

Advanced data analytics solution for process stabilization and quality improvement

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ABSTRACT

In the process industry, there has been an explosion in the volume, velocity, and the variety of data. How to reduce operational risks and improve business performance by leveraging advanced data analytics (e.g. statistical analytics, predictive analytics, big data analytics, etc.) are extremely important questions that need to be considered, right now.

The recent development of Process Data Analytics solution is targeting at process industry. This solution can identify abnormal events and causes which may lead to inefficient assets and poor quality products, utilizing the following steps:

1. Identifies efficient/inefficient assets and high/low quality products by utilizing statistical analysis of historical process data
2. Identifies the root cause in the assets and products
3. Infers the state of asset and product quality on real time using the result of the analysis

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The solution makes use of the Mahalanobis Taguchi method, a pattern-recognition technique that is employed in multivariate analysis. It will compare the collected data and accurately detect deviations from normal conditions. Any deviation will trigger a warning that productivity or quality may have deteriorated. By using the "four M" criteria of material, method, machine, and manpower to analyse process data, this solution can visualize changes in production processes and thereby improve operation performances.

The key benefits are as follows:

1. Predictive analytics and early detection of abnormalities in processes

By detecting changes in production process data, this software can spot quality and productivity issues at an early stage of the process. Based on this information, measures can then be taken to bring production operations back to a normal condition and recover quality.

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2.Fail-proof quality inspection

By detecting changes in the data from processes, this software can detect any sign of deteriorating quality and thereby catch any fault that might be overlooked in a conventional inspection. This can help quality assurance departments improve their quality inspection process.