

## 2014 CAPITAL SPENDING SURVEY

### Executive Summary





# \$7.442 Billion

According to the 2014 Metalworking Capital Spending Survey by Gardner Research, U.S. metalworking facilities will spend \$7.442 billion, an increase of almost 19%, on new metalcutting equipment next year.

|      |         |
|------|---------|
| 2008 | \$6.040 |
| 2009 | \$3.213 |
| 2010 | \$3.709 |
| 2011 | \$6.322 |
| 2012 | \$6.796 |
| 2013 | \$6.263 |
| 2014 | \$7.442 |

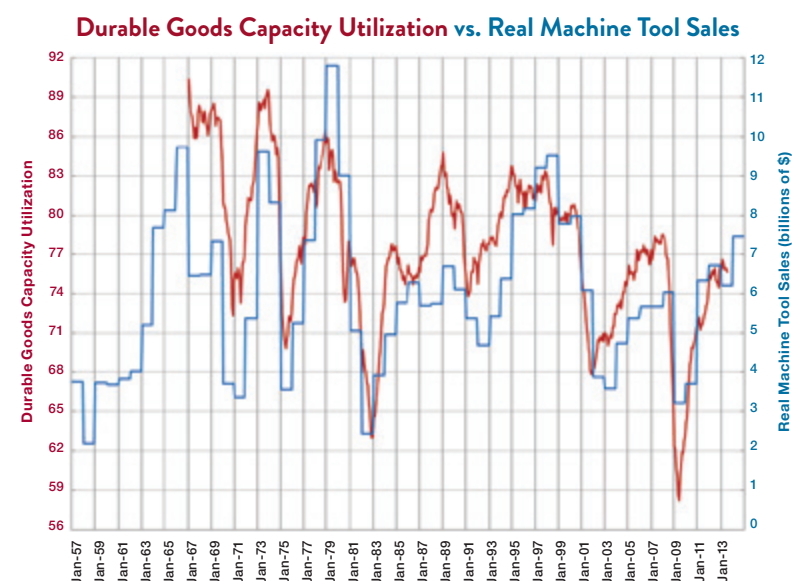
## WHY THE INCREASE?

There are four factors that help to explain the forecasted increase in machine tool sales:

1. CAPACITY UTILIZATION
2. HISTORICAL PERSPECTIVE
3. RESHORING / QUALITY STANDARDS
4. COST BENEFITS

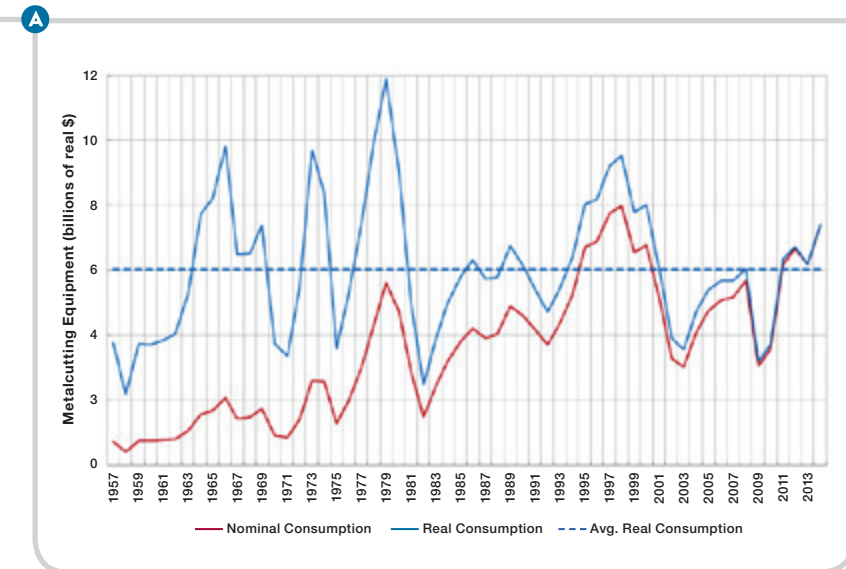
## 1. CAPACITY UTILIZATION

Forecasted operating capacity is 77%. Capacity utilization is the number one leading indicator for machine tool sales. Changes in capacity utilization tend to lead changes in machine tool sales by about one year on average. According to Federal Reserve data, capacity utilization has generally been on the rise since October 2012 and is still at or above the most recent peak in July 2012. Based on our survey results capacity utilization is slightly higher than the most recent Federal Reserve estimates. Based on the trend in capacity utilization, machine tool sales should increase in 2014.



