from second half 2013.
  • First half 2015 growth is likely to approach double digits. The equipment investment projections for 2015 are a little tamer.

• Shipments: This Year’s Outlook
  • A turnaround in shipments has occurred, but a strong increase is not anticipated quite yet. Support will come from slowly growing business confidence and investment.
  • The second half of the year should see stronger year ago growth as manufacturing ramps up for a faster paced 2015. Higher machinery exports will also drive forging shipments.

• Shipments: 2015 Outlook
  • Forging shipments have the potential to increase near 10% as the economy and investment in equipment improve.
  • With a tremendous order pipeline, aerospace should see much stronger production. This will provide a nice support to forgings.
  • A gradual turnaround is anticipated in the oil and gas drilling industry over the longer-term.
US Economic Outlook

Progress toward firmer growth...
The US economy back on a moderate growth path

- The expansion has regained momentum after adverse weather and an inventory correction reduced activity in the first quarter.
- Consumer spending is supported by gains in employment, income, and household net worth.
- Homebuilding will rise through 2016 as supply catches up with demand.
- Capital spending accelerates in 2014–15, given global market growth, replacement needs, and technological advances.
- Interest rates will rise significantly over the next three years as monetary accommodation is withdrawn.
- Long-term federal fiscal imbalances can be fixed with entitlement reforms.
US employment growth will remain strong through 2016
Business fixed investment will accelerate, led by equipment

Real business fixed investment

Year-over-year percent change

Equipment
Structures
Intellectual products

Intellectual products is a BEA investment segment which includes R&D, software and private investment for entertainment, literary, and artistic originals
Real private investment in industrial structures is led by energy projects
Moderate growth in real goods and services trade

US exports and imports

- Real US exports
- Real US imports

Year-over-year percent change

© 2014 IHS
Bottom line for the US economy

- Real GDP growth is projected to pick up in 2014 and 2015, led by strengthening private-sector investment.
- Homebuilding will rise through 2016 as supply catches up with demand.
- Consumer spending will be supported by gains in employment, personal income, and household wealth.
- The dollar will remain competitively valued, and net exports will support economic growth after 2017.
- Interest rates will rise through mid-2017 as monetary accommodation is withdrawn.
- Inflation will stay mild, with core consumer prices rising 1.5–2.0% annually.
Global Economic Outlook

Progress toward firmer growth...
An acceleration in the global economy

- Global economic growth will gradually pick up in 2014–15, led by better performances in North America and Western Europe.
- Western Europe’s slow recovery will gain traction as credit conditions ease and capital spending turns up.
- Excess capacity and deleveraging will restrain China’s growth.
- Growth paths in emerging markets will depend on structural reforms that raise productivity and allocate capital more efficiently.
- Risks abound: China’s rising debt, the Ukraine crisis, geopolitics, another oil shock, central bank “exit strategies,” and other policy mistakes.
Asia-Pacific (ex. Japan) and Sub-Saharan Africa will achieve the fastest real GDP growth
China’s economic growth will downshift in the long run

Real GDP and industrial production

Percent change

Real GDP and Industrial production

© 2014 IHS
Highlights in manufacturing

• Manufacturing growth is on track to expand 3.5% during 2014. Next year manufacturing output should grow close to the same 3.5% rate.

• Durable goods orders are up 3.7% year to date through June 2014. This has been trending upward – but very slowly.

• The Institute of Supply Management’s purchasing managers’ index (PMI) was as 57.1 for July (the 50 threshold is an indication of manufacturing contraction or expansion). It has remained in the 54-58 range for a number of months.

• Construction and spending on capital equipment are slowly increasing at a faster pace, but next year’s growth is not likely to be as strong as originally thought.

• Industry drivers supporting the forging industry should improve slowly though 2014 and accelerate during 2015 and beyond
The Institute for Supply Management signals solid growth in manufacturing and services.

ISM indexes

Over 50 indicates expansion

Source: Institute for Supply Management (ISM)
US durable goods

(Billion US dollars)

- US durable goods orders were up 5.0% during 2013 and up 3.7% year to date through June 2014.

