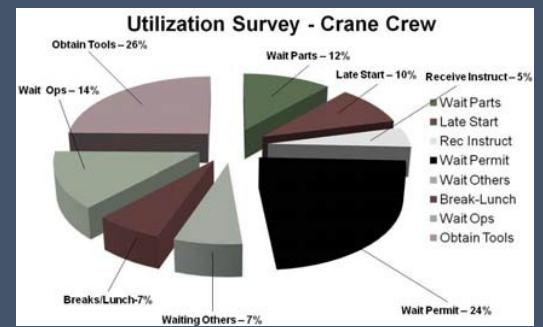


Single Point Lesson – Maintenance Wrench Time

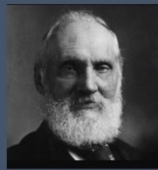
What Is Wrench Time?



Wrench Time is defined as the actual amount of time a crafts person spends doing value added work. A Wrench Time Study, or Work Sampling Study is aimed at identifying, eliminating, or mitigating the time spent on nonvalue-added tasks.

“World Class Wrench Time is 55-65%; most companies Wrench Time is between 25-35%”

“If you cannot measure it, you cannot manage it”



Lord Kelvin
1824-1907

Guiding Principles of Wrench Time Studies

Identify the percent of time maintenance personnel are delayed due to one of these specific reasons:

1. Traveling to and from the workplace: items not in the plan
2. Breakdown Planning: (emergencies or urgent work) waiting for parts, people, etc.
3. Training: technical, safety, etc.
4. Meetings: training, safety, etc.
5. Work Execution: waiting on parts, waiting on someone, etc.
6. Breaks: lunch, heat breaks, etc.
7. Waiting: waiting on supervisor, another maintenance person, production, etc.
8. Administrative: Union issues; personnel issues; discussion with supervisor about vacation, work orders, etc.

WARNING:

“Drive out fear, so that everyone may work effectively for the company.”

– W. Edwards Deming, PhD

Wrench-Time is not about reducing staff, as some people believe, it is about improving the efficiency of maintenance work which reduces cost, downtime, and stress on maintenance personnel.

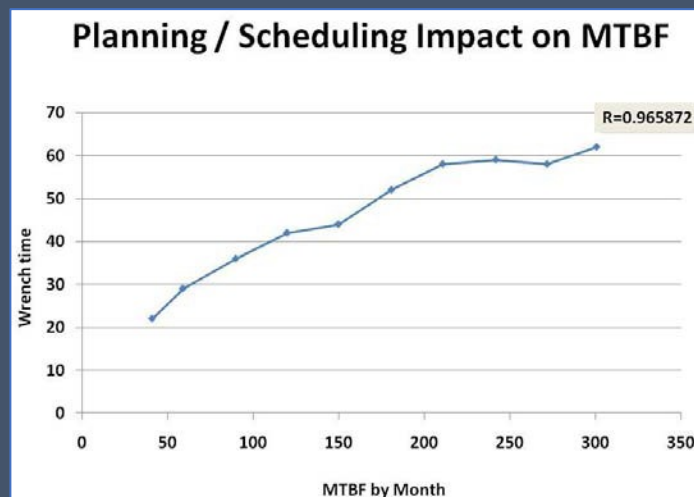
We never want our employees to fear any actions we take as managers. If a wrench time study is to be conducted, it is necessary to discuss the reasons for the study and its value.

Do not follow the “just do it” approach. You want your maintenance personnel to buy in to the process.

“The only reason for conducting a Wrench Time Study is to identify the delays causing maintenance to be less efficient”

Pay Attention to This Message:

A Wrench Time Study is not about finding personnel who are inefficient, making mistakes, or performing poorly. It is about the quality of the planning process and how the organization uses the planning process.



How Is a Work Sampling Study Conducted?

Over the years, Work Sampling Studies have taken many forms. The most infamous is the Industrial Engineer following someone around all day with a clipboard and stopwatch. This technique rarely achieves accurate results. Personal Digital Assistant (PDA) and answering some simple questions each time it signals.

With this method, no one is following anyone around; each person logs his/her own responses to the PDA when prompted. Each day, the PDA is given to a different person who carries it around and, when the PDA signals, responds with what he/she is doing at that moment. This process minimizes the fear Dr. Deming was talking about.

What Does the Data Tell Us?