## 2. HISTORICAL PERSPECTIVE

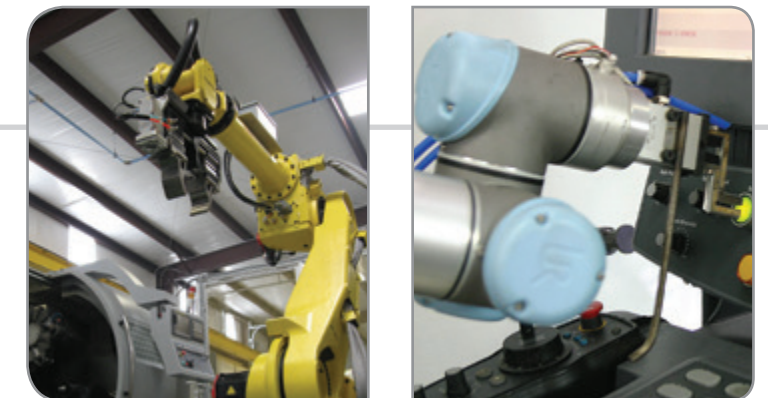
It is also helpful to look at machine tool sales as a function of capacity utilization, which we call our machine tool demand curve. The red line on this chart represents optimal demand for machine tools based on capacity utilization. Based on our survey's capacity utilization of 77%, optimal machine tool demand would be \$5.836 billion. Forecasted machine tool sales are significantly above optimal demand. In fact, machine tool sales have never been above \$7 billion without a capacity utilization of at least 79%. However, machine tool sales tend to fall above (over buying) or below (under buying) optimal demand in four to seven year cycles. 2014 would be year five of the current over buying cycle. So, it is to be expected that machine tool sales will be above optimal demand in 2014. SEE CHART A



## 3. RESHORING / QUALITY STANDARDS

Reshoring is a major trend affecting American manufacturing. Some reasons for this include relatively cheaper labor costs in the U.S. over the last five to 10 years, relatively cheaper energy costs, and a move to manufacture locally.

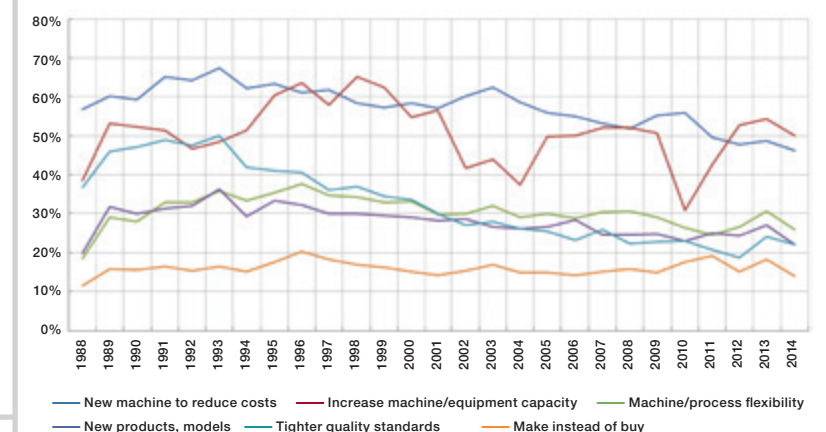
But, another significant reason for reshoring is quality. OEMs are concerned with the quality of overseas manufacturers as well as a lengthy supply chain that can hide quality problems and prevent communication between design and manufacturing departments. Tighter quality standards had been a declining reason for manufacturers to buy machine tools from 1993 to 2012. But, since 2012 there has been a noticeable uptick in tighter quality standards as a reason to buy new machines.



