

Measuring Your Production Performance

Analyzing your production and setting standards can have a real impact on your profitability in today's market.

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More and more framing organizations are growing to a size that requires hiring operations managers and CFO's. Yet the small size of the picture framing industry means there are no universities that teach managerial accounting or operational studies for the industry. To handle their growing organizational needs, firms are bringing in managers from outside the industry. While this is an exciting trend, bringing in fresh ideas and capital to the industry, these new entrants face real challenges because of their relatively limited understanding of framing. Most outsiders view framing as they would any other manufacturing industry and treat framing like the industries they came from. This can cause difficulties when they seek data and statistics like those common elsewhere.

The area where this is an issue is called metric analysis. New managers seek facts to learn the industry and judge their companies' efficiency. Unfortunately, few places keep such framing industry data. When new CFOs ask what the typical units per hour (UPH) is for a production system, the answer they usually hear is, "It depends." There's usually too much variety in framing products, equipment, and workflow to answer in any other way.

While frustration with this answer is part of the learning process for new managers, they have a good point. The framing industry would benefit by having production measurements to assess the efficiency of both operators and machines. In fact, only recently has the framing industry had metric analysis tools developed specifically for the way it works. These tools are still in their infancy compared to other industries, but they are vastly superior over what was available a couple of years ago.

Assessing the efficiency of personnel and production systems requires a standard of measurement. UPH or units per hour is the typical measure used in many kinds

of manufacturing. In its simplest form, UPH is calculated by dividing the number of units produced in a day by the hours in the workday. Finding true production efficiency, however, requires being more precise by factoring in break time, lunch, and other non-productive time.

It's also more productive to learn just how much time it took to perform a task. For example, if one operator cuts at 30 UPH and another cuts at 60 UPH, you might conclude that the second operator outperformed the first by a wide margin. Yet this conclusion is premature. It doesn't take into account a number of factors. For example, operator number one may be cutting 4-inch oak moulding while the second is cutting 1-inch soft pine. That's the "it depends" factor. Many framing operations can't be compared to other operations accurately.

Like any scientific analysis, data for framing operations has to be replicated to be valid. That's especially hard when comparing combined operations like cutting and joining. The type of saws and joiners would have to be the same. The moulding would also have to be the same size and timber species, and frames produced would have to be the same size and profile.

Managers from outside the industry often try to limit the variables by finding UPH for production cells. This may work for certain cells like glazing or sizing, but not for fitting. How can you compare fitting an oil painting to fitting a shadowbox containing a jersey and baseball? The UPH metric is valid only when used for very similar items and for a sufficient amount of goods. If UPH were measured for only one work shift, for example, the resulting statistics would have limited value because they're only good for the product produced by that shift. That's why enough time is needed to develop meaningful statistics. A UPH is valid only if it accurately

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reflects an even flow of goods that are representative of goods produced by the firm.

UPH in Framing

The best method for using metrics in the framing industry is comparing actual production time as a percentage of a production goal. It is difficult to do this type of study without capturing time information electronically and comparing it to an extensive database of industry time standards for equipment, material specifications, material size, and ergonomics.

UPH is easier for most production managers to deal with than compiling and analyzing data for actual operating times. Given the intricacy of the calculations and the availability of data, UPH statistics are easier to com-

pile and analyze. Without using production or manufacturing software, a production manager is forced to physically process items or have operators make tally marks on a sheet of paper and then compile that data. The accuracy of this method is suspect, but it's better than nothing.

Another issue related to the manual collection of data involves an operator's ability to be entrusted with providing accurate data. Metrics are often used as a basis for reward and punishment. Using the recipient of reward and punishment to collect the data threatens its validity. Data validity is also threatened because operators tend to forget to compile data for periods of time because they are focused on producing items rather than counting them. In spite of these shortcomings, UPH is typically the easiest metric for most production managers to use.

Metrics: Real-World Issues

"It used to be that pre-framed art OEM's could be off by 20 percent on price and still make money," says Jeff King, vice president of research and development for SpecialtySoft. "Those days are coming to an end. Metrics matter because labor is a big part of your costs, and measuring production gives you the information you need to quote more effectively while improving your production efficiency. If you have to guess how much time your production takes, you could be wrong, and that can mean the difference between making money on a job and losing it. If you have a metric that indicates that it takes six minutes to cut a moulding, for example, then you can allocate your labor costs based on that.

"Metrics starts with breaking your production down to its components," King adds. "How long does it take to do a piece of glass? How long does it take to cut a mat? How long does it take to cut a moulding? The hard part is that so much depends on what you're producing and the volume you're making. You can't just come up with an industry number. It also depends on what type of machinery you are using. Are you using a chopper or a double miter saw with an automated gauge? You're going to have two very different numbers with those two pieces of equipment. And you have to update your production numbers when you change equipment.

"With the right software, you have the ability to get a lot of detailed information, such as how long it takes to cut one-inch moulding versus four-inch moulding. But that's a level of detail that the industry hasn't gotten to yet. In fact, a lot of places are lucky if they know how many units they get out at the end of the day, much less per hour—and I'm talking about some pretty big operations."

