

Smart data: Know your team's needs

In this Big Picture Interview, Tyler Grahovec says smart data is actionable data, so find out what your team is looking to know.

By **Christine LaFave Grace**,
managing editor

▣ **Tyler Grahovec** is vice president of operations at Pacesetter Steel, a Kennesaw, GA-based processor of galvanized, cold-rolled, aluminized, and stainless steel for industrial end users. He joined the company in 1998 as a foreman in Pacesetter's suburban Chicago service center. At the Smart Industry 2017 conference in Chicago in September, Grahovec shared what Pacesetter has learned in implementing IIoT-enabled tools, including real-time production dashboards, to help improve scheduling and reduce downtime.

PS: At Smart Industry 2017, you said, "Part of the process in any of these (Industry) 4.0 setups is continually speaking to your people and finding out what they want and what they need." Can you tell me more

about Pacesetter's process in having conversations with team members to find out what data they wanted, and what would improve their work?

TG: We are lucky in that we have highly tenured associates, so a lot of our foremen had been line operators. During the transfer to IoT, we sat down with our foremen and asked them, "From an operator's perspective, what would you have liked to know every morning when you got into work?"

We went through, one, what did they want to know? Two, we talked about from a plant manager's perspective and a management team's perspective, what were the things that were key to us to figure out? We put all that into basically two spreadsheets (to start).

When we got into the IoT side, we came back and went to the shop floor and said: "OK, here are all the metrics you guys have used over the past couple of years to guide yourselves. If you had a clean sheet of paper, what would you want to know on an hour-by-hour basis or minute-by-minute basis when you're sitting at your line?"

We came up with what their dashboard should look like from their point of view. Then we went to the foreman and so on up the ladder. We kind of reverse-engineered it. Instead of going top-down, we went bottom-up, really focused on, what does every layer need to see and want to see?

So, for example, schedule attainment is a key metric that drives



our ability to ship to customers with a high-90% on-time delivery rate. The operators need to know if they're on time for the order they're currently running and what the next order is and if (raw material) and skids are ready for it. The plant manager, when he walked by, he wanted to see, what was the last job? Was the last job on time? And then the foreman had a different look, but they also wanted to see at the line level so that as they were walking by each line, they could see certain team metrics. Really the focus was building from the bottom up and figuring out for the guys what was relevant to them and then saying, "Here's all the data we can collect," and then talking them through what did they really concern themselves with.

PS: How did you solicit that feedback? Did you sit each team down in a room at once and talk everything through?

TG: No, I went out to each line, and we took a few minutes at the line and actually sat there and talked to them right at their workstation.

PS: You indicated that since getting its IoT infrastructure up and running earlier this year, connecting facilities' smart sensor data with PLC data and presenting real-time metrics at lineside digital dashboards, Paceset-

ter has unprecedented visibility into its operations. You mentioned being able to drill down into digitized dashboards via a touchscreen to identify in real time, for example, what has shipped and what's ready to ship, where in the plant your skids are, what's causing downtime, and where you need to update production schedules. So what's next?

TG: What's next for us is getting rid of as much paper as possible. We're really taking every piece of paper that's out on the shop floor and seeing, what are we using it for? What list is this, and how can we automate it? As we have drop-in orders, a piece of paper is static, and having something where we can update the guys in real time, helps them act quicker and react to things without waiting for somebody to get out on the shop floor and reassign all the paperwork.

It's paperwork and then really tracking the downtime at the line and being able to drill down even deeper but not making the system cumbersome for the operator. Because you don't want to make a downtime tracking tool that becomes another downtime.

PS: You said that when Pacesetter was in the process of selecting an IoT partner, you considered 15 different consulting groups and software providers

before selecting Industrial Intelligence. Throughout that time and considering the wide range of solutions you were pitched, how did you stay homed in on the priorities you had identified?

TG: Our owner Steve Leebow saw the interaction between the operations and IT team at Pacesetter and some of the tools we had developed on our own; he asked us what our IoT needs where and sent his assistant to trade shows (to scout vendors), so when they came in to present, we had a plan of what we wanted to attack. One of the biggest challenges you have is everybody has a shiny new toy if you will, so they're going to try to fit their shiny toy into your process to create your solution, and they don't really listen to your needs.

The other issue we saw was people will come in promising they can get you all this data, but it's how you use the data, that's the killer part. It was an interesting challenge which we solved by creating our own team, which is now Industrial Intelligence. Industrial Intelligence has helped us tremendously, as internally we have good software designers and developers, but we have very limited resources. It's (a matter of) finding the right partner and then getting the two teams communicating and working effectively together. ■

KPIs: Measuring the metrics that matter

Key performance indicators that do not drive business actions will not help you

□ Key performance indicators (KPIs) are one of the most overused and yet little understood terms in business and manufacturing today. They are too often taken to mean any metrics or data used to measure business performance. However, KPIs play a much bigger and more important role than that. In fact, KPIs are one of the most important guideposts for any manufacturer.