## 4. COST BENEFITS

American manufacturers are also realizing the cost benefits of technology. Finding skilled labor has become a real problem for many metalworking facilities. Also, rapidly rising healthcare and benefits costs are making it less desirable for manufacturers to hire new employees. This means that metalworking facilities need process flexibility. Since 2011, machine and process flexibility has been a more important reason to buy a new machine tool. SEE CHART B

## B Motivation to Buy a Machine





## Top Industries

| Spending by Industry                                   | 2008            | 2013            | 2014            |
|--------------------------------------------------------|-----------------|-----------------|-----------------|
| Metalcutting Job Shops                                 | \$2,319,627,284 | \$1,887,817,581 | \$2,573,335,023 |
| Machinery and Equipment Manufacturing                  | \$581,046,142   | \$548,100,804   | \$821,154,914   |
| Automotive                                             | \$404,336,832   | \$1,051,500,292 | \$646,501,020   |
| Electronics, Computers, and Telecommunications         | \$123,317,447   | \$195,367,399   | \$442,468,806   |
| Pumps, Valves and Plumbing Products                    | \$385,028,257   | \$187,951,451   | \$420,125,230   |
| Non-Manufacturing                                      | \$0             | \$105,101,210   | \$344,256,341   |
| Medical                                                | \$152,815,303   | \$99,224,330    | \$304,419,609   |
| Forming and Fabricating (non-auto)                     | \$159,499,161   | \$430,390,901   | \$281,868,908   |
| Oil, Gas Field, and Mining Machinery                   | \$386,445,600   | \$111,149,848   | \$270,933,249   |
| Primary Metals                                         | \$30,912,771    | \$260,976,691   | \$265,085,795   |
| Aerospace                                              | \$494,768,651   | \$560,756,731   | \$193,018,631   |
| Industrial Motors, Hydraulic and Mechanical Components | \$352,842,564   | \$30,739,450    | \$169,153,413   |
| Off-Road and Construction Machinery                    | \$233,069,320   | \$97,505,064    | \$141,381,922   |
| Custom Processors                                      | \$22,799,005    | \$23,561,254    | \$133,875,272   |
| Military                                               | \$74,887,490    | \$111,237,192   | \$78,157,106    |



### HIGHLIGHTS

#### Metalcutting Job Shops

- Job shops will account for almost 35% of all spending in 2014
- Job shops will increase spending 36% over 2013 levels
- Industrial mold shops are forecast to increase spending by 151%
- Increased spending will primarily come from plants with more than 50 employees.
- Equipment Types that will see significant increases:
  - Turning Centers, Horizontal, >10-in Chuck
  - Turning Centers, Horizontal, <10-in Chuck
  - Machining Centers, Horizontal, >800-mm Pallet

#### Machinery & Equipment Manufacturing

- Spending will increase to \$821.2 million, up almost 50%
- Spending will still be below 2011 and 2012 levels
- Most of the increase will come from metalworking machinery manufacturers, particularly metal forming machine manufacturers and cutting tool and machine tool accessory manufacturers
- Significant increases in plants with 20-99 employees and more than 250 employees
- Equipment types that will see significant increases:
  - Grinding – significant increases in creep feed, cylindrical/external, ID/OD, and other
  - Machining Centers, Horizontal, 400-800-mm Pallet
  - Machining Centers, Vertical, >20-in Y

#### Electronics, Computers & Telecommunications

- Spending is forecast to be \$442.4 million, which is up more than 125% Electrical equipment manufacturing, particularly relay and industrial control, will dramatically increase spending
- Spending will nearly double in semiconductor and other electronic components and navigational, measuring, electromedical, and control instruments (much of this is focused on measuring and controlling industrial processes)
- Spending will be concentrated in plants with more than 100 employees
- Equipment types that will see significant increases:
  - Lathes, Horizontal, <10-in Chuck
  - Turning Centers, Horizontal, <10-in Chuck
  - Turning Centers, Vertical
  - Screw Machines



## Growth Areas

### REGION

The East North Central always has the most spending, and 2014 is no different. Close to 40% of the projected spending will come from this region. Most regions are up but the Mountain, New England, and Pacific regions will be noticeably lower.

| Spending by Region | 2008            | 2013            | 2014            |
|--------------------|-----------------|-----------------|-----------------|
| East North Central | \$2,054,872,094 | \$1,746,407,811 | \$2,883,191,633 |
| East South Central | \$204,131,560   | \$104,894,140   | \$332,626,333   |
| Middle Atlantic    | \$447,775,340   | \$464,677,674   | \$711,913,633   |
| Mountain           | \$304,843,181   | \$438,063,818   | \$278,807,827   |
| New England        | \$340,117,882   | \$615,396,219   | \$340,845,671   |
| Pacific            | \$117,700,898   | \$920,382,777   | \$648,370,723   |
| South Atlantic     | \$552,201,909   | \$518,809,394   | \$549,805,955   |
| West North Central | \$959,828,080   | \$728,119,537   | \$776,744,668   |
| West South Central | \$1,058,292,911 | \$726,343,075   | \$919,906,505   |
| All (+)            | \$6,039,763,855 | \$6,263,094,444 | \$7,442,212,948 |

