

The Packard Electric GLOBE

The divisional magazine covering Packard's worldwide operations



Signs of World Leadership

In the 1960s, social scientists Marshall McLuhan and Alvin Toffler arrested our attention with two startling ideas about the post-war technological explosion.

Toffler's *Future Shock*, and McLuhan's "global village" are no longer startling concepts, but accepted truths, especially in the business world. Packard Electric, with business connections in 18 countries and counting, continues to watch the world grow ever smaller as technological marvels link more and more people together.

As this happens, the future speeds toward us quicker and quicker until the future is now. Those who can not or will not keep up with the pace, find the future — and the present — a little disturbing, according to Toffler.

In his "Perspective" on page three, Packard International Director Dave Heilman assures us that Packard Electric does not intend to let that happen. If Packard can continue to set the pace globally, "future shock" will be the other guy's problem.

Ryndee Carney's time-travel piece on recycling (page 10) is another example of how the automotive industry is addressing the future before it arrives too abruptly. ■

—Danny Greene

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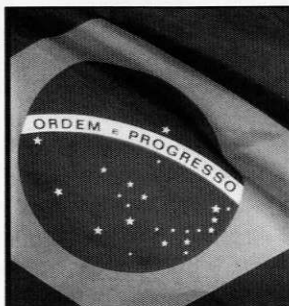
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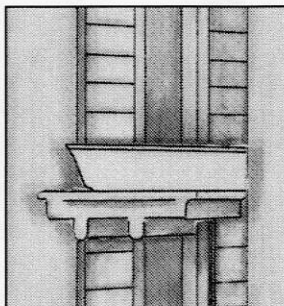
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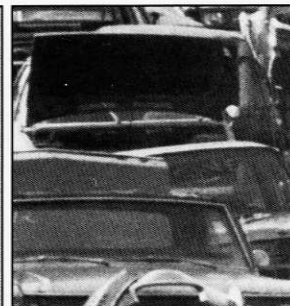
Dave Metzendorf



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At mid-year, Packard Electric was doing business in 18 countries in North America, South America, Australia, Europe, Asia and Africa.

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Recycling Vehicles: the future is now

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by Ryndee Carney

Packard joins the automotive "green movement" in seeking ways to recycle parts.



On the cover:

These flags represent some of the countries where Packard Electric has business interests.



"Listening well is critical when you do business globally..."

—Dave Heilman
Director, Packard International

New Challenges

Packard International was established in 1988 to drive the division's worldwide growth strategy for the 1990s and to focus Packard's global resources on our international customers.

We knew Packard had to grow globally if we were to retain our position as the world leader in our business. With that in mind, we set aggressive growth targets for Packard International.

Packard International people around the world rose to the challenge. This business unit currently represents 10 percent of the division's sales; we grew 15 percent from 1989 to 1990, and we expect to achieve our five-year growth target.

Growth Remains a Focus

Today, Packard International faces new challenges. Growth remains a strong focus for us, but as we develop new goals for Packard International, we need to place more emphasis on growing profitably.

One of the major issues facing the automotive industry today is Original Equipment Manufacturer overcapacity — we can build more vehicles than we can sell. This places tremendous pressure on carmakers and their suppliers to reduce costs.

Packard International is currently working to gain major new business packages. We're finding that these potential customers are basing their sourcing decisions primarily on cost. In addition, we have to keep earning our existing business every day, and current customers are also pressing us to lower costs.

Of course, customers are concerned about other things such as technology, responsiveness, delivery and quality. But we're learning that these issues are no longer selling points — they're givens.

Our customers expect fundamentally perfect products. They also value the services we provide and they're impressed with our manufacturing plants, which are the finest in the world. Nevertheless, cost remains the major issue. Our customers have told us what they expect; their question is, "What are you going to charge me for it?"

The only way Packard can both satisfy our customers' expectations for competitive prices and maximize our own profits is to find better ways to manage our costs. Each person at every Packard location around the world can help us in this area.

Packard International can also

drive growth by participating in new product markets, such as components.

We have traditionally viewed ourselves primarily as a manufacturer of wiring harnesses and the components that go on them. This outlook has served us well and will continue to serve us well. However, going forward I feel we have a real opportunity to broaden our perspective and gain new business by developing a global component strategy.

