Resolving Problems using a FRACAS* Driven by CMMS Data with a Power BI Dashboard
(*Failure Reporting and Corrective Action System)

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Abstract

Our M.O.R.E. (Maintenance, Operations, Reliability and Engineering) team developed an in-house Failure Reporting and Corrective Action Tracking System (FRACAS) using operational downtime tracking and SAP CMMS data. Information is uploaded to Power BI to provide a graphical representation of current and historical downtime events and displays their root causes and status. The purpose of the process is to classify and investigate all major losses that can negatively affect production goals.

Introduction

Of the Six Major Losses (unplanned stops, planned stops, minor stops, reduced line speed, rejects or write-offs), downtime events that cause unplanned stops, have proven to be the greatest threat to a successful production season, and the most likely opportunity for reduction.

Our most critical manufacturing window lasts only 20 weeks annually and we must complete our production of flu vaccines for the northern hemisphere within this fixed schedule.

We used the DMAIC method to demonstrate the need to minimize our downtime, quantify the severity of the downtime as well as classify, investigate and mitigate downtime events to limit future losses and reach our production goals.

Method

In previous campaigns, analysis of downtime had been performed that recorded the number of work orders written against the major components within the filling/packaging suite. This analysis required a record by record inspection of the work order text logs. Based on these investigations, corrective actions by vendors or projects were planned and executed between seasonal campaigns.

Some downsides to this method of review:

- The downtime information was not summarized and documented formally and made available for future reviews.
- Because the duration of the work orders was not the main driver, occasionally equipment that suffered many small duration chronic events received more attention than equipment with fewer long duration events.
• Analysis did not go down to the component level. Many major components exhibited a variety of failures across multiple sub components and there wasn’t a way to assure that all failure modes were being addressed relative to the risk they generated.
• Season to season comparisons were not made between the failure modes experienced.
• Because the review occurred after the end of the season, early seasonal problems lingered for weeks, accumulating excessive downtime before being addressed.

Starting in the 2022, northern hemisphere campaign production loss data for the filling and packaging areas was collected using daily shift notes created by the Operational Excellence group. Unfavorable events that generated more than 10 minutes of downtime, excessive reject rates or write-off losses were recorded. Additionally, work notifications written against a downtime event were included.

The Reliability group took advantage of this detailed information to better quantify the effect of each of the Six Major Losses. As a result of the analysis, downtime was identified to be the largest contributor to availability losses and also the having the greatest potential for improvement.

The DMAIC method was chosen to classify these events and perform weekly analysis in an attempt to mitigate problems as quickly as possible and maintain a database of past events. Data was exported from the shift notes into an Excel spreadsheet. The Work Order description, duration and text log information was imported from the CMMS that matched the work notification that described the resolution of the problems identified in the shift notes.

Weekly Process:

Shift notes are collected in 12 hour blocks and imported daily. Events are associated to one of 3-4 major systems in either the filling or packaging areas. Work notification data is matched and imported daily. Twice a week the SME will classify all downtime events by selecting the appropriate sub-component as identified in the completed Work Order. Symptom codes, correction codes and reject rates are reviewed and updated and then analysis of the problem begins. Comparisons are made to previous events matching the sub-component and correction types. The end result of the analysis is to assign an action item and status to the event. Events can be classified as:

• No action required, normally for items that have been resolved and require no further mitigation – closed status
• Parking lot – low duration infrequent events – remains open until action is taken or season ends
• RCFA – Root cause required – remains open until problem is resolved

Functionality of Power BI