#### East North Central

OH, IN, IL, MI, WI

#### East South Central

KY, TN, AL, MS

#### Middle Atlantic

NY, NJ, PA

#### Mountain

MT, ID, WY, CO, NM, AZ, UT, NV

#### New England

ME, NH, VT, MA, RI, CT

#### Pacific

AK, WA, OR, CA, HI

#### South Atlantic

DE, MD, DC, VA, WV, NC, SC, GA, FL

#### West North Central

MN, IA, MO, ND, SD, NB, KS

#### West South Central

AR, LA, OK, TX

### PLANT SIZE

Large facilities were the smallest spenders in 2013.

But, in 2014, they will be the largest spenders.

Forecasted spending should be up nearly 150% in plants with more than 250 employees. Facilities with 20-49 employees will also increase significantly.

| Spending by Plant Size | 2008            | 2013            | 2014            |
|------------------------|-----------------|-----------------|-----------------|
| 1-19                   | \$858,189,271   | \$1,438,323,849 | \$1,252,686,680 |
| 20-49                  | \$1,187,508,921 | \$1,091,254,948 | \$1,316,845,658 |
| 50-99                  | \$1,428,599,667 | \$1,007,761,282 | \$982,770,090   |
| 100-249                | \$1,228,985,703 | \$1,621,423,371 | \$1,373,537,893 |
| 250+                   | \$1,336,480,294 | \$1,104,330,994 | \$2,516,372,627 |
| All (+)                | \$6,039,763,855 | \$6,263,094,444 | \$7,442,212,948 |



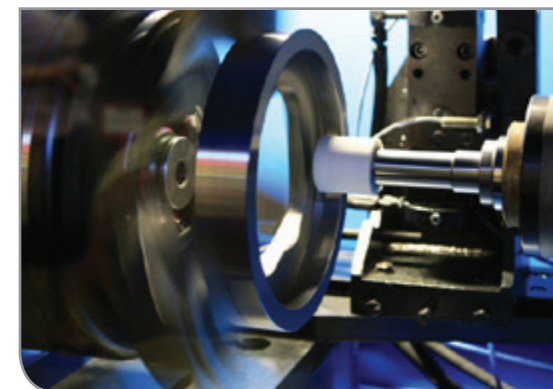
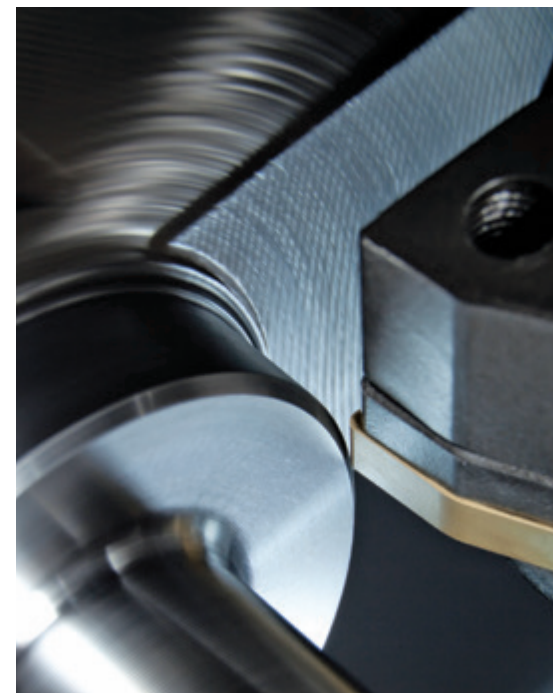


