

GLOBAL CONNECTIONS

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Session: The Globalization of the Supply Base
Management Briefing Seminars 2006

I'm going to tackle this subject from the perspective of a supplier of a product whose final assembly is highly labor intensive and, as you will see in a moment, does not lend itself to any significant level of assembly automation. Thus we're not dealing with a tradeoff between a capital intensive assembly process in a high wage country and a labor intensive process in a low wage country.

That product is the automotive wiring harness which constitutes about 85% of Yazaki Corporation's \$8B automotive business.

What you see on the screen only represents the wiring harness set for the I.P, engine compartment and battery cable needs for a N.A. vehicle, not the complete EDS wiring harness set. But I think this gives you enough of a feel for the product to meet the needs of today's discussion.

Harness sets are unique to their respective carlines and, within carlines vary due to option content as well as model mix. The average vehicle harness set has from 800 to 1800 circuits of different wire sizes and temperature characteristics. Circuits might vary in length from 8 centimeters to 15 meters; anywhere from 400 to 800 molded connectors might be required, some of them standard, but some unique to specific electrical/electronic devices in the vehicle.

Some automakers prefer a one-piece harness while others prefer the electrical distribution system to be partitioned into a number of smaller harness assemblies. In many cases we deliver these smaller harnesses to module or subsystem suppliers and the main body harness to the vehicle assembly plants.

As if all of those varying wires, terminals, and connectors aren't enough of an assembly challenge, the finished harness assemblies include any number of clips, grommets, brackets, sleeves, tubing, power distribution boxes, and other circuit protection or damage protection devices taped together and oriented to minimize installation difficulties, provide protection against environmental factors, and make the assembly robust against known potential quality and reliability failure modes.

Before going any further, I'd like to show you a short video so you can better understand the product and process and make more sense of some of the things I'm going to say.

I'm sure a number of you are saying "I can't believe what I just saw." I know, having come from a company that prides itself on its technology, I felt that way when I took the leadership role at YNA. Even today more than 6 ½ years later, when I talk to high-tech product guys I feel a little like Rodney Dangerfield because its hard to get any respect when they think all you're doing is stringing wires.

After seeing that short clip, I'm sure you can quickly understand the training and process control challenges associated with achieving the expected single digit PPM defect rates at the finished product level and before I'm done today you'll recognize the level of complexity that comes with the territory in this business.

In all seriousness, with a product as labor intensive as ours, low wage rates are an important factor in determining base product cost, but despite what you might think, are not a sustainable source of competitive advantage. Obviously, our competitor can always open up a plant right next door.

Creating the optimal operational footprint and balancing the strengths of both on-shore and off-shore locations is far more complicated than chasing low wage rates.

Even netting the production cost differential against the increased transportation and inventory carrying costs that result from an extended pipeline does not capture enough cost to enable a good decision to be made.

Sustainable competitive advantage is actually a function of production process advantage in time, efficiency and first time quality, the level of optimization of the supply chain logistics for lead time and cost, how well you and your customer understand and manage the major drivers of additional supply chain costs, and the ability of your chosen solution to enable you to be fully responsive to market needs.

I'll touch on all of this later.

In my presentation today, I'm not going to address how our company is organized to serve each OEM at both the HQ and regional levels because I don't think it's especially unique and I doubt that it would be instructive to the majority of today's audience. I am also not going to touch on the production quality system or how we integrate continuous improvement and best practice sharing across the global network of plants with specific individual customer requirements. I will, however, be happy to answer any questions related to these topics as part of the panel discussion or after the session.

In the few minutes more that I have at this podium, I'm going to focus simply on the issues associated with understanding and optimizing the total delivered cost to NA customer locations while minimizing the risk of supply interruptions.

My starting point is Yazaki's global network of interconnected plants and distribution centers. We maintain a presence in 37 countries and operate some 260 manufacturing plants. I'll be focusing on the plants supporting North America, with a known balance between on-shore and off-shore capacity and capability. All of the off-shore plants we use also provide product to their respective domestic markets as well as to other regions of the globe.

During my presentation, I'll comment about understanding costs and lead times and more specifically which of the major cost drivers you must pay particular attention to. After I make those points the value of a strong, collaborative relationship between the OE customer and the supplier will become obvious.

First, let me give you a feel for the complexity of the existing N.A. product supply network. I know you think I've mistakenly put up an airline route map but what you're looking at is fully representative of the W/H supply network supporting N.A. only. As there are more than one Yazaki company in most of the overseas countries, the number of actual routes have been simplified so as not to make the route map completely unreadable. Actually, the map would look a lot like a wire harness before we apply the tape to make it look somewhat presentable to the customer.

For the past 10 years, despite significant sales growth the percent of products produced in the America's verses S.E. Asia, including such countries as Indonesia, the Philippines, Thailand, Vietnam and yes, even China, for the North American market, has remain relatively constant..

The traditional US manufacturers as well as the new domestics get product from a mix of on-shore and off-shore locations. No automaker gets product exclusively from an off-shore location. We attempt to utilize a blended average labor cost to all customers for EDS price quotes.

We've been at this a long time and we had the advantage of starting to deliver to the US from an overseas base in 1972, but we face decisions every day as to whether to place new business in the Americas or overseas, in Central America, the Caribbean Islands, or Mexico, in Indonesia, the Philippines, Thailand, Vietnam, or China. Should we relocate existing production due to changes in the original decision factors? Our goal of course is to continue to drive down the blended cost average while maintaining or improving our market responsiveness.

