

HOW A PLATFORM APPROACH TO MANUFACTURING HELPS LEVEL PLAYING FIELD FOR SMALL TO MID-SIZED MANUFACTURERS

White Paper



OVERVIEW

Discover how leveraging cloud-based manufacturing tools can help smaller companies optimize growth and increase competitiveness.

Competing in today's manufacturing industry is not an easy endeavor for companies of any size. Challenges abound, from supply chain issues, to a growing lack of skilled workers, to constantly changing regulatory requirements and market volatility. To be competitive in today's constantly changing manufacturing environment, businesses must be nimble and able to pivot to respond when faced with these and other issues.

Managing a company with spreadsheets or a hodgepodge of disparate technology solutions is no longer enough to remain competitive. How a company handles the flow of information from sales order to invoice can mean the difference between chaos and profit. To stay ahead of these issues, companies must keep pace with technology, especially smaller businesses striving to deliver innovative, high-quality products faster than their larger competitors do.

Today's manufacturing processes produce staggering amounts of data. A typical order—from quote to delivery—can produce hundreds, sometimes thousands, of files. Historical CAD/CAM files also need to be easily accessed for reference and reuse. Further, the countless files necessary for effective project communications, such as status reports, PDFs, emails, and more, all need to be managed to optimize collaboration.

However, using a variety of spreadsheets, accounting packages, and database applications often creates a siloed approach that requires excessive manual data entry, wasteful processes, and duplicative effort. What's more, the use of disparate, unconnected tools often results in errors as the information that people need to make decisions is often hard to find or not up-to-date. Further, these unconnected tools do not provide the insights into the performance of day-to-day operations that are critical to business planning and success.

EXPAND BUSINESS EXCELLENCE

Cloud-based tools that can ramp up profits, decrease defects, and improve processes are now both affordable, practical, and within the reach of smaller businesses. Manufacturing solutions were developed to help connect and streamline great volumes of disconnected data and find areas where workflows can be automated and refined across an organization.

These new cloud-based manufacturing tools now make it feasible for smaller manufacturers to connect all business and manufacturing people, processes, and data to achieve a 360-degree view of operations, along with eliminating the data silos associated with slapped-together ERP, quality, production, scheduling, MES, and homegrown systems.

To avoid becoming more of a burden than a solution for a small business or startup, a cloud-based manufacturing technology platform should allow incremental investment in only the tools needed for a business at its current stage of development and then be scalable or able to "switch on" additional functionality as the company grows.



UTILIZE ALL THE DATA

To meet the needs of customers—both current and future ones—manufacturers must be able to effectively evaluate current demand, and assess constraints and conflicts, to adapt and respond quickly and accurately. When all the business data needed to make critical business decisions is captured in real time in a single database, manufacturers can do the following:

- **Eliminate the use of inaccurate, unreliable data**
- **Avoid use of out-of-date revisions for production**
- **Reduce the need for engineering change orders (ECOs), ineffective inspection practices, and quality controls**
- **Decrease undetected manufacturing issues, production problems, and slow and redundant workflows**

Businesses gain greater agility and efficiency not only by leveraging production and business data across the organization, but also by enabling all team members to access and use the system from anywhere.

As automation in manufacturing continues to advance, cloud-based solutions enable greater agility in using data to automate operations across an entire company. This allows manufacturers to boost productivity, spark growth, and meet the challenges of today's fast-paced manufacturing market head-on.

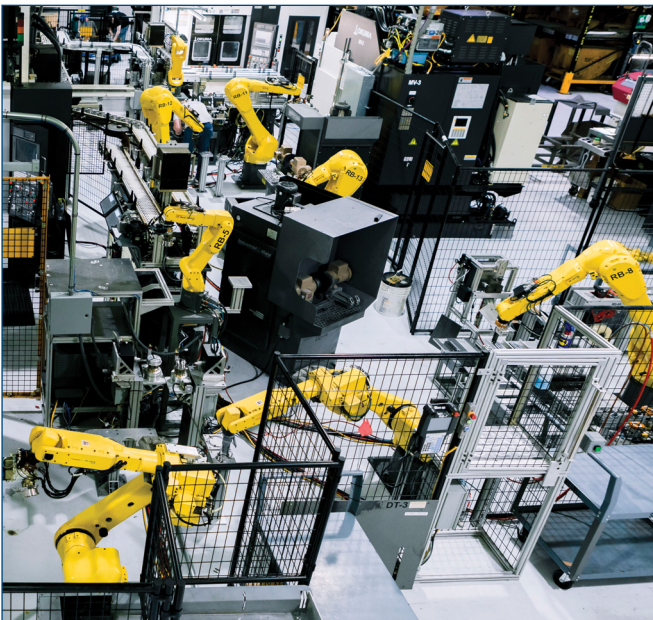
This paper will discuss numerous ways a cloud-based manufacturing technology platform can help smaller and mid-sized companies take control of their operations and materially improve the profitability of a manufacturing organization.

