

# Metals Fabrication Industry Survey Results

## Iowa Advanced Manufacturing Innovation Network

### 2015

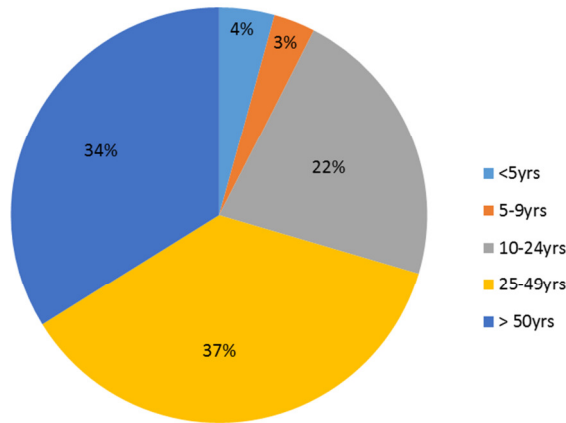
---

The following is a summary of results from the Metals Fabrication Industry Survey conducted in 2015 by Iowa State University and the Center for Industrial Research and Service. The survey comprised 186 individual responses from 165 unique companies.

**Company profile:**

**Q1** *Is this still the official name of your company?*  
 - Validation question to confirm name of company or update as appropriate.

**Q2** *How many years has your company been in business?*  
 - Industry is very mature with the majority of firms (71%) having been in business for 25 years or more.



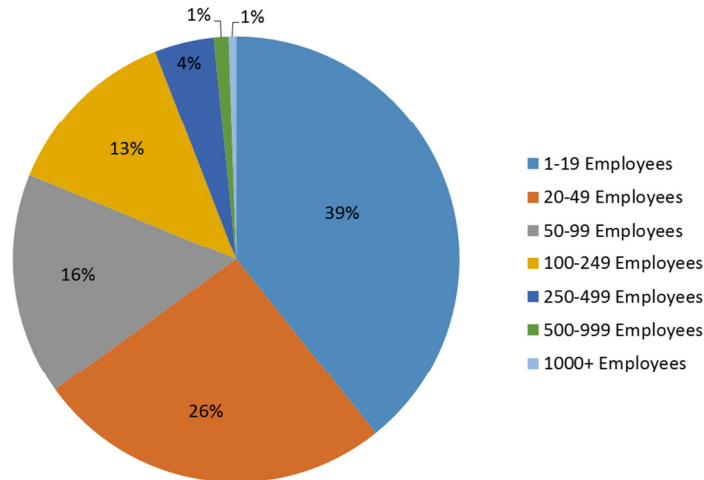
**Q3** *How would you best classify your primary business (by NAICS categories)?*  
 - Provided companies option to identify their primary business by NAICS code. Many firms are machine shops and the majority of the firms are serving multiple industries as evidenced by the high percentage (51%) identifying their primary business as ‘Other Fabricated Metal Product Manufacturing’.

3321 - Forging and Stamping	3322- Cutlery and Handtool Manufacturing	3323- Architectural and Structural Metals Manufacturing	3324- Boiler, Tank, and Shipping Container Manufacturing	3325- Hardware Manufacturing	3326- Spring and Wire Product Manufacturing	3327- Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	3328- Coating, Engraving, Heat Treating, and Allied Activities	Other Fabricated Metal Product Manufacturing
3	2	19	5	1	3	46	11	95

Q4

*How many people does your company employ at this facility?*

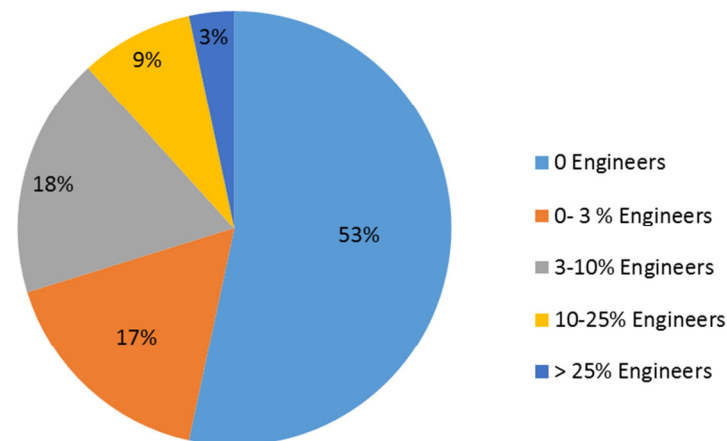
- Firms are small with the majority (65%) employing less than 50 people at the facility.



