

Drive & Control profile

Viewpoint

Dynamic logistics critical to manufacturing excellence

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The advent of just-in-time business supply chains has led many manufacturers to undertake significant modifications—in reality, almost complete transformations—of their core operating processes, manufacturing systems, business planning and personnel management.

Unless manufacturers can organize their operations to smoothly integrate with their customers' supply chain requirements, they cannot compete and sustain long-term, profitable customer relationships. To be successful, manufacturers need to be responsive, logistics-driven operations, with dynamic systems and resources in place that maximize their agility—and their ability to quickly meet rapidly changing customer requirements.

Responsive, logistics-driven manufacturers organize their operations to function as a highly optimized part of their customers' supply chain. It's more than just delivering products on time—it's organizing your business processes, supplier relationships, manufacturing systems and workforce skills so that



Logistics-driven manufacturers organize their operations—business processes, supplier relationships, manufacturing systems and workforce skills—to function as a highly optimized part of their customers' supply chain.

there is sustained awareness of your contribution to your customers' ultimate business performance.

It is critical to have systems in place to anticipate and track changes in market and customer product and performance requirements, with a particular emphasis on unique regional and industry sector needs; if a particular sector, such as mining or consumer electronics, undergoes a dramatic shift in demand or consumer preferences, a logistics-driven and responsive manufacturer is able to cost-effectively shift in response.

This takes investment—in improved lean manufacturing capabilities, in educated workforces empowered to be actively involved in continuous improvement within their organizations, and in expanded use of intelligent technology across both manufacturing, distribution and customer communications channels—to establish strong, mutually beneficial customer-supplier relationships.

Bosch Rexroth has identified several areas where it has made substantial investments to strengthen these capabilities within our North American operations. In the process, we have



A “local for local” strategy that locates new plants or manufacturing expansion in relation to key customers and markets not only shortens lead times; it also more directly aligns your R&D, product design and manufacturing resources with local and regional requirements.

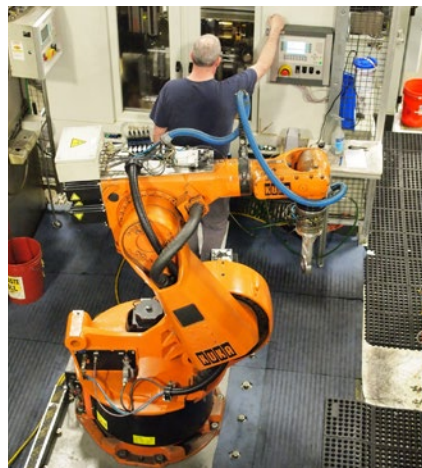
improved our responsiveness, enabled personnel throughout every level of our organization to contribute ideas for improvement, and deployed technology in ways that enhance our ability to deliver the products our customers need, when and where they need them.

Infrastructure: “Local for Local”

Aligning production capabilities to increase responsiveness can be accomplished, in part, through careful consideration of plant location in relation to key customers and markets—a global strategy that Bosch Rexroth calls “local for local” and which has guided key expansion decisions in several regions.

This is done not only to shorten lead times for delivery of finished product—although that is a key driver. Shortening delivery distances can also reduce logistics costs and help companies control their carbon and emissions footprint by locating both production and distribution resources closer to their customers.

In the past, companies may have chosen to increase manufacturing in low-cost countries, then export those products to high-cost countries. However, through experience our strategy has changed: We now invest in more complete local manufacturing and support capabilities, with regional resources capable of supplying the



To improve lean practices and manufacturing agility, Bosch Rexroth continually invests in new production platforms like these highly automated robotics for machining applications which can be found at the newly expanded Bethlehem, PA facility.

production, added value and sales volume a given region requires.

There are unique dynamics that can quickly arise when localizing your supply chain and more directly aligning R&D, product design and manufacturing resources with local and regional requirements. For example, Bosch Rexroth has experienced significant growth in demand for off-highway hydraulics technology in the Americas.

In turn, we have expanded North American hydraulics manufacturing and logistics capabilities in both our Pennsylvania and South Carolina plants. By increasing our manufacturing depth in North America, there is greater control over product design and R&D—it is more directly tied to customer requirements across the Americas.

Lean manufacturing: Eliminate waste to improve agility

Logistics-driven manufacturers can improve their ability to stay aligned with customer supply chain requirements through sustained investments in lean manufacturing. Because lean production is demand-driven, “pull” production, implementing lean practices can help identify bottlenecks, tighten production workflows and create dynamic processes for communicating customer requirements throughout your manufacturing operations—up to and including your own supply chain.