ENABLE INTEGRATION

Even in smaller businesses, the left hand often does not know what the right hand is doing. This is especially true regarding all the disparate tools and systems used among different departments. A cloud-based manufacturing technology platform can replace the patchwork of disconnected tools and digitally connect all aspects of a business, from quoting and order processing to product development, production scheduling, and shop floor management—all the way to the shipping dock. This eliminates time-consuming and error-prone manual data entry and reconciling data in disparate systems, which saves time and improves decision-making companywide.

Manufacturing cycle times improve when real-time data integration enables manufacturers to gain greater insights into overall production performance. By combining the real-time integration of production monitoring with predictive analytics, management can calculate a more precise analysis of yield variances or production throughput levels.

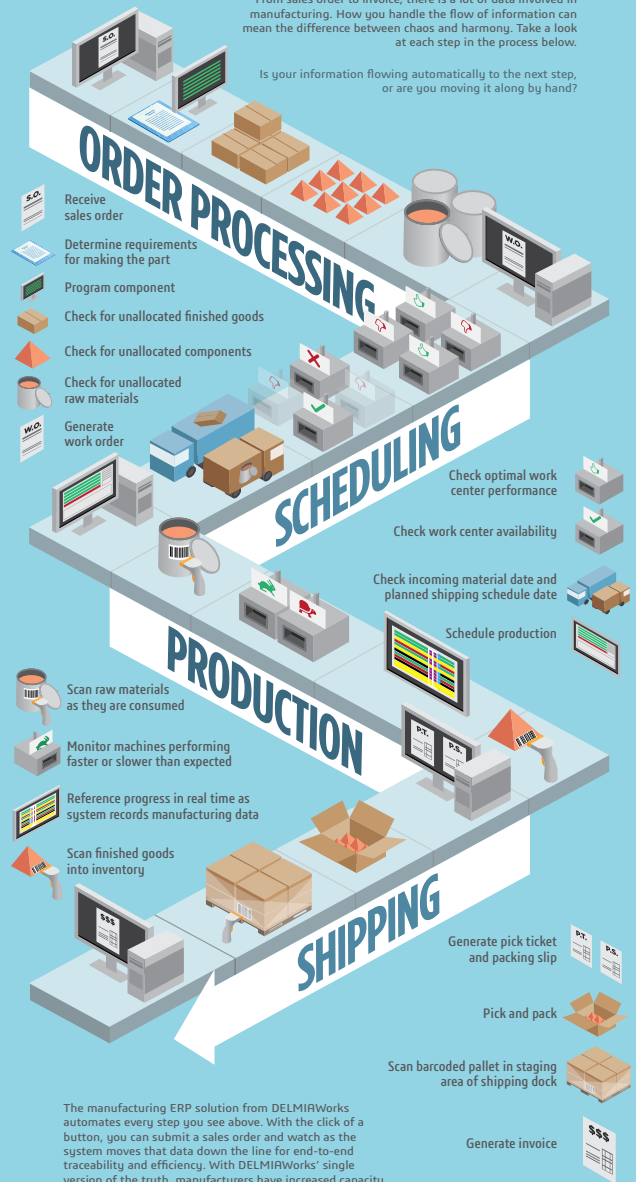
With much of this work now integrated and automated using strategic manufacturing technologies, such as ERP and MES, business leaders can spend more time on process improvements and strategies for business growth. Integration of disparate tools also increases employee productivity, provides a comprehensive view of operations, improves efficiency across teams, and reduces costs.



How Does Data Flow Through Your Shop Floor? Manually or Automatically?

From sales order to invoice, there is a lot of data involved in manufacturing. How you handle the flow of information can mean the difference between chaos and harmony. Take a look at each step in the process below.

Is your information flowing automatically to the next step, or are you moving it along by hand?



