Dow breaks down data silos and accelerates digital manufacturing with Microsoft solutions

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Customer

Dow

Partner

Accenture

Products and Services

Azure
Azure Kubernetes Service
Microsoft Intune
Power BI
Windows 10

Industry

Manufacturing

Organization Size

Corporate (10,000+ employees)

Country

United States

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Dow, a global materials science leader, provides innovative and sustainable solutions to market segments such as packaging, infrastructure, mobility, and consumer applications. The company wanted to aggregate and integrate siloed data so that it could drive decision-making across all levels of its business. Dow turned to Microsoft and its tools, capabilities, and expertise to build a highly scalable data ingestion and analytics system in the cloud. As a result, Dow helped employees access data in real time, reduced manufacturing and operational costs, and improved workflows.

Headquartered in Midland, Michigan, Dow is one of the largest materials science companies in the world. It develops and manufactures sustainable products used in sectors as diverse as packaging, infrastructure, mobility, and consumer applications. “Our ambition is to be the most innovative, customer-centric, inclusive, and sustainable materials science company in the world,” says Billy Bardin, Global Digitalization Director at Dow. “Digital tools have helped us drive our competitive advantage and continue to elevate our position in the industry.”

Dow takes a purposeful and focused approach when making technology choices. The company then works with strategic partners to maximize the potential of those technologies. This strategy delivers long-term value while helping the company stay current. “It’s not about chasing technology,” says Clark Dressen, Senior Director of Information Systems at Dow. “It’s about finding opportunities to change how we work, understanding the value that opportunity could deliver for our businesses, and then selecting the right innovative technology to deliver that value.”

Dow began exploring remote plant monitoring technologies as early as 2011. In 2014, the company embraced an Industry 4.0 approach, investing in interconnectivity, automation, machine learning, and

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real-time data. This initiative encompassed data digitization and analytics, employee experience enhancements, remote monitoring, predictive maintenance, and the increased adoption of digital and physical automation.

The quality and availability of data were foundational to this effort. However, much of the data that Dow had historically collected was siloed and relatively difficult to access. The company wanted a comprehensive solution for data ingestion and integration with the ability to collate, clean, organize, and store the data in an easily accessible format. “We have lots of sensors in the field that capture large amounts of process, equipment, and engineering data,” Bardin says. “We needed to give engineers and operators in the manufacturing environment access to that data in real time so that they could make more-informed decisions with more speed.”

Gaining executive buy-in

With a focus on digital interconnectivity, Dow looked at numerous architectures, platforms, and ways to organize and characterize data and identified Microsoft Azure (https://azure.microsoft.com/) as a potential cloud solution. “Microsoft offered a competitively advantaged product portfolio through Azure and its capabilities,” Bardin says. As one of the most strategic Microsoft global alliance partners, Accenture provided expertise to the overall program, combining the power of three world-leading organizations.

After meeting with Microsoft and Accenture representatives, developing and completing a field trial of the potential solution set, and better refining the value proposition for digital manufacturing, the team at Dow presented the effort as part of an overall corporate digital acceleration initiative that received support from executive leadership and the company’s Board of Directors. The plans outlined a purposeful extension of data interconnectivity and digital transformation across Dow.

Building and testing a new data architecture

Dow aggregated data from a variety of sources across engineering, maintenance, and operations into a cloud-hosted platform on Azure. The company could then connect employees to data through cloud-connected applications and services.

Dow integrated elements of multiple data sources into a single data hub on Azure, facilitating analytics capabilities. Now, Dow can use the integrated data to drive different applications in development.

Dow also wanted to provide visualization and quick dashboarding across levels within its organization. By using Microsoft Power BI (https://powerbi.microsoft.com/), Dow employees can make decisions based on real-time analytics.

For device management, the team at Dow used Microsoft Intune (https://partner.microsoft.com/en-US/solutions/microsoft-intune) to control who has access to devices and what they can access. Dow also uses Azure Kubernetes Service (https://azure.microsoft.com/services/kubernetes-service/) for quick and easy application development and deployment in the cloud.

Proving the value

The Dow team began building out the infrastructure and planning the critical field test to assess the new platform in the summer of 2020. “We had to prove that we could use these technologies in a live production environment and then summarize the outcome so that we could demonstrate value, create a proposed timeline, and actually launch the program,” says Maulik Patel, Senior Director of IT and Operational Technology at Dow.

After a successful field test, Patel’s team developed a plan for full implementation at scale across the company’s largest, most

integrated manufacturing site in Texas and then to its global manufacturing ecosystem. “We’ve been able to scale up the same solution at other sites in Europe and the Asia-Pacific region,” Patel says.

Dow relied on Microsoft, Accenture, and several other strategic partners to augment the experience of Dow employees working with its existing platform and architecture to accelerate the pace of the project. “We are performing a very fast deployment across many different sites,” says Patel. “We’ve leaned on guidance from Microsoft in developing the Azure architecture and augmenting our technical capabilities so that we can meet accelerated timelines and support the solution into the future.”

Realizing the value of expanded interconnectivity and data access

Dow is deploying the solution company-wide, and it has already delivered measurable improvements in a variety of areas. “Building on our Azure data, analytics, and application infrastructure, we’re seeing improvements in equipment uptime, production efficiency, and employee collaboration,” says Dressen. “The power of this solution is apparent across the business, facilitating everything from better logistics to streamlined work scheduling, with a bottom-line impact.”

Digital workflows bring Dow increased flexibility and agility for responding to change and disruption. “Using Azure as the back end along with the mobile connected field professional platform, we have transformed some manual and paper-based processes into digital procedures, which helps us drive visibility of information and streamline work practices,” says Dressen. “For example, when there’s an issue, an employee can snap a picture and add it to the case record for others to see, rather than just using written text. That gives us more context to make better decisions.”

Automation is streamlining everyday work throughout the company's manufacturing facilities. "If you see an anomaly, you can convert it into a maintenance notification in the field instead of going back to your desk," says Patel. "It's easy to capture the relevant information and trigger maintenance workflows instantly. The digital solutions we've built are changing how we work."

Using newly deployed, industrial-grade mobile devices running Windows 10 (https://www.microsoft.com/en-us/windows/get-windows-10), workers can collaborate from anywhere using voice and video meetings and pull up relevant information whenever they need it. "We are significantly improving our maintenance and operations workflow," says Patel. "We also increased our asset utilization and reduced operations costs. We even have a better way of managing supplier performance."

Achieving a digital manufacturing vision with Microsoft

Dow has capitalized on both Microsoft technology and engagement—aspects that the team expects to grow moving forward. "Microsoft will play a critical role in our scalability and our ability to keep pace with technology, making it easier for us to achieve our digital vision for manufacturing," says Patel.

Dow also appreciated the readiness of Microsoft to bring in its top experts when issues arose during the build. "The ability of Microsoft to bring expertise to bear on challenging problems is critical as we continue to grow our technology transformation across our manufacturing environment and the company as a whole," says Bardin.

Accelerating innovation into the future

"As we're driving this new data architecture into reality, we continue to see opportunities to make improvements—things like developing common data models and industry standards—and also ways we can accelerate data cleansing and integration and generally make data available to broader applications," says Dressen.

The team at Dow plans to continue streamlining and simplifying current processes as it expands deployment globally. Dow also plans to deepen its use of AI, machine learning, and automation as it works to achieve its vision of being the world's most innovative, customer centric, inclusive, and sustainable materials science company.

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