Get the inside scoop on wrench time

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Wrench time is the amount of productive time in a day. It is the time spent actually doing PM, corrective maintenance or even fixing breakdowns. It does not include getting parts, manuals, driving to a broken down unit, jockeying units in the yard, etc.

Traditionally wrench time was defined as time spent by the worker with tools working on the machine. It includes direct troubleshooting. By convention we now include LOTO, Confined space entry set-up as part of wrench time.

How long does it take to repair a tire or replace a pump seal? If were thinking of the pure work time and assumed everything needed was right there, in front of you, then you would be thinking of wrench time. But if you were thinking of the time from when the job is handed out to when the worker is available for the next job then you are thinking of work order time.

Misconception: We can get wrench time from our work order system.
Actually there is no way to derive wrench time from work orders. The reason is that the work order is at best an approximate document. Minor (and some major) non-work activities are just not recorded. Of course you can estimate it by multiplying the work order time by 33% but the lack of granularity minimizes the usefulness.

Why is this important?
All your productive maintenance and repair activity comes from your wrench time.
Obviously if you have enough people for all your workload and projects then wrench time is of lesser importance. But if you struggle to meet all your demands then the wrench time becomes urgently important.

Another way of thinking of the NON-wrench time is to think of friction. A certain amount of friction is needed to make things work (a certain amount of set-up time is needed to do maintenance). But an excessive amount of friction soaks up the energy until eventually no useful work is done.

Studies done a while ago (before LOTO rules were put into place) show that a typical maintenance mechanic or electrician only spends around 168 minutes of a 480 minute day doing maintenance work (called wrench time).
The most popular study shows:

Activity Percentage and minutes per day Receiving Instructions 5% 24
Obtaining tools and materials 12% 58 Travel to and from job (both with and without tools and materials) 15% 72 Coordination delays 8% 38 Idle at job site 5% 24

Late starts and early quits 5% 24
Authorized breaks and relief 10% 48

Excess personal time (extra breaks, phone calls, smoke breaks, slow return from lunch and breaks, etc) 5% 24

Direct actual work accomplished (as a percentage of the whole day) 35% 168
How do you obtain accurate wrench time?
There are two ways. The hard way is to position yourself so you can see most of the workers and assign someone to observations. They can tabulate how much time is spent. The easy way is to use work sampling.

Work sampling

Imagine taking randomly timed snapshots of the whole shop floor wherever anyone would be working. Tabulate the random snapshots into a table of checkmarks per activity. Once you have enough observations (you can use the graph located at http://work-sample.com/nomograph.html to determine the number of observations needed).
To learn the basics of work sampling the same web site has a work sampling game (located at http://work-sample.com/work-sampling-game.html). You observe the mechanics fixing cars in a repair shop and at random times (dictated by the game) you have to record your observations. The point is to match the computer's observations.

Along the way you can learn how to conduct work sampling. But the real question is why bother? If you remove the barriers the wrench time will improve.

There are barriers to improved wrench time include everything from inefficient storeroom systems to slow permitting to inadequate coverage by certain crafts. Use work sampling to discover where lost time is hiding.

One of the great contributions of the Lean Maintenance crowd was to take your wasted time and see if an intervention would reduce the waste. The process is to make what is called a Pareto chart where the losses are listed by the size. The team can brainstorm ways of reducing the wasted time (hopefully without unintended consequences).
In the next column I will discuss some of the wasted time that was found by work sampling and what could be done to improve the wrench time.

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