

## **SOME CONSIDERATIONS REGARDING THE PARTNERSHIP IN MAINTENANCE**

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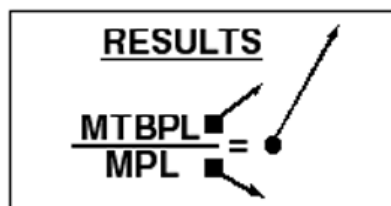
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**Key words:** maintenance, operations, partnership, production systems.

**Abstract:** In this paper, the vital relationship between operations, maintenance, and engineering will be elaborated. The relationship between operations and maintenance should be a partnership, not a customer/supplier relationship—the next step in promoting this partnership is to establish the rights focus in your joint improvement effort. So, if maintenance is not a service provider, what does maintenance deliver? That both maintenance and operations deliver reliability. The maintenance department delivers equipment reliability and the operations department delivers process reliability.

### **1. INTRODUCTION**

Reliability can be defined as “Quality production output at expected speed without downtime, personal injuries, or environmental damages,” or the same as OPE or overall production efficiency. It can be measured as OPE or with the following formula: MTBPL/MPL, where MTBPL = mean time between production loss and MPL = mean production loss. The term “production loss” is suggested rather than the more common reliability term “MTBF” (mean time between failures). The reason for this is that it should stress the fact that it should avoid operational problems, as well as equipment problems. The term “failure” is too often related to technical equipment failures (maintenance). If it has been decided to focus on improvement efforts on reliability improvements that will result in sustainable, lower maintenance costs, it is advised to find out the revenue of increased reliability as it compares to the value of reducing maintenance costs. A common way of doing this is to estimate the average market price for a product or a product mix over the last five years. Then, deduct the variable cost to make the product over the same time period.



*Fig. 1*

As shown in the figure 1, your joint goal is to continuously increase MTBPL and decrease MPL. The combined results of this will be a reliability factor. The joint operations/maintenance goal is to continuously increase this factor. In this example, it should be obvious that the joint operations/maintenance focus should be reliability. A lower maintenance cost will then follow as the reliability increases. The problem is that the manager might ask to do both at the same time, or even worse, ask first to cut the maintenance cost and then focus on reliability. From the company's experience it has shown over and over again that this approach will fail.

## **2. THE PROMOTION AN PARTNERSHIP IN MAINTENANCE**

**A joint venture.** One thing is to agree that operations and maintenance are equal partners in a joint venture resulting in reliable production. Another thing is to make it happen, and, to make it happen, things must be done differently than they are in a customer-supplier relationship. For example:

- Agree on the same goal-overall production efficiency (OPE).
- Achieve the right joint focus-total reliability. There is revenue as a result of improved reliability. Improved reliability results in lower sustainable maintenance costs.
- Solve problems-do not classify production losses by department.
- Include operators in basic inspections and essential care of equipment
- Agree on guidelines for priorities of work requests
- Communicate production plans
- Create a joint shutdown schedule

Of course, the most important part of building the partnership is personal relationships. However, organizations are changing, and, with the wrong processes in place to promote a partnership, things will fall back to a less effective work system.

**Include operators.** Where it is practical and makes sense, operators should undertake some basic inspections of equipment. If it is practical for an operator to do inspections, they should be taught to do so. As a guideline-if an operator can be trained in an inspection method in less than 15 minutes, he or she should be trained to do that inspection.

A classic example is the inspection of a rotary steam joint for a paper machine. It makes sense for a back tender to not only look at ropes, felts, paper web, doctor blades, condensate returning through steam joint, etc., on the back side of a paper machine, but to also inspect the condition of the carbon ring in the steam joint. Training operators on how to do this takes less than five minutes.

**Agree on work request priorities.** First of all, maintenance work should start with a work request, not a work order. A work request might or might not turn into a work order.

If a work request turns into a work order, the execution should follow jointly agreed upon priorities. It is a very good idea to develop these together between operations and maintenance.

To sit down with your operations partner and agree on these guidelines and then start using them jointly is one of the most hands-on and best ways of making the partnership happen. It is a priority to send anybody who requests an example of a guideline.

**Promoting partnerships.** To make a partnership between maintenance and operations successful, it is ought to need to do things differently than they are done in a customer-supplier relationship. For example:

- Agree on the same goal-overall production efficiency (OPE).
- Achieve the right joint focus-total reliability. There is revenue as a result of improved reliability. Improved reliability results in lower sustainable maintenance costs.
- Solve problems-do not classify production losses by department.
- Include operators in basic inspections and essential care of equipment.
- Agree on guidelines for priorities of work requests.

**Communicate production plans.** It might seem obvious that communicating production plans are done just as often as once a week meeting between the operations and maintenance partners. However, the experience is that it is not a given that maintenance and operations communicate the production plan well enough.

As a minimum requirement, the production plan is posted weekly and updated daily. This allows scheduling of maintenance work to best take advantage of all opportunities that present themselves. This is important for a process producing many different sheet

characteristics, such as a paperboard machine making everything from uncoated to coated on one or both sides, running one or more wires. It is also important in other processes. For example, if it makes one type of pulp in a continuous digester, it will have fewer maintenance opportunities on short notice.

**Identify maintenance opportunities.** Sit down with your operations partner and identify all maintenance opportunities that present themselves as you go through each product you manufacture. Also, estimate a time range available for maintenance work. Give each maintenance opportunity a code and describe them on the backside of the priority guideline.

In your work requests, the requesters should fill out the maintenance opportunity as a minimum requirement per your standard for "work re-quests." The value of doing this is that you will learn more about the manufacturing process, while at the same time promoting the partnership and opening up more opportunities to do maintenance without losing production. You will start taking advantage of all scheduled and unscheduled shutdowns to do necessary maintenance work.

**Joint shutdown schedule.** It is not uncommon to find that there are four to five shutdown schedules, and these schedules are not well connected to each other. There might be one schedule for operations work, another for mechanical work, etc. An indication of a good partnership between operations and maintenance-and also within maintenance-is that there is only one schedule for every shutdown. This schedule should be well connected between all involved departments.

**Operating practices/maintenance prevention.** Include operating practices in your maintenance prevention program. When the priority guideline is done jointly with operations, most probably should be discussed on one event called "critical process running on spare equipment." This is when, for example, if it runs a spare pump because the redundant pump is not performing. This event often triggers a long discussion. Operations has always called maintenance resources to repair the failed pump, even if it is two o'clock in the morning.

The solution is that switching pumps between shutdowns becomes the responsibility of operations. All doubled pumps are marked "A" and "B," so it is easy to remember which pumps to run. (It is not unusual to find that both pumps are unknowingly running and working against each other). There are many other operating procedures that should include in the maintenance prevention program. Examples include how to heat up a steam system, how to start a pump correctly, and how to clean without causing problems.

### **3. CONCLUSIONS**

In this paper has been discussed joint goals and how to promote the operations/maintenance partnership through a different way of reporting and solving operations as well as maintenance problems.

From the plants experience, it is more common than not to find that the working relationship between operations and maintenance is one of adversity instead of a relationship of close and productive cooperation. Operations often sees itself as the customer of maintenance, and, consequently, maintenance is viewed as a service provider.

In such a relationship, it should be obvious that operations is responsible for the cost of the maintenance work it requests and gets delivered. However, in a bad relationship, this is not the case. As long as maintenance work requests are performed, operations views maintenance as the good guys. But, if at the end of the year it shows that the maintenance budget is exceeded, it is not unusual to find the maintenance manager in the hot seat having to explain why more money than budgeted was spent.

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