

Measuring Productivity in the Workplace

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There are thousands of ways to measure productivity. Determining the best method is the dilemma many companies face. Time is money. The single greatest impact on productivity is how time is spent on the manufacturing floor. In the precision-turned parts industry, most machine cycle times are in seconds, which makes “minutes” a highly prized commodity.

Benjamin Franklin famously quoted: “Lost time is never found again.” Lost opportunities are prevalent in manufacturing. For example, a machine that starts up on the morning shift half an hour late lost 30 minutes of production,

Manufacturing productivity is a time measurement, of both people and machines.

and a poorly maintained machine that constantly breaks down loses hours of potential production time. Managers frequently sift through the maze of

data, searching for the tidbits that really mean something. They try to piece together a spreadsheet that may or may not end up being helpful in measuring and improving productivity. Another option is measuring how effective time is spent on the shop floor, for both people and machines. That calculation is called “Minutes.”



Minutes: A Simple Measure of Productivity (and Profitability Direction)

By now you may be wondering how to do the minutes calculation. You have one decision to make before you do your calculation and that is: *What operation(s) generate the greatest percentage of value-added sales in your plant?* In most cases, it is primarily production equipment.

The calculation:

1. Accumulate all shop floor labor hours for the work week. (Including all shop floor production, support and part-time labor.)
2. Add all of the selected production equipment machines' hours for the work week. (You will need hour meter readings [HMR] for the machines.)
3. Divide the machine hours (HMR) by the labor hours and convert the answer to minutes.

What do Minutes Mean?

Minutes are the measure of *minutes of machine productivity for each employee labor hour*. It is easy to determine and can be monitored weekly. Minutes tend to increase when business is strong and conversely decrease when business slows. The weekly chart coupled with a 3-week

IN THIS ISSUE

- Measuring Productivity in the Workplace
- Small Parts Manufacturing Sees PMPA Membership Benefits from the Work Floor to the White House
- Manufacturing Day is Friday, October 4th
- PMPA Annual Meeting: Connect with the Industry's Best!
- Craftsman's Cribsheet: Quality
- PMPA Calendar

CONTINUES ON PAGE 2

CONTINUED FROM PAGE 1

Measuring Productivity in the Workplace

and/or 12-week moving average smooths the weekly chop and provides a great trend analysis tool for your labor component.

All Minutes Aren't Equal.

Each company's minutes are unique to their operation. This tool is for internal use and should not be used for benchmarking other companies. As an example, below are descriptions of two different companies. For purposes of demonstration, both companies are very profitable and leaders in the industries they serve.

- Company A is a screw machine company with mostly long production runs and few secondary operations. The company has 22 shop-floor employees and runs a 40-hour shift.
 - 22 employees x 40 hours = 880 hours
 - 24 machines with 624 HMR/880 hours x 60 = 42.5 minutes
- Company B is a precision machine company serving the aerospace and medical industries. This company runs complex parts on CNC multiple spindle screw machines, Hydromats and other primary equipment. Secondary equipment, cleaning and inspection processes are also important value-added operations. The company runs a 40-hour shift with 130 shop-floor employees.
 - 130 employees x 40 hours = 5200 hours for the week
 - 60 machines with 2040 HMR / 5200 x 60 = 23.5 minutes

As you can see from the example, the minutes for each company differ greatly, even among highly profitable companies. The minutes calculation is best used as an internal labor and machine productivity tool. It is a very useful weekly benchmark to share with all employees. Once you have established a base line for your operation, the next step is improving the number.

Minutes are best used as an internal labor and machine utilization tool.

Minutes: A Measure to Improve Productivity and Profitability.

The two components of minutes, machine hours and labor hours, are key measures for productivity and profitability. Each of these components has unique drivers. Machine hours are primarily driven by customer demand and labor hours are controlled by company management. Maintaining a balance between the two can have a significant impact on profitability.

Adjusting labor, especially reducing the number of employees when demand decreases, is a more difficult task than adjusting machine hours. Without a system to show the necessity and impact of too much labor, reducing hours and layoffs are usually a painful process.

Sharing and discussing the minutes chart with employees provides management a simple all-encompassing tool.

- Increasing minutes is the goal.
 - Nonproduction labor helping in production departments improves productivity while reducing nonproductive labor hours.
 - Flexible hours when demand decreases reduces nonproductive labor while improving minutes.
 - Increase machine-to-operator ratio when machines run well. Increased machine hours while maintaining labor hours = higher minutes.
- Continuous improvement projects to improve productive/nonproductive labor ratio.
- Static minutes are okay when no significant changes occur with product mix and/or continuous improvement projects.
- Declining minutes require analysis and adjustments to labor hours.
 - Reductions in machine hours reduces demand for labor, both production and nonproduction.
 - Poor machine maintenance increases machine downtime and nonproductive maintenance labor while reducing machine production hours. Fewer support and secondary production employees are needed to meet demand.
 - Unusually high numbers of setups increase setup labor while producing zero production hours.
 - Low production = low hour meter hours = lower minutes, if labor isn't reduced in step with machine hour reductions.

Production labor and producing equipment create demand for other labor departments. Without production, these departments aren't needed.