My advice, especially to those just starting down this path is as follows:

- Be thorough in your analysis of alternatives, making sure you know the facts about both opportunities and risks
- Bring the customer into the process before making the final decision and most importantly create a delivered cost model.

Notice I said delivered cost, not landed cost.

I know that all of you understand the components of a traditional landed cost calculation exclusive of the production costs themselves... but bear with me for a moment because your delivered cost may include a lot more than what you traditionally include in a landed cost calculation. It certainly does for us.

For instance, don't let the organization glide past component logistics cost; make sure they're adequately studied. The cost and/or lead time to get quality components to the assembly facility may be a differentiator for you. Study localization of the supply base. Understand local content rules, duty status or other regulations closely.

Don't take packaging and transportation costs for granted, especially given today's high fuel costs. Look for synergies that minimize that total cost given the ocean container size, truck trailer size and your product size.

Assess the need for repackaging on shore and whether or not returnables make sense. The results of this assessment may surprise you. Know the ports you expect to use; their capacity, their busy seasons, unload times, and the match or mismatch with available local truck or rail carrier capacities. Define and cost these primary routes. Estimate the total incremental finished goods inventory carrying costs for the off-shore solution.

What you must really pay attention to is what we call extraordinary costs.

These costs are easy to underestimate or overlook completely because they are rarely significant factors when production is close to the customer.

The absolute cost associated with these factors is highly dependent on customer behaviors or practices such as product development discipline, production launch control, assembly plant practices, plant production control schedules, raw and fabricated material authorization levels, etc. in addition to being driven by your own performance to schedule, quality performance, and the like.

I'm sure you can see how your delivered cost can escalate rapidly when the product you built five weeks ago and just got off the boat is no longer current because of engineering changes or is not the product you need to deliver because of schedule changes or has to be reworked at much higher cost, close to the customer, due to quality concerns.

The customer dearly wants the benefit of the low everyday delivered cost when things are going to plan but is hardly tolerant of the rework bills or air freight costs incurred when six or seven weeks of

product in the pipeline are affected. I'll say more about this later but for now the take away should be to make sure you've assessed these added cost risks, accounted for them appropriately in your delivered cost model, and consulted with your customer to gain agreement as to how these extraordinary costs might be handled.

Another area that tends to be overlooked relates to the incremental infrastructure costs associated with having the benefits of a global supply network.

These include tracking product from offshore locations across the ocean, knowing what's in the port and when it will be off loaded, dealing with US customs and other Homeland Security Administration requirements (CTPAT, etc.).

In addition, you'll likely find you'll need more distribution square footage and perhaps some repackaging capability. We've had to retain rework capability on-shore because of the necessity to respond within hours with modified product when changes are mandated by the customer... and change control, always a challenge, becomes even more difficult to track when the pipeline extends to ships and facilities in foreign countries.

Finally, engineering, program management and production control expenses during the product development and launch phase are clearly higher when off-shore plants are involved. There's incremental travel, videoconferencing, lost time, and much more communication involved to deal with changes, issue resolution, line-proveout, and the like.

The obvious issues faced when you have a long supply chain, beyond just cost that I haven't yet addressed, are lead time and supply protection.

Suffice it to say that these concerns must be addressed with the same rigor as the components of the delivered cost model. Every effort must be made to adapt counter-measures to mitigate as many risks as possible. Standardization of system components represents a critical and obvious step, but it requires global customer regional leaders to agree on the proposed standard; reductions in part number complexity, even if you or the customer must take a piece cost hit, might pay dividends on a total cost basis. Get ahead of changes through co-located engineers, in the application centers as well as the assembly plants, make sure you've accounted for all supply chain lead times, including time in port and transfer times; have alternative routes established, a process for expediting material defined, a "fast track" decision process and an on-shore network of skilled individuals capable and empowered to meet any emergency while maintaining the required system integrity.

On a number of occasions, I've referred to the important role played by customers in helping to optimize the total value chain. I'd like to close by highlighting three specific issues that wreak havoc on the creation of a reliable total delivered cost model and can quickly cause a major disruption in supply chain performance from a quality or delivery perspective.

They are: frequent changes in build schedule, mix, launch timing and vehicle balance out dates... particularly on a product with high part number complexity and/or frequent product changes through the launch period and after startup. It is not uncommon in our business to be faced with an early job 2 design introduction with an urgency that precludes the use of months of in-process and finished goods inventory.

The vast majority of these issues can be held in check through early involvement of suppliers before system design decisions are finalized, improved product development process discipline, consistency in manufacturing leadership direction, a "total value" approach to optimize P/N complexity, and a clearly defined change control process that takes into account both cost and risk factors.

Collaborative customer-supplier management of the factors that result in these three formidable foes can be a major source of cost differentiation from automaker to automaker and must be addressed quickly if this gap is to be closed in the near term.

So let me summarize the key points I tried to make this afternoon based on Yazaki's long history as a supplier with a global network of facilities supplying automakers' needs in both the established and growth markets.

- Planning should be comprehensive
- Bring the customer in early on your plans
- Model the total delivered cost – not just landed cost
- Place a premium on managing change
- Ensure compatibility with expected market responsiveness
- Collaborate on system design to minimize both cost and risk

And, to take a page out of Bo's book, my wish list for a model customer would not look too dissimilar to the one he so often presents for supplier companies, that's a lot of common ground! Maybe the often talked about collaborative business model is not far off! What do you think, Bo?

Thank you for listening. I look forward to your questions and comments in the panel discussion.