DELMIAWorks
Means Automation

DELMIA
WORKS

<https://www.solidworks.com/domain/manufacturing-production>

SOLIDWORKS

...a case in point

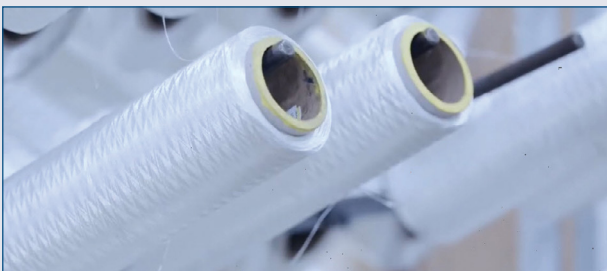
From Quote to Balance Sheet, Onyx Hose Manages Its Full Production Life Cycle in a Single, End-to-End System With DELMIAWorks

Onyx Hose & Tube Inc. is a mid-size manufacturer in Guelph, Ontario, Canada. The company prides itself on top customer service, quality production, and project-focused design for industrial, agricultural, medical, and food and beverage industries. Onyx also handles a variety of custom and general-purpose projects. Drawing on decades of experience in the hose and tube market, the Onyx team leverages its in-depth knowledge of applications and materials to design, manufacture, and deliver superior products on time.

Onyx Hose & Tube chose DELMIAWorks® from Dassault Systèmes because it needed a manufacturing system that controlled operations from sales quote to final delivery. “You need to be able to do the full life cycle in your business in one program,” explains Onyx President Renata Sergejew. “The reports you get from DELMIAWorks allow you to analyze where you are, where you’re going, and figure out what path will get you there.” Sergejew adds, “The communications that it [DELMIAWorks] opens up has improved our efficiency overall, and it’s improved our productivity from low 80s to mid to high 90s.”

Sergejew loves that she can see every detail of the operation without leaving her desk. Moreover, everyone in the company can access the data they need to do their jobs from DELMIAWorks. “You look at other systems, and there’s a break between production and financials. There is no break here. Every step of the way through your production process, [DELMIAWorks] is driving data into the balance sheet and the profit/loss,” raves Sergejew. “It [the data] comes from our one system that goes from end to end. The truth is always there. It’s an incredible tool, and I’m so pleased that this is the tool we chose.”

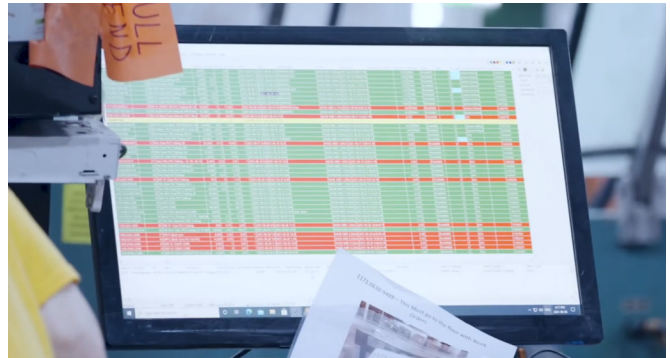
To see the Onyx Hose video, [click here](#).



MAGNIFY VISIBILITY

Small to mid-sized (SMB) businesses typically use multiple spreadsheets or basic accounting software to track production. The old adage, “You can’t improve what you can’t measure” rings true, but it’s impossible to measure what is unseen, and a large percentage of manufacturers are flying blind by using disparate systems to capture the business data they need to measure performance but also to make critical business decisions.

With a comprehensive manufacturing technology system, it’s easy to access, search, compile, and analyze data to measure business performance. Therefore, leaders have more time to spend on strategy for business growth. Everyone in the company, from the front office to manufacturing to shipping, can quickly produce reports that identify problem areas that can be addressed immediately, sometimes catching problems before they materialize.



A manufacturing technology platform provides a single-database approach for end-to-end visibility into several areas, including these:

Accounting and Finance – Important financial data flows seamlessly into manufacturing, job costing, quoting, and forecasting functionality so you know how and where you spend your money, as well as where and how you receive your income.

Order Processing and Purchasing – Push-button visibility into the demand, consumption, and stock levels of both raw materials and finished goods.

Scheduling – Having your production scheduling solution share the same database as an integrated ERP system makes it more efficient to schedule production runs and special orders, reacting in real time to unexpected events.

Production – With real-time production visibility and monitoring, manufacturers can monitor production cycles, measure scrap, ensure all production steps are executed, and predict completion times.

