Competitive Advantage thru ensuring Equipment Reliability

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Cummins India implemented an innovative approach to retain and enhance their business profitability. Simply put, they are ensuring that the equipment supplied by them to their customers perform as promised and make efforts to assure their customers to meet the desired reliability. This successful business model of Cummins India is now being copied and implemented by Cummins International in other countries. [1]

In these difficult times it is good news. But how can an Original Equipment Manufactuer (OEM) do that? They may do a number of things, which are as follows:

- Understand the customers' business requirement in details.
- Not only supply their core product but also the matching equipment to go with it.
- Take care to install the machinery
- Design a maintenance program that would assure the customer to achieve the desired level of performance and availability.
- Keep adequate spares at customers' premises to meet the maintenance needs and ensure that there is no spare outage.
- Implement the maintenance schedule correctly so that the agreed performance could be achieved.

With such degree of involvement of the OEM the customers benefit in a number of ways:

- They would achieve their business objectives.
- They would be able to cut down on maintenance costs.
- They would avoid bottlenecking problems.
- Up-gradation and improvements, if any, would be taken care of by the manufacturer.

An OEM may benefit from such an arrangement in the following ways:

- Increase their business turnover even in a period of recession.

- Could retain their customers more effectively.
- Build a better brand image and market share thru better product differentiation
- Enhance their business profitability when other OEMs were suffering.
- Effectively drive out competition.
- Better utilization of service manpower
- Lesser complaints – more customer satisfaction.

On the surface this approach seems very simple and obvious. But to successfully implement this competitive strategy it would need very careful study, analysis, thinking and action.

Let us see what may be the possible steps that would make this strategy work for any OEM. We know that any piece of equipment has a life cycle of its own. The different stages may be described as follows.

1. Concept Stage.
2. Design stage.
3. Manufacturing stage.
4. Installation & commissioning.
5. Operation stage.
6. Decommissioning stage.

It is obvious that to improve and maintain equipment reliability at an early stage is relatively easier than at a later stage. Therefore the thinking has to start at the very first stage of the equipment life cycle. So, if reliability is to be high at Stage 5 (Operation Stage) then reliability has to be built in from Stage 1 (Concept Stage). Traditionally an OEM controls all activities and operations from Stage 1 to Stage 4 and the customer has control on Stages 5 and 6. In the above strategy an OEM virtually assumes the responsibility of all functions from Stage 1 to Stage 6 thereby benefiting the customer.

Therefore if an OEM wishes to adopt a similar competitive strategy the questions that an OEM may have to face would be as follows:

1. What would be the operating standards needed by the customer? How best these standards may be transformed into equipment specifications?
2. How do we build in the concepts of reliability, maintainability, safety and other issues at the concept stage? Where do we get the data? How do we involve the customer?
3. How may design review do we need to go through? What would be the types and the content of each type of design reviews? How the issues of reliability, maintainability and safety are translated into the design?
4. What components and sub-assemblies would need manufacturing precision and accuracy to ensure high degree of reliability in field operations? How do we ensure this? How can we aim for simplicity and ruggedness at the same time? Is maintainability and safety assured?
5. What are the precautions we need to ensure at the installation and commissioning stage? How may we ensure at this stage that the targeted reliability and availability can be tested and assured?
6. How do we devise a maintenance plan that would ensure a high reliability with minimum intervention? How do we estimate the cost and resources needed to maintain the equipment?
7. How do we plan for spares? How much safety stocks should we have to ensure the desired level of availability and reliability?
8. What are the training needs? How do we implement these?
9. How do we maintain system reliability?
10. When do we plan to decommission the equipment? How do we measure that the equipment has reached its useful life? What precautions are to be taken during decommissioning? What would be the residual value?
11. What would be the profitability from the entire exercise and operation?

In brief, the above questions and their relationships are described as shown in Figure 1.

