Buyer's guide and checklists

Electricals and electronics manufacturing

How to select an ERP for electricals and electronics manufacturing

Electricals and electronics (E&E) manufacturers operate in an environment defined by rapid product cycles, global component sourcing, strict traceability requirements, and constant engineering change. Multi-level bills of materials (BOMs), manufacturer part number (MPN) management, approved alternates, and fluctuating component costs introduce complexity that generic enterprise resource planning (ERP) systems often underestimate.

Artificial intelligence (AI) is increasingly promoted as the solution. But in electronics manufacturing, AI only creates value when engineering, component control, sourcing, production, and finance are unified. Without that foundation, AI simply reflects disconnected data and delayed decision-making.

This guide helps you evaluate ERP through that lens—assessing whether a system can manage component-driven complexity today and support smarter, faster decisions as product and supply volatility increase.

What makes ERP selection different in electricals and electronics

Most ERP buying guides assume stable product structures, predictable material supply, and infrequent engineering change. That assumption rarely holds in electricals and electronics manufacturing.

Manufacturers in this sector typically manage:

- Deep, multi-level BOMs
- Rapid engineering change order (ECO) cycles
- Global sourcing and dual-sourcing strategies
- MPN control and approved alternates
- Strict lot and serial traceability with test results throughout production

- High-volume assembly combined with configurable variants
- Reference designators and detailed product genealogy in complex assemblies

ERP selection is not about whether a system can "run manufacturing." It's about whether it can absorb change without breaking downstream processes or margin visibility. In high-volume electronics environments, that evaluation should also consider how ERP and manufacturing execution systems (MES) work together to preserve genealogy, capture test results, and support recalls and root-cause analysis.

Core ERP evaluation checklist for electricals and electronics manufacturers

Each section below includes:

- Key evaluation questions
- Why it matters in electronics manufacturing
- A buyer takeaway
- How priorities shift between small and medium-sized business (SMB) and enterprise environments

Introduction

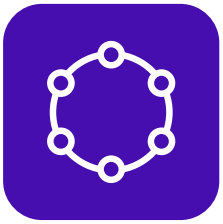
Selecting an ERP for electricals and electronics manufacturing requires more than a list of features. It demands a platform that can manage complexity across production, supply chain, financials, and more—all while keeping data and workflows tightly connected.

The following sections outline the core capabilities to evaluate, helping you determine whether an ERP can support real-time decision-making today and scale with your business as it evolves.

1 Manufacturing model fit

High-volume assembly meets configurable variation

Buyer questions



- ☐ Can the ERP support configure-to-order, build-to-order, and high-volume repetitive assembly within the same environment?
- ☐ Can multiple manufacturing typologies coexist without duplicate data models or forced segmentation?
- ☐ Does the system handle rapid product ramp-up and ramp-down cycles cleanly?
- ☐ Can configured products generate production-ready BOMs automatically without manual re-entry?

Why it matters

Electronics manufacturers frequently operate hybrid models, combining repeatable assembly lines with configurable or contract-driven work. Systems built around a single production philosophy force workarounds that disrupt planning and costing.

The ERP must accommodate both structured, high-volume assembly and flexible configuration as standard capabilities.

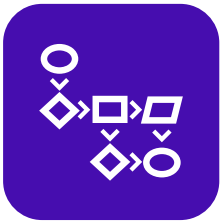
Buyer takeaway

→ *Multi-mode assembly and configuration should coexist natively in the ERP without architectural compromise.*

2 Engineering, BOMs, and change control

Where electronics complexity concentrates

Buyer questions



- ☐ Can the ERP manage deep, multi-level bills of materials (BOMs) with effectivity dates and revision control as native functionality?
- ☐ Are engineering change orders (ECOs) automatically connected to purchasing, inventory, costing, and production?
- ☐ Does the system help you manage component use-up to reduce stock obsolescence?
- ☐ Can approved alternates and manufacturer part numbers be managed without proliferating internal part numbers?
- ☐ Do changes propagate cleanly across sites and suppliers?

Why it matters

Electronics manufacturing is driven by component change. Obsolescence, redesigns, and supplier shifts are constant. If engineering changes are not tightly integrated into planning and financial processes, production disruptions and margin erosion follow quickly. The ERP must treat change as a controlled operational process rather than an isolated engineering event.

Buyer takeaway

→ *Engineering changes should automatically flow into sourcing, production, and costing, not be managed as a separate process.*

3 Component and materials management

Managing volatility at scale

Buyer questions

- ☐ Can the ERP capture manufacturer part numbers (MPNs) alongside internal items?
- ☐ Does it support dual-sourcing, approved alternates, and use-up logic natively?
- ☐ Can material allocation adjust dynamically as component availability shifts?
- ☐ Is visibility into owned, non-owned, and supplier-managed inventory unified?