Warehouse Management – Minimize handling costs and maximize warehouse pick, pack, and put-away efficiency with complete visibility of warehouse activity and inventory movements throughout the warehouse.

Supply Chain – By tracking materials or products in transit, business leaders can improve customer service and cost controls by managing inventory in motion, accessing proactive status updates, limiting disruptions, and mitigating risks.

The wealth of real-time data produced, when made accessible, can be applied to production and process monitoring. This visibility helps to improve efficiency and product quality. With all the data at hand, business leaders gain insights into the performance of daily operations that enable them to plan based on hard numbers instead of impromptu evaluations or guesstimates.

ELEVATE QUALITY

The result of defective parts is 100 percent lost profit. Catching imperfections early in the process not only prevents defective parts from being made and delivered to the customer, but also increases profitability and ultimately customer satisfaction.

Producing a new part to replace a defective one doubles production costs. A part with a 25 percent profit margin becomes a part with a negative 50 percent profit margin. For a typical \$20 million producer with a 2 percent defect rate, defects can cost \$600,000 per year.

Quality management is the institutionalization of inspections and the documentation of measurements and results. Material reviews, process monitoring, and inspections are at the heart of quality management.

A manufacturing technology platform should enable repeatable quality programs by building inspection procedures into the day-to-day operation of the business, such as these:

- **Workflows that ensure inspection takes place before downstream process steps occur**
- **Monitored process trends that trigger alerts before issues arise**
- **Inspection results that are recorded for root cause analysis and customer documentation**
- **Corrective action programs that are documented and enforced**
- **Statistical process control analysis that enables increased production rates without introducing quality issues**

Quality management requires end-to-end knowledge of multiple elements of the operations: Are the raw materials in compliance? Is the tooling and equipment in tolerance? Is the rate of production slow or fast? Did in-line inspections take place as required? Did a properly trained operator conduct the inspection?

Like all the essential disciplines of the manufacturing operation, quality management requires broad access to a long list of information and a holistic view of the business to be comprehensive and preventative, a scenario made possible by a cloud-based manufacturing technologies system.

...a case in point

Investing in Software and Machinery to Drive Agility

Comar is a fast-growing manufacturer of plastic packaging products and components for the medical, pharmaceutical, healthcare, personal and home care, food and beverage, and niche markets. Comar relies on the DELMIAWorks manufacturing ERP system for real-time process and product monitoring, quality management, traceability, and manufacturing execution system to ensure quality while meeting customers' production deadlines and audit requests.

To compete on both quality and agility in the highly regulated industries it serves, Comar required a system that would provide real-time product and processing insights and the traceability to efficiently complete audits. By standardizing on the DELMIAWorks manufacturing ERP system, Comar has been able to accelerate its new product development and introduction process while also staying agile enough to take on custom product orders. "The modularity and scalability of our DELMIAWorks ERP system has provided us access to data that results in faster decision-making, in spite of the fact that we have a more complex business," observes Tom Sine, Comar business systems manager. "We can look at the same thing in nine different plants, assess performance, and make business decisions quickly. Our customers definitely value this speed and agility."

Outfitted with sensors, the machines on Comar's shop floors complement DELMIAWorks' real-time monitoring functionality to provide the manufacturing intelligence managers need for making timely, informed decisions. "We're a metrics-driven organization and have robust business systems that provide us access to real-time web-based dashboards that are fully integrated with our DELMIAWorks ERP data," explains Scott Conklin, Comar executive vice president of sales and marketing. "The dashboards are refreshed every 15 minutes and can be set up to proactively alert decision-makers to recognize success—for example, a record day in production—or to bring attention to a mold, machine, or process that isn't performing to our expectations, so we can better manage our operations."

Continued on next page...

TRANSFORM CUSTOMER SERVICE

Timely and accurate customer service drives the ability to charge full price for products. Being able to quote accurate delivery times, meet customer delivery dates, and deliver quality products ensures repeat business. In addition to on-time quality delivery, however, a business must be easy to do business with.

Readily available information and flexible scheduling are part of delivering top-grade customer service. Low service levels result in customer turnover, and customer turnover is very expensive. Having to replace just 10 percent of existing business with new customers can cost a \$20 million manufacturer 5 percent of its annual profits in the form of sales-related expenses, retooling, and learning curves for producing new products versus established production.