Feedback from our customers indicates we need to work on our cost and quality to be successful in the component business. Excellence has taught us to listen to our customers and do what they ask of us.

Listening Well

Listening well is critical when you do business globally, because different countries have different cultures and systems. We've also learned the importance of listening to the Packard International people who live and work in our various markets around the world. They are the experts on doing business in their respective regions, and their knowledge is invaluable.

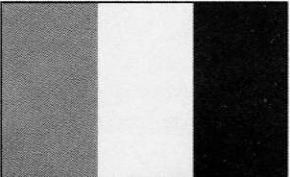
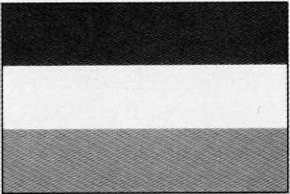
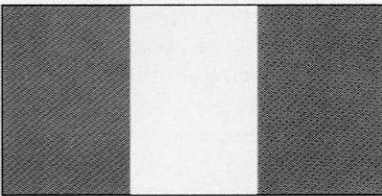
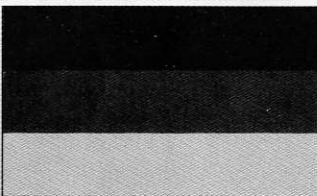
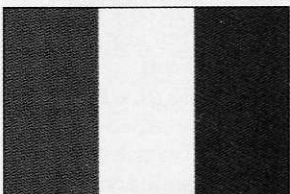
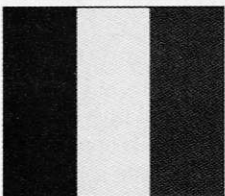
Packard International people are excited about what they are doing and they are exciting people. Their enthusiasm, dedication and hard work — supported by the rest of the organization — has helped Packard grow over the past three years.

I believe we can grow even more. By the year 2000, I would like to see Packard International achieve \$1 billion worth of business. That's a magic number to some people, but if past performance is any indication, Packard International and the rest of the Packard team are up to the task. ■

—Dave Heilman,
Director, Packard International

Packard Ship Flies Many Flags

HOW MANY flags on pages 4 and 5 can you identify? See Flag Identification on page 5.



Sailing ever farther upon the seas of a world marketplace, the Packard ship flies many flags. At the end of 1991's second quarter, Packard Electric was doing business in 18 countries around the globe. Facts and figures concerning all international operations follow.

Packard Electric Europe

Austria: Packard Electric Burgenland GmbH in Grosspetersdorf.

Customers: BMW, General Motors Europe (GME)

Capital: Vienna; language: German

Rank: 79th largest country in world (Note: Ranked according to population.)

Belgium: Reinshagen Tournai S.A. in Tournai.

Customers: Renault, Volvo

Capital: Brussels; languages: Flemish, French

Rank: 67th

United Kingdom: Reinshagen UK in Coventry, England

Customers: Ford, GME

Capital: London; language: English

Rank: 16th

France: Reinshagen France in Montigny le Bretonneux

Function: service center

Capital: Paris; language: French

Rank: 19th

Germany: Kabelwerke Reinshagen GmbH in Wuppertal, and Hohn Kabel GmbH in Neuss. (Other German facilities located in Berlin, Bochum, Neumarkt and Saarwellingen.)