Q5

*How many employees at this facility have a bachelor's degree or higher in an engineering field?*

- Firms have few engineers with degrees on staff as evidenced by the majority (53%) of firms employing zero engineers with a bachelor's degree or higher.



Q6a – Q6h

*Has your company used the following resources to help develop new products, services, processes or business models?*

	Yes	% Yes
R&D Tax Credit	51	27.3%
Small Business Innovation Research (SBIR)	9	4.8%
Iowa State University (ISU) - CIRAS	81	43.3%
ISU - other technical	25	13.4%
ISU - Senior Design	14	7.5%
University of Iowa - Technical Assistance	6	3.2%
University of Northern Iowa - Technical Assistance	19	10.2%
Other	18	9.6%

NOTE: A survey respondent could answer 'Yes' to any or all choices.

## Sales Growth:

Q7a – Q7i *As you develop new products, services, processes or business models, which of the following technologies do you think could help **grow your sales**?*  
 - Provided list of technologies to determine which technologies companies believed would add value to grow sales. Respondents could choose No=1, Maybe = 2 or Yes = 3 for each technology. Averaged responses to generate a score for each technology to identify which technologies were most demanded.

	Average Score
Q7a. <b>Additive Manufacturing</b> (Utilizing 3D printing or rapid prototyping to reduce costs when developing and/or producing products.)	1.72
Q7b. <b>Electric Press Break</b> (Tighter tolerance can help get into more stringent, premium price applications.)	1.63
Q7c. <b>Fiber Optic Laser cutting</b> (Tighter tolerance can help get into more stringent, premium price applications.)	1.76
Q7d. <b>High Performance Materials</b> (Replace traditional metals with new high performance metals, polymers, composites or ceramics.)	1.73
Q7e. <b>Clean steel</b> (Surface preparation is not required prior to painting, leading to premium sales prices.)	1.83
Q7f. <b>Material modification</b> (Processing material through nitriding, carbonizing, imbibing, liquid induction hardening, painting, etc. to give material different properties.)	1.75
Q7g. <b>Advanced Machining and Tooling Technologies</b> (Ability to make unique features that lead to premium sales price.)	2.15
Q7h. <b>Provide design services to customers</b> (CAD Model Engineering Analysis Tools – e.g. Finite Element Analysis (FEA), Metal formability, Plastic processing, Sheet metal design package, Assembly analysis.)	2.03
Q7i. <b>Internet Marketing / Recruiting</b> (Increasing online presence through website, social media, etc. to get new business or more capacity)	2.34

## Cost Reduction:

Q8a – Q8n *As you upgrade your products, services, processes, or business models which of the following technologies do you think could help **reduce your costs**?*

- Provided list of technologies to determine which technologies companies believed would add value to reduce costs. Respondents could choose No=1, Maybe = 2 or Yes = 3 for each technology. Averaged responses to generate a score for each technology to identify which technologies were most demanded.