All of the efficiencies and inefficiencies that an organization exhibits are reflected in the effective wrench time of a maintenance crafts person. When there is poor interdepartmental communication, it will be reflected in wrench time. Where the stores function is not efficiently managed, it will be reflected in wrench time. Where the planning process is insufficient, it will be reflected in wrench time.

Essentially, the purpose of a Work Sampling Study is to measure the level of effectiveness of the planning and scheduling function within an organization, although the study goes beyond the efficiency of the planners and schedulers. A Work Sampling Study measures the way the organization uses the information that comes from the planners.

It measures how each of the departments within an organization works together to accomplish work. It measures the planning and scheduling function of the organization. In other words, a Wrench Time Study is used to determine what the typical day for a maintenance crafts person looks like at a particular facility.

How Many Observations Are Required for a Statistically Valid Study?

2,000 – 3000. Sorry; if it were easy, everyone would be doing it!

Awareness of a Problem

The more an organization is aware of its problems, the easier those problems are to fix. By participating in a Work Sampling Study, and being as accurate as possible about activities during the study, system inefficiencies will be easy to identify.

Once these are identified and addressed, the daily stress that people, especially maintenance crafts people, have will be reduced.

Imagine going to a job and the parts are already kitted and waiting for you. The machine is already shut down, cleaned out, and locked out by the operator. The job plan contains all the necessary detail required for the job, and maybe even a little more... just in case you need it for reference. How much easier would life be? This is the goal of any maintenance organization, and the Work Sampling Study is a tool that can help accomplish this goal.

Finally, motivation is high, reliability is optimized, and everyone is happy. This is a fact and has been seen many times by managers around the world.

Outcomes of the Wrench Time Study

What happens if Wrench Time is improved?

- Maintenance work is completed on time.
- Production capacity increases.
- Everyone is happier because of less stress

What could happen as a result of increased Wrench Time?

- Maintenance personnel could now be used as planners and schedulers.
- Maintenance personnel could be trained as Maintenance Engineering Technicians (they make the best problem solvers).
- Human-Induced Failures are rare.
- Production operates the equipment to specification and as such cost is reduced and capacity increases beyond expectations.
- The culture of the site is more motivated and open to change.

My recommendations:

1. Educate Plant / Site Leadership in the value of Planning and Scheduling using the Single Point Lesson below.

Single Point Lesson

Steps to Optimize Maintenance Planning and Scheduling in any Organization

By Ricky Smith CMRP

Maintenance Planning and Scheduling is critical to success of any Maintenance Organization resulting in a significant increase in Wrench time (Hands on Tool Time). *Planning and Scheduling are two distinct functions which are dependent on each other.*

Wrench-time is a measure of maintenance personnel's time accomplishing proactive work on time, on schedule, and on budget.

Wrench-time does not include time obtaining parts, tools or instructions, and work associated with those tasks, traveling to or from job sites, or time spent obtaining work assignments. It is about only focused on "hands on tool" time.

- Maintenance Planning is a highly skilled function that requires a basic knowledge of the maintenance work processes, operations expectations, project management, computerized maintenance management system (CMMS) and related systems, as well as a practical understanding of the work to be performed.
- Planning is the "what's required" and "how to" part of any maintenance job.
- Planning typically includes the following:
 - Parts/Materials
 - Specifications
 - Instructions (Repeatable)
 - Coordination requirements
 - Estimated time
 - Repeatable procedure
 - Safety/Environmental Requirements

- Maintenance Scheduling is the process by which all proactive maintenance activities are scheduled by day by hour in coordination with Production at least one week in advance.
- Maintenance Scheduling requires the following:
 - Maintenance Scheduling Meeting is managed by the Maintenance Planner/Scheduler
 - Production and Maintenance leadership agreement of schedule by day by hour one week prior to scheduled work execution
 - The Maintenance Schedule is agreed upon by all parties prior to scheduling meeting.
 - A Maintenance Scheduling Meeting, typically held every Thursday for 30 minutes, lead by Maintenance Planner/Scheduler to ensure nothing has changed for next week's schedule.
 - Personnel to attend Scheduling meeting:
 - Maintenance Planner/Scheduler
 - Maintenance Supervisor
 - Production Supervisor / Manager
 - Plant/Reliability Engineer (Optional – dependent on potential interference with next week's schedule due to contractor, project interference with schedule)
 - Measurements (prefer a dashboard posted in the plant)
 - # Breaks to the schedule by type of break, ie. Production could not release equipment on time, No parts, Maintenance Labor not available, etc.
 - Schedule Compliance
 - PM Compliance
 - OEE

Maintenance Planning and Scheduling Scorecard

November 2020

Planning and Scheduling is an Investment, not an Expense

Planning and Scheduling Vision, Mission, and Guiding Principles

Planning and Scheduling Vision Statement

To plan and schedule maintenance work in order to optimize asset and process reliability at optimal cost.

