



Situation Analysis:

A major food manufacturer used a multi-step process to mill corn. The manufacturing process relied on a series of conveyors to move the bulk material to different locations within the plant. The conveyors often broke down, resulting in manufacturing interruptions, lost production and increased costs. The manufacturer turned to UNICCO, its production maintenance contractor, which takes a Reliability-Focused Maintenance approach, to evaluate and recommend improvements for the conveyor systems.

Background:

The corn miller relied on several 60' long 36" wide belted drag conveyors to move bulk materials from one process to the next. The drag chains failed unexpectedly despite a rigorous time-based maintenance program, leading to emergency shutdowns of the next steps in the manufacturing process. The company used an in-house CMMS (Computerized Maintenance Management System) but, based on the data that it had been collecting, was not able to determine the causes.

Project:

Management decided to find the root causes of the failures in order to significantly reduce manufacturing interruptions. UNICCO assigned its Reliability Planning team to analyze the situation and propose improvements. UNICCO conducted FMEA (Failure Modes and Effects Analysis) and RCA (Root Cause Analysis) to identify the exact causes of the failures. The project identified excessive drag chain stretch, out-of-spec internal bearing clearances and drive belt/chain and sprocket wear – all conditions that can be measured and trended to project life expectancy.

Based on information related to the most frequent and costly repairs, UNICCO redesigned drive configurations and load capabilities, instituted soft starts where load was a factor, and redesigned components in destructive environments. These changes, along with procedural changes that monitored vibration, motor circuit condition, oil analysis and motor bearing conditions, now provide more accurate and up-to-date drag conveyor condition assessments.

The Reliability Planning team implemented Procedural Based Maintenance to gather quantifiable data to give to field personnel. This enabled them to pre-plan and deliver the parts and tools for specific tasks to the work site, which increased wrench time.

Results:

The new procedures eliminated failure maintenance on most conveyors and reduced maintenance time by 30 to 40%. The new Procedural Based Maintenance significantly increased drag conveyor reliability on all processes and reduced downtime. The UNICCO project resulted in \$84,000 in annual savings in maintenance costs alone. Increased manufacturing uptime delivered significantly more profits to the bottom line.

PROJECT SUMMARY

Industry: *Food processing*

Situation: *Drag conveyors connecting manufacturing processes failed unexpectedly*

Project: *UNICCO conducted a FMEA to identify the multiple causes of failure*

Results: *Instituted a quantifiable PM program that reduced failures, increased efficiency and delivered annual maintenance savings of approximately \$84,000*