

Increasing Role of Data Automation in a Metal Fabrication Enterprise

Metal Fabrication Growth Story

The Metal Fabrication industry in the U.S. is growing.

As per a Transparency Market Research report, the global metal fabrication industry was valued at \$16.82 billion in 2016 and is expected to reach \$22.7 billion in 2025 at a Compound Annual Growth Rate (CAGR) of 3.4%. Out of which, North America is expected to grow at a CAGR of 4.8%. Also, metal fabricators have seemed to understand the need to increase their speed and to adopt new technology, as over 94% have increased software spending in the last year. In terms of adopting hi-tech machinery, the trend is similar with the sales of disk and solid-state fiber lasers increasing by 36% in 2017.

Overall, US Manufacturing has observed a dramatic rise, with an 11% growth since the major global recession in 2008.

Also, many large and medium-segment metal fabricators have closed their offshore operations and brought them back to the U.S., due to rising wages in countries such as China and India. Higher freight charges and logistical challenges have also led to increased metal fabrication in the US. This means more employment opportunity in the U.S. and an increased need for fabricators to up their game.

Overall, the Metal Fabrication Industry in the U.S. is enjoying a positive trend.

While the industry as a whole has shown an upward trend in terms of growth, there are Metal Fabricators, especially in the smaller segment, who are struggling to do business in the heat of increasing competition and technological advancement. Their survival is subject to volatile global economic conditions, socio-political conditions, market demands/requirements, technological advancements, raw material costs & availability, competition and much more.

Of the many challenges they face, cost-control, labor retention and a lack of efficiency are amongst the largest of them.

Often, the smaller fabricator's immediate response is to cut back & make adjustments where they can (i.e. cut labor and operational costs, shut-down underperforming business functions, and shuffle staff across the organization with a hope of increasing efficiency and increasing personnel skills etc.)

However, these are short-term fixes, the problems are still there, and they will not go away till decisive measures are taken. Decisive measures often come in the form of technological upgrades.

Role of Automation and its Increasing Need

For many, automation is the way forward - especially for fabricators who are struggling to sustain and grow. Many of them have moved on from conventional fabrication technology to more advanced automation equipment, such as laser cutting machines and state of the art welding & bending equipment etc., yet they struggle to meet strict timelines and face material wastage, over-production, increased labor costs (over time), inventory overstock, delayed order dispatch, and increasing operational costs etc.

This is due to a lack in 'soft' automation e.g. ERP/MRP software and sensor-based equipment, to track and monitor business processes and production workflows - for an all-round data visibility.

Without data visibility, automated systems are of little value to the fabricator. Imagine a situation where the shop-floor is waiting for order information. In the process, precious labor time is being lost. When the order information does arrive, the production machinery jumps into action.

However, if any part of the order information is incorrect, the shop floor will have spent time, energy and money creating a product the customer does not want.

Data Visibility is the key ingredient that is often missing. Fabricators generate a lot of data. The sad part is most of it goes unused and very little goes into improving existing processes and increasing production efficiency. If fabricators channel their data through appropriate systems and technology in place, most of their critical business & operational decisions can be made based on real-time accurate data, thus preventing speculation/impulse based decisions that can have an unpredictable impact. In the above example, if the personnel and machines knew beforehand what orders they could expect, the scheduling would have been more proactive and those unnecessary efforts and cost could have been avoided.



Today's ERP software has come a long way. Manufacturers can host it anywhere, either on their private cloud, on-premises or public cloud; and access it from any device be it desktops, laptops or other handheld devices. Data can be recorded into the ERP and stored on a centralized database accessible from multiple applications, devices and departments. This means mobility support to floor personnel, enabling them to make critical, calculated decisions on the fly - with the help of easily accessible, real-time data.

In addition to providing data visibility, ERP software has advanced integration capability with varied third-party and internal applications that play a key role in manufacturing.

ERP software can be readily integrated with order-management and e-commerce systems to streamline order management and control.

It can also be integrated with a host of manufacturing applications such as CAD/CAM software, Nesting Software, Machine Monitoring Software, barcode devices, logistics applications, and internal applications such as CRM, Mass Mail, HR etc.

This translates to integrated systems 'talking' with each other, and automatically executing complex processes for multiple orders simultaneously. This should result in reduced order turnaround-time, plus increased production efficiency, product quality, and just-in-time delivery. It can also help manufacturers keep optimum inventory levels, limit scrap quantity, streamline personnel & machine availability, streamline supply chain and much more.

