Advanced Discrete Manufacturing
for Microsoft Dynamics AX 2012
A To-Increase Industry Solution
Transforming manufacturers into trusted lifecycle providers
ACCELERATE RESULTS
The New Standard for Meeting Unique Industry Needs

The world of discrete manufacturing companies is a literal matrix of product variations and versions, custom orders, continuous engineering changes, constant pressure to innovate that leads to capital-intensive research and development projects—that’s the start. Whether a company is developing and producing highly engineered products or maintaining their own plants, machinery, and other assets, they juggle high operating costs; a complex mix of manufacturing modes; dispersed employees, suppliers, and partners; and 24/7 global competition. Just as important, many companies are becoming full service providers for their customers. Designing, producing, and installing components remains the primary focus, but adding services and representing OEM products has enabled manufacturers to become single-source, trusted vendors.

The To-Increase Advanced Discrete Manufacturing Solution for Microsoft Dynamics AX gives organizations across multiple verticals exactly what they want: Faster response and service, streamlined processes, and internal procedures designed to create a lean environment. Flexible capabilities support highly specific industry processes, including integration with engineering, flexible quotations, cash flow management in a project-based environment, and after-market field service and spare parts delivery. Built on the Microsoft Dynamics AX platform, this end-to-end solution integrates smoothly with proven Microsoft products and technologies to facilitate smooth deployment, a familiar user experience, and tight connections with existing IT investments.

Achieve real-world results

Advanced discrete manufacturers have achieved significant results by implementing the To-Increase solution, including:

- Reductions in inventory levels and associated cost.
- Improved customer response and satisfaction in sales and after-sales.
- Greater visibility across project phases and improved collaboration across teams.
- Operational performance that fuels fast, accurate production and delivery, which in turn drives your ability to win new business and enable growth.
Optimize business processes

Designed for engineer-to-order (ETO), make-to-order (MTO), configure-to-order (CTO), assemble-to-order (ATO) or hybrid manufacturers, the To-Increase solution helps you master business processes that include:

- Complex Quotes (Bids, Tenders)
- Product Data Management
- Product Lifecycle Management (PLM)
- Concurrent Engineering
- Collaboration with External Systems (CAD/CAM and PDM/PLM)
- Custom Builds or Configurations
- Project-Based Manufacturing
- IP Management
- Spare Parts Handling
- Sub-contracting
- Maintenance, Repair, and Overhaul; Field Service Management; and Warranties
- Engineering, Procurement, Construction and Installation (EPCI) Contracts
- Engineering Change Management
- Complex Costing
- Document Management
Key Business Challenges

Though their vertical focus and manufacturing modes may differ, all advanced discrete manufacturers work in a volatile marketplace, with technologies changing on a daily basis, customer needs changing by the hour, increasing cost pressures, and compressed delivery cycles.

**Time**
Time constraints affect your ability to create flexible, detailed, and complete quotations for customers. The pressure to move faster than the competition impacts the development, prompt delivery, and installation of equipment. In addition, your organization needs to efficiently manage long-term product lifecycles, including original design, engineering modifications, retrofits, extensions, and refurbishing of existing machinery.

**Collaboration**
Effective collaboration is vital to managing cross-functional internal and/or external design teams. Your ability to meet expectations for manufacturing, execution, and delivery depends on easy information exchange and interaction for customers, suppliers, and sub-contractors.

**Cost-Effectiveness**
Managing costs, especially for projects with long lead times, requires real-time visibility across the entire project. To track and control costs, your business needs efficient procurement processes, ongoing evaluations of shop floor effectiveness, and a lean production environment.

**Complexity**
The process of getting from design to final installation is a major task—in particular for ETO environments—and often involves custom-designed and engineered components. The sales process must also be highly flexible to keep pace with specific and changing customer demands. For example, a quotation (bid, tender) is often assembled by multiple people in multiple roles. Quotations can include elements from all phases of the project and need to be monitored through flexible workflow. In addition, manufacturing processes need to accommodate concurrent engineering, document management, and engineering changes.
“Tempress Systems in the Netherlands has adopted PLM Integration between Dassault SmarTeam and Microsoft Dynamics AX to archive common innovation and engineering standards to propel their collaboration between engineering and manufacturing forward. Based on this integration, Tempress is ready to manage their journey into providing innovation value to their customers.”

Frans van der Werff
CFO Tempress Systems
The Solution

Whether your business is competing in local or global markets, your success depends on implementing a solution that can meet your specific organizational needs and adapt easily to custom manufacturing requirements.

The advanced Discrete Manufacturing Solution for Microsoft Dynamics AX is designed to solve these complex business issues — including managing the entire product lifecycle, streamlining sales and after-sales processes, and delivering products faster and more profitably.