In addition to the advantages manufacturing technology brings to inventory availability, scheduling, and quality that are essential to customer service, it also provides a host of tools to enable the last mile of customer service:

- **Customer Relationship Management (CRM) for a complete view of the customer**
- **Accurate shipments and invoices**
- **Production status to quickly and accurately answer delivery and availability questions in real time**
- **Electronic data interchange (EDI) to conduct business electronically**

Customer service is the ultimate measure of the value of a single-database manufacturing software solution: Did we quote it right? When will it be delivered? Is it built to specification? Was it labeled correctly? Was it invoiced correctly? These interrelated questions illustrate how all the operations of the business need to come together to deliver top-shelf customer satisfaction.

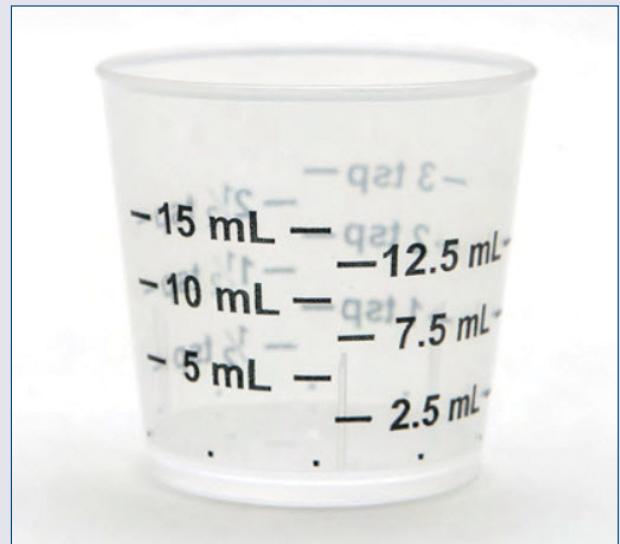


...Continued from previous page

Comar also relies heavily on real-time monitoring to gain valuable insights into how every machine on each of its production centers is operating. By monitoring production variances, operators can adjust out defects to increase yield while decreasing waste. “DELMIAWorks has a module for managing preventive maintenance,” notes Sine. “So, when a machine is running, the real-time production hours and cycles are counted. With this data, the system can trigger preventive maintenance work orders on machines as well as molds. This has been especially helpful in reducing downtime and preventable breakdowns to ensure we meet our customers’ requirements.”

By harnessing data in the DELMIAWorks manufacturing ERP system, Comar has the real-time insights to drive innovation, ensure the quality that differentiates it from competitors, and enable the agility to address customers’ demands for short-notice production.

To read the full Comar story, [click here](#).



ADVANCE MANUFACTURING OPERATIONS

A manufacturing technology platform monitors and manages operations and the work in progress on the shop floor. It provides two-way, real-time data exchange between machines and software to guide, trigger, and report on activities. A cloud-based manufacturing technologies system should offer a host of functionality that enables businesses to scale up and add capabilities, only when or if needed. Some of the core functionality includes:

Real-Time Production Monitoring – Manufacture in real time, where monitoring and data collection tools are the “heartbeat of the plant floor.” Machine and process parameters are monitored in real time to ensure all aspects of your shop floor are operating at optimal efficiency.

Business Activity Monitoring – Use an event-based notification system to capture and evaluate data for proactive decision-making and timely corrective actions.

Business and Manufacturing Intelligence – Leverage the data collected to bring overall equipment effectiveness (OEE) data and key performance indicator (KPI) reporting and analysis to management’s fingertips for informed decisions.

Maintenance, Repair, and Overhaul (MRO) – Establish a complete preventative maintenance program for machines, tools, auxiliary equipment, gauges, and more to eliminate scheduling conflicts and unexpected downtime.

Planning and Scheduling – Incorporate all scheduling requirements and objectives into one central engine that optimizes the schedule and meets lean business objectives.

Time and Attendance – Streamline and track the clocking in and out of employees and relay labor reporting directly into a financial system.

The ability to identify potential manufacturing problems before they can influence profits, customer trust, and revenue is leading more manufacturers to automate their operations.

While there are many issues manufacturing technologies can address, the most urgent and quickly resolved are related to visibility and controlled access to the shop floor and plant, including these:

- **Troubleshooting product-quality issues**
- **Eliminating time wasted tracking the status of jobs in production**
- **Removing the roadblocks that create longer cycle times and lead times**
- **Avoiding unnecessary shutdowns of production lines**
- **Solving supplier quality and compliance problems**

Using the power of real-time production data, manufacturers determine how they can make corrections, repair equipment, and improve their operations before issues become large and costly problems.

