

April 15, 2023

## Executive Message

---

### Use Your Voice...

I had a great meeting a few weeks ago with a few AMF employees that were somewhat frustrated. Their issues varied somewhat from person to person, but the overall message I heard was that they had no voice on how things were working in the day-to-day operations of their respective jobs.

I was grateful for the feedback and want to make sure I am communicating to them and to our entire company, if not overly communicating, that every person here at AMF should feel like they have a voice!

Lets talk about how you can be heard.

First, please use AMF's **Continuous Improvement**

system. This continues to be a vital part of, not only our daily operations, but our core strategy aimed at out-playing, out-maneuvering and out-doing our competition.

Admittedly, this is not an overnight fix, but a long, steady, measured approach that will methodically—body-blow-after-body-blow—tap-out our competitors.

If you feel any sort of frustration, any stop or pause in the work, any hinderance to your job, I sincerely ask you to submit the issue—**coupled with an idea of how to make it better**—and we will absolutely review that idea with the task, if workable, of getting it implemented.

If your frustration is with a person or group of people, I urge you to take the time to re-frame your frustration. Stop worrying about people and start thinking about process. Most of our frustrations result when things are not working right, and most things not working right boil down to one thing—process, process, process.

I kindly and respectfully submit that although we are receiving many ideas every week, the number of suggestions could be much higher. Please participate in Continuous Improvement. We need it from every corner of the business: office, shop and field.

**We are averaging about seven new ideas a week.** With over fifty employees, AMF is expending over two-thousand-man hours every week and only receiving seven suggestions? I think that means that most of us are working and never facing any frustrations or headwinds all week long—not a single issue, not one frustration, not one stop or pause. For me, may I suggest that seems highly unlikely.



If you feel frustrated, please take the time to submit your idea to our Continuous Improvement Hotline, 801-784-3787, (love pics as well). We review every single idea submitted each week!.

**AMF has implemented over 1,520 suggestions in the last couple of years from these submissions...it is real and we need to keep it going!**

The second AMF business system for today's discussion is our **Communication Strategy**.

Communication is a ten-dollar word that means so much and so little at the same time. Better communication is something my wife tells me I need improving...all, of, the, time! "Rich, I don't think you are listening to me; Rich, why didn't you tell me..."

Bottom line, communicating effectively is very difficult (even for my wife but don't tell her I said that :-)).

What are we doing to make communication part of our fabric? Here are a few things:

- ◆ Continuous Improvement... 'nough said already.
- ◆ Work Order reviews, revise-router stamps & training
- ◆ Fabrication Notes
- ◆ Fabrication Pictures
- ◆ Daily Standup Meetings
- ◆ Weekly Graphs, Charts, Metrics
- ◆ Weekly Gemba-Walks
- ◆ Weekly PM Meetings
- ◆ Weekly Training on Standard Processes
- ◆ Weekly Text Messages
- ◆ Bi-Weekly Production Meetings
- ◆ Monthly Newsletter
- ◆ Monthly Rapid Improvement Meetings
- ◆ Quarterly company parties and gathering events
- ◆ Yammer Intranet Media (coming soon)

Friends, please get on this train.

Participate—do not be afraid to speak up, give your opinion, share your thoughts and ideas, listen to others, be willing to try new things, let people make mistakes without making them feel stupid.

**There are so many tools in place for you to safely make your voice heard.**

One of the keys is to make sure that we are communicating not just about problems and people, but solutions and process. This kind of feedback will become ever so valuable if we share our opinions with an opportunity-for-improvement mindset aimed at process.

I love what we are doing and where we are headed, and I am so grateful for all of you. We have great people, and we are doing some truly great things.

We need to hear every voice so speak up and let keep getting better!

Respectfully,

Rich Marker

# Employee Spotlight

## Kris K

1. **What's something about you (a fun fact) that not many people know?** I went to Culinary Art (Chef School) for college!
2. **What is your favorite hobby?** Golf & Disc Golf.
3. **What's the first concert you attended?** ZZ Top & Lynyrd Skinner
4. **What's the next place on your travel bucket list?** Ireland...gonna get there one day.
5. **If you had to eat one meal every day for the rest of your life, what would it be?** Steak & Potato fingerlings
6. **One thing you cannot live without?** My family.
7. **Where is your favorite place to be?** Idaho, somewhere in the peace and quiet.
8. **Favorite Travel Destination?** Disney Land with my family, my kiddos were 3 and 5 at the time and they thought the characters and Disney magic was real—it was so fun to watch them meet and soak up the characters.
9. **Any favorite line from a movie?** "Alright, Alright, Alright!"
10. **What music is on your phone?** Everything: country, rap, blues, bluegrass.
11. **What chore do you absolutely hate doing?** Putting up Christmas Lights
12. **What shows do you binge watch?** Nothing...don't watch much TV



# Quality Message

## **AMF making use of Statistical Sampling and the Normal Bell Curve.**

In this article I want to introduce the concepts of statistical sampling and Normal bell curves.

