CASE STUDIES

Maintenance practice in the printing industry

1. Organisations involved

Health & Safety Laboratory, United Kingdom

2. Description of the case

Key points

- A number of organisations within the print industry were surveyed to gauge their maintenance practices
- Those organisations that have good maintenance practices state that they achieve business benefits
- Organisations with a maintenance plan are able to perform better than those without such a plan
- There are a wide variety of practices across the industry - only 65% have a maintenance plan and even fewer of these are satisfied with what they have been able to accomplish with the help of such a plan
- Good maintenance facilitates health and safety compliance
- Good maintenance minimises accidents
- Operators use safe work practices

2.1. Introduction

Within the printing industry effective maintenance is essential to ensure that the optimum performance of equipment is sustained and productivity is consistent. However, many printers are still reactive in their approach to maintenance and so only focus on equipment when a breakdown occurs. The project wishes to promote maintenance practices that printers can use regardless of size or sector, to both improve their productivity and competitiveness, and to reduce potential injuries and accidents caused by faulty equipment.

Background

In 1998, several organisations within the printing industry came together to form a cross-industry Web Offset Champion Group. The group's main purpose was to promote generic best practice within the web offset printing industry and thereby improve productivity, quality and safety within organisations.

The present project aims to promote good maintenance practice among organisations in order to increase productivity and profits, and consequently reduce accidents and improve and promote safe work practices. This is an important aspect for businesses to pursue as research has shown that there is a clear link between productivity, reliability and maintenance.

2.2. Aims

The overall aim of this project was to promote good maintenance practice within the print industry. This involved highlighting the financial benefits, in terms of increased productivity, that could be gained from such practices. Specifically, it was essential:

- To raise the awareness of good maintenance practice within the printing sector
- To identify those generic and practical principles that are important in improving maintenance practices
- To demonstrate those factors that contribute to effective planned maintenance programmes and understand how equipment performance can be optimised through more effective maintenance
- To identify opportunities to help predict equipment failure
- To communicate best practice to both printers and suppliers

2.3. Scope of the project

The evolution of maintenance and the printing industry

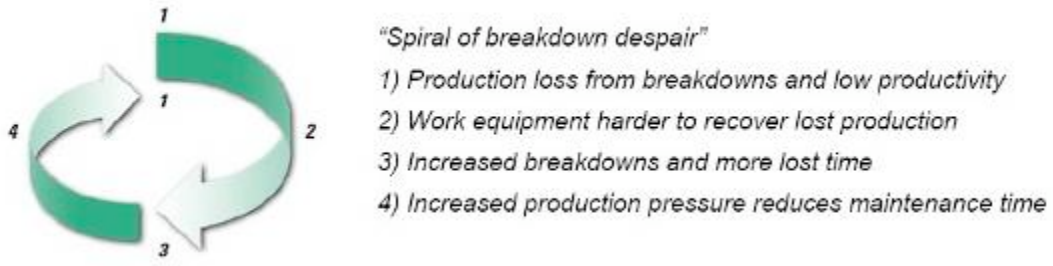
The development of maintenance strategies and techniques are comparable to the developments that have occurred within health care. The focus has progressed from reacting to the *breakdown* to promoting the *preventive,* then to engaging in the *predictive* and finally to accepting the *pro-active*, as illustrated in table 1.

Table 1: Development of maintenance strategies compared to healthcare strategies[1]

Period	Strategy	Human health care	Machine 'health care'
< 1950	Breakdown	Heart attack	Large budget, correct when broken
< 1970	Preventive	By-pass surgery	Periodic component replacement
> 1970	Predictive	Heart disease detection	Condition monitoring, fix early
> 1980	Pro-active	Cholesterol & blood pressure monitoring Root cause diet control	Performance monitoring Contamination control TPM (Total Productive Maintenance)

However, the printing industry still uses the 1950s approach of fixing it when it breaks, which reduces productivity as the organisation is captured in a spiral of 'breakdown despair'. See Figure 1.

Figure 1: Spiral of breakdown despair[2]



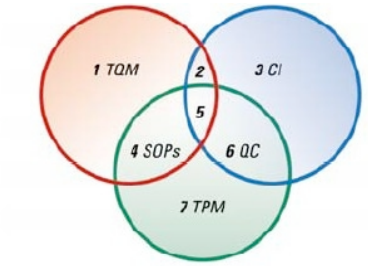
It is important to recognise that, as a stand-alone activity, maintenance is not enough to ensure that aims of improved productivity, performance and fewer accidents are achieved. Maintenance must be accepted as part of the entire operating environment, and the various overlapping techniques that are available to improve performance are shown in Figure 2. However, an organisation should choose the technique that is most suited to its culture and environment, especially in small and medium enterprises (SMEs), where resources may be constrained.