...a case in point

Automating All Facets of Injection-Molding Part Production

SEA-LECT Plastics Corporation is a leading supplier of injection-molding manufacturing, design, product development, and tooling services. According to Vice President/General Manager Matt Poischbeg, SEA-LECT Plastics initially relied on a custom-developed enterprise resource planning (ERP) system and Excel spreadsheets to manage its injection-molding operations. However, Poischbeg says the manufacturing services provider needed to find innovative solutions to streamline and improve all functions related to injection-molding production to support growth.

“We implemented the SOLIDWORKS® 3D design-to-manufacturing system to improve our ability to handle customer data and identify design-for-manufacturing issues, and also the integrated CAMWorks® machining package, both of which helped us achieve productivity gains,” Poischbeg explains. “Yet, we still needed an overarching system that would enable us to automate all functions related to injection-molding production. We needed to boost productivity to better manage our growing volume of business, but we also needed to better understand our actual costs for each job to remain competitive in an increasingly dog-eat-dog market.”

SEA-LECT Plastics implemented the DELMIAWorks ERP system in 2012 because of its integration with SOLIDWORKS design and manufacturing software, and its ability to be configured to SEA-LECT Plastics’ specific automation needs. “DELMIAWorks does everything that we need,” Poischbeg stresses. “...It covers every detail involved with injection molding, giving us real-time access to information and status on everything from costing, bills of materials, and mold types to tooling, staffing, and scheduling.”

Continued on next page...

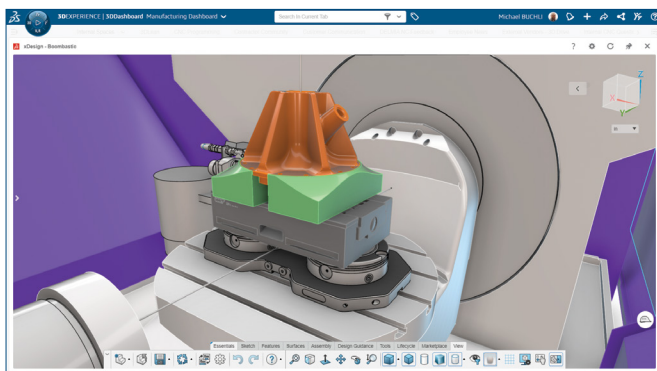
WORK TOGETHER EFFICIENTLY

It is still common for most small to mid-size manufacturers to rely on emails, faxes, and phone calls as the primary vehicles for communicating with customers and suppliers. Leveraging the powerful computers and fast communication networks that are more affordable than ever, cloud-connected manufacturing technologies enable superior collaboration and the ability to keep everyone on the same page—all in a single environment. That benefits manufacturers in countless ways, such as these:

Teardown of Communication Walls – Design engineers and manufacturing have commonly had a history of strained relationships. Not being on the same page can hurt productivity, resulting in higher product costs. Cloud-based manufacturing technologies enable everyone on a team, including customers and suppliers, to interact from a common platform. When working from the cloud, all information shared is in real time, eliminating the need to manage mountains of project emails. Disputes among designers or shop floor personnel or managers or clients are quickly resolved by reviewing communication threads on the platform. Follow-up meetings can be quickly organized. Team engagement is so easy that improvement becomes second nature instead of a forced or awkward part of the process.

Early Involvement in Design Reviews – The ability to enable an entire team to review the product design without any requisite CAD knowledge is also key. From engineers to managers to manufacturing, all team members can participate in the design review process with full 3D digital renderings, meaning potential issues are discovered earlier in the process when less costly to resolve. Real-time design for manufacturing (DFM) advice from the shop floor or suppliers avoids potentially expensive downstream issues.

Making 3D reviews available to everyone is like sharing a common language; the entire team can participate in the design-review process, and all communication is captured, so traceability is built right into the process. It becomes so much easier to communicate concerns, identify issues, and propose resolutions when everyone can see and review the 3D CAD model themselves. This enables outside suppliers and internal stakeholders without CAD tools to participate and be involved sooner in the development cycle.



