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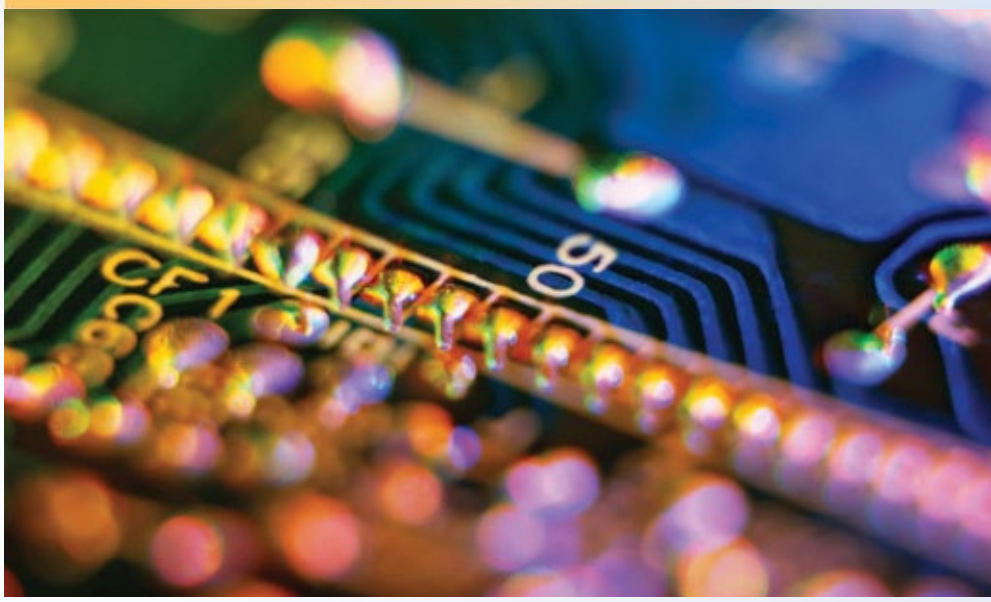

An LCR outsourcing option for low-volume, high-mix, high-complexity OEMs

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The profile of electronics manufacturing in the United States has changed dramatically over the past 20 years. The availability of low-cost offshore sourcing alternatives, predominately in China, has hastened the exit of high-volume manufacturing from the United States, leaving in its wake lower-volume products, manufactured in greater variety, and with higher complexity. Items that fall into this category, such as medical devices, industrial equipment, and aerospace/defense products, are typically characterized by highly volatile demand, custom configurations, intellectual property constraints, and stringent quality requirements. While cost is always a consideration in these and similar market segments, flexibility and agility in meeting the customers' requirements for product customization and availability are of equal importance.

With increasing global competition and continued economic uncertainty applying pressure to margins, original equipment manufacturers (OEMs) are aggressively seeking new ways to lower costs while protecting their ability to respond effectively to customer demands. Unfortunately, conventional offshore outsourcing strategies, especially those formulated totally in low-cost regions, are ineffective for low-volume, high-mix (LVHM) products. Successfully driving down costs while insuring the flexibility to respond to market demands requires a two-pronged approach: the combination of low-cost, same-hemisphere labor with the agility, responsiveness, and control associated with a domestic presence.

The Challenge. The best candidates for the conventional offshore sourcing model are typically characterized by stable designs with minimal options for customization or configuration changes and sufficient volume to justify continuous flow manufacturing processes that can produce a consistent supply at very high yields. This is often referred to as high-volume, low-mix (HVLM) manufacturing. Customer involvement is minimal, as standardization of both product and process results in a total focus on reducing costs and sustaining quality. Interaction with the customer is most prevalent when a new design is being released and prepared for volume production. It is this standardization and lack of variation that serves as the foundation for a successful low-cost region (LCR) outsourcing strategy.

Low-volume, high-mix, and high-complexity products typically exhibit none of these elements, and in fact, exhibit the exact opposite. LVHM is by nature more complicated, as the same amount of preparation, collaboration, coordination, and communication is involved as for HVLM; it just needs to be replicated on a frequent basis, every time another event-driven order or new product is introduced into the schedule. Designs are anything but stable, resulting in a high frequency of engineering activity that demands close coordination between customer and supplier. Products are frequently designed for application-specific customization that can create a myriad of configurations, further complicating material pipeline planning. Production schedules are often volatile and sporadic, where significant increases and decreases in demand can occur with little warning. As any LVHM OEM will attest, the keys to success often reside in the ability to remain agile and flexible, delivering the products that meet each of their customer's unique needs at a competitive price, and most importantly, with minimal, if any delay. It is exactly these traits that must be flowed down through their supply chain, and that create the greatest challenge when attempting to capitalize on an LCR strategy, as virtually all offshore sourcing options will, at a minimum, introduce the potential for unforeseen costs and delays into the equation.

The Solution. If we accept the premise that reducing costs while maintaining responsiveness is essential for LVHM OEMs to compete effectively, then the creation of a new paradigm is necessary; one where the unique strengths of domestic and offshore production combine to deliver a superior result. Blending both options to produce a hybrid model that marries low-cost region production with domestic coordination of non-manufacturing activities can deliver cost reductions without risking operational flexibility.

For U.S.-based LVHM OEMs, the low-cost region of choice is Mexico. The benefits of producing in Mexico are numerous, including stable, lower labor rates, a well-trained direct-labor work force, access to university-educated engineering and management staff, and perhaps most importantly, close proximity, which reduces the impact that shipping expense and transit time can have on total cost reductions, inventory levels, and product availability. Mexico is an ideal destination for programs that contain high value-added labor content, high complexity, lower volumes, higher mix, and short demand-cycle requirements.

While offshore sourcing delivers lower product costs, it does not effectively address the time-sensitive aspects of the LVHM OEM-supplier relationship. Those aspects can include design support, product and process development, prototyping, and the compression of the pipeline to support lean initiatives such as Kanban programs, which have become such an integral part of a successful OEM supply-chain strategy. In order to truly offer value, the proposed hybrid model satisfies these requirements by channeling all communication, product development, program management, supply-chain compression, and logistics through the domestic division of the supplier. In addition, the dual manufacturing site solution provides further flexibility by extracting high labor content for production offshore while maintaining low-labor, higher-complexity integration and test domestically. This approach maximizes the cost reducing capability of Mexico, minimizes the expense of cross-border transportation, and places the end product closer to the customer.

Conclusion. Combining the relative strengths of domestic and offshore production in a flexible, hybrid model offers LVHM OEMs a cost-effective option that protects and enhances their ability to respond to dynamic market demands. As with any outsourcing partnership, alignment with a qualified EMS provider that can demonstrate a proven track record in implementing LVHM solutions is critical for project success. While there are standard challenges to every outsourcing initiative, each OEM faces unique circumstances requiring a custom manufacturing, engineering, and supply-chain solution. The introduction of this new paradigm provides LVHM manufacturers with an outsourcing option that can be configured and scaled to their unique requirements.

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About Federal Electronics. Founded in 1948, Federal Electronics, Inc. is a leading electronics manufacturing services provider. Based in Cranston, Rhode Island, the company serves the needs of original equipment manufacturers and government contractors by providing comprehensive production solutions that lower cycle times, control and reduce costs, and create flexible supply chains that are responsive to volume variability. For more information, visit

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