Customers: BMW, Fiat, Ford, GME, Volvo, VW-Audi,

Capital: Berlin

Language: German

Rank: Current rank unavailable

Ireland: Packard Electric Ireland Ltd. in Tallaght

Customers: Ford, GME

Capital: Dublin; languages: Irish, English

Rank: 103rd

Hungary: Packard Electric VAS in Szombathely

Customer: GME

Capital: Budapest; language: Hungarian

Rank: 61st

Italy: Packard Electric Italy in Turin

Customer: Fiat

Capital: Rome; language: Italian

Rank: 15th

Portugal: Cablesa in Linho, Carnaxide: Castello Branco, and Reicab in Guarda

Customers: BMW, Ford, GME, Mercedes-Benz Renault, Volvo, VW-Audi

Capital: Lisbon; language: Portuguese

Rank: 65th

Spain: Unicables in Pamplona and Cetasa in Tarazona

Customers: Ford, Matra, Renault, Volkswagen-Audi

Capital: Madrid; language: Castilian Spanish

Rank: 25th

Tunisia: COFAT in Tunis

Customers: GME, Renault

Capital: Tunis; languages: Arabic, French

Rank: 75th

Turkey: Packard Electric Sistemleri Ltd. in Istanbul

Customer: GME

Capital: Ankara; language: Turkish

Rank: 17th

Packard International

Australia: Packard CTA Pty., Ltd. in Ararat, Victoria

Customers: GM Holden's, Nissan

Capital: Canberra; language: English

Rank: 50th

Brazil: Packard Electric do Brasil in Sao Caetano do Sul and EPEC SA in Sao Jose dos Campos

Customers: Autolatina, GM do Brasil

Capital: Brasilia; language: Portuguese

Rank: 6th

Japan: Japan Branch Office in Tokyo

Function: Sales office

Capital: Tokyo; language: Japanese

Rank: 7th

Mexico: Promotora de Partes Electricas in Mexico City, Queretaro, Monterrey, Saltillo, Tlaxala and Juarez; and Conductores Componentes Electricos I, III and V in Juarez

Customers: GM, Chrysler, Ford, VW, CAMI, NUMMI, Freightliner, Mercedes Benz and Siemens.

Capital: Mexico City; language: Spanish

Rank: 11th

South Korea: Shinsung Packard Co., Ltd. in Yang Ju

Customers: Daewoo, Kia

Capital: Seoul; language: Korean

Rank: 23rd

Packard North America

Mexico: For country statistics, see Mexico heading under Packard International.

Customer: GM

USA: Packard Electric World Headquarters in Warren, Ohio. (Other U.S. operations located in Michigan, Mississippi and Texas.)

Customer: GM

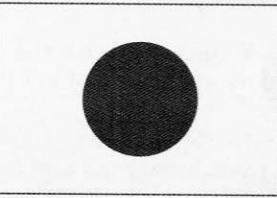
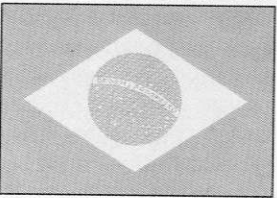
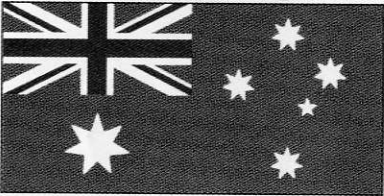
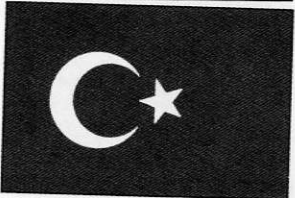
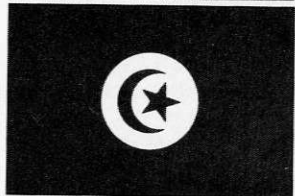
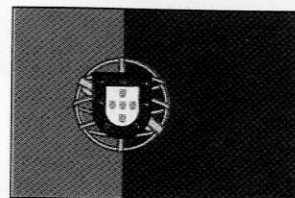
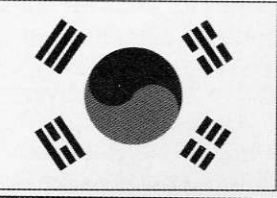
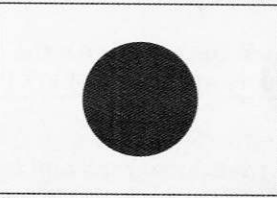
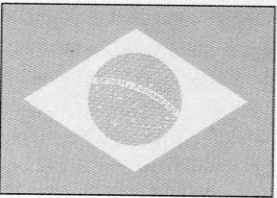
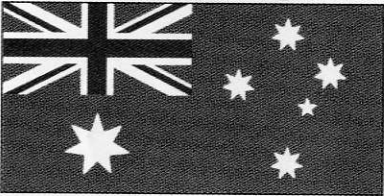
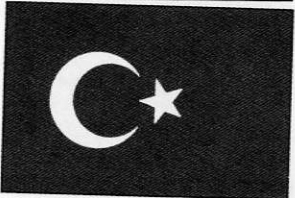
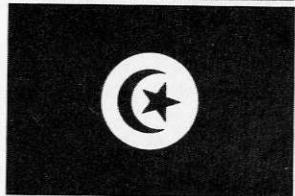
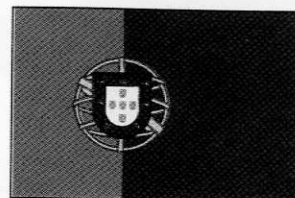
Capital: Washington, D.C.; language: English