- Look for 4.9% growth in production of US durable goods for 2014 and 6.1% 2015. This is slightly slower than our previous forecast.
Industrial machinery overview

- Includes:
  - Sawmill & Woodworking Machinery
  - Food Processing Machinery
  - Plastics & Rubber Industry Machinery
  - Semiconductor Mfg Machinery
  - Textile Machinery
  - Printing Machinery
  - Petroleum Refining Machinery
  - Chemical Processing Machinery

- Capital spending programs on industrial equipment are ramping up in 2014 with new orders up more than 29% from a year ago. Booking rates have increased substantially in the past few months.

- We look for spending on industrial equipment to expand 10% during 2014 and 8% in 2015. The growth potential is there, last year’s 3% growth was just a lull.

- Exports account for over 30% of US industrial machinery shipments. A competitive US dollar will be beneficial.
• US industrial equipment orders are up 28% year to date through June.

• Look for US production of industrial machinery to increase nearly 10% in 2014 and to rise 7% in 2015.
Construction machinery overview

• Includes:
  • Construction Machinery
    • (backhoes, bulldozers, off-highway trucks, construction tractors, road graders)
  • Surface Mining Machinery (except drilling)
  • Logging Equipment
• Recovery in housing and construction will not be as strong in 2014 as originally thought, but it should hit full stride during 2015 and 2016.
• Recovery in residential construction and logging/wood products is providing some support to domestic sales but mining remains a drag.
• Coal mining faces stiff competition from natural gas and environmental pressures.
• Shale gas, tight oil, and tar sand projects will provide support beyond 2014. Higher energy prices will be a stimulus.
• Nonresidential construction, especially of commercial structures, is expected to pick up sharply during 2015 and 2016, but public projects are likely to limp along over the next few years.
US Construction Machinery

- Growth in construction and equipment exports drives construction machinery production 10% this year and 3% during 2015.

- US construction machinery orders, year to date through June, are up more than 13%.
Farm Machinery Overview

- **Includes:**
  - Farm Machinery (combines, tractors, plows, planters, feed processing equipment)
  - Lawn & Garden Tractor Mfg (includes home use)

- US farm income, the key driver of equipment spending, was a record $131 billion during 2013.

- As farmers gobbled-up equipment, farm machinery production was up 4 during 2013. Strong machinery sales in 3 of the past 4 years have resulted in a new farm fleet and limits near term potential.

- Canadian market was also robust in 2013.

- Despite a strong harvest, weaker commodity prices should bring farm incomes down to $102 billion in 2014. Look for declines in the US farm equipment market this year and next.

- Commercial turf business improves with the economy. Lawn and garden equipment demand will rally with housing.
While off from record 2013 levels, farm incomes in 2014 and 2015 will still be relatively healthy.
After last year’s growth, look for farm machinery output to be off slightly during 2014, with very little growth beyond.
Metalworking machinery overview

• Includes:
  • Industrial Mold Mfg
  • Machine Tool Mfg (cutting types)
  • Special Die & Tool, Die Set, Jig & Fixture Mfg
  • Cutting & Machine Tool Accessory Mfg
  • Rolling Mill Machinery

• The motor vehicle industry has become profitable and long-delayed CAPEX programs are moving forward.

• Boeing and Airbus are ramping-up of commercial air transport production. Expanded capital equipment programs are continuing.

• Growth in metalworking should continue beyond 2014 as many delayed capital projects finally become realized.
US metalworking machinery

- US metalworking machinery orders are up 7% year to date through June.

- Output is tracking close to 6% growth this year and should continue close to that during 2015.
Engine, transmission & power equipment overview

- Includes:
  - Turbine & Turbine Generator Set Units (includes steam, hydraulic, gas, wind, excludes aircraft)
  - Speed Changers, Industrial High-Speed Drive & Gear Mfg
  - Mechanical Power Transmission Equipment Mfg
  - Other Engine Equipment Mfg (internal combustion engines ex. auto & aircraft)

- Construction is not as strong as originally thought, but a rebound in 2015 will drive the demand for off-road equipment and its power trains.

- Stronger energy prices will re-stimulate domestic energy exploration and extraction industries and their power sources.

- Medium and heavy truck production should expand well into the double digits this year and 6-10% during 2015. Power trains will also need to expand.

- Exports have reflected weakness in Europe and slower growth in developing economies, but US turbine manufacturers are very competitive internationally.

- Wind energy projects are anticipated to improve.
US utility capacity additions (Megawatts)

- Electric utilities are at an under 80% operating rate suggesting only replacement and conversion demand, not new construction.

