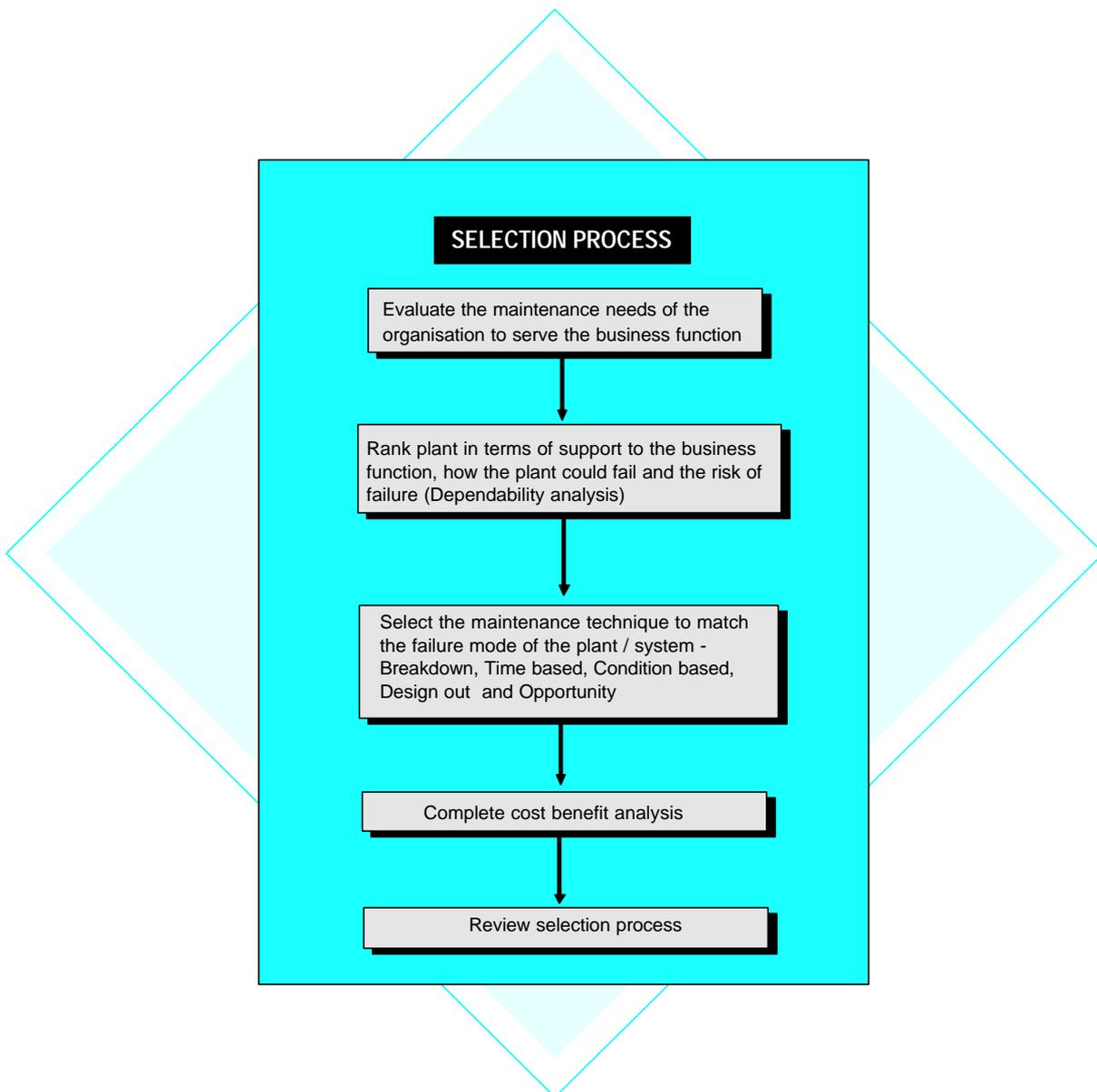


MAINTENANCE PROGRAMME SET-UP

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Carried out for:
GROUP SPONSORSHIP
PROJECT

Compiled by:
A J Tate
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Appendix A - G

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PREFACE

This Application Guide is in support of a series of four BSRIA Technical Notes on condition based maintenance. It details the setting up of maintenance programmes including condition based maintenance. The previous BSRIA Technical Notes dealt with the relevance of specific condition monitoring techniques to the maintenance of building services plant.