King says that while it's possible to look at the amount of time it takes to do every single item, the time and effort it would take to do that would be so costly it wouldn't be beneficial. "For

example, software is designed so you can find out how long it takes to cut 5 x 7-inch frames versus 20 x 24s, but no one has placed a value on knowing that," says King. "They do place a value on knowing how many frames they're cutting. They're looking for meaningful statistics, benchmarks for production."

According to King, one way of doing time studies for metrics is to have a manager sit back with a clock and watch how many pieces an operator does—maybe not even telling him about it so he works at his average pace. "Software programs can also be used to log how much time people actually spend at a station," he points out.

While metrics is growing in importance, people often lose sight of quality assurance when they think of metrics. "Even if you can produce 10 frames in 20 minutes, that won't do you a lot of good if you have a 25 percent reject rate," King says. "Setting a production metric too high can be very costly if it results in a high reject rate."

The important thing is that metrics lets you control your production efficiency and your labor costs. "As the industry progresses, metrics will help standardize framing production and help compare operations," he adds. "Framing production facilities tend to keep their heads down and keep turning out product. Metrics lets them understand and measure how well they're doing so they can improve their bottom line."

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Hours per Day

The accuracy of UPH depends on the accuracy of the data collected and the basic factors used to calculate it. For instance, most firms consider a workday eight hours. Yet when determining the true number of hours in a workday, it's generally accepted that all breaks including lunch must be deducted to gain an accurate measure of units produced per hour. To develop an accurate UPH, it is important to ask some basic questions: Does a workday consist of eight hours or seven? How many hours does the staff member actually work? How much time is spent on the telephone or in the bathroom? For accurate calculations, consistency is a key. If it is determined that workday consists of an eight-hour day, then that number must be used consistently. And if any statistic or factor is found to be in error, then all the data can be modified at a later date.

Assessing Time

To accurately measure labor usage, the staff member should clock in and out of the production cell. This will help calculate breaks and lunch hours. In the semiconductor industry, many types of processing equipment require a user to swipe an employee ID card to clock in. The machine contains software that calculates the number of units produced, actual processing time, down time, and defect rates. Similar technology is also available in the framing industry. It allows a staff member to log on to a workstation, where production software tracks the productivity of the staff member. The base statistic of UPH is easily calculable using this system. It also provides a higher level of statistical analysis like those used in other industries, such as the number of defects per hour and total operating performance relative to standard industry times.

Calculating defects per hour or for any other time period is necessary to assess defect rates and to isolate when and where defects occur. Tracking all components processed by team member can reduce defects even more. It allows for quick identification of inefficient or poorly trained team members as well as faulty equipment. Tracking processed materials can be achieved by using bar codes for all processed materials.

Setting Goals

When using metric analysis to make a production system more efficient, translating the data into meaningful system improvement is easier when you set a definite goal, such as "Achieving an average UPH of 40 at the saw station by June 2005." Generic goals like "Make the saw station efficient" are less successful. A goal should be definite and have a timetable with specific milestones. A realistic plan can then be put into effect to achieve the goal by a set date. The goals there-

by set the timetable and milestones that must be hit for a project to be considered a success. Once the timetables and milestones are set, metrics can be used as the basis for measuring success.

Establishing Metrics

Metrics should be established based on industry standards, such as a saw operator should be able to cut 750 frames out of 1-inch moulding on an efficiently operating pneumatic double miter saw. The establishment of metrics must be based on industry standards and in-house time motion studies (TMS). Sharing metrics among manufacturers is becoming more common, but the onus of collecting data still falls on the shoulders of individual companies. Through the use of historical data, data shared with other firms, and data generated by TMS, production managers can establish meaningful metrics.

Time Motion Studies

Time motion studies have been conducted for over a century. Good TMS take into account the limits of human physical and mental capacities and the importance of a good physical environment. The results of TMS have been used for decades to help build efficient production systems. For a framing company, a supervisor and the most skilled operators should conduct TMS. The pace set should be one that is comfortable, not breathtaking. The purpose is to set an average production time of a skilled worker, not the fastest time possible. The purpose of TMS is to set realistic, efficient standards for workers, not to create production levels designed to make their supervisors look good. If a standard is set that pushes all operators to try to achieve a nearly impossible production speed, then the metric will be seen as punitive by workers and will exhaust them. The result will be greater turnover, with a loss of production time and efficiency.

Conclusion

Data collection and analysis for high volume OEM's with large runs are easier than for other segments of the industry, such as retail chains, large volume custom framers, and OEM's that service the hospitality and similar industries. They are, in essence, large custom frame shops. Today's highly competitive environment, with shrinking margins and overseas competition, has forced domestic retailers and OEM's to provide a high degree of product customization, which makes data analysis difficult. Despite this, measuring performance and setting production standards is important because it has a significant impact on profitability. Given the competitive nature of the volume framing industry, with shrinking margins and overseas competition, metric analysis is a tool that can boost profits and increase market share. Metrics are here to stay in the framing industry. Companies that learn to do them right will not only survive but also excel. ■