<table>
<thead>
<tr>
<th>Year</th>
<th>Gas</th>
<th>Coal</th>
<th>Nuclear</th>
<th>Wind</th>
<th>Solar</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>8969</td>
<td>4349</td>
<td>938</td>
<td>13233</td>
<td>2662</td>
<td>718</td>
<td>30769</td>
</tr>
<tr>
<td>2013</td>
<td>6802</td>
<td>1555</td>
<td>248</td>
<td>1285</td>
<td>6052</td>
<td>722</td>
<td>16664</td>
</tr>
<tr>
<td>2014</td>
<td>4967</td>
<td>600</td>
<td>0</td>
<td>6021</td>
<td>6984</td>
<td>867</td>
<td>19438</td>
</tr>
<tr>
<td>2015</td>
<td>5712</td>
<td>0</td>
<td>1582</td>
<td>7767</td>
<td>4793</td>
<td>563</td>
<td>20416</td>
</tr>
<tr>
<td>2016</td>
<td>12157</td>
<td>0</td>
<td>131</td>
<td>4062</td>
<td>6003</td>
<td>370</td>
<td>22723</td>
</tr>
<tr>
<td>2017</td>
<td>5260</td>
<td>0</td>
<td>483</td>
<td>1363</td>
<td>2591</td>
<td>355</td>
<td>10051</td>
</tr>
<tr>
<td>2018</td>
<td>5554</td>
<td>0</td>
<td>1332</td>
<td>2900</td>
<td>2710</td>
<td>502</td>
<td>12997</td>
</tr>
</tbody>
</table>
Engine, transmission and power equipment

(Million US dollars)

- US engine, transmission and power equipment orders are 6% higher year to date through June.

(Percent change)

- Engine, transmission and power equipment production improves after 2013 lull.
Oil and gas field machinery overview

• Includes:
  • Oil & Gas Field Drilling Equipment
  • Oil & Gas Field Production Machinery
  • Derricks (excludes offshore & floating platforms)
  • Water Well Drilling Machinery

• Energy prices have risen to stimulate the US oil & natural gas sectors.
• Higher natural gas prices will renew drilling in the shale gas regions.
• The outlook for tight oil projects remains bright.
• Canadian tar sands production will continue to gain ground.
• Competition from cheap natural gas and environmental pressures will continue to take a toll on coal.
• Rising demand and an upward drift in commodity prices will eventually trigger a recovery in rest-of-world mining and energy industry capital spending.
Oil price outlook

• Supply growth should be more than sufficient to meet rising global demand, putting downward pressure on prices in 2014–15.

• IHS Energy projects US liquids production will increase from 7.5 million barrels per day (mbd) in 2013 to 8.5 mbd in 2014 and 9.0 mbd in 2015.

• We have raised the long-term path for global oil prices. Higher prices will generate required investment in future tight oil, deepwater, and frontier offshore fields. Global spare capacity will remain tight, with little cushion to absorb major supply disruptions.
Rising demand for North American natural gas

- A cold winter has left natural gas storage inventories at a 10-year low.
- Rebuilding inventories over the injection season will be a challenge. Production growth alone is insufficient to refill storage.
- Incremental gas needed to refill storage will have to come from the substitution of coal for natural gas in power generation.
- Industrial gas demand will continue to grow, with significant investments in new ammonia, methanol, and ethylene facilities under way.
- Mandated coal-fired power generation retirements by 2015 and the advent of LNG exports in 2016 will support gas prices.

Source: IHS Energy
US crude oil and natural gas prices on different paths.

Crude oil and natural gas prices

Source: IHS Energy
Tight oil and shale gas projects will provide production support.

US Oil and Natural Gas Production

(Left scale: millions of barrels per day, Right scale: trillion cubic feet)
Shale gas productive capacity expands 42% through 2017.

North American Natural Gas Productive Capacity

(Left scale: billions of cubic feet, Right scale: percent)
North American gas and oil field equipment

(Million US dollars)

- US oil & gas field and mining machinery orders are 3% lower year to date through June.

(Percent change)

- North American oil & gas field equipment production growth should be steady over the next five years.
The auto market springs back to life

• Bad weather was largely responsible for dropping the market into the low 15mm (SAAR) range at the start of the year. Inventories are back in balance.

• Pent-up demand has been reduced but remains a strong factor.

• Market is shifting from needs based recovery to wants driven market.

