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Improved Maintenance = Lower cost

defra
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Introduction

- Maintenance - there is no opting out! – every company must maintain its physical assets
- To ensure that the success or failure is not left to chance, a maintenance strategy *should* be in place
- Impacts safety, cost and quality

Approaches/solutions/panaceas

- Reactive, Preventative, Predictive, or Mixed
- TPM, RCM, FMECA, CBM
- Outsource, integrate, re-organise

Our Role

To assess the effectiveness of existing maintenance practices to develop appropriate maintenance strategies.

In particular:

- Identify the range of maintenance practices currently used
- Assess the effectiveness of existing maintenance practices using OEE
- Identify a range of modern maintenance strategies (practices and technologies) which will increase the performance/availability of refrigeration equipment.

Research

- Interviewed Senior Mangers from 10 food and drink companies.
- Questionnaires to maintenance staff and equipment operators
  - Provide benchmark as to the current maintenance practices
  - How management decisions are taken to Identify barriers for adoption of modern maintenance
- Interviewed maintenance managers from different sectors

Initial Findings

- Availability and reliability figures suggest equipment are well maintained
- Main method of maintenance – Reactive
- Minimal planned maintenance
- Minimal operator maintenance
- Increase in Reactive maintenance
- OEE not a true reflection of maintenance

Barriers to Maintenance Strategy Development

Barriers	Elements
Financial & Human Resources	• New equipment required • Comprehensive training initiative required • Downtime required for implementation • Insufficient manpower
Time	• Time required for implementation due to perceived length of implementation period • Time required for training
Skills	• Lack of skilled equipment operators • Varied levels of expertise and skills in maintenance engineers • Difficult to introduce modern data collection and analysis techniques due to the lack of formal training in data collection techniques
Management Awareness	• Lack of awareness to alternative maintenance methodologies • Managers had basic knowledge of TPM, RCM and CBM techniques

Are These Barriers Real or Perceived?

- Real with regard to constraints on resources
- Real with regard to lack of awareness
- Perceived with regard to required time to implement
- Perceived with regard to problems in skilled operators adopting maintenance improvement initiatives
- *How can companies overcome these barriers?*

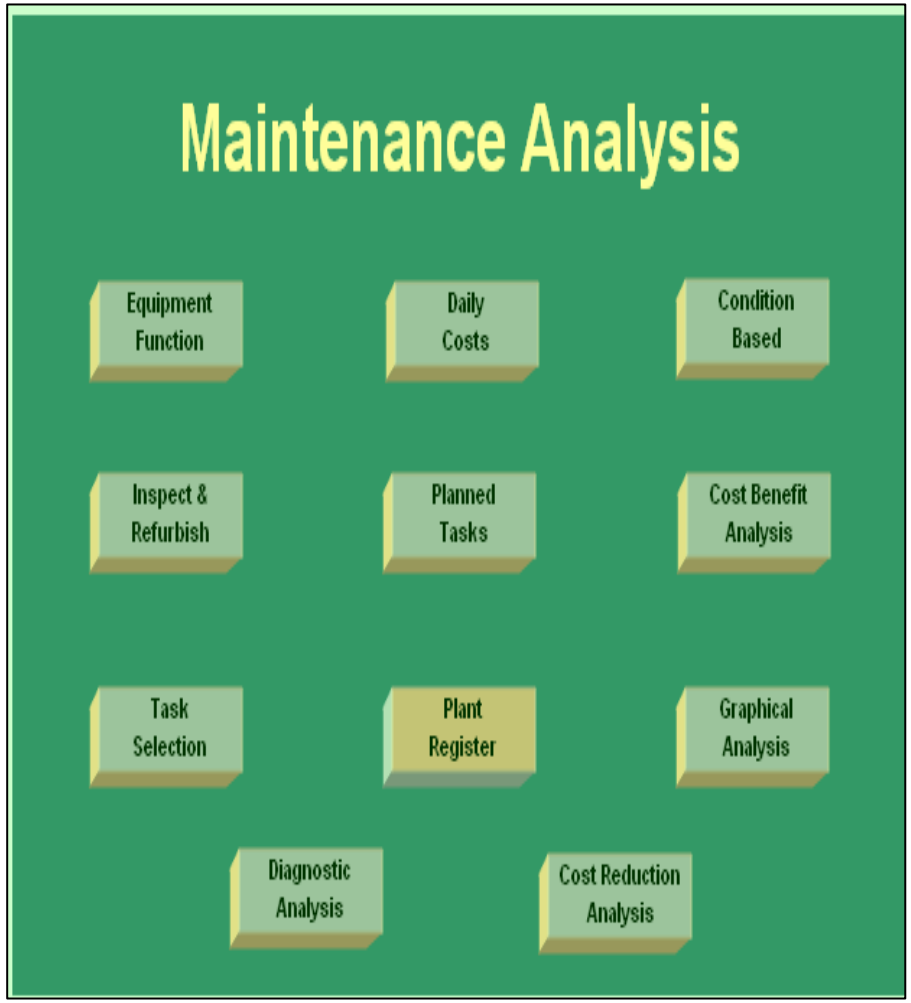
Maintenance Strategy Development

Advanced Integrated Maintenance Management System (AIMMS)

- Helps to identify maintenance strategy based on Return on Investment as a key driver
- Offers simplified choices based upon varying units of analysis - ROI & OEE
- Combines both process and systems improvement with choices of appropriate technology to provide the tailored maintenance strategy
- Identify the costs associated with the present approach to maintenance
- Provide a fast implementation pathway
- Promote maintenance awareness
- Reduce the costs associated with maintenance

Maintenance Software

- Modular software system
- 11 modules linking to the seven stages of AIMMS



Data Collection

Planned Maintenance

Fixed Cost. Labour	Salaries £/hr	Hrs	Total £
Maintenance	15		0
Operator	12		0
Supervisor			0
Manager			0
Sen. Manager			0
Director			0
Parts			0
Total	27	0	0

Un-Planned Maintenance

Additional Cost	Hrs	£	Total
Unplanned Maintenance	3	15	45
Scrap	2	0	50
Rework	1		20
Overtime			0
Parts		20	20
Del. charges			0
Outsourcing			0
Operator waiting	2	5	10
Total	8		£145.00

Performance/Quality

Change Over	Unplanned Maintenance	Start Up	Calibration & Measuremen	Minor stoppages	Operator(s)	Scrap	Rework
0	8	0	0	1	2	2	1

Availability

Maximum Hours Available	Allowance for Breaks, etc	Available Hours	Total Downtime, (Hours)	Total Operating Time (Hours)
8	1	7	9	-2

Planned Maintenance Costs	Unplanned Maintenance Costs	Planned Maintenance (Hours)	Unplanned Maintenance (Hours)	Cost of additional work	Total Downtime (Hours)	Operating time (Hours)	Operator Waiting
£0.00	£145.00	0	8	£90.00	9	-2	£10

Total Costs
£245.00

Next Phase

- 2 Case study companies
- Collect Maintenance data and energy usage
- Determine “appropriate route” to new strategy
- Implement and review
- Present Conclusions

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Questions?