Discover The Goldmine In Your Maintenance Work Order System Through Analysis

How to Simply and Easily Investigate and Release the Information Goldmine in Your Maintenance Work Order System to Solve Your Equipment Reliability Problems and Skyrocket Maintenance Performance!

Second Edition

By Mike Sondalini
Contents

Preface to Edition 2 ................................................................. 4
Preface to Edition 1 ................................................................. 5

   1.1. Collecting Maintenance and Equipment Data ................................ 8
   1.2. Traps in Recording Failure Codes ............................................. 10
   1.3. Record Failure Modes and not Failure Causes ............................ 13

2. Analysing Your Maintenance Work Order History ...................... 18
   2.1. Time Periods To Use For Analysis ........................................... 18
   2.2. Using Existing Categories On the Maintenance Work Order For Analysis ............................... 19
   2.3. Introducing New Analysis Categories and Codes ........................ 20
   2.4. Other Useful Equipment History Data Sources ........................... 22

3. Conducting the Analysis of Your MWO’s .................................... 25
   3.1. Identifying Reoccurring Problems and Opportunities to Improve .......... 26
   3.2. Keyword Searching ............................................................... 26
   3.3. Pareto Charting the Frequency of Repetitive Problems .................... 26
   3.4. Timeline Frequency Analysis (Real Time Between Failure Charting) .......... 28
   3.5. Always Start with a Plot of the Timeline Showing Failure Dates ......... 29
   3.6. Ratio Comparisons for Benchmarking and Continuous Improvement .... 32

4. Measuring Reliability Change .................................................. 37
   4.1. Weibull Analysis ................................................................. 37
   4.2. Time Series Plots ................................................................. 48

5. Show the Money in Maintenance .............................................. 49

6. Analysing Equipment Reliability Issues .................................... 54
   6.1. Identifying With Fault Codes ................................................. 55
   6.2. Basis for Developing Equipment Reliability Curves ....................... 55
   6.3. Crow-AMSAA System Performance Plots ................................ 56

7. Analysing Maintenance Costs and Time ................................... 60

8. Capital Justification Including True Downtime Costs ................. 62
   8.1. Results From Case Study Investigation ................................... 63

9. Getting Extraordinary Equipment Reliability ............................. 66
   9.1. The Reliability of Processes and Systems .................................. 68
   9.2. Control Process Step Variation .............................................. 69
   9.3. Behaviours of High Reliability Operations ................................ 71
   9.4. Limitations of Our Materials of Construction .............................. 72
   9.5. Raising the ‘R’ ................................................................. 73
   9.6. Start on the Journey to World Class Reliability .......................... 73

10. Using Reliability Growth Cause Analysis (RGCA) ..................... 76
    10.1. Worked RGCA Example 1 ................................................. 81
    10.2. Worked RGCA Example 2 ................................................. 82
    10.3. The Latest Developments in RGCA ...................................... 91

11. Root Cause Analysis with Creative Disassembly ....................... 92
    11.1. Creative Disassembly Explained ......................................... 92