• Cyclical recovery phase coming to a close, sales gains will moderate.

• Credit and jobs will bring the younger generation into the showrooms.

• Cost pressures will remain under control into 2015.

• New product introductions to remain high, as OEMs fill in the white spaces.

• Higher fuel economy standards are the new big challenge and opportunity. Outbound, much higher gas prices will provide more impetus to cars, smaller vehicles and electric / hybrids.
Average age of cars and light trucks on the road

(Years)

2001 2003 2005 2007 2009 2011 2013

CARS  LT. TRUCKS  LT. VEHICLES
North American light vehicle sales & production

NA becoming an export hub

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SALES</td>
<td>12.4%</td>
<td>7.3%</td>
<td>2.8%</td>
<td>2.4%</td>
<td>1.7%</td>
</tr>
<tr>
<td>PRODUCTION</td>
<td>17.6%</td>
<td>4.8%</td>
<td>5.0%</td>
<td>1.1%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>
Big three domestic vs. import name plate — car & truck sales, SAAR

(Units in millions)

January 2000 to January 2014

Detroit Big 3

Import

Months
Even with July’s upgrade, there still is upside potential in the forecast.
Commercial vehicle outlook

• Medium-duty truck production (Class4-7) continues to gain significant ground.
  • Up over 16% during 2014
  • Up 9% in 2015
  • Up 5% in 2016

• Heavy-duty truck production (Class 8), a turnaround is anticipated.
  • Up 14% during 2014
  • Up 7% in 2015
  • But down 9% in 2016

• Replacement demand is mostly driving sales…

• …but stronger a economy and more freight movements will support additional equipment sales this year and next.
Expect truck tonnage to start ramping-up by 2015 and 2016.
Equipment replacement and a pick-up in freight activity should drive truck production growth over 14% in 2014 and 8% in 2015.
Aerospace outlook

- Includes:
  - Aircraft Mfg (commercial & military)
  - Aircraft Engine & Engine Parts Mfg
  - Other Aircraft Parts Mfg

- Despite a slowdown in new orders, a long pipeline of commercial aircraft bookings remains. The airline industry looks to replace older aircraft with updated, fuel-efficient models.

- Orders for defense aircraft have strengthened considerably this year. Boeing’s commercial market (BCA) accounts for 60% of revenues; its defense, space and security (BDS) accounts for the remaining 40%.

- Production in aerospace has picked up slowly this year. Schedules will need to increase substantially over the next three years to fill the order pipeline.
New US nondefense aircraft orders are down 11% year to date through June, but unfilled orders remain 11% higher than a year ago.
But US defense aircraft orders up 25% year to date through June.
North American aircraft and parts production will need to ramp-up to fill orders.
Ships, boats, and offshore rigs overview

- Includes:
  - Barge & Ship Building
  - Boat Yards, Ship Repair & Dry Docks
  - Drilling & Production Floating Platforms

- Budget constraints will limit the defense side of the business.
- US shipbuilding industry order backlog has shrunk over the past year, but production still needs to increase to fill existing orders, especially energy carrying retrofits to existing ships and barges.
- With the emphasis on shale gas, tight oil and tar sands, Can/Am investment in shallow and deepwater rigs will take a back seat.
- The demand for rigs outside of the US should remain strong.
- Unconventional energy revolution and expansion of domestic chemical capacity will bolster US vessel production.
US Ship and boat

• US ship and boat orders are up 44% year to date through June. Many are conversions to carry energy products.

• Commercial ship conversions to carry energy products are underway and will support production increases over the next two years.
Bottom line for the forging industries

- Capital equipment markets will grow at a faster pace this year and next, but not as strong as in our prior forecast, implying a softer forging outlook.

- Replacement demand remains the principal driver behind higher light vehicle sales and production, but growing employment and incomes will make the growth sustainable.

- The outlook for commercial vehicles is very strong. Freight activity continues to expand, while replacement demand is the principal near-term driver.

- Higher energy prices should give the energy exploration, production and distribution markets an extra boost.

- Aircraft and parts production will need to ramp-up substantially.

- Despite continuing caution about CapEx, machinery & equipment over the next three years holds promise, even with slower growth compared to the prior forecast.
Thank you!

Please continue to participate in FIA’s Annual Orders & Shipments (O&S) Survey. Your input is needed for the continued success of the forecasting project.