"doing the right work at the right time"

Planning and Scheduling Mission Statement

Maintenance Planning and Scheduling is to enable proactive maintenance through increased "wrench-time" enabling optimal production process reliability at optimal cost.

Planning and Scheduling Guiding Principles

- Scheduling uses a combination of Defect Severity and Asset Criticality to determine scheduling work orders.
- Maintenance Planners focus on Future Work only, today's issues are handled by Maintenance Supervisor or Lead Person
- Maintenance Planners plan and schedule "MAINTENANCE WORK"
- All work "Scheduled" which require parts / material are kitted in a secure area
- All Planned and Scheduled work is tracked through status codes, see "Status Codes" below:
 - > RTS – Ready to Schedule (parts kitted and staged/secure)
 - > AP – Awaiting Parts
 - > AWP – Awaiting Production
- All Work Scheduled is scheduled by day and by hour
- Scheduling meetings are held on Thursday for FINAL review of the following week's maintenance schedule with Production, Maintenance, and others as required (ie. Contractors, Safety)
- Maintenance Planners facilitate the meeting and typically last 30 minutes
 - > Required attendees, Maintenance Planner, Maintenance Supervisor, Production Supervisor, Contractor (optional), Maintenance / Reliability Engineer
- Leading and Lagging KPIs are used to manage the Planning, Scheduling, and Work Execution Process.

Wrench-Time

"Hands-On Tool Time"

World Class Wrenchtime = 55-65%
Typical Wrenchtime = 15-25%

- Wrench time is a measure of crafts personnel at work, using tools, in front of jobs.
- Wrench time does not include obtaining parts, tools or instructions, or the travel associated with those tasks.
- It does not include traveling to or from jobs.
- It does not include time spent obtaining work assignments.

Steps to Success in Maintenance Planning and Scheduling

Step 1: Identify External Distracters



- Poor spare parts and inventory controls
- Conflicting ideas of what planning is
- No planner
- Planners taken off job, put on tools, or involved in daily activities (parts chaser, facilitating daily work)
- Maintenance and Production not acting as a team
- No planning process, unclear expectations, unclear roles and responsibilities
- Maintenance leadership not following the plan
- Emergency / Urgent Work too High
- Lack of Discipline
- The CULTURE

2. Take your best maintenance technician with the best computer skills and send them to “Maintenance Planning and Scheduling Training” and make sure they have contact information.

Maintenance Planning and Scheduling Workshop
“Live” and “Virtual”
at Southern Wesleyan University’s Bryant Lodge
February 8-10, 2022

At a Great training location on a small lake and quiet -- 4 miles from Clemson, SC --- 30 minutes from GSP Airport (Greenville-Spartanburg Airport)

Information? rsmith@worldclassmaintenance.org


Bryant Lodge

3. When they return they need to focus on one area of the plan to plan and schedule first. This is called “Proof of Concept”. You want to prove to the organization this works by creating a Maintenance Dashboard which will measure the impact of planning and scheduling.

Plant Maintenance/Reliability Dashboard

PM Compliance	Planned Work	Scheduled Compliance	Work Order Close Accurately	Rework	Maintenance Cost
100%	40%	100%	47%	78%	12%

“ You cannot manage what you do not measure”
 - Peter Drucker

Simple Tips for Managing Maintenance Effectively

1. Accurate Work Order Close-out is critical to good data – Maintenance Planner should close out work orders only
2. Repeatable Procedures to ensure a repeatable process, steps and specifications are a requirement
3. Post a Maintenance Scoreboard for all to see and to understand their “Score in the Game” (leading and lagging KPIs)
4. Repeat Equipment Failures are “Unacceptable” and must be mitigated thru RCA Techniques
5. Knowledge is critical of Best Practices for Maintenance and Production personnel (hourly and leadership)
6. No equipment problem should last more than 7 days, if so, call an expert outside your plant and outside your company
7. Education of all Maintenance Personnel is critical to optimization of any Maintenance Organization

Questions or Comments?

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