



Equipment Performance – Reporting Strategy

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Introduction

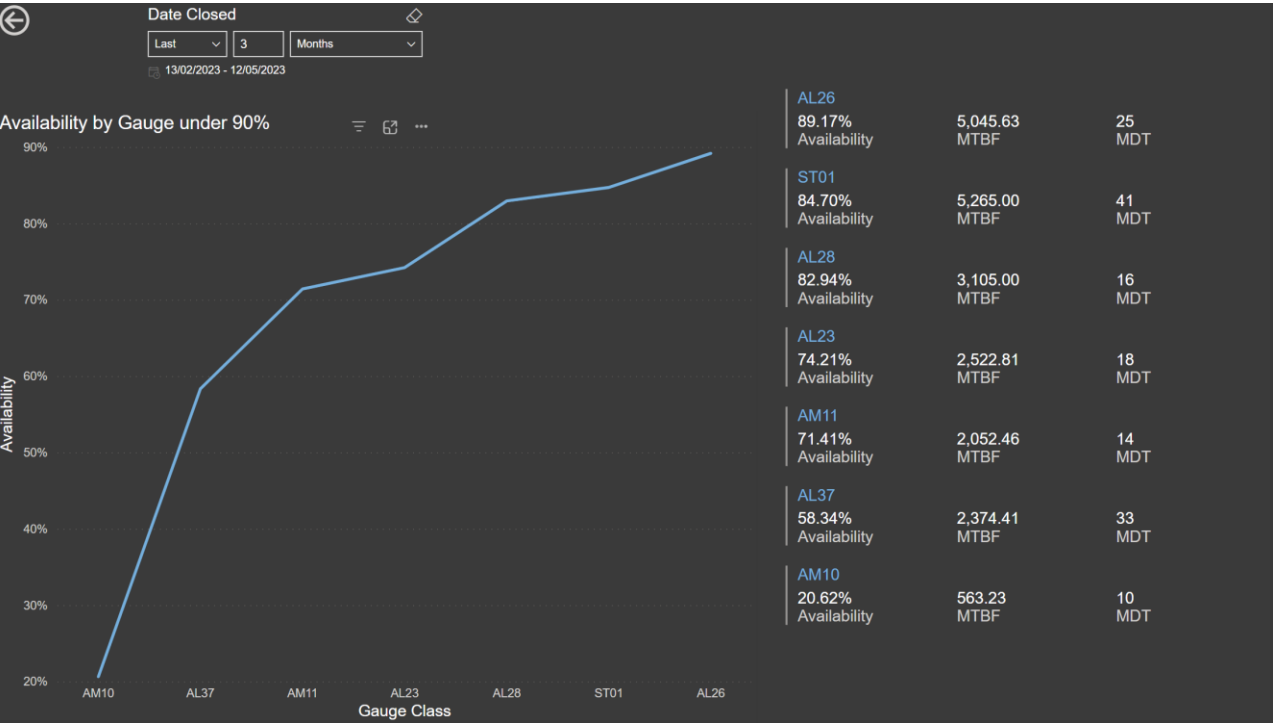
Renishaw’s objective is to double the production capacity of the manufacturing plants. To do this, the company are investing in additional assets, which is expensive. There is an opportunity to increase the performance of the assets already within Renishaw. However, to do this, an understanding and report is needed using reliability metrics. This report will show how the assets are performing, with a view to increase their performance.

Objectives

- Research and use industry standard techniques.
- Use graphical techniques for the report
- Develop KPI’s for the metrics.

Key Stakeholders

- Works Engineering Manager
- Plant Maintenance Manager
- Senior and Leading Engineers
- Production Managers



New report shows the availability of asset classes, their MTBF and MDT. Some equipment has low availability of just 20%.