In a recent Plant Services webinar, Kathie Poindexter, director of product marketing for manufacturing and supply chain for Epicor Software Corporation, examined how KPIs enable users to manage, control, and achieve desired business results. Below is an excerpt from her presentation.

WHAT SHOULD QUALIFY AS A KPI?

To qualify as a KPI, a measure should link to the business objec-

tives, not just be site- or plant-centric, and should be meaningful for the business stakeholders. It also should:

- Connect to the business world
- Provide context, not just raw figures but relative figures measured and compared over time
- Be well-defined and easy-to-understand with no ambiguous interpretation
- Create expectations that allow users to create and set realistic targets

Most importantly, your KPIs need to drive actions. Key performance indicators that do not drive actions are not going to help you. The challenge is choosing the right KPIs. If you choose the wrong one, then you are measuring something that doesn't align with your business goals, causing you to focus on the wrong things. How then should you go about selecting the right KPIs for your organization?

KEY PERFORMANCE INDICATORS FOR MANUFACTURING

One of the best ways to accomplish this is by researching and understanding some of the most important KPIs. This way, you'll have a better understanding of which ones are specific to your business requirements and, more importantly, which ones will not be beneficial.

Key performance indicators fall into many categories or process areas depending on the audience and objectives, such as financial, customer focus, process, supply chain, quality, and people focused.

Let's dig a little deeper into one of these areas. Process-related KPIs are critical for manufacturing plant operators, and I suspect ones many of you are already measuring to some level today. To demonstrate how a commonly used KPI supports better decision making, let's discuss overall equipment effectiveness (OEE). OEE is the product of availability, performance, and quality.

Availability measures the performance of actual equipment run-time against planned run-time and is often used to measure the performance of your maintenance program.

Performance measures your efficiency at producing products during run-time. It is a measure of your actual cycle time against planned maximum cycle times.

Quality measures your performance in producing quality parts. It is the ratio of good parts to those that did not meet quality standards or those that required rework.

The OEE provides a measure of how well your manufacturing process is running. Mostly, it is valuable in tracking overall progress in production and maintenance activities. But as a standalone value, OEE offers no insight into the causes of production ineffectiveness. The OEE components (availability, performance, and quality) offer the initial direction in identifying production, maintenance, and process shortcomings.

Another useful KPI, **customer lead time**, can generally be broken down into different components. It illustrates the performance of several indicators and may be more useful in evaluating and improving operations to improve customer lead time, which is what the customer perceives. The sum of the order processing time, the

production lead time, and delivery lead time, is referred to as total lead time or customer lead time.

Order processing time is the time from when a customer places an order through to purchase orders or production orders or until production begins on that particular order. This can also be viewed as the administration time of that order before production or processing starts.

Production lead time is the time required to produce or process the order. This is the only time where the product is produced or manufactured. This time includes all value-added and idle times during production process.

Delivery lead time is the time it takes for an order or product to be delivered to the customer once the product has been produced and all the relevant production activities, such as quality testing and paperwork, are completed and the item is released for delivery.

Plant uptime is a process or production performance measure or KPI which is used extensively in many industries together with plant downtime, and sometimes as an alternative to uptime. It

is sometimes preferred to plant downtime because it incorporates all the possible downtime causes, both scheduled and unscheduled. Therefore, it represents the time that the plant is actually up and running, producing value-added goods for your customers. In the end, this is the time the production line or process is making money for the business.

Plant uptime or plant availability is also a component in calculating plant and process OEE, as mentioned before. Although downtime is a good KPI to track, it can become very complicated when it is split down into different downtime classifications. The true downtime and figure for a plant or process may become subjective. This is where it is preferable to use plant uptime in order to gauge management ability to operate the plant or process as efficiently as possible with minimal stoppage, for whatever reason.

Labor productivity, the efficiency measure, can be measured differently in every industry. In manufacturing, you can measure your organization's efficiency by analyzing how many units you have produced every hour and what percentage of time your plant was

Effective KPI's

Defined & Quantifiable Communicated Crucial Applicable

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TO LEARN MORE ABOUT MANUFACTURING KPIS, WATCH THE ON-DEMAND WEBINAR.

https://info.plantservices.com/webinar-2018-turn-data-into-actionable-intelligence_bd_iiot

up and running. In the case where you might have multiple facilities producing the same products and when analyzing the difference in labor productivity rates between each plant, there may be different factors which cause a variance in results. It's operation managers and

supervisors who should consider the following possibilities:

- Different skill levels of operators
- Different plant configurations such as layout
- Aging condition of plant and equipment
- Distance from supply sources and raw materials
- Reliability and quality of that raw material supply chain
- Quantity and quality of your supporting resources such as your maintenance teams