By investing in lean, manufacturers establish responsive processes. This means that, instead of having to improvise every time a customer or market requirement changes, you have built solid processes that enable you to sustain quality, control costs and

still make the changes necessary to stay aligned with new demands.

For Bosch Rexroth, our investments in manufacturing agility include new production platforms at our expanded Bethlehem, Pennsylvania, industrial and hydraulics facility. These platforms are a mixture of highly automated robotics for machining applications with linked, semi-automated manual production cells. These technology choices were designed following our Bosch Production System lean manufacturing principles and guidelines.

**Workforce:
Educated and empowered**

Equally critical to the success of any logistics-driven manufacturer is a skilled and empowered workforce. In our experience, all the lean technology and process documents in the world cannot deliver a true logistics-driven manufacturing operation unless the people who work within it have the power to make changes and implement solutions.

As manufacturers in many industries “re-shore” production to improve proximity to end-user customers, it is

critical to build a strategy to invest in workforce skill sets and to increase the readiness of key capabilities—this includes production, engineering and logistics personnel.

To ensure we align our production with both customer requirements and lean production principles, Rexroth personnel are fully immersed in lean processes and actively contribute on a daily basis to continuous improvement—on the factory floor and in our distribution operations. They are empowered to treat problems as opportunities, to ask questions and contribute practical solutions, to resolve problems and to eliminate waste and supply chain disruptions.

We also have benefitted from supporting workforce training and engineering education programs, as part of a long-standing global commitment by Bosch Rexroth to education for professional and manufacturing personnel. In North America, in collaboration with the Bosch Community Fund, we have been working closely in all Bosch Rexroth communities to find innovative ways to build the workforce of the future.

From a fully equipped apprentice lab in our Fountain Inn, South Carolina, facility, to grants we’ve recently awarded to four Pennsylvania STEM-related programs, to collaboration efforts with local technical colleges at many of our sites, we know that we cannot stand by and simply hope that the skilled workforce we need will evolve on its own. Our efforts in our community, including environmental efforts like our “zero landfill” initiative, are helping us to build a sustainable business model for the long term. These efforts have helped us to win the Pennsylvania Governor’s Job ImPAct award for job growth, and a “Top Workplaces” award for Ethics in the Workplace in our local community.

Delivery: When you need it

The broad shift to just-in-time logistics models can present manufacturers with a dilemma: how to schedule production runs against tight turnarounds and the desire to minimize inventory—within your plant and your customers’.

One way Bosch Rexroth has responded to this challenge is by streamlining access to our most popular drive, motion and control products with our GoTo Focused Delivery Program. To ensure shipment with market-best lead times, we embarked on a company-wide project to shorten processes throughout the value stream. We organized product management, production and delivery channels to be dedicated to making these products available fast, without additional expediting or handling.

This program required investments throughout our manufacturing and supply chains. Extensive product management time was spent identifying the products for



Implementing lean processes and principles enables more responsive, demand-driven production; it is crucial to empower workforces to actively contribute on a daily basis to continuous improvement



One way to be highly responsive is to identify high-demand products and build streamlined product management, production, logistics and delivery systems, creating a dedicated supply that can quickly satisfy a sudden change in customer requirements.

inclusion in the program, structuring manufacturing in multiple plants so that GoTo products were identified and managed according to program guidelines, and creating dedicated inventory and delivery processes to meet program commitments.

It also required investments in communications tools—websites, special catalogs, mobile apps and multiple promotional and information materials—to add speed to the customer journey with GoTo. We have also made substantial investments in online engineering tools to shorten the time it takes customers to go from initial need to final engineering configuration and component ordering.

We wanted to make sure that the widest range of customers within

North America was aware of the products offered through the GoTo program and could easily determine if its existing offerings met all their needs.

In this way, many customers who initially believed that they needed longer lead time, specialty hydraulics, linear motion or electric drive and control products, discovered that they could instead be served much faster by the GoTo channel. This logistics-driven model continues to expand, and in turn it is driving manufacturing efficiencies throughout our North American production and logistics systems.

Dynamic manufacturing is logistics-driven

For Bosch Rexroth, our investments in manufacturing and distribution




resources have been made to match rapidly changing markets and customer needs, and to continuously improve our alignment with those needs, and our ability to respond. As much as possible, we believe it is critical to examine and refine our manufacturing and logistics capabilities on an ongoing basis, identifying waste and removing obstacles to efficiency.

This requires a focused commitment to lean manufacturing and continuous improvement processes. It is also critical to invest in and deploy intelligent information, communication and automation systems, leveraging the latest technologies. Most importantly, associates at every level must be empowered to be responsive and responsible for ensuring the highest levels of customer satisfaction.



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