



Total productive maintenance for SMEs

Total productive maintenance (TPM) is not a course for machine maintenance but essentially a program of activities for eliminating the constraints that reduce the production efficiencies of individual machines throughout production systems. It is based on: 1) highlighting losses by comparing the current situation with the ideal as determined from operating principles and parameters; 2) Promoting kaizen (continuous improvement) with the aim of eliminating losses identified; and 3) establishing systems and implementing training to enable the above activities to be carried out by individuals and on an organizational basis.

For this to be done efficiently, TPM has been formalized in a number of step-by-step development programs, such as the seven steps of autonomous

maintenance and seven pillars of TPM, and is recognized as an effective method for rapidly translating activity into bottom-line results. The Figure summarizes the different kinds of losses that are identified and eliminated through TPM.

Need for TPM

During critical periods in the business environment and times of energy crisis, the cost of business operations increases, especially production costs. The rise in costs is compounded as the market environment becomes more complex. Therefore, companies must look for ways to improve their operational and cost efficiency to sustain their competitiveness. TPM is one management tool that could help enterprises survive in a harsh business environment as it allows them to reduce costs dramatically by maximizing efficiency,

eliminate the 16 big losses, establish and maintain zero-defect conditions, minimize changeover times, undertake stockless production, and develop a demand-responsive, flexible production system.

TPM applications in SMEs

The purpose of TPM is to improve company performance by enhancing the operational efficiencies of people and equipment. Equipment operators are the first targets, because they are the ones who could make mistakes in operations which may then cause product defects and make machines fail. Autonomous maintenance is a program for developing equipment operators into highly competent individuals who know their machines well; keep them clean; lubricate, tighten, check, and otherwise maintain them; and make improvements

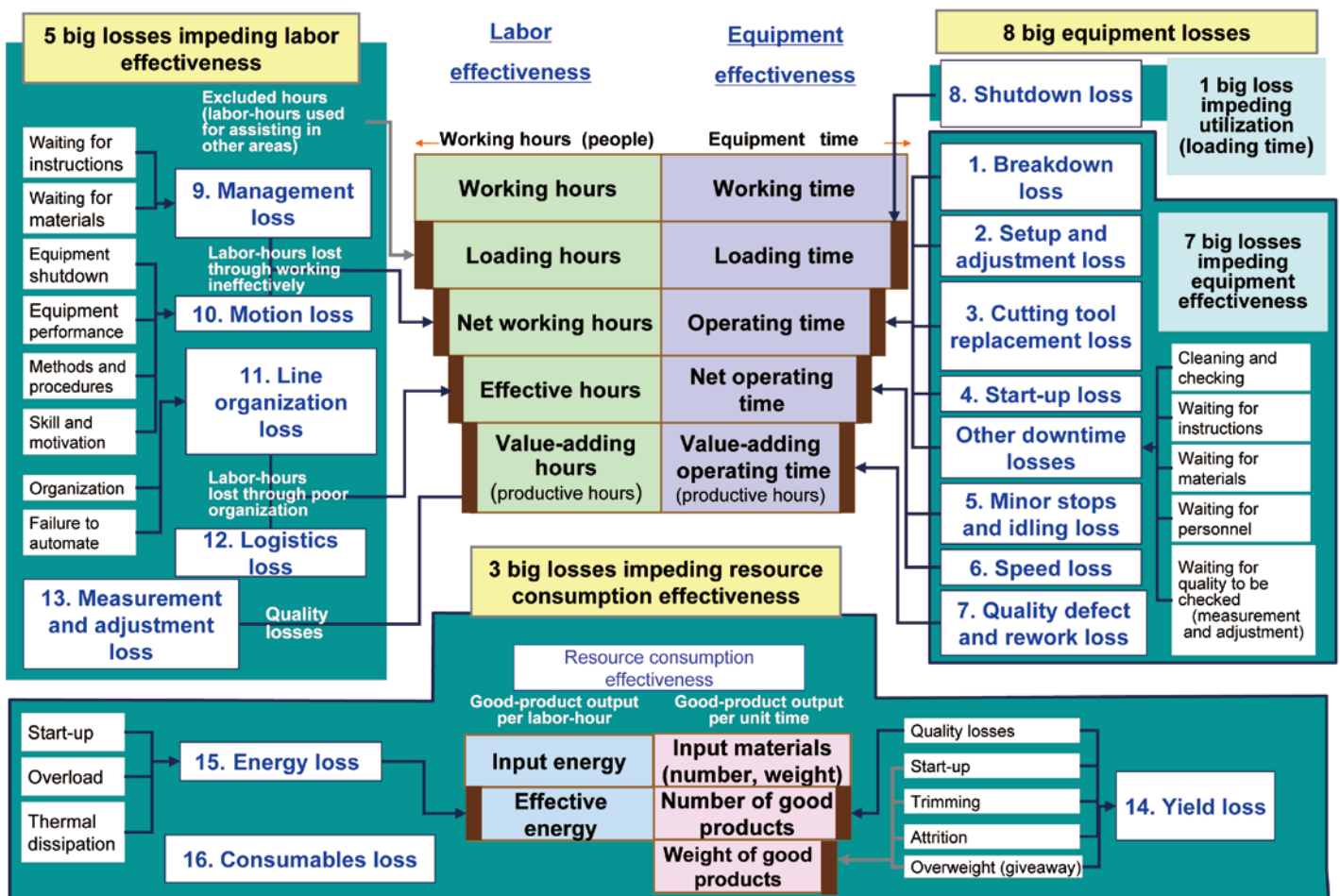


Figure. How losses inherent in production systems (the 16 big losses) occur.

to eliminate losses. The program begins with the 2S of sort and set in order, and it is then developed through a seven-step procedure. The seven steps of autonomous maintenance are: 1) initial cleaning; 2) tackling contamination sources and hard-to-access areas; 3) formulating provisional autonomous maintenance standards; 4) general inspection; 5) autonomous checking; 6) standardization; and 7) full self-management. To complete the TPM program, the other guiding principles (pillars) must be implemented in parallel, such as focus improvement, planned maintenance, education and training, etc. TPM activities need a strong commitment from top management to succeed.

To begin applying TPM concepts, the entire workforce must first be convinced that upper-level management is committed to the program. The first step in this effort is either to hire or appoint a TPM coordinator. It is the responsibility of the coordinator to sell the TPM concepts to the workforce through an education program. To do a thorough job of educating and convincing the workforce that TPM is just not another “program of the month” will take time, perhaps a year or more. Once the coordinator believes that the workers are sold on the TPM program and that they understand it and its implications, the first study and action teams are formed. These teams are usually made up of people who have a direct impact on the problems being addressed. Operators, maintenance

personnel, shift supervisors, schedulers, and upper management might all be included on a team. Each person becomes a stakeholder in the process and is encouraged to do his or her best to contribute to the success of the team effort. Usually, the TPM coordinator heads the teams until others become familiar with the process and natural team leaders emerge.

What TPM is not

TPM is not a maintenance program; it is an operations improvement process. In recognition of this, some organizations call it “total process reliability.” It is definitely not a program or an event; it is a process or philosophy. It is not a means to reduce head count; there is plenty of work to be done. It is not a quick fix, because it takes some years to achieve the targets. But the results begin immediately. 🏠



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