With an ERP and its integration capabilities, everything is able to flow with clock-work precision, thus enabling metal fabricators to achieve their maximum results, while using less time, energy and resources.

Using our flagship ERP solution (OmegaCube ERP), one of our customers, a precision metal manufacturer, Laser Precision LLC, tamed the chaos called Data.

For Laser Precision LLC, it wasn't a business challenge or a quick short-term solution that led them to automate their processes. It was more about long-term strategic thinking for the organization and a hunger for doing things the better way. They are clearly seeing the positive effects of their decision of more than 10 years ago.

Automated Jobs Scheduling for Dynamic Order Processing

Laser Precision faced a unique challenge where they had to juggle between instant orders of which they had no prior visibility, programmed jobs that were scheduled for the entire year but susceptible to dynamic quantities and delivery dates, and multiple drop-in orders (over 250 per month).

With OmegaCube ERP's customized solution that integrated EDI and Scheduling, Precision Laser was able to automate jobs scheduling for the entire 52-week window. Before this, they downloaded schedule changes everyday and manually updated the shop control system - an activity that was prone to error. With OmegaCube, the individual work center schedules are now automatically updated every 90 seconds, thereby ensuring that the operators are working on the most critical jobs at any given point during the day.

This has also reduced a lot of manual efforts: Down from 2 people, 8 hours a day and 2 cases of paper per week, Scheduling now requires just one person, 2 hours a day - thanks to OmegaCube ERP's ability to analyze data and alert the systems to changes that will impact day-to-day operations.

Additionally, the increased scheduling visibility and control within OmegaCube ERP has led to significantly improved delivery performance, high customer satisfaction, and a 300% increase in business - without adding a single administrative position.



The Results of Automated Jobs Scheduling for Laser Precision

Automated Nesting for Material Savings

The growth reflected in their material savings too. With OmegaCube ERP's capability to integrate with nesting programs such as Sigma Nest and ProNest, it helped Laser Precision create more effective dynamic nests.

With complete visibility into demand schedules, they know which parts to include for a more complete nest and achieve material utilization and accurate cost estimates. Laser Precision has seen 2-4% in material savings due to complete nesting automation.

They do not have any schedulers or expeditors to date. Every activity is done by automated intelligent systems.

Laser Precision also felt the need to manage dynamic changes in customer demand and to automate the process, so their employees would know what the customer wants and when they need it. Therefore, they started using OmegaCube's customized ERP modules to process customer demand forecasts every day. The modules reshuffle job priorities and reschedules them in a little over 45 minutes.