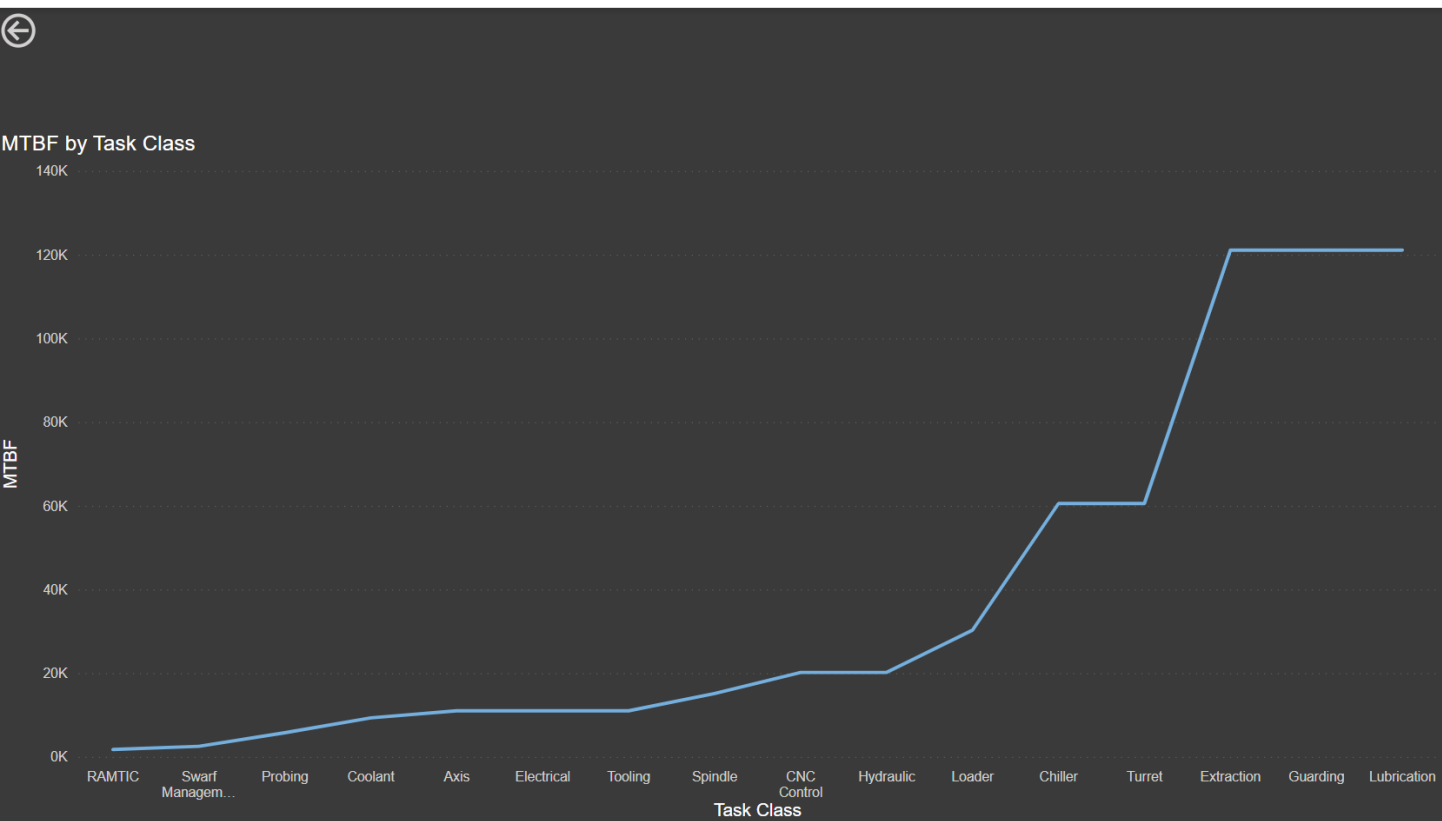
$$Availability = \frac{MTBF}{MTBF + MDT + MPMT}$$

$$\text{Mean Time Between Failure} = \frac{\text{Run time (operational time)}}{\text{Number of breakdowns}}$$

