OMDEC

Spares Management Software

<SMS>™

Spares Management Software

Spare Parts Optimisation and Management

Introduction:

In many asset intensive industries there is a critical requirement to maintain operations, production, revenue and profit or mission readiness where the

critical spare parts failure rate is random and unpredictable.

The typical context exhibits the following characteristics:

- Spare parts unit costs are high, both to purchase and maintain.
- Turnover is low.
- MTBF is typically expressed in years.
- Planning periods are long
- Replacement time is prohibitively lengthy.
- There are repairable and non- repairable items.
- Management priorities are subject to change requiring dynamic policy revision

A critical issue in spares management is to establish an appropriate level for insurance of an emergency spare whenever a critical long-life component fails.
The big question is:

How many critical spares should be stocked?

The Spares Management Software from OMDEC has been designed as a flexible tool containing accepted formulae to serve as the basis for arriving at answers to the above in a scientific, auditable and multi-dimensional fashion.

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Purpose of Software :

- To **predict the level of Spare Parts required to be kept in stock** in order to maintain operations, production, revenue and profit or mission readiness where the Spare Parts failure rate is unpredictable
- To provide for both **repairable and non-repairable** Spare Parts
- To provide the basis for **measuring the costs of maintaining** the required Spare Parts
- to show the **average arrival rate** in the repair shop and **the average turnaround repair rate** required to maintain the required availability
- to provide options for optimizing Spare Parts requirements based on:

    - The overall probability of Spare Parts availability during the planning period.
    - The specific probability of Spare Parts availability at any time a stores issue is required.
    - The cost minimization
    - The production line availability

- To determine the period for which operations can be supported given a **specific level** of Spare Parts.

Benefits :

1. Where there is a random Spare Parts failure rate, **SMS predicts the level of Spare Parts required** to maintain operations, production, revenue and profit or mission readiness.
2. **SMS prompts the user to stock the level** of Spare Parts that allows them to balance continued production with cost of spares.
3. **SMS optimizes level of Spare Parts** based on the user defined criteria of availability or cost.
4. **SMS allows for separate calculations** for repairable and non-repairable Spare Parts.
5. **SMS** shows **how long a given level of Spare Parts will support continued operations.**
6. **SMS shows the cost and availability impact** of varying levels of Spare Parts.

7. **SMS provides cost and availability results** of varying repair times.
8. **"what if" model** provides for variances in planning period, number of items in stock, replacement period
9. **SMS easy to use** data entry screens require little training.
10. **SMS easy to read** reports shows results at a glance.

Sample Results

1. **Navy program:** SMS calculation showed the period of support based on the current level of spares to be less than one year.

2. **Mining Operation:** Haul truck power trains - for ready to issue availability of 95%, 14 Spare Parts were required in stock; optimizing for minimum cost reduces this to 6.

3. **Mining Operation:** conveyor motors – to optimize for minimum cost 6 spares are needed; but to achieve 95% conveyor line reliability, no spares are required.

Basic Input Data :

- Repairable or non-repairable spares
- Planning period
- Value of Spare Part at end of planning period
- Repair time
- Mean time between replacements
- Parts in use, parts in stock
- Level of availability required
- Optimization criteria (selected from value list)

Outputs :

- Level of Spares Required for each scenario
- Probability of Spare Parts availability for each option.
- Support period for the given level of Spare Parts

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What the Customer Gets :

- Software licence
- Software CD
- User manual
- Webex training
- Phone or email coaching
- Complimentary autographed copy of Dr Andrew Jardine's book "Maintenance Replacement and Reliability"
- Optional one day on site or website training, data analysis and recommendations (extra cost) – for details see below…..
- Support and upgrades (extra cost)

On-site or Website Training :

- Whether on-site or web-site training will be determined by the customer based on travel costs.
- 2 hours basic training on spares replacement principles.

Origin :

Developed from formulae in "Maintenance, Replacement and Reliability" by Dr Andrew Jardine, Professor of Mechanical and Industrial Engineering, University of Toronto, Canada.