[1] Claypole, T. and Wells, N., 2005, Productivity Maintenance in the UK Printing Industry. London: Vision in Print. p. 30

[2] Source: Claypole, T. and Wells, N., 2005, Productivity Maintenance in the UK Printing Industry. London: Vision in Print. p. 30

Figure 2: Techniques to improve performance[3]

1) Total Quality Maintenance
2) Cross-functional teamwork
3) Continuous improvement
4) Standard Operating Procedures
5) 5Cs (Clear, Configure, Clean & Check, Conform, Custom & Practice)
6) Quick Change development



An Internet-based survey was used to obtain data from 86 organisations, to gain an understanding of maintenance practices across this sector in the UK. The questionnaire was very detailed and consisted of the following four sections:

Section 1: Classifying Questions (e.g. number of hours the presses were in operation, availability of maintenance staff, ISO 9000 certification);

Section 2: Current Maintenance Status (e.g. views on maintenance, the cleanliness of the working environment, the role of the operators in the maintenance process); **Section 3: People Power** (e.g. the integration of the staff into the maintenance/productivity process);

Section 4: Key Performance Indicators (e.g. KPIs that are used, extent of benchmarking with other companies).

The respondents were mainly commercial printers (55%), small businesses (45% employed fewer than 50 people, and only 17% employed more than 250), with slightly more than half having dedicated maintenance staff (55%).

Processes and Equipment

A large majority of the organisations (91%) had in-house pre-press with 77% of them using Computer-to-Plate (CTP)

- 13% retained film processing
- 14% relied solely on film

The majority of the organisations (98%) had post-press finishing equipment.

The majority of them were able to process printing jobs completely in-house as they have a guillotine (70%), a folder (one-third) or a saddle stitcher (one-third).

2.4. *Results and evaluation*

The respondents may not be typical of the wider industry as close to all of them (99%) believed that effective maintenance improves production. Further, close to two-thirds (60%) are accredited with ISO 9000.

One finding was that 40% of the organisations did not employ dedicated/specialised maintenance staff, with 75% of them employing 5 individuals or fewer. Rather they tended to rely on internal specialists or operators who had limited time to dedicate to maintenance, or on external services. Further, they employed multi-skilled maintenance staff or a combination of multi-skilled and mechanical maintenance staff, which suggests a stronger focus on electronic and hardware problems than on those that involve the mechanics of the press and post press equipment.

[3] Source: Claypole, T. and Wells, N., 2005, Productivity Maintenance in the UK Printing Industry. London: Vision in Print. p. 30

Some organisations have progressively introduced maintenance programmes into their working environments since 1997, and this reflects a widespread focus on achieving a higher level of productivity and increased competitiveness.

Those organisations that had maintenance programmes in place had fewer press stops, a higher throughput, less waste, more consistent quality and improved safety.

2.5. Problems faced

The survey found that even though most of the respondents (99%) believed that effective maintenance improved productivity, only close to two-thirds of these organisations (64%) had a maintenance plan. Of those with a maintenance plan, just over one-third were small in size (≤50 employees). This may indicate that smaller organisations may not be as willing to implement a maintenance system due either to a lack of resources, or a lack of understanding of the importance of maintenance.

2.6. Success factors

It is important to ensure that workers from all parts of an organisation are involved in any actions, from senior management to all other employees.

In terms of ***strategy***, a top-down directive is needed to improve productivity and maintenance is an integral component of this. Initiatives can range from formal strategies to integrate maintenance into a formal manufacturing strategy, to informal "common sense'" approaches where maintenance is seen as an obvious necessity.

It is essential to integrate maintenance as a key productivity element into a manufacturing strategy, and that all staff are informed about the ways in which maintenance can be improved and how it can, in turn, improve the company's performance.

Management, motivation, training and selection of people are the single highest success factor. In the last 20 years there have been over 100 studies demonstrating that companies with long-term success are those that optimise employee involvement - some studies identify up to 30% higher productivity, less absenteeism, fewer accidents etc. Specifically, employees need to be motivated and trained and organisations should select those staff who have the right skills and attitudes. The attitude and behaviour of staff is important, and these may need to be changed to foster a team spirit and make it possible for the staff to have a sense of "ownership" of the equipment.

2.7. Contact information

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2.8. Transferability

The maintenance practices advocated in this project are easily applied in a variety of industries in any country. They are based on practices that are neither sector-, country- nor language-specific. There is an element of 'common sense' inherent in these practices, in that proactive rather than reactive solutions should be sought.

3. References, resources:

Claypole, T. and Wells, N., 2005, Productivity Maintenance in the UK Printing Industry. London: Vision in Print.

URL: http://www.visioninprint.co.uk/uploads/documents/VisionInPrint10433Best%20Practice1.PDF