Rank: 4th

Sources: Packard Personnel, Financial Planning, Forward Planning Departments. Kaleidoscope — Current World Information. ■

Flag Identification

Page 4, from top to bottom: Austria, Belgium, United Kingdom, France, Germany, Ireland, Hungary, Italy. Page 5, top to bottom: Portugal, Spain, Tunisia, Turkey, Australia, Brazil, Japan, Mexico, South Korea, United States.



SCAN AND DELIVER

New material staging system keeps Plant 47 on track

During the era of the Pony Express, the American West was wild and young, and pioneers received their mail from men on horseback.

As the West was tamed and technology advanced, postal carriers replaced the dusty horses and made deliveries more routine. ZIP codes later increased the volume and ease of delivery; and today's march toward automation holds similar promise.

It's much the same with the cut lead delivery system in Ohio's Plant 47.

After experiencing some problems with the traditional rack and fork truck storage system, the Ridge Road facility started looking for alternatives to help the plant meet its vision.

The result of that search is an Automatic Staging and Retrieval System (ASRS.) The system sorts, then delivers cut leads for shipment to the plant's 13 customers in Mexico in the same way a mail carrier sorts parcels and letters for delivery.

Unique Set up

According to Bob Hocevar, Plant 47 superintendent, the new system handles a lot of material quickly and efficiently. Although it's not new technology, this system is a first for Packard and is a unique setup of a traditional ASRS.

"It's a classic example of synchronous material flow," Hocevar explained. "ASRS evens the flow and keeps things moving." Once a cutter operator completes an order, the cell is placed on a roller conveyor and sent on its way to a weigh count station. At the station, operators apply a bar code label and assign an available staging location in the ASRS, based on the cell's contents and final destination.

Traffic Controller

Continuing along the conveyor, a bar code scanner reads the label and feed the information into the ASRS "traffic controller," which directs the container to its assigned location. When the cell stops at the row to which it's been assigned, a crane picks it up and places it in the assigned slot.

When a customer places an order, the computer locates the material in the storage facility and the process is reversed: the crane removes the tote from its slot and places it on the conveyor. It travels along the conveyor, arriving at a point where it will be loaded on a skid for shipment.

Those involved stress that ASRS is a staging system, not one for storage. What's the difference? Cells are intended to rest in the facility anywhere from 20 minutes to five days; within General Motors, that's the

shortest time period for a setup of this nature.

"Before we had the ASRS, we had the possibility of a material handling bottleneck," Hocevar stated. "As it was, we needed an army of people moving those containers in and out of the racks.

"There was a limited amount of floorspace, so we were forced to handle the material twice. The old rack system was inefficient and fraught with human error; we could