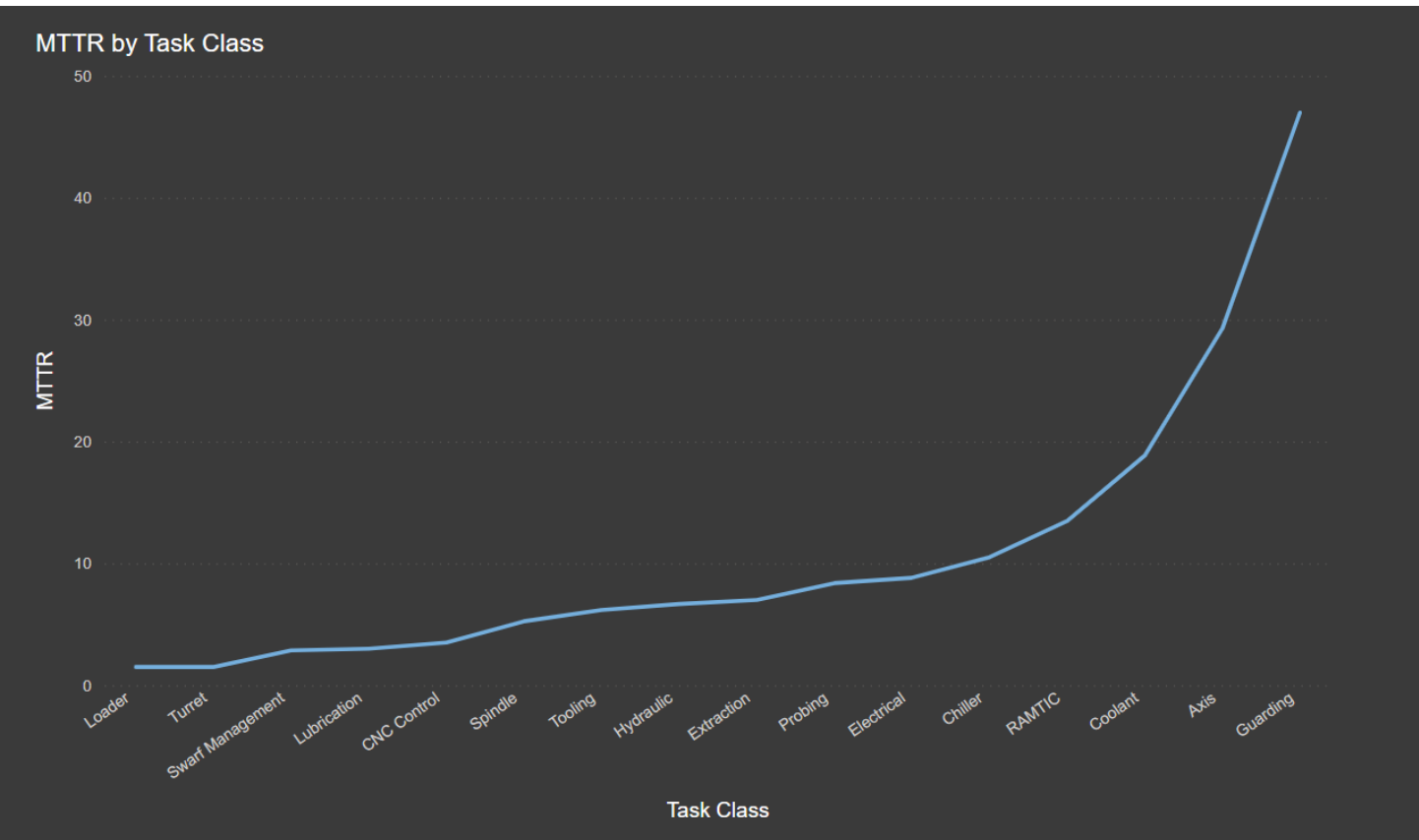
$$\text{Mean Down Time} = \frac{\text{Total downtime (breakdown)}}{\text{Number of breakdowns}}$$

$$MTTR = \frac{\text{Total Repair Time}}{\text{Total breakdowns}}$$

Figure 1 : Equations to be used for performance metrics



Drill through of AM10 class, showing the reliability of the sub systems within that equipment.



Showing maintainability of each sub system within the asset.

References

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Research

From researching reliability and equipment performance, performance can be defined as the reliability of the asset and the maintainability of the asset.

Availability is used as a top metric to measure performance.

Reliability of an asset is defined as the mean time between failure.

Maintainability is measured using mean downtime and mean time to repair (MTTR), MTTR defines the average time a repair takes, whilst mean down time includes time waiting for an engineer.

Data Description	Error (% of grand total)	Data Size
Mean Down Time	2.61	69339
Run Hours	5.81	3 months
MPMT	3.28	61100
Defect	3.62	69339
Cause	3.62	69339
Action	2.75	69339

Table showing the accuracy of the data. % of data that is missing from each field of the work order.

Conclusions

The report successfully measures the performance of the equipment, highlighting equipment that falls below 90% availability. The report successfully drills down the data to report on both reliability and maintainability of the asset.

The report also highlights need to stock parts based on downtime impact, highlights poor maintenance practises and resource levels.