Data, Data, Data …

Data: Individual facts or statistics
Information: Knowledge gained through study, communication, or research

Turning data into useful information is the key to making critical equipment reliable. NASCAR contenders have found data invaluable in improving their overall performance. How they use data to assure equipment performance and reliability provides a model for manufacturing and maintenance. Here are some insights.

I hear it over and over again in the plants that I visit: "We have lots of data but not much useful information to convince our decision-makers that we are doing the right things." Unfortunately, decisions that have a direct affect on maintenance and reliability are often made without the benefit of useful data. Routinely collecting the right data–accurate data–and then quickly doing something with it is critical.

Many companies, plants, departments, and work groups collect a lot of data. Sometimes, it seems like too much data. After it is collected, the data is submitted to someone who supposedly compiles it. Often, those who generate the data never see it again. Maybe a few spreadsheet reports come back showing the compiled data. But is it useful information or just data, data, and more data?

Here are three steps to making your data more results-oriented.

Determine Key Performance Indicators
First, determine the ultimate performance measures or key performance indicators (KPIs) for critical equipment, processes, and functional areas. Try not to get bogged down in considering every bit of data as a key performance indicator. Avoid data overload!

Ask the question, "What data measures how well we are doing?" Think of the process, not the equipment or the department. Business measures that compare equipment or department performance without regard for the functionality of the entire process will come up short. For example, in an integrated manufacturing process or even a batch process, the idea of every piece of equipment performing at a magic number of 85 percent overall equipment effectiveness (OEE) is not necessarily a good KPI. Looking at the overall process flows may indicate that while the overall process may need to run at 85 percent OEE, each machine will likely vary depending on cycle times and designed efficiencies. Individual machines can run at much lower–or higher–OEE. Unless compared to their affect on the overall process flow, individual OEE results are misleading. For example, a 47 percent OEE can be excellent if that is the maximum level of performance the process requires.

Consider this: Four of the key performance indicators used by NASCAR champions are fuel mileage, lap times, pit stop times, and finishing position. Most other measures roll up into these four KPIs. For example, horsepower, braking efficiency, aerodynamics, chassis setups, and driving style affect the fuel mileage KPI. And fuel mileage directly affects the number of laps between pit stops. Tire changing, chassis adjustments, fueling, slow-down laps, and speed-up laps all contribute to the pit stop KPI. Measurements for lap speed, cornering speeds, cornering ability, and aerodynamics all affect the KPI of lap times. Finishing position has a direct affect on the sponsors' financial support of the race team and the team's budget. Sponsors pay for advertising visibility and can calculate

their return on that investment. The team's budgets can be enhanced by the financial wins at the track and bonuses from the sponsors. Finishing position is also a function of the other three KPIs: fuel mileage, lap times, and pit stop times. Paying attention to the ultimate measures of performance provides insights where and when to drill the data deeper.

If the data collected does not affect a KPI, then ask "Why are we collecting it?"

Choose Data Collectors who are Close to the Process

Second, engage those closest to the equipment and processes in the collection, analysis, and corrective actions resulting from their data collection. This step is extremely important. Reliable, consistent, and accurate data collection depends on motivated, engaged people closest to the sources of data. They must see how the data is being used to improve performance and to make their jobs easier along the way. Without their involvement, data appears as a "club" for motivating people to improve their equipment and processes.

NASCAR championship teams rely on data collected by people in every part of the operation. Test results and practice results–whether at the shop, in the wind tunnels, or at the track–are all documented by the people closest to improving performance. Race-day performance is also measured by those closest to the action. Data collection is made easier by customizing forms to assure that the right data quickly ends up in the right place. Some race tracks have sophisticated timing devices that not only measure the qualifying lap times but also report the time the car entered and left each of the four turns. This data allows the teams to determine exactly where to take corrective action to improve lap times. It is much more scientific than just "going faster."

Convert Data into Useful Information

Third, convert the data into "useful data" or information that people can quickly use to determine root cause and corrective action to improve performance. Useful data shows current performance compared to a historical trend. Charting the data in an easy-to-read format contributes to its usefulness. Annotating root causes for deviations from the goal makes the data very useful for making corrective actions and preventing recurrences.

Maintaining equipment history in a useful format helps NASCAR teams improve the performance and reliability of their racecars. This means collecting the right data, putting it into an easy-to-use format, and making it accessible to those making improvements. Useful data also indicates when additional data must be collected. A NASCAR team engineer once told me that they collect historical data on anything that can affect the performance of the car. They also have a saying: "The green flag drops at 1:00 on Sunday whether you're ready or not." The goal of a winning team is to be ready! History has taught them that.

Data, data, data. We must learn to make it user friendly so we can live with it. It is a way of life where equipment reliability is important.

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