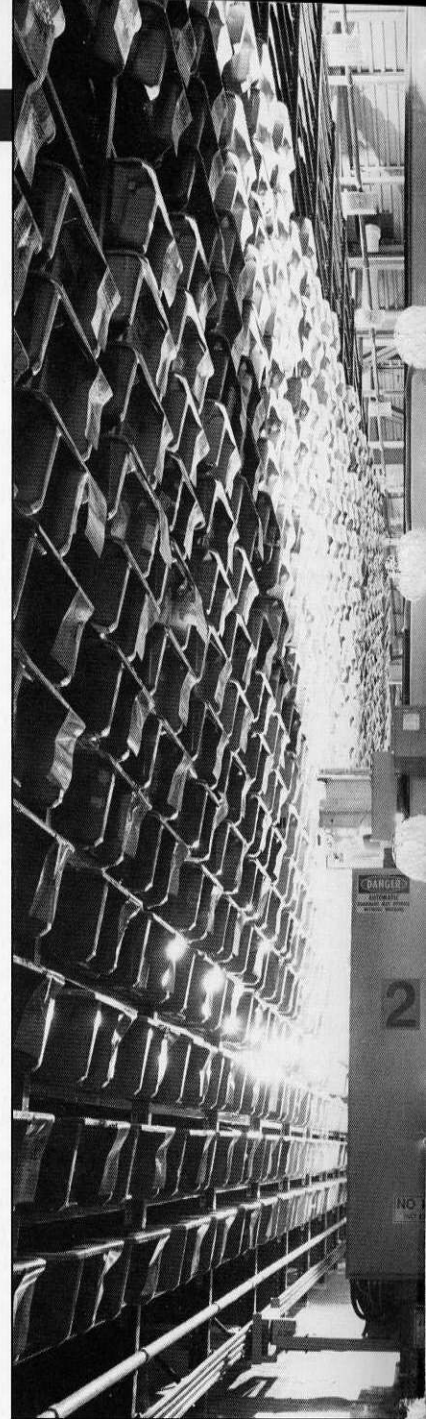




PHOTO: DICK CLAPP

not possibly fulfill our vision for this plant while we had that material handling system."

The system he described was a traditional rack and fork truck operation. Each shift required three fork truck operators to store the finished product and three additional operators to pick the stored product for shipment.

Advantages

Before Plant 47 installed the ASRS, there was storage space for about 5,500 tubs in the plant. Since its addition, the plant has about 9,200 locations which centralize and increase the available storage space.

The system, which was operational by April, will completely pay for itself in two years and save Packard nearly (U.S.) \$1 million each year, said John Hamby, senior electrical engineer.

Jim Bousfield, senior engineer, divisional Industrial Engineering, added that the ASRS actually lowers the per piece cost although that wasn't one of the original selling points. It takes up one-fifth the space and handles throughput efficiently.

"In addition to the savings, Plant 47 is able to satisfy our customer better because we can get orders on the road much quicker," Hocevar commented. "We can pack and ship

orders 16 to 24 hours sooner than before. Our operators will load orders tonight that wouldn't have been touched until tomorrow on the old system. I think we have the best material handling system in the division. No doubt about it!

"We've also had full support from Republic Storage Systems, our supplier. They're here any hour of the day or night if we have a problem. I think they're as proud of this system as we are."

Where To From Here?

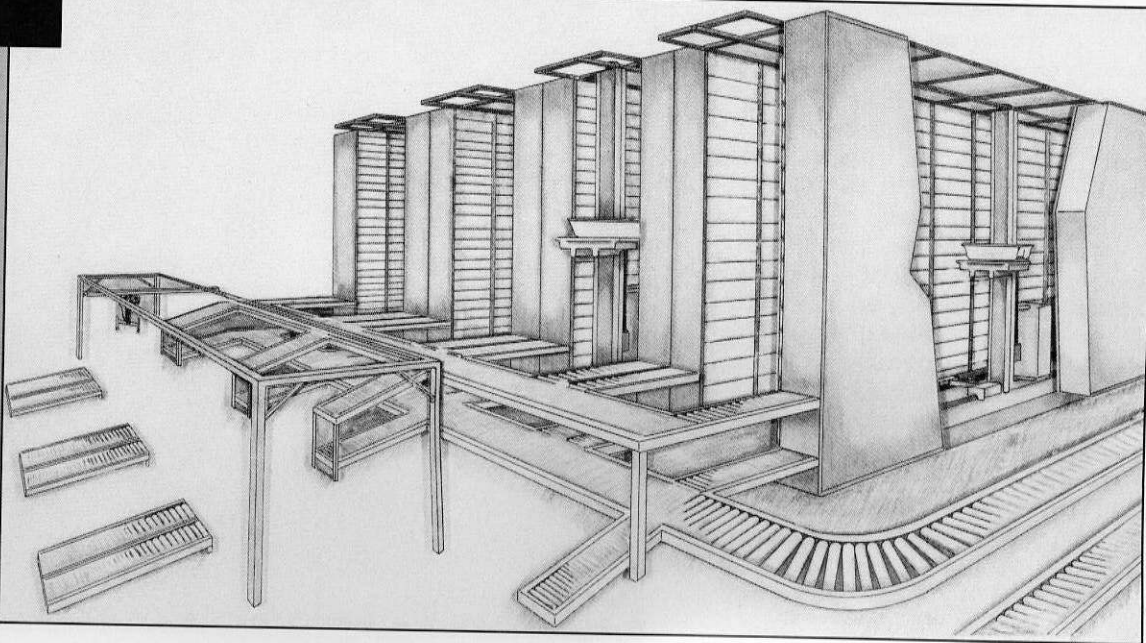
"Although we're currently using it only for finished product shipment to our customers, we are preparing to implement the second stage where the ASRS will help us manage our in-process material for the lead prep area," Hocevar said.