	Average Score
Q8a. <b>Additive Manufacturing</b> (Utilizing 3D printing to produce tools, fixtures, and molds at lower costs.)	1.77
Q8b. <b>Electric Press Break</b> (Faster cutting times, lower energy costs, tighter tolerances to reduce scrap.)	1.67
Q8c. <b>Fiber Optic Laser cutting</b> (Faster cutting times, lower energy costs, tighter tolerances to reduce scrap.)	1.81
Q8d. <b>High Performance Materials</b> (Replace traditional metals with lower cost metals, polymers, composites or ceramics.)	1.73
Q8e. <b>Clean steel</b> (Surface preparation is not required prior to painting, leading to less downstream processing and reduction of cycle time.)	1.83
Q8f. <b>Material modification</b> (Processing material through nitriding, carbonizing, imbibing, liquid induction hardening, painting, etc. to give material different properties, which may reduce or eliminate downstream processing.)	1.79
Q8g. <b>Advanced Machining and Tooling Technologies</b> (Ability to make unique features that can improve design and/or reduce material or labor costs.)	2.24
Q8h. <b>CAD Model Engineering Analysis Tools</b> (Finite Element Analysis (FEA), Metal formability, Plastic processing, Sheet metal design package, Assembly analysis – to predict performance and improve reliability.)	2.07
Q8i. <b>Basic Computer-Aided Design (3D models)</b> (Better traceability, less chance for errors in drawing accuracy or managing changes.)	2.14
Q8j. <b>Material Scrap Reduction Technologies</b> (Auto nesting / common line cutting to reduce scrap and save time.)	2.17
Q8k. <b>Product Testing</b> (Non-destructive inspection, Destructive testing, Non- contact scanning / metrology to determine reliability.)	2.02
Q8l. <b>Big Data /Data Analytics</b> (IT support, real time data gathering and analysis to identify trends and/or predict defects.)	1.83
Q8m. <b>Machine Sensing Technologies</b> (Machine Vision, Radar, Inline Product inspections, Vibration Accelerometers/Load cells to monitor equipment.)	1.87

## Business Model and Human Resources:

- Q9 Which of the following best describes your business model for specifying product/service/process requirements?  
 - Most companies manufacture products based on customer provided requirements as opposed to developing products in-house.

Business Model Choice	Count of Response
1 - Customer specifies all requirements	59
2 - Most requirements are specified by collaboration between ourselves and the customer	69
3 - Customer specifies some requirements and we specify others	43
4 - We specify all requirements	9

- Q10a – Q10h Is your company actively implementing any of the following strategies?

	Count of Yes Response
Q10a. <b>Promoting your company through community involvement</b> – (Reaching out to schools, sponsoring youth programs, tours, etc.)	113
Q10b. <b>Targeting different populations of workers</b> – (Disabled, part-time workers who would like full time, young seniors 65-69 years, etc.)	65
Q10c. <b>Recruiting women to manufacturing jobs</b> – (Promoting specific benefits of interest to women, etc.)	77
Q10d. <b>Encouraging retention by offering personal development benefits</b> – (Training, tuition reimbursement; focusing on creating a culture where people want to stay; flexible work hours, bonuses, profit sharing, etc.)	128
Q10e. <b>Sharing seasonal/part-time employees with another company</b>	26
Q10f. <b>Increasing process efficiency</b> – (Investing in automation, robotics, etc., to encourage growth)	128
Q10g. <b>Increasing operational efficiency</b> – (Reducing waste so you can do more with the same or fewer people, etc.)	161

NOTE: A survey respondent could answer 'Yes' to any or all choices.

## Summary:

Iowa State University is hosting an Innovation Summit for Iowa metal fabrication manufacturers on March 22, 2016 so you can learn about new technologies, and network with other Iowa companies and ISU experts. Attendees will be able to develop a specific project plan for their business that can help grow sales or reduce costs by using one or more of these technologies. The following questions will be used to best design the summit to meet your needs.

- Based on results below there was significant interest in the event (Q11- 67% interested if schedule allows). Additionally, many firms are actively working on projects to grow sales or reduce costs (Q12 and Q13).

Q11 *Would you be interested in attending this summit?*

Choice	Count of Response
1 – Not Interested	33
2 – Interested, but unable to attend. Please follow up with me	26
3 – Interested and will attend if schedule allows	119

Q12 *To **grow sales**, when are you planning to develop a new product, service, process or business model?*

Choice	Count of Response
1 – No plans	32
2 – 1 year or more in the future	25
3 – Within the next year	29
4 – Currently in process	92

Q13 *To **reduce costs**, when are you planning to replace or modify an existing product, service, process or business model?*

Choice	Count of Response
1 – No plans	40
2 – 1 year or more in the future	22
3 – Within the next year	27
4 – Currently in process	87

**Thank you for your time and assistance.**