

## MAINTENANCE STRATEGIES USED IN INDUSTRIAL PLANTS

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**Abstract.** Strategy in maintenance: changing from a complete in-house solution up to complete outsourcing showing how to analyse and develop a strategy. Components of a strategy are revealed in order to clear things before they get started. The article contains original contribution in synthesizing the strategic thinking in a combination, to be cost-effective and having the best results in Uptime.

**Keywords:** strategy, outsourcing, contract maintenance

### 1. Introduction

Maintenance strategies are rules that tell us when, what action, in which place or parts have to be done. It counts to take the right decision in a field of interaction between: efficiency-safety-disponibility in order to minimize costs, and maximize reliability. Maintenance and the integration of secondary functions is a very complex job that concerns not only a hand full of maintenance people, but it is a concern of all the employees.

The future shows that: it becomes more and more obvious that less but highly qualified tradesmen will maintain more complex and sophisticated mashinetools. What strategy is chosen is a decision of each factory separately, because there is no universal solution to solve this problem.

### 2. Strategy forms

A complete maintenance strategy should contain a healthy mixture of tactical options:

- Reactive (accepting the risk);
- Proactive (avoiding, minimizing, or transferring the risk);
- Engineering to design out failure (avoiding or transferring the risk);
- Consequence reduction (reducing the risk);

For each decision you make about what to do, you must also decide when to do it.

Many maintenance actions are repetitive, but "how often?"

Timing maintenance tactics can be:

- Scheduled (rigid adherence to some time frequency or fixed interval);

- Unscheduled (no fixed interval used at all. it only applies to the reactive approach);
- Flexible scheduled (shifting of scheduled or unscheduled work to "convenient windows of opportunity"). It depends of the disruption possibilities in production.

### 3. How to choose a strategy

Which machine tool and how it will be maintained and serviced, is a result of an analyse that takes in consideration the following criteria:

- The "chaining" of the machines in the process;
- Redundancy of the machines;
- Validity of environmental, safety and quality-standards;
- Time for service;
- Availability of spare parts;
- Material buffers between the machines;
- Seasonal production peaks (market or rohmaterial influence).

It is very important to take care of all the requests of the shareholders, stakeholders, (environment, legislation of the country where we produce, clients where we deliver). The strategy has to be flexible, adaptive to the continuous changes.

### 4. Strategy components

Strategy is the basis for the tactical implementation. It provides a general direction and it should not be complicated.

It includes the following components:

- **MISSION:** a statement of what you are there to do. This statement should provide a simple and clear purpose for the organisation;
- **VISION:** a simple statement of what you want to achieve with your maintenance strategy;
- **TACTICS:** a brief statement of the main activities you will engage to achieve your vision;
- **TARGET TIMING:** a statement of when you want to achieve your target;
- **RULES:** a statement of simple rules you will follow implementing tactics. Your rules should be simple to remember, like: Take care of yourself, Take care of the equipment, take care of business.

**5. Strategy developments**

Developing a maintenance strategy entails a process that brings the elements of the strategy framework together.

Figure 1 depict a highly effective development process Plan-Do-Check-Act.

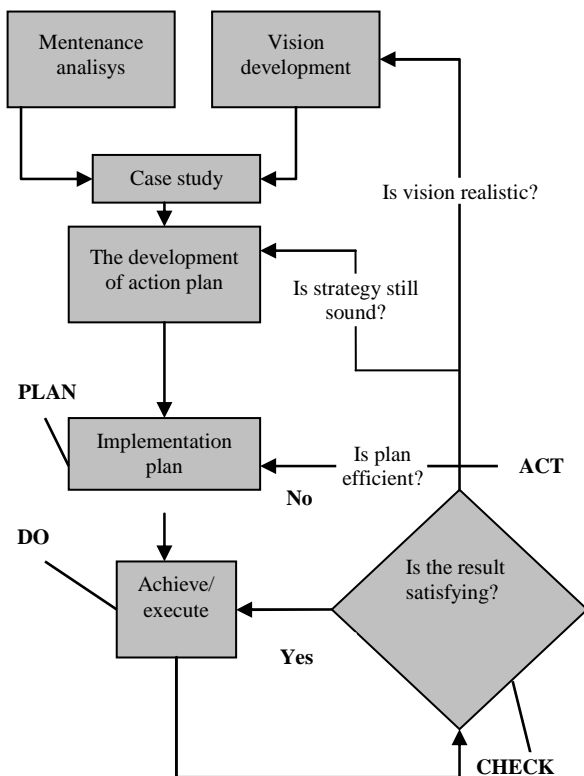


Figure 1. Strategy development process

**6. Contract maintenance**

There are many businesses that take as an option “outsourcing” of some forms of maintenance, whether it is a specialized technical

work, a non-destructive testing or machining work.

Some contract out the entire maintenance function, keeping just a contact person for managing the contracts, time schedules, etc. The practice of outsourcing is common around the world (there are companies that look after maintenance for hundreds of plants).

The reasons for outsourcing are in the most cases because: the contractor can do the job more cost-efficient, the risk is transferred, or that specialities are not available (in heating, ventilating, and air conditioning, (HVAC) is very commonly outsourced for this reason.

In some cases there is simply not enough work for keeping the specialists busy at full capacity in the company.

To answer the strategic questions of whether to consider contracting out significant portions of your planned and preventive maintenance, first understand the concept of competitive advantage. Your business has one or more core products and services that provide to customers. Can your cost effectiveness and capabilities advantage be something that allows you to compete and win in the marketplace? If so, outsourcing maintenance may give away or diminish your competitive advantage.

