

# SIGHT MACHINE WHITE PAPER

## Advanced Insights: 5 Manufacturing Analytics Best Practices for Today's Enterprise



### Quick Take

- Today's manufacturer contends with a flood of operational and shop floor data flowing from connected machines and systems.
- Companies seeking a competitive advantage gain value when they harness this data into actionable insight for better decision making, and improved operations.
- An advanced manufacturing analytics platform helps inform strategic planning, guides real-time operations and uncovers root causes of issues before they become bigger problems.
- This timely paper provides five best practices for a clear and simple path to unlocking the insight and value in a company's "big data" store of operational transactions.

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White Paper



## A Manufacturing Data Revolution

A data revolution is taking place on the plant floor of today's manufacturing enterprise.

Nearly every factory machine and sensor sends out huge amounts of structured and unstructured data across the global enterprise - but is the information providing actionable business insight?

Indeed, the data explosion shows no signs of stopping as "big data" gets even bigger. Studies from McKinsey Global Insight reveal that manufacturing stores more data than any other sector, more than 2 exabytes of new data each year. As the report reveals, data originates from a variety of sources in a "fire-hose" of data streams - from instrumented production machinery, quality systems, process control, and supply chain management, to systems that monitor the performance of finished products.

With more intelligent use of the steady stream of factory data, today's manufacturer is in a better competitive position.

For today's enterprise, it's not just about collecting more detailed transactional data. It's gaining more intelligent and actionable insight into real-time factory and plant floor performance data by function and business area.

This is where manufacturing analytics comes into play. An advanced manufacturing analytics platform helps inform strategic planning, guides real-time operations and uncovers root causes of issues before they become bigger problems.

With real-time insight, today's manufacturer is better able to improve customer service, shorten lead times, and increase production performance and operational efficiency.

## Manufacturing Analytics for Meaningful Insight

An advanced manufacturing analytics platform provides real-time access to critical, enterprise-wide data such as production metrics, quality, machine down time, supply chain and more.

A recent McKinsey report defines manufacturing analytics as follows:

*"Advanced analytics refers to the application of statistics and other mathematical tools to business data in order to assess and improve practices. In manufacturing, operations managers can use advanced analytics to take a deep dive into historical process data, identify patterns and relationships among discrete process steps and inputs, and then optimize the factors that prove to have the greatest effect on yield. Many global manufacturers in a range of industries and geographies now have an abundance of real-time shop floor data and the capability to conduct such sophisticated statistical assessments. They are taking previously isolated data sets, aggregating them, and analyzing them to reveal important insights."*

An integrated approach to data collection, presentation, and analysis has significant business value. With more intelligent use of the steady stream of factory data, today's manufacturer is in a better competitive position.

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## Best Practices in Manufacturing Analytics

Today's winning manufacturing companies gain a competitive advantage when they harness data into actionable insight for better decision making, improved forecasts and other manufacturing performance improvements.

Noted here are five best practices delivered by an advanced manufacturing analytics platform that unlocks insight and value in a company's "big data." Companies are wise to evaluate systems that provide:

### 1. A direct connection to multiple data sources.

It's a best practice for a manufacturing analytics platform to easily integrate data from multiples sources, such as sensor data, camera images, PLC data, digital gauge data, barcode scans, and more.

The technology platform should combine data collection across all of the sources in a plant – from product data, execution data, work instructions, quality metrics, supply chain metrics, to genealogy/traceability data.

Considering what's termed as "the Industrial Internet," it's important to note that data is not just confined inside building walls. A non-stop flood of data flows from sources and activities that feed the facility, like suppliers, distribution networks and the end-users. The manufacturing analytics platform must easily track data flowing from the extended enterprise.

### 2. The ability to handle terabytes of data.

As noted in the McKinsey report above, the manufacturing sector stores data measured in the exabytes. From production planning to shop floor to supply chain and delivery, each data stream serves as a piece of the puzzle to help unlock overall business process improvements. But the key is to close the gap between the raw data and true understanding.

The analytics platform must have the technology infrastructure and capacity to accommodate this flood of data, in increasing volumes. This data is critical, however it is often stored for only a finite amount of time because of its volume. It's a best practice to not only track the data, but store it and report on it in a meaningful way over time to see trends, areas for improvement, variances, etc.

### 3. The capacity to integrate both structured and unstructured data.

Manufacturing systems generate different types of both structured and unstructured data—time series, metadata, pictures, videos, and more. The manufacturing analytics platform must offer the capability to correlate these types of data together within a common context.

In addition to providing analysis of the manufacturing data within the presentation layer, the platform must also support integrating analyses and reports into ERP, MES, and other enterprise solutions, via a standard set of application programming interfaces (APIs).

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## 4. Cloud-enabled functionality for both unlimited storage infrastructure and anywhere/anytime access.

A cloud-enabled manufacturing analytics platform delivers considerable business benefits. The cloud model offers unlimited and secure storage, scales on demand, and lets companies avoid tying up cash in heavy, up-front investments in hardware and software. For companies seeking ease of deploying new functionality and updates, the cloud model is a must. The cost savings and technical advantages of a cloud deployment are significant for international, multi-site companies in particular.

Be sure the manufacturing analytics platform offers web and mobile-based applications that are on-demand, at any time, from any connected device.

## 5. Real-time dashboards along with deep-dive analytics for optimal insight, decision making.

The analytics platform should offer intuitive, graphical dashboards that make mission-critical metrics available to the entire enterprise – in real-time – so companies have a better chance to take action about decisions as they happen.

When role-based, and with drill-down capacity, these dashboards ensure that users only see the charts and graphs that are relevant to their specific areas.

For instance, the production or operations staff would use a visual dashboard for inventory accuracy reports, quality achievement metrics, production measures like equipment downtime graphs, and more. The shipping manager might use a dashboard to track on-time shipping completion percentages and premium freight costs reports.

Real-time dashboards unify daily production activity to the financial performance of a manufacturer. Being able to know at the machine level if the factory floor is running efficiently, gives production planners and management what they need to know to scale operations.

## Next Steps

In all, these five best practices in manufacturing analytics provide a more intelligent use of data. Data insight is more critical than ever with the rise of the Industrial Internet, where machines and devices are tightly connected.

For today's manufacturer, the answer isn't more data, it's more intelligent use of data and ready access to operational insight wherever people are working, with business intelligence at their fingertips.

When used effectively, an advanced manufacturing analytics platform helps collect and analyze meaningful manufacturing data, provides a way to visualize the data in context, and give access to the right people at the right time.

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## About Sight Machine

The Sight Machine Manufacturing Analytics Platform analyzes existing manufacturing data for trends and important statistics, presenting real-time information to manufacturers in an easily digestible cloud-based format. Integrated into existing manufacturing operations, Sight Machine applies best manufacturing practices, such as standardized adapters for legacy MES, ERP and SCADA systems, along with advanced data management such as signal processing of sensors and images to higher-level data structures.

Sight Machine's web and mobile-based applications are available on demand, at any time, from virtually any connected device – from across the plant or across the globe.