

What is ETO / Project-based Manufacturing?

Engineer-to-order (ETO) or project-based manufacturers are also referred to as “custom”, “make-to-order” or “contract” manufacturing companies. All of these terms describe a style of manufacturing rather than any particular industry segment.

These terms describe manufacturers that produce unique and often complex products that are designed to customer specifications, and may require unique engineering design or significant customization. As a result, each customer order will have a unique set of item numbers, bills of material and routings.

Other characteristics that typically distinguish ETO manufacturing from standard “repetitive”, “discrete” or “make-to-stock” manufacturing are shown in the table below. Some of these characteristics (for example, installation on site) may not apply to every ETO manufacturer, or to every product produced, but most of them do.

Repetitive / Discrete / Make-to-stock	Engineer-to-order / Project-based
Price List	Estimate and Quote
Wins a sale / receives sales order	Wins a contract / receives job order
Standard Products	Unique Products
Standard Cost	Actual Cost
Cost Variances to Standard	Cost Variances to Original Estimate
Purchase Material to Stock	Purchase Material directly to a Project
Flat Bills of Material	Deep & Unique Bills of Material
Ship From Finished Goods	Ship from Work-in-Process
Product Lead Times in Days/Weeks	Product Lead Times in Weeks/Months/Years
High Unit Volume Production	Low Unit Volume Production
Invoiced on Delivery	Progress Billing by Milestones completions
Focus on Material Planning	Focus on Production Scheduling
Forecast Driven	Project Driven
Plan with Master Schedule	Plan with Project Management
Standard MRP	MRP by Project
Delivery to Customer	Installation on Site
Part Number Based	Job Order Based
Design Completed Before Production	Design Integral Part of Production
No or only a few Engineering Changes	Many Engineering Changes / Variations

One important consequence of these special characteristics is that ETO manufacturers have special systems requirements. This is particularly true for their ERP (including specific accounting and costing requirements), MRP and materials management systems requirements.