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DOES RESHORING MAKE SENSE FOR YOUR OUTSOURCING STRATEGY?

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Does reshoring make sense for your outsourcing strategy?

Alexandra Topp, Spectrum Assembly, Inc.

The reshoring topic continues to make news, but is it truly a viable outsourcing solution? San Diego-based electronics manufacturing services (EMS) provider Spectrum Assembly, Inc., has seen growth attributable to the reshoring trend.

Determining which projects make sense to reshore and which are better left offshore requires careful analysis. Here are six cost factors to consider:

- Project volumes
- Proximity between the product team and production
- Schedule flexibility
- Greater use of systems and automation
- Comprehensiveness of solution
- Quality concerns

Project volumes

In a project with an annual run rate of a million or more units, small per unit cost savings translates to a large overall savings. However, for projects with run rates in the tens of thousands, the savings may not offset the total added costs. As costs have increased in China, lower volume projects with marginal cost savings are being re-evaluated and in many cases, coming back to the U.S.

Product team proximity to manufacturer

Distance adds both time and complexity to outsourced production. Team travel costs and communication errors are one factor that can eliminate offshore cost savings at lower volumes. There is also a speed factor,

both in New Product Introduction (NPI) and volume production. At the NPI level, teams using a regional production source can meet face-to-face quickly during the design and production qualification stages. At the volume production level, engineering change orders (ECOs) are easier to implement rapidly since there is typically a short finished goods inventory pipeline. Finally, the hours associated with working in widely different time zones can drive personnel turnover. In low-to-medium production volumes, these drivers of hidden costs should be carefully evaluated as part of the sourcing decision.

Schedule flexibility

Variable demand is another element driving reshoring home. While offshore suppliers can support variable demand, it tends to drive inefficiency, increase defects and concomitant higher cost. Companies offshoring variable demand products typically either incur the cost of warehousing of finished goods in close proximity to their end market or higher logistics costs for expedited shipments. Additionally, in countries with rigid import regulations, such as China, EMS customers may be required to “buy” forecasted, but unutilized

raw materials inventory on a quarterly basis, which negates a major advantage of outsourcing. A regional supplier equals greater schedule flexibility since shipping lead-time drops out of the equation and typically active inventory is carried by the contractor even when forecasts are not met. In Lean manufacturing partnerships, a regional supplier can also easily support their customers’ inventory reduction goals. For example at SAI, a program manager teams with the customer to

NPI can be a challenge when working at a distance. SAI configures its NPI teams and project launch strategy to fill any gaps a customer may have in their engineering support. Each customer is paired with a highly trained staff member to help with outsourcing.





Automated processes eliminate the potential for defects. SAI uses component towers for point-of-use material stocking. The tower provides an ESD and humidity-controlled environment for component storage. Parts are scanned via a barcode that corresponds with the job number to decrease defects, as well.

develop a forecasting framework, set material bonds and determine required finished goods kanban.

Greater use of systems and automation

Regions with low cost labor often have inherent inefficiencies since manual processing is often cheaper than automation. Depending on the labor content, a highly efficient U.S. contractor may represent the lower total cost. Onshore manufacturers invest in developing low turnover workforce programs and using fewer employees to perform a wider variety of tasks. As an example, at SAI, over 50 percent of production operators have been with the company for over a decade.

Additionally, to enhance cost competitiveness, SAI has fostered a Lean culture focused on high quality, service and flex-

ibility combined with smart systems and efficient processes. Four principles guide SAI's strategy:

- Configure equipment to support small lot sizes
- Minimize variation
- Minimize waste created by poor quality or inefficient operations
- Minimize transport time

SAI migrated to a paperless factory system that uses Aegis Manufacturing Operations software to address several of these areas. It reduces the time needed for NPI by electronically transferring documentation which is used to generate production documentation and program machines. This seamless approach reduces the personnel needed to support NPI and provides a centralized repository for documentation control and also eliminates the potential for errors that is present in more manual methods. Work instructions are

displayed electronically on the production floor which speeds up changeover and eliminates the potential for mix-ups in paper documents. Quality data collection is also automated. The Company also utilizes equipment which is easy to program to facilitate faster changeovers and uses automated component towers for error-free point-of-use materials stocking.

SAI's business strategy also focuses on minimizing variation and inefficiency. PCBA, cable and harness assembly, and box build operations are located under one roof. This level of vertical integration cuts time and cost by simplifying the supply chain.

Comprehensiveness of solution

Proximity to customers makes it easier for teams at a regional EMS provider to



SAI's SMT lines utilize equipment optimized for fast changeover, which reduces costs for high mix production. Equipment is set up to run completely by machine from solder paste application through placement and reflow to decrease time and save costs.

offer more comprehensive solutions since they can travel to the customer's facility easily. This is also area where a high service approach can eliminate hidden costs by addressing common problems before they become problems.

SAI has developed specialized service packages to make it easy for customers to pick the right mix of support for their needs. For example, SAI's TransferAssist service package assigns a team to help customers new to outsourcing more easily transfer production that may not be well documented or optimize the product for manufacturability and/or testability. SAI's Total Lifecycle Control package provides customers with a menu of engineering, manufacturing and post-manufacturing services that can be tailored to support different requirements at different stages in a product's life.

Additionally, regional contractor are often more willing to invest in additional capabilities to support project requirements. As an example, when one of its customers wished to divest its wire-bonding capability as part of a larger project, SAI added the capability.

Quality concerns

Most OEMs audit to ensure an offshore contractor has acceptable levels of quality. However, contractors in lower labor cost production regions are used to substituting components wherever they can reduce costs, because it is an acceptable practice with their consumer and industrial customer bases. If this is not monitored, it can create significant issues for companies in regulated industries such as medical. Additionally, language and cultural issues can drive mistakes which cause both increase cost and production time. Reluctance of many suppliers in low cost labor markets to invest in the latest automated inspection technology can impact quality. Conversely, U.S. manufacturers often find this investment pays for itself by minimizing production personnel.

Finally, industry- or application-specific quality requirements may make it difficult to source critical components or do final inspection offshore. For example, SAI had a customer whose products were used in the nuclear industry that could only use raw cable that met very rigid industry specifications. The only two suppliers of that type of raw cable were located in the

U.S. An offshore build required shipping raw cable to China, assembling the product and the shipping it back to the U.S. When the cost of air freight to support demand variations of a build-to-order product was factored in, a U.S. build was clearly the most cost effective option.

Outsourcing can be a complex process when done at a distance. At higher volumes, the internal costs associated with that level of complexity may make sense. However, in low-to-medium volumes, a high service, well-automated regional source may be the more cost competitive option when all costs are evaluated. Companies new to outsourcing may be best served by a contractor with a support infrastructure capable of addressing any gaps in the production transfer process. Companies with longer product lifecycles or those requiring specialized solutions are also often better served onshore.

Alexandra Topp handles sales and marketing, at Spectrum Assembly, Inc. She can be reached at alexandra@saicorp.com. For more information on SAI, visit www.saicorp.com.