



THE FUNDAMENTALS OF AN EFFECTIVE TIME & MOTION STUDY

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Engineered Standards are systemic, methodological tasks of a labor performance management process. The labor performance management processes are broken down by tasks. As associates perform these functions, organizations will have standardized timed durations for each. The engineered standards will provide SAM values ('Standard Allowable Minutes') per task within each key volume indicator (KVI) of a given work function. These SAM values provide management with, "what the work time should be" compared to actual time spent working by an associate on a given task. Time & Motion studies provide an effective method to gather time data for developing Engineered Standards.

This discussion will highlight, from a supply chain engineer's retrospective, the ins and outs of producing a successful time study. There are many published resource materials that detail the conceptual format for conducting and performing time & motion studies. However, there are certain "soft" elements of time studies that may not have been notated in those resources. These other "soft" aspects of conducting time studies can enable one to truly develop an effective study. This discussion provides examples of these soft aspects to be aware of within a time study.

External variables can often influence the performance of the associate while the process is being performed. Also, when developing a template utilized for a study, the observer will need to fully understand the process to create each level of steps or elements involved in the process. Then there is the device or tool the observer will utilize to capture the time data. Finally, the PF&D is applied appropriately to that unique process. PF&D stands for "Performance, Fatigue and Delay." This is a percentage add-on factor to the overall engineered standard. These different factors are taken into consideration, while calculating PF&D. For example, lighting, force, attention to detail and atmospheric factors. A more detailed explanation will

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be further discussed later in this white paper. A time study should be constructed to observe multiple associates with variation in skill levels. An engineer should not observe an associate that is new to a process, instead try to select an associate that is knowledgeable about the process. Even a highly skilled associate could encounter some sort of emotional anxiety. How does an observer reduce or prevent these anxieties while performing the tasks throughout a study? First, casually introduce yourself to the person. It is important to be casual and resist being too formal. After introduction, describe the purpose of the time study and attempt to give details in layman's term (i.e. resist technical terms that will require more explanation of the meaning). Be sure to ask if they have any questions and follow-up.

Personal space is essential and must be respected. However, the observer must position themselves in a manner to observe and accurately capture the tasks performed. Find a position that will concurrently respect the associate's private space as well as give a favorable observation point. Small, non-delaying conversations are acceptable. Casual conversations will convey human interactions between two people and could reduce some of the anxiety. In contrast; non-interaction could result in the associate thinking that this time study is an evaluation of them personally. This is a common misperception that associates often believe the observation is a performance evaluation. Other aspects to consider are the current emotions of the associate. Were there some prior situations that changed the associates state of mind? The observer will need to consider the effects of the associate's emotions on the work tasks performed.

In the beginning the engineer needs to survey the area where the study will be performed. The observer will need to detail all the external Influential factors. A study should have minimal out of scope variables influencing a process. For

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example, what is the ambient temperature of the area and how could the associate be affected by the temperature? What is the season of the process being studied? Will it be beneficial and effective to conduct a study during the busy time of the operation (peak period)? The key component is for the observer to take time to evaluate the conditions and/or variables that could be affected by an external influence. If applicable, make every effort to remove or reduce the external variables. Work with the operations management team and discuss with them how the study can be optimized. Consider this aspect as removing barriers that could result in inaccurate performance outcomes.

The module or template of the process to be observed will require careful development. The observer needs to familiarize themselves with the process to be studied. There are methods that can be utilized to gain knowledge of the process.

Observers can obtain knowledge by conducting interviews with associates (on the floor), supervisors, and managers. The observer can seek reference materials of the process, flow maps, SOPs or training manuals.

The data collection tool is also essential in an effective time study. Long gone are the days of utilizing analog (or even digital!) stop-watches with clipboards for capturing time study data. Advances in technology, have made the capturing of data much easier and productive. Tablet computers and smart phone devices have enabled time study software and applications that are intuitive to use. When developing a template, the observer needs to construct the template in a manner that would minimize delays. A common mistake is an observer capturing the wrong related task or tasks that are “bad practice.” The observer should try to minimize the navigation throughout the template; also practice maneuvering through the template during a practice simulation. You want a logical flow of the

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template to correspond with the logical flow of the process. As the associate performs each task, the observer will be able to accurately capture the correct tasks and the performance rate observations.

The PF&D factor is a typical multiplier in calculating an adder for the SAMs of a process. The personal factor component relates to any delays that are a direct cause by the associate. This includes but not limited to restrooms, water breaks and out of scope talk. The Fatigue factor provides an adjustment for the energy level of the performer as the work shift occurs. The Delay factor encompasses incidental delays that can occur, whether avoidable or unavoidable, that are typically expected for a process. To calculate the PF&D factor, utilize actual observed instances to determine the P & D factors, and research percentage factors that are commonly found in reference sources (Human Factors/Ergonomics studies have produced standard, acceptable percentage values for fatigue) for the F factor.

In summary, this white paper provides insight on items that an observer should be aware of when preparing for a time & motion study. The goal is to replicate the ideal conditions of a process. Remember to set a comfortable atmosphere for the associate being observed. Also, preview the observation area and try to eliminate or anticipate any possible external influences. Account and apply a fair PF&D percentage factor to the overall standard allowable time. As an observer conducts more observations and gains experience, future time studies will become more effective and accurate, resulting in the most reasonable standard allowable time for that unique operating process.

Contact us at info@hy-tek.com or call us at 678.842.9114, if you want to learn more about conducting an effective time & motion study.