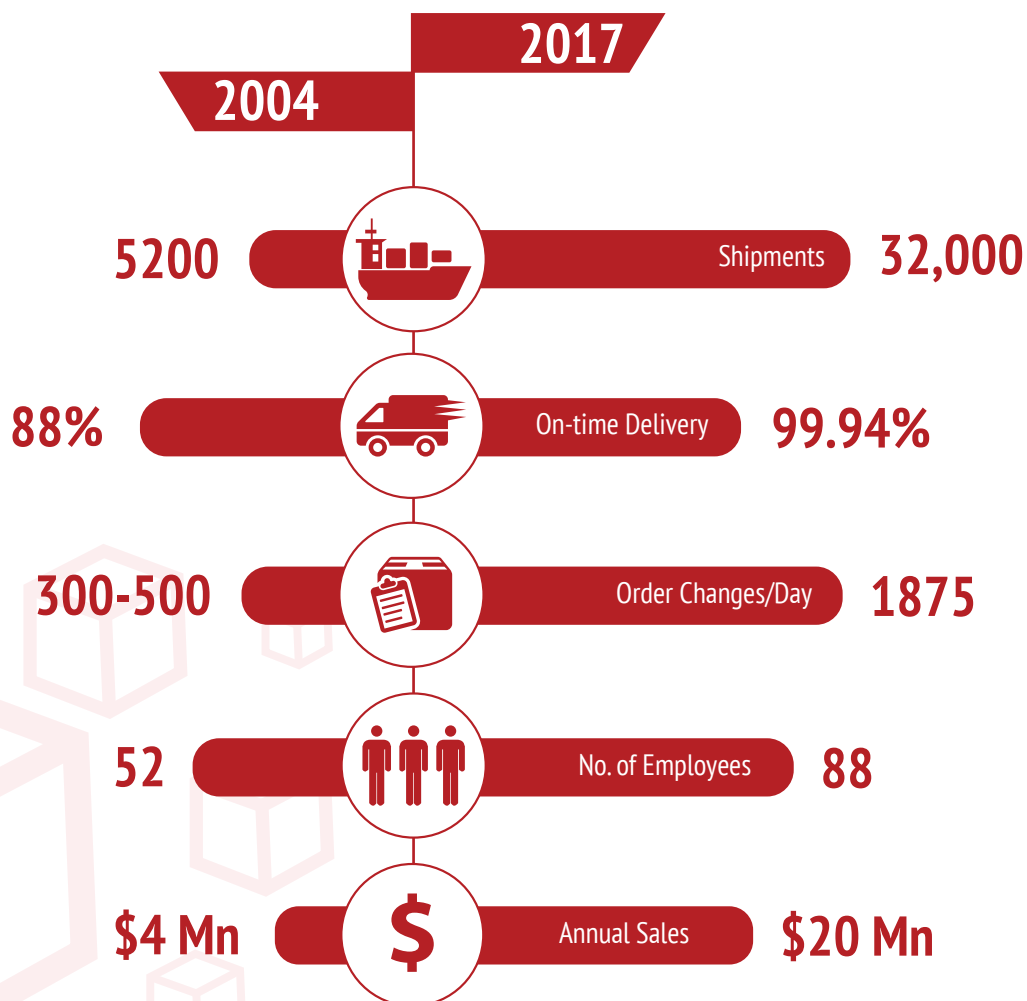
For quick job processing, they have built what they call an electronic demand profile, which basically tells them how a part is to be produced and delivered. Each part includes up to 27 elements such as geometry, labor requirements, processing times, effects on capacity, outsourced components or services, delivery schedules, and delivery quantities.

It is basically a guide book on how to manufacture a part successfully.

This is important as the company builds new electronic profiles for roughly 175 parts per month. The electronic profiles range from a simple material gauge change for an existing part to an entirely new part with unique requirements.

The electronic demand profiling has made life easier for shop-floor personnel who know what parts to make up while processing a job.

Results



For Laser Precision, automating every single aspect of their operations happened step by step. It was all about identifying each problem, the software and hardware systems involved (ERP, Nesting, production control) and developing a common ground between them for a seamless communication. They also had to set up quality checks so that unwanted data didn't meander its way into the system and break it apart.

To date, they still have 8 people in their administrative department who manage operations.

Together they handle more than 9000-part numbers with 5000 being active at any given point. They manage 1875 orders/day and 120-130 shipments daily.

What they have done, is to successfully integrate various data silos into one orderly flowing system that is visible to everyone across the organization and to their customers in real-time. This has not only helped them operate seamlessly but also to grow and scale up as an organization. This is what technology and automation can do for a business.

Automation is Inevitable

Today's metal fabricators have a lot of technological options to choose from. Sensor-based technology, automated controls & equipment, and MRP/ERP software are becoming more available, and have become more capable of handling varied complex tasks than ever before. This means even small fabrication shops can adopt them and produce high-quality goods of varied types and sizes at quicker speeds, at the lowest operational & labor costs, and deliver just-in-time to their customers.

With automation, they can be much less subject to ever-changing market scenarios, as they will have a clear visibility of their ecosystem and make crucial timely decisions. Growth is more certain, as they will experience increased production capacity that will enable them to generate more cash-flow, scale up operations and expand to newer markets.

Sources

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About OmegaCube

Since 1999, OmegaCube has delivered enterprise-class ERP software for our customers with a single focus,

"No two companies operate exactly the same and they need flexibility in their systems in order to maintain their competitive edge".

You know your business inside-out and would definitely want your ERP software to treat you in a manner you like, and not exactly as it treats your competitor. Our flagship product, OmegaCube ERP seamlessly adapts to your business. With best industry practices built into the product, coupled with extreme flexibility, OmegaCube ERP can do things better than you currently do and at the same time, adapt to what you do best. This has helped our customers from diverse industries, realize their strategic goals such as, workflow automation, centralized operations, cost reduction, increase in production, knowledge centralization, and effective resource & manpower utilization. Our strong expertise in advanced ERP technology coupled with immense manufacturing & distribution knowledge allows us to deliver quality enterprise solutions that help you gain competitive edge in the market and achieve your business goals.