## Spending by Equipment Types

|                                                  | 2008            | 2013          | 2014          |
|--------------------------------------------------|-----------------|---------------|---------------|
| Machining Centers, Horizontal, 400-800-mm Pallet | \$1,357,777,327 | \$973,104,568 | \$908,752,225 |
| Machining Centers, Horizontal, >800-mm Pallet    | \$0             | \$223,716,832 | \$816,141,521 |
| Machining Centers, Horizontal, <400-mm Pallet    | \$392,898,820   | \$451,085,223 | \$570,489,236 |
| Machining Centers, Vertical, >20-in Y            | \$541,469,063   | \$512,698,641 | \$695,503,798 |
| Machining Centers, Vertical, <20-in Y            | \$728,885,080   | \$868,138,996 | \$634,691,298 |
| Turning Centers, Horizontal, >10-in Chuck        | \$408,832,743   | \$250,007,950 | \$535,687,818 |
| Turning Centers, Horizontal, <10-in Chuck        | \$376,724,170   | \$464,166,052 | \$652,323,098 |
| Turning Centers, Vertical                        | \$58,184,205    | \$62,679,638  | \$112,444,278 |
| Lathes, Horizontal, >10-in Chuck                 | \$407,319,689   | \$407,319,689 | \$276,295,074 |
| Lathes, Horizontal, <10-in Chuck                 | \$463,448,679   | \$601,911,422 | \$685,975,219 |
| Lathes, Manual                                   | \$112,712,356   | \$64,699,419  | \$39,553,422  |
| Lathes, Vertical                                 | \$64,074,197    | \$39,645,602  | \$114,559,681 |
| Screw Machines, Multi-Spindle CAM                | \$0             | \$0           | \$12,041,997  |
| Screw Machines, Multi-Spindle CNC                | \$0             | \$0           | \$33,795,225  |
| Screw Machines, Single-Spindle CAM               | \$45,094,884    | \$21,736,190  | \$163,719     |
| Screw Machines, Single-Spindle CNC               | \$29,816,025    | \$62,059,466  | \$12,939,378  |
| Screw Machines, Swiss-Type Automatic             | \$0             | \$0           | \$19,439,555  |
| Screw Machines, Swiss-Type CNC                   | \$0             | \$0           | \$96,493,984  |
| Rotary Transfer Machines                         | \$14,296,460    | \$27,949,160  | \$1,431,811   |
| Transfer and Other Special Machines              | \$18,216,386    | \$57,673,867  | \$129,113,967 |
| Grinding, Centerless                             | \$20,359,191    | \$35,719,563  | \$33,505,564  |
| Grinding, Creep Feed                             | \$9,942,740     | \$54,883      | \$53,341,253  |
| Grinding, Cylindrical/External                   | \$45,737,661    | \$141,127,665 | \$77,788,572  |
| Grinding, Flat/Surface                           | \$58,679,761    | \$81,742,428  | \$77,177,930  |
| Grinding, ID/OD                                  | \$35,526,734    | \$73,663,599  | \$85,171,713  |
| Grinding, Internal                               | \$21,113,683    | \$14,021,080  | \$31,185,550  |
| Grinding, Other                                  | \$14,496,771    | \$22,257,434  | \$167,649,228 |
| EDM, Ram Type                                    | \$17,868,213    | \$13,305,783  | \$41,006,240  |
| EDM, Small Hole                                  | \$10,109,726    | \$32,400,200  | \$21,945,109  |
| EDM, Wire Type                                   | \$40,302,995    | \$48,721,208  | \$91,259,199  |
| Sawing/Cutoff                                    | \$102,834,033   | \$89,572,416  | \$100,470,985 |
| Additive Manufacturing                           | \$0             | \$43,324,990  | \$42,449,701  |
| Boring                                           | \$330,193,973   | \$341,040,736 | \$4,958,209*  |
| Broaching                                        | \$4,721,948     | \$7,399,761   | \$5,564,283   |
| Drilling/Tapping                                 | \$147,929,460   | \$98,527,296  | \$175,015,411 |
| Laser Cutting                                    | \$29,387,564    | \$13,061,811  | \$66,154,596  |
| Waterjet Machines                                | \$10,110,454    | \$12,000,912  | \$13,493,055  |

\*Boring machines are now included in horizontal machining centers

## Top Equipment Types



### MACHINING CENTERS, HORIZONTAL

- Spending will increase just over \$600 million, or almost 40%
- Machines with a greater than 800-mm pallet will be up nearly 400% to just over \$800 million
- Machining Centers, Horizontal, >800-mm pallet
  - More than half of the spending will come from metalcutting job shops
  - Almost 38% of the spending will be from facilities with more than 250 employees; good spending from shops with fewer than 100 employees