...Continued from previous page

Since adding DELMIAWorks ERP, SEA-LECT Plastics has fully automated its design-to-manufacturing processes. DELMIAWorks streamlines processes across sales, order processing, finance, human resources, planning, production, inventory, procurement, and more, enabling visibility, execution, and communication of manufacturing activities and data throughout the organization. By implementing DELMIAWorks, SEA-LECT Plastics increased operational efficiency from 70 percent to 98.5 percent; cut its part reject rate to less than 1 percent, a third of the industry standard; improved its profit margins; and attained ISO 9001:2015 certification.

“In this tight market, there’s no room for error, and we can’t afford to lose, either,” Poischbeg notes. “With the information and automation provided by DELMIAWorks, both our pricing and position are more competitive. In short, DELMIAWorks gives us a competitive edge.”

To read the full SEA-LECT Plastics story, [click here](#).



Work is Automatically in Sync – Because the entire team (designers and manufacturers) works from the same platform and the same data, making informed decisions is faster because everyone has access to real-time data, regardless of access to CAD tools. With all the data in the same place, everyone is up-to-date with access to a single source of truth, and because only “live” data is accessed, there is no risk of being out of sync on model revisions or assembly configurations.

Because everyone can work from any location using any device, traditional roadblocks to efficient deliveries and collaboration are eliminated. Manufacturers are no longer in the dark until the last minute. Relationships improve as collaboration between various disciplines improves.

Manufacturing by its very nature is a collaborative effort. The advantages of a system that can embrace all of product development, from concept through manufacturing, are clear. Manufacturers can streamline processes, increase productivity, consistently meet delivery dates, and maximize team communication in a shared technology environment.

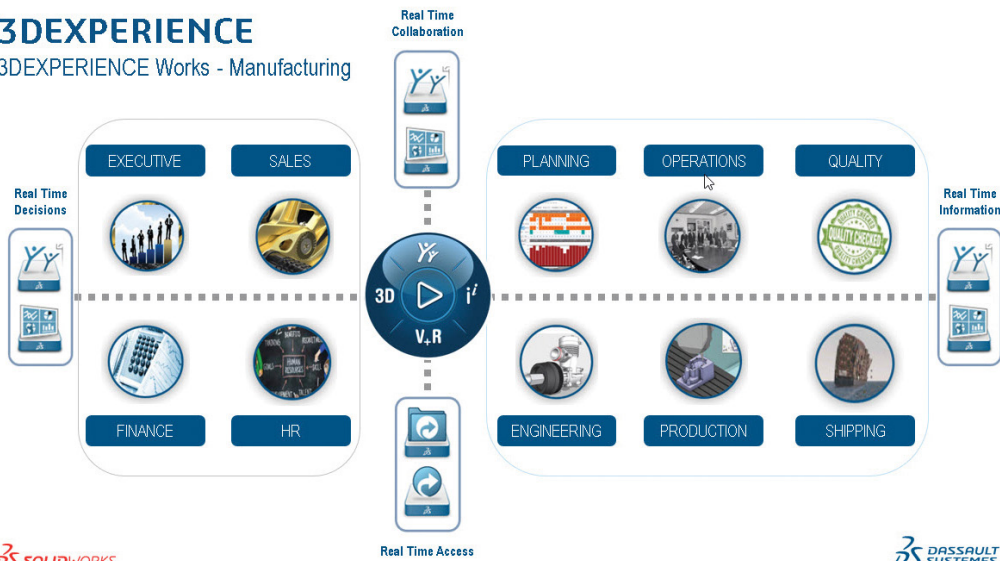
END-TO-END SOLUTIONS

Overcoming the growing competitive challenges facing manufacturers in today's data-driven production and business environment ultimately depends on how well businesses access, automate, and leverage the mounting volumes of data that now drive production and back-office operations. Business tasks:

- Increase product innovation
- Accelerate time to market
- Improve product quality
- Maximize resource utilization
- Control manufacturing costs