Many believe that the whole maintenance is a “core competence”, that cannot be outsourced, rather than thinking in how unique “is this service for your business. If what you do in maintenance is unique to your business, than keep it “in house”.

That kind of work can be done better by internal employees (table 1).

Table 1. Outsourcing decision matrix

	Strategic	Not strategic
Competitive Advantage	Keep work In house	Consider Outsourcing
No Competitive Advantage	Rework to provide advantage	Outsource

Clear lines of demarcation should be drawn between in-house and contract involvement (figure 2).

The in-house volume contains normally the activities of inspection, basic care and repairs and small improvement activities.

Assured external services are the highly specialized activities specific to the machine-tools. These services are contracted, if they bring cost-efficiency to the maintenance business.

The biggest advantage of outsourcing is in

combining the internal and external employees into a team. Internal know how will rise by learning from external specialists, and ratio-potentials are shown clearer by doing teamwork.

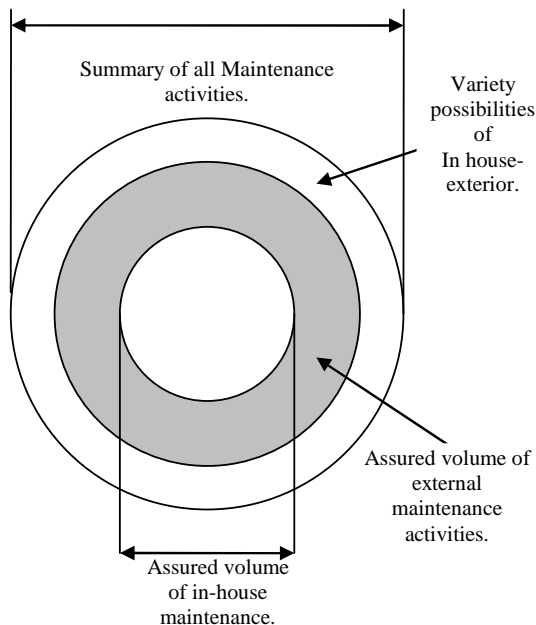


Figure 2. Summary of maintenance activities

Contracting can bring a lot of flexibility to your business, but it needs supplementary management and control. Managing contracts is not the same as managing your own people. It requires a different set of skills and approach, and it may require new people or additional training for the existing staff.

It is very important to make a right move when you think about outsourcing, because you might transfer all the problems you had in the company, to an external service provider and that can make things even worse.

**7. Strategy Combination**

What is more important?

Is outsourcing all activities with higher productivity performance?

**8. Conclusions**

Strategy can be as simple or as complex as you like, but simple is the best.

Starting points are: your objectives, the asset environment, its present state, and the state of the maintenance management practices (figure 3).

Understand what means to be a high performer, and to be using successful practices.

You have to see what is best for your company because there are no absolute “best-

practices”.

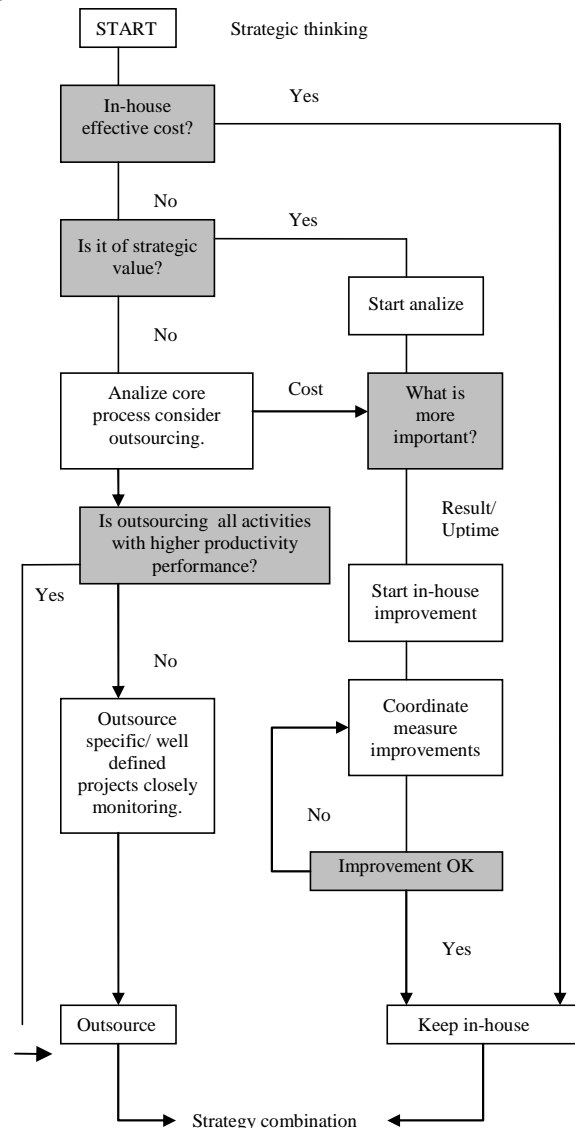


Figure 3. Outsourcing procedure

Decide what you want to achieve – that is your “Vision”. Compare what you do today with that vision and consider using successful practices.

Then, plan improvement activities and manage them as any other internal project. Execution is what matters.

Some companies outsource maintenance. If you want to do it, than do it for the right reasons.

If maintenance is of strategic importance or if it is unique to your business, you are probably better off keeping it in- house.

Once you have decided to make improvements, it is important to sustain them. Excellence is a journey and not a destination .You will know if your strategy works, if you find yourself dealing with other, new problems each year and not revisiting the same once.

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