

Outsourcing Electronic Manufacturing — Risk or Reward?

Electronic Manufacturing Service (EMS) providers offer viable solutions to cost, performance and quality issues for virtually any size ODM (original design manufacturer) or Tier 1 supplier. Many of the outsourcing arguments that hold true for other industries hold true for EMS — focusing on core competency, preserving capital and leveraging expertise — but Electronic Manufacturing Outsourcing (EMO) offers significant value in flexibility and product lifecycle.

Global economics, explosive growth of new markets, and rapidly changing technology require ODMs to place equal importance on EMS performance capability, quality analysis procedures, and risk mitigation capabilities. Risk mitigation capabilities and problem solving skills of EMS providers are often the decisive factors in project success.

EMS services can be all-encompassing. What started primarily as PCB outsourcing has grown to a comprehensive offering of design, manufacturing and assembly of electronic components, including complete 'box build' resources. The business model of outsourcing has proven itself to be not only viable, but profitable and preferable. The EMS niche is expected to see larger numbers of OEMs partnering with manufacturing partners as the electronic device market increases in complexity, is more regulated and as companies turn to specialization to increase market share.

Strategy First, RFP Second

As fundamental as it sounds, developing a long-term strategy is a critical task prior to even thinking of outsourcing. An organization with a mature product line and no intention of new product development should most likely stay the course. But for a business strategy that calls for first-to-market innovation and rapid market rollout, partnering with an EMS will allow continued focus on product development and marketing. Are you looking for input on product design? Do you need to find way to reduce manufacturing costs? Do you have a team to vet ECMs? And then manage? Investing time to develop that strategy, along with a clear set of selection criteria, will result in the highest outsourcing ROI.

What to Outsource

By acknowledging manufacturing areas that may be operating at a less than optimal rate, OEMs can identify key areas where an EMS will add the greatest value. Focusing on marketing its core intellectual property, for example, enables OEMs to pursue differentiation in the marketplace, contracting with an EMS partner to provide product design and manufacturing.

Look for test systems that deliver high volume and zero-defect components:

- Built-in self-test (BIST) firmware
- In-circuit testing (ICT)
- Optical inspection (AOI) systems
- X-ray inspection, especially with dense BGA PCBs
- Functional test and environmental stress testing.

To fully embrace outsourcing, and thereby obtain the greatest value, OEMs must recognize that electronic manufacturing is comprised of many processes, namely design, development, fabrication, assembly, testing, and in many cases logistics, both inbound and outbound. If you are risk adverse, you may be thinking along the lines of a silo approach, outsourcing only a fraction of the process. Keep in mind that silo purchasing can very well add complexity to your supply chain, and thereby increase risk. Don't rule out 'box build' solutions.

Understanding Risk

The risks associated with outsourcing manufacturing are little different than those faced by an OEM itself, namely cost overruns, quality issues, material constraints and product obsolescence. The key risk for most OEMs is performing poorly in the market and losing sales to their competitors. Furthermore, what constitutes risk to one business unit may not be for another. The same holds true for product lines, even within the same business. However, many risks can be identified, forecasted, measured, monitored, and finally mitigated through proper planning.

In supply chain management, especially outsourcing, risk mitigation is a knowledge asset, leveraged for future productivity enhancement. EMS providers can serve customers with that knowledge, domain expertise, and skilled resources. They can perform as a nimble manufacturing division, an asset in a quickly changing world.

AS MORE OF THE PROJECT IS OUTSOURCED...



Silo purchasing — A greater percentage of project management outsourced produces greater value while decreasing project complexity.

Specific Solutions to Specific Requirements

A process that addresses risk and proposes mitigation while providing tailor made solutions for flexible client requirements is the foundation of a good EMS partnership. To mitigate the risk involved in the product realization process of a highly variable requirement, EMS provider should offer:

- Top notch design and prototyping
- Testing and validation for each configure to order (CTO)
- Accurate forecast of material requirement
- Adequate inventory

Emphasis on design for manufacturability (DFM) and design for testability (DFT) during product design can eliminate problems down the line. EMS providers should develop DFM/DFT techniques to analyze and recommend revisions to product designs early in the prototype stage.

- Supplier validation
- Process in place for managing change requests
- Adequate human resources and production allocation
- Training and continuous improvement

The Importance of Collaborative, Open Source Data

Real time knowledge sharing and information management is vital for risk mitigation in any electronic manufacturing facility. Information technology such as Process Management (PM) software and Enterprise Resource Planning (ERP) solutions play a major role in this aspect.

Sharing real time information related to stock, procurement, inventory, sales and forecasting enables better supply chain management. Program managers can make 'informed' discussion with clients related to demand and forecast, wastage due to change request, obsolescence of parts due to Part Change Notices (PCN), and Production Cost Variations (PCV).

Above all, the data generated through information management software facilitates the decision making process of senior management.

Key Partnering Discussion Points

Materials Management

Turnkey manufacturing relies on well-orchestrated material procurement, reducing liability while insuring project continuity. Does your EMS manage its global supply chain network efficiency for a continuous supply of materials? Can your EMS meet variable demands and change requests through bonded contracts with materials suppliers?

Lean Manufacturing

Outsourcing non-core tasks embodies the spirit of lean manufacturing and places the responsibility of adhering to the 'voice of the customer' squarely on the EMS. Lean manufacturing principles maximize productivity while reducing production cost.

- **Project Clarification:** all aspects based on the voice of the customer
- **Design/Engineering/Product Teams:** Interdepartmental steps and processes are defined and implemented within value stream while eliminating non-value processes
- **Communications:** Understanding requirements of the customer and aligning process that respond to it
- **Continuous Improvement:** Iterate these steps till perfect value is created.

Continued Investment in Technology and People

If rapidly changing technology is a catalyst for ODM outsourcing, then it should also be a catalyst for ECM's on-going investment in manufacturing systems. New products may require new ways of working. OEMs should look for a new and improved equipment list, an indication that the ECM also has an eye on the future.

Compliance & Training

Certified ISO 9001:2008 as well as RoHS compliance are the baseline in electronics manufacturing. In addition, staff should be IPC 610 trained. While much of the PCB and component manufacturing process is highly automated, continuous improvement is a human process. The more knowledgeable, trained and team-oriented your EMS, the more likely they will have a positive impact on what ultimately is your product quality.

About EBW Electronics

EBW Electronics is a highly automated electronic manufacturing firm in Holland, MI. EBW Electronics has a diversified customer base spanning multiple industries and specializing in the design and manufacturing of printed circuit board assemblies (PCBA).

Electronic Manufacturing Success

Our ability to plan ahead and anticipate future demand for our contract electrical manufacturing services is the foundation for our rapid growth. Our experienced electrical engineering and production team takes pride in consistently delivering quality electrical components and assemblies on time.