"Stage three," added Hamby, "will be to ship directly to the aisle of the plant where the product is needed to help our customers better manage their inventory."

"We build 2 million leads a day here and our vision calls for us to nearly double that output in the future," said Hocevar. "This is the only way we're going to be able to fulfill our vision. We feel it's impossible to manage that amount of material throughput any other way." ■

ABOVE: Inside the ASRS, an automatic crane places cells in their assigned slots. The ASRS in Plant 47 can stack cells higher and safer than a forklift can.

RIGHT: Artist's rendering shows how material flows in and out of the staging area.



ARTWORK: DEBBY BAILEY

All The Right People

By focusing on quality, Saturn is converting import buyers

Saturn, General Motors' effort to bring import buyers back to "made in the USA" cars, is redefining quality and customer satisfaction with every vehicle that rolls off the line in Spring Hill, Tenn.

And according to Richard G. "Skip" LeFauve, Saturn's President, supplier-partners such as Packard Electric are helping Saturn win buyers away from other manufacturers, particularly the Japanese.

He observed that Saturn is currently outselling Honda on a per-dealer outlet basis. "Granted, we don't have as many dealers as they do, but as we add dealerships, look out, Honda — here comes Saturn!"

LeFauve also noted Saturn is receiving rave reviews from satisfied owners, who are spreading the word about how much they like their cars.

Focus on Quality

"We've really focused on quality rather than volume — that's how Saturn's reputation is going to be built," said LeFauve, who worked at Packard for more than 20 years earlier in his GM career.

To illustrate this dedication to quality, LeFauve described how Saturn jolted the automotive world a few months ago when it replaced more than 1,800 cars to fix a supplier-caused coolant problem. LeFauve said Saturn couldn't simply replace the coolant due to the potential long-term effects on the engine and ultimate customer satisfaction.

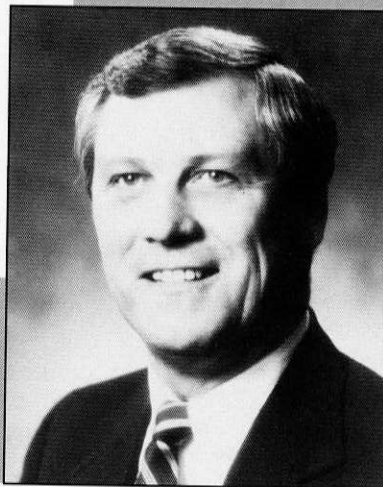
"This wasn't an especially gutsy move; it was the right thing to do," he emphasized. "When you're trying to build a quality reputation and

Arturo Rodriguez, supervisor at Conductores y Componentes Electricos I, reviews Saturn Quality information with employees. CCEI, part of Packard Electric's Mexico West operations, is a Saturn supplier.



"When you're trying to build a quality reputation and customer enthusiasm, you have to do the right thing for the customer."

Richard G. "Skip" LeFauve
President, Saturn Corp.



customer enthusiasm, you have to do the right thing for the customer."

LeFauve insisted Saturn made the right call. "We blew customers' minds — people couldn't believe we'd give them a brand-new car just like the car they purchased; in some cases, we gave them a better one."

In addition, LeFauve said Saturn sent an important signal to its suppliers: "We mean what we say; we're serious about quality."

Today's definition of acceptable quality differs from the days when LeFauve was a new engineer at Packard Electric. "Then, 90 percent was good enough — a 10 percent reject level was acceptable. Today, 100-percent quality is the only level we can accept — the definition of quality is 100-percent good parts."

