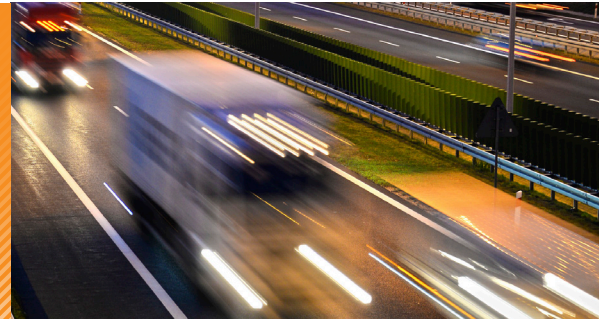


GLOBAL MANUFACTURER IMPROVES YIELD BY OVER 90 PERCENT AFTER ADOPTING INDUSTRIAL INTERNET OF THINGS (IOT) SOLUTION



Challenge: Global Manufacturer Seeks to Improve Yield

The company's polymer mixing process was producing output of inconsistent quality, with yields sometimes dipping as low as 50% or 60%. The scrapping of poor batches created huge costs and was crippling production capacity. The root cause was traced to ever-changing product specifications, in addition to variations in a range of production parameters. Production engineers were unable to stabilize the process using traditional approaches as mixing polymer was stubbornly unstable and each new product formulation only exacerbated the problem. To solve this issue, this global manufacturer needed a solution that provided the following capabilities:

- Ingest and integrate Internet of Things (IoT) data from machinery, sensors, the environment and other sources
- Discover the critical factors and optimal process parameters through correlation, visual analysis, and optimization algorithms
- Provide deep process insight, enabling daily decision support and continuous improvement
- Dynamically and continuously optimize the process through machine learning

Solution: Hitachi Provides Manufacturing Insight

Hitachi delivered an advanced analytics platform that integrated a wide range of production data and sensor data outputs to visualize, analyze, and diagnose the mixing process. This new insight enabled the production engineering team to understand the correlations and cause-and-effect from a wide number of variables. By adding machine-learning functionality, the solution was able to make continuous process adjustments to improve the yield over a period of several months.

Outcome: Increased Yield and Significant Cost Savings

During the initial pilot project, the solution eliminated over 50% of the poor quality batches, increasing the average yields to above 90%. Not only have the process parameters been optimized, but the system is now capable of continuously adapting to changing conditions. Additional benefits include:

- Significant reduction in operating costs (multimillions of dollars)
- Increased mixing capacity with raised overall production throughput
- Flexibility to accommodate changing product designs, increasing numbers of product variations, and new or changing ingredients



Above Photograph: This is what the mixing process looks like.

Below Photograph: The mixing process uses this huge machine, called a Banbury Mixer. What comes out of the mixer are hot batches of goeey rubber.



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