Microsoft Dynamics AX serves as a stable, rich foundation for traditional ERP functions. Industry-specific functionality integrates seamlessly with the system to create an end-to-end solution. The ultimate benefit of the To-Increase solution is that it can grow as your needs change, without the need to reconfigure or replace your system.

Product Lifecycle Management
The product lifecycle management process for advanced discrete manufacturers can be long, complex, and subject to last-minute demands for change.

- The process starts during the earliest stages of the quotation and stops only when the machinery is retired by its latest owner.
- During the entire process, product lifecycle information must be kept up to date, including references to the necessary spare parts used during service and maintenance. Products can range from a single custom-designed piece to a full installation of a subsea framework or even an entire production plant.
- Customer requests vary from comparatively simple configurations to highly complex, engineered installations with long lead times.
- For concurrent engineering, you want to carefully manage when a product is available for quoting, when it hits your manufacturing environment and when you start purchasing. At the other end of the spectrum you want to avoid selling a product that has reached the obsolete stage and use it only as a spare part for use in your service operation.

The To-Increase solution offers an easy-to-adapt process for managing both simple and complex machinery. The solution integrates with existing CAD/CAM or PDM/PLM systems, but that’s just the start. Along with integrating parts data, you can synchronize the entire engineering change process by incorporating engineering change orders into both the PLM system and the logistics environment.
Centralized Information Management
All engineering data lives in one central location, delivering huge benefits. Role-tailored access to information, version management capabilities, and a managed release process ensure that people across different departments and divisions work with information that’s relevant, accurate, and current. In addition, full integration with Microsoft SharePoint makes it easy to store product information for easy sharing and collaboration across the entire enterprise, whether people are licensed users of Microsoft Dynamics AX or not. You choose the information you want to share, and you can rest assured that changes and new versions are documented and traceable.

Attribute Management
Engineers need fast and accurate views of a product’s attributes. The To-Increase solution enables both easy tracking of attributes and assignment through a classification hierarchy. Using built-in search capabilities, engineers can filter unlimited attributes and classification data to surface alternatives drawn from previous designs, rather than creating new products from scratch.

Engineering Change Management
“Change” may be the term manufacturers hear most often in the course of a project. In some cases, product specification changes are included as part of the definition and require no specific action. But what if you need to track every change during the entire lifecycle of the product? The challenge is daunting—changes can range from simple document changes to full revisions and refurbishments, with consequences for the installed base of the machinery that uses the new/changed component.

With the Advanced Discrete Manufacturing solution, Engineering Change Requests can be launched at any stage of the product life cycle, including requests for new product creation. Workflow for managing requests enables a smooth qualification and approval process that involves the right people.

Multiple Engineering Change Requests can be associated with an Engineering Change Order, eliminating islands of information and creating a managed process for product engineering changes.

That said, change costs increase rapidly as a product moves from engineering concept to manufacturing. Proactive change management is the key to keeping costs down. Project owners and managers need direct insight into logistical consequences before executing change—what open orders are affected, whether inventory needs to be scrapped, what milestones are affected and how, and much more.

The To-Increase solution delivers direct insight into the impact of change as part of the Engineering Change Order process. And because the solution is designed for a smooth fit with PLM systems, it can also publish this data to the Engineering Change Process in the PLM system. Just as important, an Engineering Change Order can be executed as a simple list of tasks or as an entire project, depending on your organization’s needs.
Quote – Bid – Tender

The core business process for advanced discrete manufacturing starts with the quotation (bid/tender). A quotation is not just the initial expression of a sales order, but a process in itself. Depending on the complexity of the quotation, the content evolves over time and involves multiple roles.

The To-Increase solution enables you to custom-define the lifecycle and workflow for a quotation, including the approval process, to reflect the complexity of the quotation.

- New quotations can be created as new, as a copy of an existing quote, or inherited from a template.
- A quotation includes a user-defined work breakdown structure that defines all components. Time, products, additional material and cost, and other elements are accurately presented and tracked. And regardless the level of complexity, you’ll find the process for creating a quotation is straightforward and easy.
- The use of pre-defined templates streamlines execution for EPCI contracts. Template definition can ensure compliance with local jurisdictions and regulations and the style
(format and content) your customer requires.

- Engineering and production-related information, along with financial conditions, are included in the quotation. Equipped with a direct overview of the financial consequences, you can create and send precise quotes to prospects. You can also view quotations from within your CRM system.
- The definition of a product as part of a quotation, from a standard project to a full installation of a plant, can be built out from multiple components, whether products need engineering or straightforward configuration.

Advanced Discrete Manufacturing for Microsoft Dynamics AX also offers a built-in configurator that integrates with ERP and CRM information and processes. With minimal effort, you can shape a complete product offering that includes specifications, sales conditions (buy, rent, lease), and service components.