Why it matters

Component shortages, lifecycle transitions, and supplier risk define electronics manufacturing today. Systems that treat parts as static items create rigid planning models that fail when supply conditions shift.

The ERP must manage alternates, substitutions, and sourcing flexibility without losing traceability or financial control.

Buyer takeaway

→ *Your ERP should reduce exposure to component volatility, not amplify it.*

4 Planning, scheduling, and capacity

Coordinating supply and assembly

Buyer questions

- ☐ Can planning synchronize material availability with line capacity in real time?
- ☐ Can planners simulate component shortages or alternate substitutions before they affect delivery?
- ☐ Are multi-site and multi-method plans unified under a single planning engine?
- ☐ Can rush orders be prioritized while understanding downstream impact immediately?

Why it matters

Electronics assembly is highly sensitive to component availability. A single missing part can stall production. Planning must integrate material constraints, capacity, and commercial priority. They should not be treated as wholly separate entities.

Disconnected planning tools introduce lag and reactive firefighting.

Buyer takeaway

→ *Look for planning that unifies component availability, capacity, and customer priority in a single mode.*

5 Quality, traceability, and compliance

Embedded, not reconstructed

Buyer questions

- ☐ Can the ERP provide end-to-end lot, batch, and serial traceability across components and assemblies?
- ☐ Are quality events directly tied to specific lots or serial numbers?
- ☐ Can compliance reporting (Restriction of Hazardous Substances (RoHS), International Organization for Standardization (ISO), and other regulatory requirements) be generated without manual reconciliation?
- ☐ Does genealogy remain intact when alternates or substitutions are used?

Why it matters

In electronics, traceability extends across thousands of components and global suppliers. When genealogy is fragmented, recalls become costly and compliance risk increases.

The ERP must embed traceability into everyday operations in real time, not just after the fact.

Buyer takeaway

→ *Traceability should automatically survive substitutions, alternates, and engineering change.*

6 Project, contract, and margin control

Visibility before margin slips

Buyer questions

- ☐ Can the ERP track profitability at contract or program level while work is in progress?
- ☐ Are costs pegged directly to specific orders, projects, or contracts?
- ☐ Can pricing and cost assumptions adjust dynamically as component prices fluctuate?
- ☐ Can AI summarize project health or margin risk without separate reporting tools?

Why it matters

Contract electronics manufacturers often operate on thin margins. Component volatility and design changes can erode profitability quickly if not monitored continuously.

The ERP must surface margin exposure in real time, ahead of financial close.

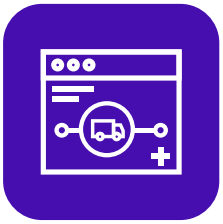
Buyer takeaway

→ *Margin visibility should evolve as components and contracts evolve, not lag behind them.*

7 Global supply chain and supplier collaboration

Visibility beyond the four walls

Buyer questions



- ☐ Can the ERP support supplier portals, vendor-managed inventory, and collaborative forecasting?
- ☐ Can procurement history inform dual-sourcing strategies automatically?
- ☐ Are intercompany transfers and global sourcing flows managed without artificial buy-sell transactions?
- ☐ Can supply risk be identified proactively?

Why it matters

Electronics supply chains are global and dynamic. The ERP must provide transparency across supplier networks, not just within internal operations.

Rigid sourcing structures increase cost and risk exposure.

Buyer takeaway

→ *Sourcing agility should be embedded in the ERP, not dependent on spreadsheets and emails.*

8 Data, analytics, and embedded AI

Decision intelligence grounded in operations

Buyer questions

- [ ] Is operational data unified across engineering, sourcing, production, and finance?
- [ ] Are analytics embedded within workflows rather than isolated dashboards?
- [ ] Can AI-driven insights be acted on inside the ERP?
- [ ] Are AI agents capable of handling specific workflow tasks end-to-end with auditability?

Why it matters

AI layered on disconnected systems amplifies fragmentation. In electronics manufacturing, insight must reflect live operational conditions, such as component status, design change, supply risk, and margin exposure.

AI becomes valuable when it is embedded in unified workflows and grounded in accurate operational data.

Buyer takeaway

→ *AI should enhance day-to-day decisions inside the ERP, not sit outside the system.*

9 Platform, scalability, and long-term fit

Designed for rapid evolution

Buyer questions

- ☐ Can the ERP scale across new product lines, sites, and acquisitions without fragmenting BOM control?
- ☐ Does the platform reduce reliance on customization?
- ☐ Are updates and innovation delivered without destabilizing existing configurations?
- ☐ Can enterprise governance coexist with local operational flexibility?