Believe it or not, AMF has used this technique in a recent discussion with one of our customers, Heritage Industries, to measure variation on parts we laser-cut and form for them.

Using our data and the associated graph helped both AMF and Heritage Industries conceptualize the normal variation that is inherent to the Press Brake forming process. It, in fact, led to Heritage Industries easing tolerances, when possible, on their drawing requirements.

Statistical sampling is a widely used technique in quality control and process improvement.

Sampling, as it implies, uses a subset of a larger population of components or parts.

Data collected from this subset allows us to make inferences about the entire population.

One important statistical concept that is often associated with sampling is the normal bell curve—something you probably saw, or learned about in school, but quickly forgot because it wouldn't apply in your life, haha.

In this article, we will explore the basics of statistical sampling and the normal bell curve and how they can be applied here at AMF.

### **What is Statistical Sampling?**

Statistical sampling is a method used to estimate characteristics of a population based on a subset, or sample, of that population.

For metal fabrication, a population may refer to a large batch of metal components (think a large stack of parts), and a sample is a smaller, representative subset (think of pulling out a few parts from that large stack) that are selected for inspection or measurement.

Sampling is often more feasible and cost-effective than measuring or inspecting every single component in a large population, especially when the population size is large, or the inspection process is time-consuming or costly.

When measured, recorded and tracked, sampling allows us to obtain a reasonable estimate of the quality or performance of a larger.

The accuracy of the estimate depends on the sampling method used, the sample size, and the variability within the population.

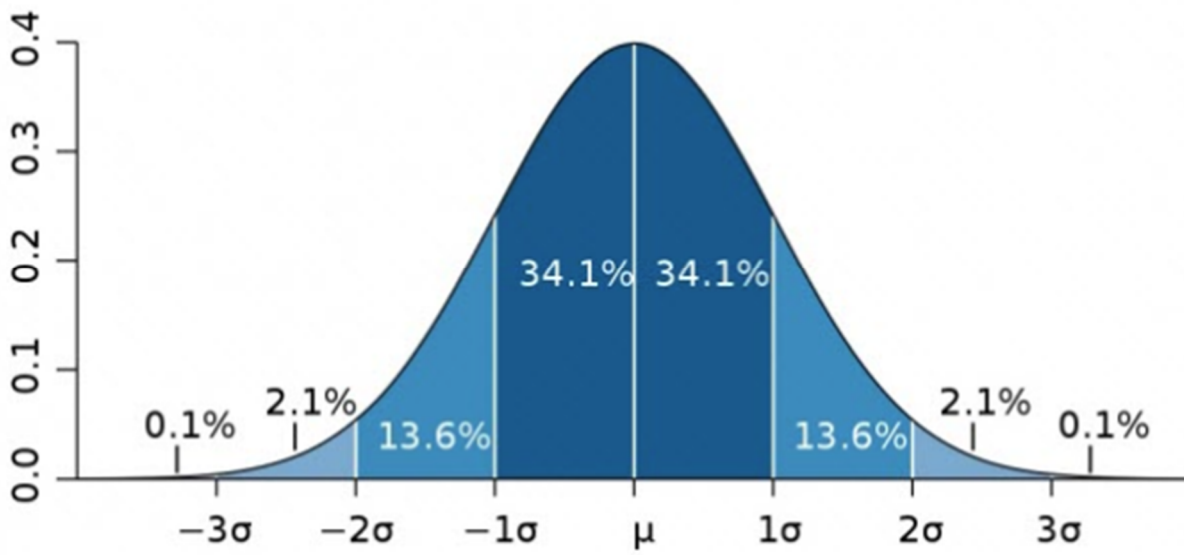
Properly designed and executed sampling plans can provide valuable information for decision-making in any of our work centers.