When the configuration process is complete, the specification can be transferred to the PDM/PLM environment for use during construction, installation, and service processes.
Contracts
When a contract is signed, the information gathered during the quotation process is sent to relevant departments for action. Some parts need to be procured instantly due to long delivery lead times, while other contract positions can be slated for additional engineering prior to ordering parts. At the same time, partners receive the information they need, the back office can create invoices, and management can build detailed plans for coordinating all activities.

Manufacturing
Manufacturing includes activities that span manufacturing new components, assembling purchased parts, or testing finished parts, depending on the complexity of the contract. Certain components can be manufactured using straightforward production orders and bills of material. In many cases, the complexity of the contract and process requires a project-based approach to construction. When machinery is created in a small or even an extended series, the prototype stage can be executed using a project-based approach. Later versions or machines can then be created using a more traditional production style.

Project-Based Manufacturing
A standard, linear production process cannot meet complex requirements for constructing equipment, machinery, and parts. The flexibility needed to support a concurrent engineering environment and provide optimal visibility is best managed using a project-based approach. For example, in the case of an EPCI contract, most activities are project-based and spread over multiple projects. A linear production process would simply not work.

The To-Increase solution enables organizations to take full advantage of a project-based approach to custom manufacturing. The total overview of activities and the flow of information across all lines of business are managed from one central location.

All roles working on a project can easily track items and progress throughout the production lifecycle. The project-based approach also enables you to split the process into smaller, dedicated projects for related activities. You can carefully monitor planning, procurement, costs, and progress for activities that need special attention, including the management of subcontracted work. And you and other users see project overviews that reflect your organization’s needs. In most cases this means that the details you don’t need are filtered out, so you’re not overloaded with data.

It’s a bit paradoxical. The To-Increase solution is standardized and can be quickly implemented using standardized methodologies. At the same time, it enables you to design a manufacturing process that’s tailored to your specific capabilities and current strengths. As you expand your business, Advanced Discrete Manufacturing will grow alongside your business and give you the agility to implement project management models that align with lean manufacturing principles.

Installation
The installation process is rarely a single defined workflow. Parts of the machinery can be delivered to the final destination and built up locally, or the finished machinery can be delivered as a whole. Depending on your business model, you may use a streamlined delivery mode, with a network of authorized partners managing the local installation. Coordination, planning, and management are essential to securing prompt and on-time delivery. Finally, document management plays a key role in the installation process, since all documentation will be released and is often shipped with the installation.
“We’ve known for some time that a project-based approach makes more sense to handle custom manufacturing.”

Phillip Hawthorne, CIO, Wheelabrator Group
Our Advanced Discrete Manufacturing solution equips you to plan and execute all phases of installation, including:

- Availability (ATP) and lead-time for standard, one-off, spare parts, and non-standard materials to ensure accurate inventory
- Capacity (CTP) for equipment, tools, employees and subcontractors to optimize scheduling and delivery
- High-level and granular control for work orders, including the ability to create and manage multiple versions of documents

**After-Sales Service**

After acceptance of the installed, tested, and inspected machinery, the contract is mostly complete. Installed machinery is now taken over by the service department for proactive maintenance and repair during the product lifecycle. Depending on contractual obligations, all or some parts are included in a warranty procedure. With the To-Increase solution, all costs of repair and coverage by maintenance contracts and/or warranty are visible and can be used for analysis. Integral planning for all activities based on priority, skills, time, and contractual obligations is part of the service management solution.

The maintenance, repair, and overhaul requirements for an installation go well beyond the proper functioning of delivered machinery. Ongoing local maintenance and support during usage can also be part of the job. With the To-Increase solution, all of your company’s work orders, and those of contracted employees, will be maintained as part of the total picture.

**Spare Parts**

Spare parts can be delivered as part of a planned maintenance work order, as part of a repair order, as a planned delivery (moving parts), or by customer order. Regardless the delivery mode, all products are visible during the entire lifecycle, including replacements and refurbishments.
“Since implementing the To-Increase solution, we can accurately measure time lapses during various stages in the work order cycle. This ability enables us to provide parts and machine services on time, as specified in our service contracts, and increase customer loyalty.”

Sergey Bondarets Service Operations Manager, Vostochnaya Technica
Your Growth. Our Goal. Drive your business forward.

As the largest non-reseller ISV for Microsoft Dynamics AX and Microsoft Dynamics NAV, To-Increase develops solutions for highly specific industry verticals, including advanced discrete manufacturing, construction, food and beverage, retail, wholesale, and distribution. More than 1,000 customers across 44 countries count on us to provide end-to-end industry solutions and business integration solutions. We’ve transformed the term “out of the box” by collaborating with customers and partners to develop standardized solutions that work as native extensions of Microsoft Dynamics and meet up to 85 percent of unique needs from the start. We strive to make technology fit the way you do business and to make it easy to do business with us—providing customers and partners with innovative solutions, continuous training, support, and new releases that align with Microsoft product releases.

More Information? Please visit www.to-increase.com or e-mail info@to-increase.com