Honeywell | Connected Plant

Honeywell Cloud APM Helps Avoid Machinery Downtime within its PMT Division

Case Study

The results are in. Leveraging cloud-based analytic technologies from Honeywell Connected Plant (HCP), a Honeywell internal initiative boosted productivity of machinery and processes running within its Performance Materials and Technologies (PMT) division. The pilot program proved successful beyond expectations, having increased machine uptime as expected, yet doing so quicker than expected over a 6-month period.

Background

The site is a Honeywell PMT Specialty Additives plant producing LDPE thermoplastic in Orange, Texas. PMT collaborated with Honeywell's HCP business, who provides industrial asset analytic solutions from the Honeywell Connected Plant software suite – a family of cloud-connected solutions geared to maximize productivity from process, people and assets.

Challenge

"We needed to reduce the degree of planned downtime for preventative machinery maintenance. We wanted a way to extend service intervals without increasing the risk of an unplanned event", said Will Olp, Manufacturing Director for PMT Orange. "We wanted it quickly, within existing plant resources, and without interrupting operations in order to ensure on-time delivery for our customers." The plant sought to increase uptime yet needed an improved means to understand existing plant data.

Moreover, the pilot was organized to demonstrate how Honeywell's cloud technologies can press the envelope of PMT's continuous improvement culture. The pilot needed to demonstrate HCP capabilities to serve a developing strategy to deploy Honeywell cloud technologies throughout PMT. While Honeywell has deployed its cloud-based asset performance software for its plants previously, including a turbocharger manufacturing facility in Saitama, Japan, the Orange deployment is the first deployment where Honeywell connected one of its USA plants to its Honeywell Sentience Cloud framework.

Solution

The kick-off of the initiative involved an assessment of the plant's assets, processes and operational needs. Then HCP and PMT engineers collaborated to solve the problem through implementation of 58 key performance indicators (KPI's) and predictive models across select assets using Honeywell Asset Performance Management – the Asset Performance Management and data analytics engine of Connected Plant.

Of the selected assets, 4 were recognized as opportunities to reduce downtime, prolong maintenance intervals, and capture untapped throughput potential – cumulatively reducing both planned and unplanned downtime of plant machinery, and increasing overall plant efficiency.

Implementation included APM training for reliability, maintenance, and process engineering personnel, and operational procedures were updated to include roles and responsibilities of the system's users. Likewise, a documented chain of command was created for APM alarm recognition and an approval workflow established for implementing corrective actions.

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The pilot at PMT Orange was organized to demonstrate ways that Honeywell's cloud technologies can press the envelope of PMT's continuous improvement culture.

This case demonstrates the value that today's cloud-analytics can provide toward recognizing hidden asset performance degradation and magnifies how assets interact with the processes they serve.

"Connected Plant has helped improve our operational efficiencies and production up-time," said Bob Gargione, Vice President & General Manager for Honeywell's Additives & Fine Chemicals business. "Additionally, we are excited for our customers to realize the value generated from reduced lead times on their orders and improved on-time delivery."

Benefits

The pilot began proving its worth shortly after going on-line in the summer of 2018. The most significant contributors to the derived benefits were found directly from descriptive analytics. HCP-PMT engineers created a unified historical dataset from the data of machines and their associated processes. Using the unified dataset as the basis for applying modern analytics, the engineers developed enhanced predictive models that both recognized impending machine/process deterioration and provided accurate estimates for prolonging time to required maintenance.

The most significant finding involved three critical machines where engineers ran descriptive analytics and found unique "shift" patterns in the machines' bearing vibration and temperature signatures. Interestingly, the shifts revealed the ability to predict failure of a nearby packing gland (i.e. seal) rather than the bearing itself. Previously the glands were a preventative maintenance item and replaced early, but with the new insight PMT realized they could confidently prolong the change-out interval. By doing so PMT avoided three days of unnecessary downtime. Instead, the plant was able to run uninterrupted through the end of the year and plan the packing replacement in conjunction with the plant's planned 2019 turnaround.

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Results

By the closing of its fiscal year, the PMT facility had captured additional revenue as a direct result of the APM implementation. Income on the incremental revenue is setting a recovery rate of project costs to within one year. This correlates to a time-to-value for Honeywell's investment at less than half the original estimate.

Honeywell Asset Performance Management combines process and asset alerts with recommendations to increase plant productivity

Summary

This case demonstrates the value that today's cloud-analytics can provide toward recognizing hidden asset performance degradation and magnifies how assets interact with the processes they serve. Leveraging the capabilities of Honeywell APM, insight was derived from asset monitoring that revealed hidden improvement opportunities in the plant's LDPE production process – improvement opportunity that would otherwise have gone unnoticed.

About Honeywell Asset Performance Management

Honeywell Asset Performance Management (APM) goes beyond traditional machine monitoring and data gathering. By merging together decades of machine and process modeling experience with modern cloud analytics, Honeywell digital twins predict machinery availability, drill to the root cause of inefficient machine operation, and bring order to reliability and maintenance planning.

Honeywell APM deploys rapidly through a wealth of standard asset libraries and tools to integrate data sources quickly. On average, installation costs are recouped in 6 months or less.

Learn more about how Honeywell APM can improve overall effectiveness of plant assets and processes, by visiting Smarter Asset Performance Management.

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