Why it matters

Electronics manufacturers evolve quickly. ERP platforms that rely on customization struggle to keep pace with product innovation and supply chain change.

A scalable platform supports growth without reimplementation.

Buyer takeaway

→ *Choose an ERP that evolves with product complexity, not one that hardens over time.*

10 Product lifecycle and NPI control

From concept through controlled launch

Buyer questions

- ☐ Can the ERP manage product lifecycle stages, from prototype through production and phase-out, without separate systems?
- ☐ Are engineering, sourcing, and production aligned during new product introduction (NPI)?
- ☐ Can pilot builds and pre-production runs be tracked distinctly from standard production?
- ☐ Are lifecycle transitions governed with approval workflows, audit trails, and component use-up controls?

Why it matters

Electronics manufacturers operate on compressed innovation cycles. Products move rapidly from prototype to production while components shift in availability and cost. Native product lifecycle management (PLM) support and disciplined engineering change control help coordinate NPI while reducing the stock obsolescence that can follow unmanaged transitions. If lifecycle governance is disconnected from operational ERP, early-stage changes can enter production prematurely, creating confusion in sourcing, costing, and compliance.

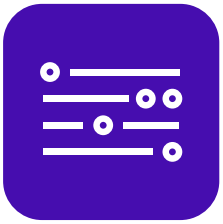
Buyer takeaway

→ *New product introduction should be governed inside the ERP with lifecycle control and engineering change.*

11 Design-to-cost and component cost simulation

Protecting margin before release

Buyer questions



- ☐ Can the ERP simulate cost rollups across multi-level BOMs before products are released?
- ☐ Can alternate components be modeled to compare margin impact prior to substitution?
- ☐ Does the system expose cost sensitivity to supplier price changes?
- ☐ Can engineering and finance collaborate on cost visibility during design?

Why it matters

In electronics manufacturing, component pricing volatility directly impacts product profitability. Once products are released, margin flexibility narrows quickly.

Without integrated cost simulation, engineering and sourcing decisions are made with limited visibility into financial impact, increasing exposure to margin erosion.

Buyer takeaway

→ *An ERP should enable design-to-cost discipline, not just report margin after the fact.*

12 Installed base, service, and aftermarket integration

Extending visibility beyond shipment

Buyer questions

- [ ] Can the ERP track serialized products and their as-built configurations?
- [ ] Are service history, warranty status, and replacement parts linked to original production records?
- [ ] Can field returns inform quality and engineering processes automatically?
- [ ] Is aftermarket revenue visibility unified with manufacturing financials?

Why it matters

Many electrical and electronics manufacturers generate long-term value through service, spare parts, upgrades, and warranty programs.

When installed base data is disconnected from production history, quality feedback loops weaken and aftermarket revenue opportunities are harder to manage strategically.

Buyer takeaway

→ *An ERP should unify manufacturing and aftermarket insight, not treat shipment as the end of visibility.*

Additional enterprise considerations

For large, multi-site electronics manufacturers, ERP selection must also account for governance, compliance, and global standardization.

Enterprise buyers should evaluate whether the ERP can:

- Standardize BOM and change control globally
- Maintain consistent traceability across sites
- Support reference designators as part of electronics product structures
- Consolidate financial and operational visibility
- Enforce compliance without slowing production
- Support complex intercompany flows cleanly

Small and medium-sized business (SMB) considerations

Growing electronics manufacturers should also evaluate whether the ERP:

- Provides electronics-specific depth without heavy customization
- Supports alternates, MPN control, and traceability out of the box
- Scales as volumes and product complexity increase
- Avoids functional gaps common in electronics-only point systems
- Provides a practical path to complementary capabilities such as MES, PLM, and advanced planning as requirements expand

Why Infor

Our ERP is designed specifically for electricals and electronics manufacturers, supporting component-driven production, integrated engineering and finance, engineering change control, and end-to-end traceability, with AI embedded in operational workflows. It's purpose-built for electronics manufacturing complexity.

Unlike generic ERPs, it also offers seamless integration with complementary solutions tailored for your industry, including manufacturing execution system (MES), warehouse management (WMS), configure, price, quote (CPQ), and product lifecycle management (PLM).

About Infor

Infor is a global leader in business cloud software products for companies in industry-specific markets. Infor builds complete industry suites in the cloud and efficiently deploys technology that puts the user experience first, leverages data science, and integrates easily into existing systems. Over 67,000 organizations worldwide rely on Infor to help overcome market disruptions and achieve business-wide digital transformation.

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