The increasing competition in the market place has forced organisations to consider all aspects of their business activity, including maintenance. The desire to cut costs, improve maintenance efficiency, extend overhaul periods, reduce equipment downtime and protect the core business activity has meant that many organisations are looking for alternative approaches to their maintenance, often in the form of condition based maintenance.

The Application Guide has two main parts. The first details a formalised and structured approach to assess the maintenance needs of building services plant and equipment in a broad range of buildings. This is to ensure the correct maintenance policies and techniques are selected, so that the plant will meet the business needs cost effectively. The second part examines the practical implementation of condition based maintenance; that is detailing the considerations which ensure a successful condition monitoring regime on which to base maintenance decisions. This is achieved by considering the stages that are common to the implementation of any condition monitoring technique.

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1 INTRODUCTION

Any organisation has a core business function and a number of support or non-core business activities, including accounts, administration, transportation, and the facilities (building fabric and M & E maintenance, catering, security, cleaning, IT safety, etc.) A failure or breakdown in any of the support activities will affect the core business activity to a varying degree; the resulting financial losses can very easily outstrip the simple cost of maintenance activities.

Management of the support services must ensure their smooth operation. This includes identifying how a failure could occur, what its effects would be on the core business activity and how to pre-empt, limit or stop the effects of the failure.

This management process especially applies to the maintenance of the mechanical and electrical engineering services required to support the business function of an organisation. The traditional approach to ensure the smooth operation of the mechanical and electrical services has typically relied upon time based maintenance as part of a planned maintenance regime. For many organisations time based maintenance will continue to be the approach adopted. However, this single approach to maintenance is no longer the most effective in today's competitive market and can be over-costly.

Even for plant that has been correctly selected, designed, installed and commissioned, time based maintenance can result in a high incidence of maintenance-induced failures. Some reports suggest that as many as 70% of all failures are maintenance-induced.

Taking a traditional approach to maintenance results in each plant item being considered on an individual basis, with no appreciation of the plant configuration. This results in maintenance carried out for maintenance sake and not to meet the business function. It is therefore necessary to consider plant firstly in terms of systems to support the business function and secondly on an individual basis.

The correct maintenance techniques can cost effectively detect, prevent or arrest failures, so that the impact on the core business function is minimised.

Selecting the correct maintenance techniques to form the overall maintenance strategy of an organisation, calls for a clear understanding of :

- The reasons for maintenance
- The business function of the organisation
- The relationship between the plant items, systems and the business function
- The function of the plant and the required performance
- How the plant can fail and the risk of failure
- What the failure means to the business
- How to pre-empt or stop the failure and how to limit the effects of failure.

To ensure these factors are considered requires a structured maintenance technique selection process.

In condition based maintenance, the maintenance activities are determined, planned and carried out on assessment of plant condition and need. Plant condition is assessed by monitoring parameters that are representative of the condition of the plant. Limit values or levels are set for the given parameters. Where the monitored parameter falls outside of limits, a maintenance activity is initiated. This activity may be to reset the limits and increase the monitoring frequency.

To ensure a condition based maintenance activity is successful involves:

- Management support and backing
- Staff involvement
- Selecting condition monitoring techniques appropriate to the failure modes of the plant or system
- Collection of data under repeatable conditions to ensure accurate trending of collected data
- Trending of results
- Replacing or supplementing an existing maintenance activity with condition monitoring
- An understanding that condition monitoring is not the complete answer to all maintenance needs.