3DEXPERIENCE

3DEXPERIENCE Works - Manufacturing

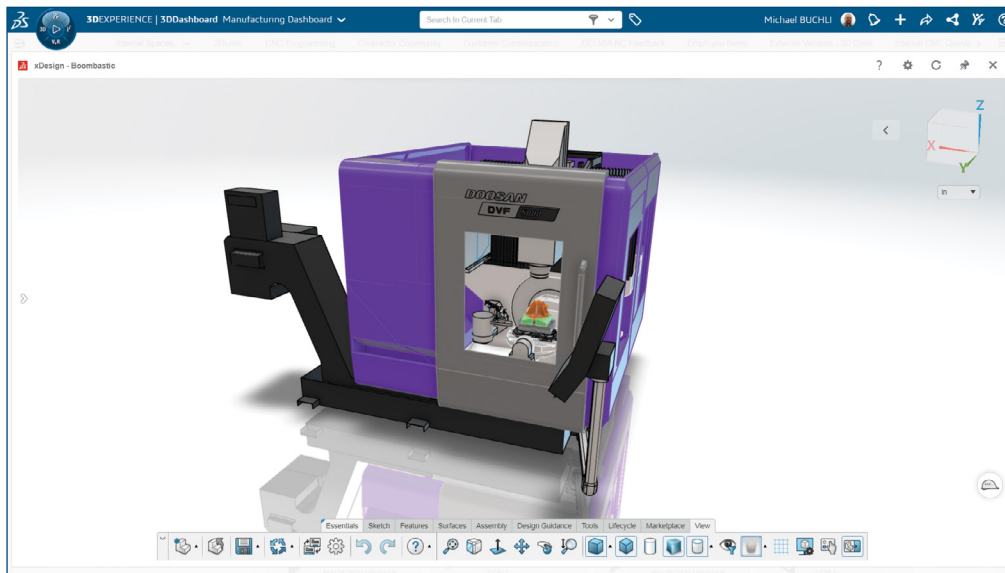


DELMIAWorks on the **3DEXPERIENCE**® platform provides manufacturers with an affordable, cloud-based system to improve collaboration, manufacturing efficiency, and business agility. In combination with SOLIDWORKS, it provides a unique, closed-loop ecosystem, from design through the manufacturing process, to give manufacturers a comprehensive end-to-end suite of solutions for running business operations.

Developed specifically for small to mid-market manufacturers, DELMIAWorks on the **3DEXPERIENCE** platform provides a powerful collection of digital technologies that span the entire business from accounting, sales quotes and orders, material requirements, inventory, and purchasing. What's more, its extended manufacturing functionality facilitates production scheduling, shop floor control, quality control, and warehouse management.

Real-time reporting is a snap, leveraging a single source of data to create custom reports and dashboards. In this connected environment, it becomes push-button easy to tie shop floor performance with bottom-line business results.

The **3DEXPERIENCE** platform offers a single source of truth since all the data flows securely into the platform, and because there is only one database and one application to administer with a single, intuitive interface, greatly reducing the need for IT support. Gone are multiple systems and multiple spreadsheets. Gone are double and triple data entries and exports. Instead, entering the information in one application once enables the data to automatically “talk” and “feed” the other applications, providing management valuable, immediate insight and information the very moment it’s needed.



DELMIAWorks solutions can help manufacturers transform their organizations from slow and lumbering bureaucracies into well-oiled machines, enabling them to consistently shorten time to market, reduce manufacturing costs, improve profit margins, and maximize resource utilization. In addition, because DELMIAWorks solutions automate both production and business workflows, companies do not have to sacrifice quality in exchange for speed, and they realize higher levels of quality and innovation in product development and manufacturing.

If you are a manufacturer looking to improve efficiencies, increase automation, and sharpen your ability to compete, visit <https://www.solidworks.com/domain/manufacturing-production> or call 1 866-367-3772.

Our 3DEXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the 3DEXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating ‘virtual experience twins’ of the real world with our 3DEXPERIENCE platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes’ 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit www.3ds.com.



3DEXPERIENCE®



SIM Technologies Pvt. Ltd.

3rd Floor, “Mamanjee Centre”,
S7-A, Thiru-Vi-Ka Industrial Estate,
Guindy, Chennai – 600 032

+91-8754447021

marketing@simtek.in

©2022 Dassault Systèmes. All rights reserved. 3DEXPERIENCE, the Compass icon, the 3DS logo, CATIA, BIOVIA, GEOSIA, SOLIDWORKS, 3DVIA, ENOVIA, NETVIBES, MEDIDATA, CENTRIC PLM, 3DEXCITE, SIMULIA, DELMIA, and IPAVE are commercial trademarks or registered trademarks of Dassault Systèmes, a French “société européenne” (Versailles Commercial Register # B 222 306 440), or its subsidiaries in the United States and/or other countries. All other trademarks are owned by their respective owners. Use of any Dassault Systèmes or its subsidiaries trademarks is subject to their express written approval.