

## Data, Data, Data,...

Written by Bob Williamson  
Saturday, 01 May 1999 19:16

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Data (da-ta), n.: Individual facts or statistics. **Information** (in-fer-ma-shun), n.: Knowledge gained through study, communication, or research.

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

I hear it over and over again in the plants 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 effect on maintenance and reliability are often made without the benefit of reliable information. Routinely collecting the right data--accurate data--and then quickly doing something with it is critical.

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

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.

Ask the question, "What data measures how well we are doing?" Think of the process not the equipment or the department. 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.

Consider this: Four of the key performance indicators used by NASCAR championship teams are fuel mileage, lap times, pit stop times, and finishing position. Most other measures roll up into these four KPIs.

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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 effect 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. Finishing position is also a function of the other three KPIs.

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

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.

NASCAR championship teams rely on data collected by people in every part of the operation. Test 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 also is 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. The data allow the teams to determine exactly where to take corrective action to improve lap times.

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 taking corrective actions and preventing recurrences--again, useful information.

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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! It is a way of life where equipment reliability is important. **MT**

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