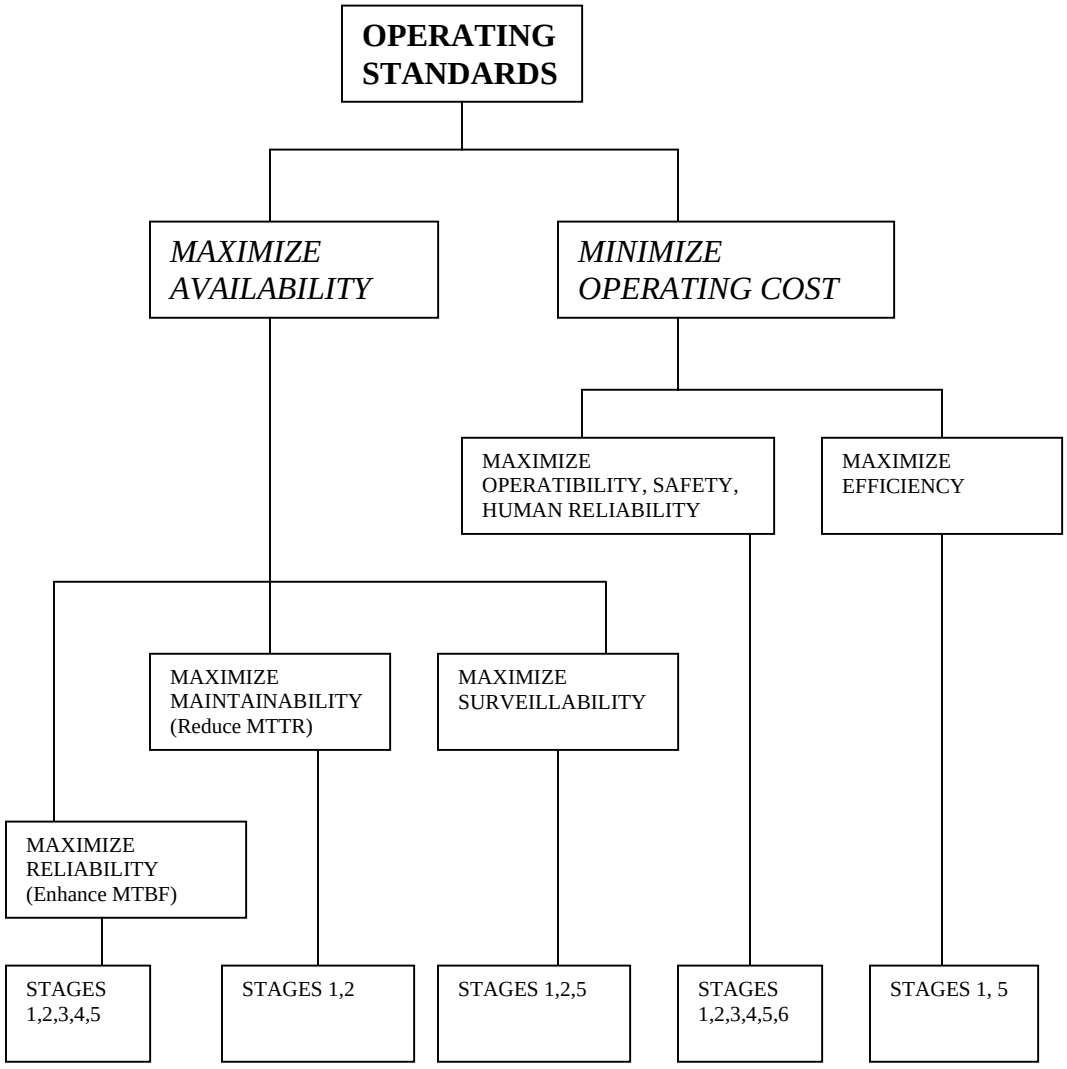

Figure 1.

We understand from Figure 1, that Stage 1 (Concept Stage) is the most important stage where reliability may be maximized and cost may be minimized. Surprisingly, at this stage the proportionate cost in the total life cycle is also the least (average about 3% to 5% of the total life cycle cost). However, it appears strange that most OEMs and Users ignore this important and cost effective stage in their decision making for introducing new machinery or procuring one. The next important stage where much may be achieved in terms of business objectives is Stage 5 (Operation stage). In this stage the proportionate cost in the equipment life cycle is the highest (typically 50% and above). But, at times, achieving business objectives only at this stage may prove difficult.

Hence the best financial management may be done when all steps are seriously considered in combination and systematically looked into. However, business objectives

(translated into operating standards) must generate in us the will to pursue machinery reliability in totality.

If pursued seriously, it provides the OEMs and Users of technology a great competitive tool.

References:

[1] – Nathaniel W. Foote, Jay Galbraith, Quentin Hope, and Danny Miller The McKinsey Quarterly, 2001 Number 3

About the Author and his work:

Internationally recognized in manufacturing and industrial efficiency circles, Dibyendu De has been a pioneer of Condition-Based Maintenance and Equipment Reliability strategies in India. He has published numerous policy papers in both national and international journals and has been invited to speak at overseas and Indian conferences on industrial efficiency through human thinking and effort.

Mr. De is Principal Consultant of 'Reliability Management Consultant'. His firm specializes in advising clients in all manufacturing industries, designing custom reliability improvement programs to allow each client to achieve measurable business success. Developing the appropriate strategy to identify and address operating problems, building in measures to improve production systems, and lending 21 years of experience to assist each client to improve upon existing techniques while applying the latest industry innovations and best practices, Mr. De has built up a sterling reputation among his numerous engineering and process manufacturing clients. With an emphasis on private sector business, Mr. De's list of over forty venerable clients include:
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Aditya Birla Ltd.
Duncan Brothers
Usha Martin Industries
WM Engineering (U.K.)
Les De Moulin (Mauritius)

Mr. De holds a BE (Mech) degree, a M.Sc Engg (M/C Design) degree, and a PGDM diploma. In addition, he has completed specialized training in the UK, the United States, and India on the topics of Condition Based Maintenance, Reliability Engineering, Fluid Power, TPM, BPR, and Six Sigma. His current focus is on improving competitive advantage of a company utilizing technology and knowledge-management.