Packard-Saturn Partnership

Suppliers are critical members of Saturn's team. As a Saturn supplier, Packard Electric is expected to do more than just put a harness in a box destined for Spring Hill. LeFauve explained that Saturn wants suppliers to be represented in person in their plant, not by a trademark on a receiving dock.

"We want to have personal contact with our suppliers — we think of the relationship as a partnership," he said. "We believe suppliers should be involved in the decisions that affect the success of the car."

So far, Saturn is well-satisfied with Packard's performance.

"Packard's done a great job for Saturn," LeFauve stated. "In our quality audits at the end of the assembly line, the electrical audits are just outstanding — zero defects. That means Packard is supplying good quality product to us."

Learning From Each Other

LeFauve noted that he is applying some of the things he learned during his years at Packard today at Saturn.

"Packard taught me that people really make the difference in an organization. Packard has always focused on supporting people in their jobs and doing the right thing. That's what Packard stood for 20 years ago and it's still true today."

In turn, he feels Packard and other GM locations can benefit from adopting parts of Saturn's philosophy, especially its focus on continuous improvement.

"We've got to keep trying to do things better. It's okay to do things differently than we have in the past. GM spent \$2 billion to build this facility and move folks down here to make new things happen. We should take that as a message from GM that all us have to do our jobs better, faster and smarter. I know Packard people can do that." ■

—Ryndee Carney





PHOTO: DANNY GREENE

Recycling Cars: the future is now

The year is 2191. Archaeologists make a major discovery: rusted fenders, dome lamps, dashboards, bumpers, wheel rims, wires. The more they dig, the more they find. What happened here?

Two centuries earlier, people called them junkyards — the final resting place for cars and trucks that had reached the end of the road. But around the beginning of the 21st century, people learned they couldn't keep digging holes in the earth for more landfills, so they came up with a way to recycle vehicles.

Sound like an ecological fantasy? Not according to automotive manufacturers and suppliers, who are currently seeking ways to use materials from the cars we drive today in the vehicles we buy tomorrow.

Packard Staff Development Engineer Jim Harvey noted that in-

creased environmental awareness by companies and consumers, coupled with pending legislation, is driving this worldwide trend to design vehicles that are easier to recycle.

Harvey cited a proposed German law which would require new autos to contain 25 percent recycled materials by weight starting in 1993. In addition, German car makers would have to develop systems to sort, recycle and accept parts from old vehicles.

European Customers

He noted Packard's European customers such as BMW, Volkswagen and Opel are already preparing to comply with this type of "green" legislation. Packard Electric Europe launched a project several months ago to investigate recycling wiring assemblies.

In the U.S., solid waste legislation in all 50 states is expected this year, with key activity in 27 states. California legislators are proposing a disposal fee, which would require

car buyers to pay up to \$180 at the time of purchase to cover the cost of dismantling their vehicles.

Approximately 90 percent of the materials in a new, 2,400-pound car can be recycled, according to estimates from the U.S. Motor Vehicle Manufacturers Association. But Harvey explained some major barriers exist today which are stalling vehicle recycling efforts.

One problem is the increased use of plastics to achieve lighter, more fuel-efficient vehicles. Unlike metal parts — especially steel — for which recycling methods are already available, recycling plastic parts is fairly complicated. Among other things, plastics must be sorted by type since different kinds are recycled differently, and there may be as many as 60 types of plastic in one of today's cars. Additional recycling roadblocks include:

- High cost of dismantling vehicles, separating the vast number of different materials designed into

them and recovering materials for reuse

- Low awareness that recyclability is a growing industry trend
- Lack of a market for recycled materials, especially plastics, which some consider to be too low-value and low-quality for automotive use

Packard impact

Packard's involvement with recycling products began as part of the division's waste reduction and cost-cutting efforts, Harvey noted. "The primary principle of recycling is to keep from producing waste in the first place," he said. "If you don't produce waste, you don't have to figure out how to recycle it."

This effort to reduce waste dovetails with the current push for recyclable vehicles and components, and Packard customers are beginning to ask for recyclable products, Harvey stated.

Packard has been able to adopt a proactive role in this area because its products are inherently recyclable. For example, the division already recovers and reuses copper and other metals.