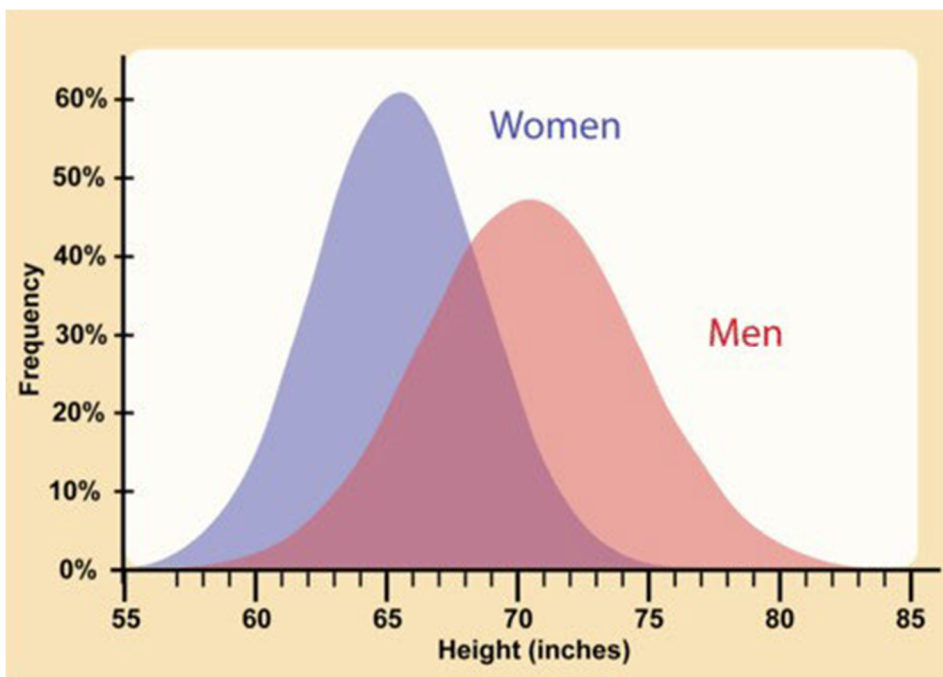
### Understanding the Normal Bell Curve:

The normal bell curve is a probability distribution that is commonly used in statistics to describe the behavior of any naturally occurring events. It is called a bell curve because it is shaped like a bell. (See below)

1 Normal Distribution Curve  $\mu$  = Mean  $\sigma$  = standard deviation (Sigma)



A very reliable example of how a distribution curve has been used in real life was done by taking a random sample of male and female height and applying the data in a normal bell curve. Notice how men have a curve that is less tall (on the frequency scale) and more widely distributed than women.





## How does this principle apply to metal fabrication?

The normal bell curve can be used to describe the distribution of a particular characteristic in any manufacturing process. Take, for example, dimensional measurements at the Press Brake.

The mean value of the distribution represents the average or expected value of the characteristic, while the spread or variability of the distribution is represented by the standard deviation.

The normal bell curve is important in statistical sampling because it provides insights into the expected distribution of the characteristics in the population.

In other words, normal curves can help predict process variability and the amount of natural or normal variation in a given process.

There is variability in all processes! And, variability can result from multiple causes including machine, operator, and material.

Variability can also occur due to setup between multiple process or batch runs. These things are considered natural or process variation. If large outliers or extreme values are found that distort a normal bell curve these are considered unnatural occurrences or abnormalities. Finding abnormalities is very helpful because it makes it easier to determine the root cause and put in place corrective actions to prevent those occurrences in the future.

Application of Statistical Sampling and the Normal Bell Curve can be applied in various ways in metal fabrication processes to improve quality and performance. Here are some examples:

- ◆ **Process Control:** Statistical sampling can be used to monitor and control metal fabrication processes by regularly collecting and analyzing data from a sample of components or parts to detect process [abnormalities](#). The normal bell curve can help in setting up control limits based on the expected distribution of the characteristic of interest, and any data points that fall outside the control limits can trigger corrective actions to bring the process back into control.
- ◆ **Inspection and Testing:** Statistical sampling can be used to inspect and test a sample of components or parts to assess their quality or performance. The normal bell curve can be used to set up acceptance criteria based on the expected distribution of the characteristic, and the results of the inspection or testing can be interpreted in terms of the percentage of components or parts that meet the acceptance criteria. For example, if the characteristic of interest follows a normal distribution, a commonly used criteria is the "Six Sigma" approach, which aims to achieve a defect rate of less than 3.4 defects per million opportunities (DPMO), corresponding to a process capability of 6 sigma. The normal bell curve can be used to calculate the percentage of components or parts that fall within the acceptance criteria, helping fabricators make informed decisions about the quality of their products. Properly designed and executed sampling plans can provide valuable information for decision-making in any of our work centers.
- ◆ **Product Development:** Statistical sampling can be used in the product development stage of metal fabrication processes to gather data on the performance of prototypes or initial batches of components or parts. The normal bell curve can be used to analyze the data and estimate the performance characteristics of the population, helping in the design optimization and improvement of the product.
- ◆ **Process Improvement:** Statistical sampling can be used to identify and quantify sources of variability in metal fabrication processes, and the normal bell curve can help in analyzing the data and identifying areas for process improvement. For example, if the characteristic of interest shows a skewed distribution or has a high variability, it may indicate a need for process optimization or control to reduce the variability and improve the quality of the components or parts.

In summary, statistical sampling and the normal bell curve are valuable tools in manufacturing and fabrication processes for quality control and process improvement. By properly designing and executing sampling plans and interpreting the results using the normal bell curve, AMF can make informed decisions about the quality and performance of their products, identify process variations or abnormalities, and drive continuous improvement efforts.

Understanding the concepts of statistical sampling and the normal bell curve is a great way for manufacturers to ensure consistent quality and performance of their parts, leading to customer satisfaction and business success.

*Andrew Gibby, Director of QA*