### TURNING CENTERS, HORIZONTAL

- Spending will increase slightly more than \$400 million, or just over 66%
- Machines with more than a 10-in chuck will more than double to \$536 million
- Machines with less than a 10-in chuck will increase 40% to \$652 million
- Turning Centers, Horizontal, <10-in Chuck
  - Metalcutting job shops almost 33% of the market at \$220 million
  - Most important regions are East North Central and Pacific – both more than \$100 million
  - Largest market is plants with more than 250 employees but most significant increases are in plants with fewer than 50 employees
- Turning Centers, Horizontal, >10-in Chuck
  - Metalcutting job shops about 45% of the market at \$237 million
  - Huge increase to \$120 million in oil, gas field & mining machinery
  - More than 80% of the spending will be in the East North Central and West South Central
  - Spending well distributed across all plant sizes

### GRINDING

- Grinding spending will be \$526 million, up \$157 million or 43%
- Most significant increases are in other, creep feed, and internal grinding
- Other Grinding
  - Will see \$168 million in spending, more than triple any year since 2008
  - Half of that total will come from machinery & equipment manufacturing, particularly machine tool and cutting tool manufacturers
  - Other strong industries include HVAC, other manufacturing (ball and roller bearings), and metalcutting jobs shops
  - Almost half of the spending will be in facilities with more than 250 employees
- Creep Feed Grinding
  - Forecast is for \$53 million
  - Most years there is very little spending in this category
  - Almost all of the spending will come from machine tool manufacturers in the East North Central in plants with 20-49 employees
- Internal Grinding
  - Forecasted spending will more than double to \$31 million
  - Both electronics, computers & telecommunications and metalcutting job shops will spend about \$11 million
  - Facilities with fewer than 19 employees and those with more than 250 employees will spend between \$11-12 million

## 2014 CAPITAL SPENDING Survey & Forecast

### METHODOLOGY

Gardner Research's 2014 Metalworking Capital Spending Survey was sent to 28,000 subscribers of *Modern Machine Shop*, *Production Machining*, *Moldmaking Technology*, and *Automotive Design and Production* magazines. Surveys were mailed in mid-July, and the survey period was closed in mid-August. Respondents are asked to answer detailed questions about their budgeted spending on machine tools, tooling, workholding, and more. The responses are projected across the metalworking industry based on plant size. The survey has an error factor of +/- \$1,000,000 at a 95% confidence level for the total machine tool spending projection.

### OTHER GARDNER RESEARCH

Tooling & Workholding Survey  
World Machine Tool Output & Consumption  
Plastics Processing Capital Equipment Survey & Forecast  
Media Usage in Manufacturing Facilities  
Gardner Manufacturing Index  
Top Shops Benchmarking Survey

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#### Gardner Corporate

6915 Valley Avenue,  
Cincinnati, OH 45244  
P 513-527-8800 F 513-527-8801

RICK KLINE, SR.  
President

RICK KLINE, JR.  
Vice President/Group Publisher

MELISSA SKAVLEM  
Chief Operating Officer

#### Gardner Research

STEVE KLINE, JR.  
Director of Market Intelligence  
[skline2@gardnerweb.com](mailto:skline2@gardnerweb.com)

NANCY EIGEL-MILLER  
Research Manager  
[NEM@gardnerweb.com](mailto:NEM@gardnerweb.com)

### THE METALWORKING GROUP



TRAVIS EGAN, Publisher  
[tegan@gardnerweb.com](mailto:tegan@gardnerweb.com)

### PM/PRODUCTION Machining

JOE CAMPISE, Publisher  
[jcampise@gardnerweb.com](mailto:jcampise@gardnerweb.com)

### MoldMaking TECHNOLOGY

CLAUDE MAS, Publisher  
[cmass@gardnerweb.com](mailto:cmass@gardnerweb.com)

### AUTOMOTIVE DESIGN and PRODUCTION

MIKE VOHLAND, Publisher  
[mvoiland@gardnerweb.com](mailto:mvoiland@gardnerweb.com)

### TECHSPEX

NICK BLOOM, President  
[nbloom@gardnerweb.com](mailto:nbloom@gardnerweb.com)

### ADDITIVE MANUFACTURING

TRAVIS EGAN, Publisher  
[tegan@gardnerweb.com](mailto:tegan@gardnerweb.com)



TRAVIS EGAN, Publisher  
[tegan@gardnerweb.com](mailto:tegan@gardnerweb.com)



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