

## Scientific Management Systems

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*First term final exam, January 2013, 4<sup>th</sup> Year at Production Engineering and Mechanical Design Department.*  
Please solve the next question (3 hrs). 110 marks. (All types of sources are allowed.)

Maintenance operation is vital to the survival of any organization. It is important to distinguish between the maintenance operation's vision, its mission and its objectives and goals.

A **vision** statement should explain what the organization would like to become in the future. A vision statement is generated by the company ownership. An example is *to gain an identity as the leader in technical innovation.*

A **mission** statement should explain the purpose of the maintenance operation's existence. Mission is the reason you do what you do. An example is *to provide timely, quality and cost-effective service and technical guidance in support of short-range and long-range operating/production plans.* We will ensure, through proactivity, rather than reactivity, that assets are maintained to support required levels of reliability, availability, output capacity, quality and customer service. This mission is to be fulfilled within a working environment, which fosters safety, high morale and job fulfillment for all members of the maintenance team while protecting the surrounding environment.

The **objectives** must support both the plant's strategic and production plans and the plan's objectives. In addition they must support the maintenance operation's stated mission. The number one objective for all maintenance organizations everywhere is *maintenance of equipment reliability.* Additional maintenance objectives consistent with the mission statement are: *control maintenance workload; continually reduce equipment downtime and increase availability through the establishment of a preventive/predictive maintenance program (including failure analysis) designed, directed, monitored and continually enhanced by maintenance engineering; ensure that work is performed efficiently through organized planning, optimized material support and coordinated work execution; establish maintenance processes, procedures and best practices to achieve optimal response to emergency and urgent conditions; create and maintain measurements of maintenance performance; provide meaningful management reports to enhance control of maintenance operations; provide quality maintenance service in support of operational need.*

The **goals** are the measurable steps toward fulfilling the mission while objectives are the organizational conditions that must be met in order to fulfill the mission. Examples are: *unscheduled man-hours become under 10%; emergency maintenance labor hours become under 2%; preventive maintenance man-hours become above 30%; overtime becomes 5%.* It is essential to establish specific goals for achievement in relation to the plant's strategic and operational plans, both short- and long-term.

The **targets** must be set for maintenance performance in terms of *equipment up time, maintenance costs, overtime, work-force productivity and supervisor's time at job sites.* Such specific targets as these enable management to monitor progress and the effectiveness of the maintenance management program and to control activities by focusing corrective attention on performances or levels that consistently fall short of the targets.

Maintenance objectives, goals and targets should be synchronized with the departmental mission statement and be consistent with the facility strategic and operations/production plans that are formulated to realize the company's vision.

**Required: Design a Lean-Six Sigma framework for a general maintenance management system, guided by those exploration statements above.**

*Best wishes*

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