Plastic poses problem

Plastic material poses more problems, however. Thermoset plastics are more difficult to recycle because they result from a non-reversible chemical reaction. Thermoset applications at Packard include ignition products made of rubber and silicone, RIM grommets and cross-link cable.

Fortunately, Packard uses mostly thermoplastic, which is relatively easy to recycle because it can be re-ground, reheated, re-formed into pellets and used again.

The key to effective recycling at Packard is to keep different thermoplastic materials separate during the manufacturing process, Harvey explained.

"Different thermoplastic compounds — PVC, nylon, polyester, etc. — have different properties. Chemically, they don't mix, like oil and water. To recover and reuse these plastics, we must discipline ourselves to separate them in our plants."

Harvey acknowledged that plastics have a definite life span and can only be recycled a few times before they lose their properties. However, recycled plastics can sometimes be substituted in applications which are less demanding than their original use.

"We have to be sure we don't

reduce our quality a bit by using recycled materials," Harvey observed. "But if we study the properties of our materials relative to the requirements of our products and take a responsible approach, we can help make recycling worthwhile and profitable for Packard."

"This issue is not going to disappear," he stressed. "It's not a fad — we must do it for future generations. We can't keep digging holes in the ground for new landfills. How do you put a price tag on the environment?" ■

—Ryndee Carney



Gina Solinger, left, and Donna Dinard of Packard Electric's Plant 44 feed machines that make reclamation of plastic and cardboard feasible for the Ohio Operations' recycling effort.

Common Sense Sensors

'Smart' design promotes product flexibility

Packard Electric Engineering — from Component and Process to Manufacturing Engineering — has developed a family of six molded plastic temperature sensors that can all be built from the same basic parts.

These new temperature sensors differ from conventional brass temperature sensors because they are constructed of rugged, high temperature plastic.

All six applications are low cost because the injection molding process doesn't require additional work such as thread machining or roll crimping.

Keeping the same core part in each sensor gives Packard a competitive advantage according to Roger Phillips, assistant staff engineer, Component Engineering.

"They are extremely easy to automate," Phillips said. "From the beginning, they've been designed using Design For Manufacturability principles. By working together with Manufacturing and Process Engineering, we were able to design flexibility right into the sensors. A complete product line has emerged because we designed them smart."

Commonality also translates into reduced machine cycle time and faster response to customer requests because only the molds are changed.

Process Engineering's Dale Johnson said the assembly process includes a rebuilt automatic insert molding line and an assembly turntable. Insert molding operators will build the common core. It then goes to turntable operators who place the core into the sensor's shell, test the finished part and mark it with an identifying code.

"Because of the commonality and simplicity of the sensors designs, our manufacturing processes can more easily adhere to the Packard Production System guidelines," Johnson said.

The sensors are slated to make their debut in the 1993 model year; applications currently being tested are air temperature sensors on the engine's intake manifold and coolant temperature sensors. In both cases, the temperature sensors do exactly as their name implies — they monitor the air or engine coolant

temperature. Temperature information is then relayed to the Engine Control Module, which controls the engine's running conditions and emissions.

"Depending on the application," explained Randy Sumner, supervisor, Component Engineering, "we mold a different shell. That saves on tooling, gives us a lower per piece cost and minimizes the corporate investment all because we're using common parts. Growth potential for these products is phenomenal." ■

This family of molded plastic temperature sensors is more competitive than previous sensors because all six are built around a common thermister (shown in their center).

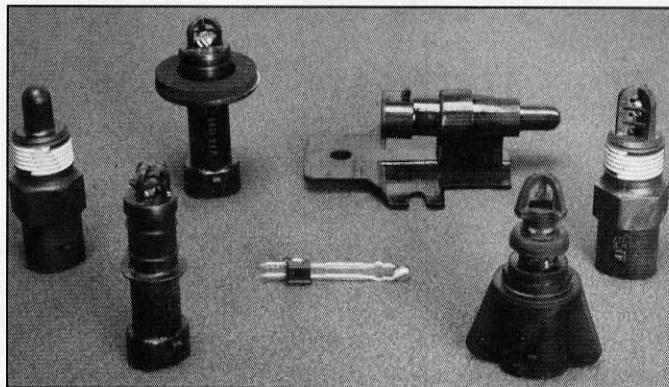


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