

RVOICE

Information and Innovation in the RV Industry

IN THIS ISSUE:

- PAGES 1-2 How does Dutchmen lead the way in quality and safety?
- PAGES 3-4 Going Green



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The lamination management team pauses in front of robotic welding of aluminum roof rafters. Shown from left to right are John Ruiz, Assistant Plant Manager, Bob Ries, Director of Quality Assurance, Hank Johnson, Lamination Plant Manager and Scott Biederman, QC inspector.

HOW DOES DUTCHMEN LEAD THE WAY IN QUALITY AND SAFETY?

Bob Ries shares insights.

Is it possible to manufacture 25,000 RVs a year that are defect-free? Bob Ries and the employees at Dutchmen Manufacturing are driven to achieve that goal. When Bob joined Dutchmen nine years ago as Director of Quality Assurance, the company had been purchased by Thor Industries. "The quality perception wasn't very good," recalls Bob. "Thor was implementing changes and setting Dutchmen in the right direction."

Since then, Dutchmen has grown from 400 employees to more than 1,100, and sales have increased four fold. At eight production plants and two lamination facilities, the company manufactures 20 different brands of travel trailers and fifth wheels, producing product in every price segment. "We deliver the best quality and value for the dollar," says Bob, "and are able to serve dealers at any price point for customers who walk through their door."

Here, Bob shares insights about how he and Dutchmen employees make quality a priority that gets results.



Dutchmen Manufacturing, Inc., corporate headquarters in Goshen, IN.

What quality assurance measures set Dutchmen apart?

Some of our competitors deal with a problem after the fact. We make every effort to prevent the problem before it gets to the customer. An important factor is testing at our PDI (Pre-delivery Inspection) facility. We take at least one unit from every line every day and do everything a customer would do. We open and close doors, operate everything, test every system and every appliance. We check under, over, on top and inside. If we find anything wrong, we go back to the plant and correct the problem.

A rain bay is part of our PDI building. We designed it specifically to simulate what a unit would go through if it were towed on the road at 60 miles an hour or if the slide-outs were open during a heavy rain storm. We deluge the units with 4,000 gallons of water in two 10-minute intervals with sprays from every direction. At least one unit from every facility goes through this water test each day. And all of our Goshen area laminated units go through the rain bay, because water intrusion is the worst thing that can happen to a laminated wall.

What about Dutchmen's safety procedures?

We have critical safety checks at the end of every line. After the normal checks, every unit has a specific safety check in 17 areas by both Quality and Production. When it comes to product safety, we lead the industry and even get calls from the federal government asking how we handle certain problems.

When I first started, for example, a major issue for the RV industry was wheel loss. We did extensive testing and found that the problem was related to torque loss on the lug nuts. We set up critical safety processes throughout our plants to eliminate torque loss, and we've had no instances of wheel loss since then. Meanwhile, the industry set up a coalition a couple of years ago to address this problem. They developed a process procedure proposed it as a future ANSI code. It's virtually the same process we implemented years ago and eliminates a major industry problem.

Has Dutchmen implemented lean manufacturing?

We're implementing lean manufacturing principles in a big way. We started with extensive and intensive training conducted by Purdue University for Dutchmen employees ranging from top management to floor personnel. This involved partial to full days of training for months on end. Now we're implementing lean manufacturing principles in six of our production plants and our lamination facilities.

continued on page 2 >>

<< continued from page 3

When it comes to supply-chain management, recycling is a key element. In 2000, the European Union ELV Directive mandated minimum recycling rates and made auto manufacturers responsible for the collection and disposal of vehicles at end-of-life. Automakers must also recover a high percentage of the vehicle to ensure that it does not end up in the solid waste stream. Manufacturers are currently required to recover 85% of each vehicle, and by 2015 the requirement increases to 95%. Japan has implemented similar regulations.

Although laws in the U.S. are less stringent, manufacturers are voluntarily participating in Extended Product Responsibility (EPR). According to "Automotive Industry Trends," the automobile recycling industry recycles more than 11 million automobiles, buses, motorcycles and trucks every year, diverting an estimate 85 million barrels of oil that would otherwise be used in the manufacturer of new or replacement parts.

U.S. auto manufacturers realize that recycling can pay economic dividends. Some recycled plastics today cost less than comparable virgin materials. And some types of bumpers deliver equal or higher quality than virgin material while costing the same or less.

How Auto Makers Make Production Green

Subaru:

- Subaru's Lafayette, IN plant recycles 97% of all excess or leftover materials such as steel, glass, plastic, wood, paper and glass from the manufacturing process.
- The wheel supplier reuses brass lug nuts to hold wheels in place during shipping. Previously they were thrown away - 33,000 pounds of brass a year.
- Paint sludge formerly discarded is dried and shipped to a plastics manufacturer for mixing with plastic compounds in parking-lot bumpers and guardrail safety blocks.
- Solvents in the painting process are cleaned and recovered, then reused in the paint shop.

General Motors:

- The new Lansing Delta Township Plant in Michigan is the first "LEED Gold Certified" automotive manufacturing plant in the world. During the first 10 years of operation, the facility will save over 40 million gallons of water and 30 million kWh of electricity, compared to traditional construction. Energy efficiencies result in energy costs that are 45% lower than industry standards, with a projected savings of \$1 million a year.

Chrysler:

- Two North American facilities have achieved zero-waste-to-landfill status.
- All manufacturing facilities in Mexico are zero wastewater discharge facilities.

Ford:

- More recycled and renewable materials have been used in the new Ford Mondeo, S-MAX and Galaxy models.
- Recycling-led product development ensures recyclability of materials at end-of-life.
- At the Windsor Engine Plant, all shipping containers and pallets are returned to suppliers for re-use.
- The Fumes-to-Fuel system takes VOC-filled emissions from the painting process and concentrates it into usable fuel.
- Rather than using several gallons of metal-working fluid to lubricate machines at its Livonia Transmission Plant, Ford uses a small, precisely measured quantity of oil mist.

Green is the way to go

Kermit the frog said, "It's not easy being green." Nevertheless, in many ways, players in the transportation industry are proving that it's possible - and even profitable - to be just that. ■

National Adhesives

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Using lean manufacturing principles, these Dutchmen employees developed a system to organize different-sized lamination panels, improving process flow and enhancing the work environment. Shown from left to right are employees Hank Johnson, Scott Biederman, Jimmy Rivera, Dave Radcliff, Jose Méjia and Andrew Solina.

The results have been outstanding - not only providing better processes and cost savings, but the morale and effectiveness of the employees have soared. They're part of the process and feel pride in what they're doing. They meet directly with the plant manager and general manager at working-session meetings daily. They have responsibility for setting up improvements in their area and their plant.

What do you expect from Dutchmen's suppliers?

My expectations are simple. I expect defect-free products on time with technical support. I expect the products to work and require our major suppliers to audit the performance and installation of their products in our plants. I also expect our suppliers to take corrective actions on problems that we find in the field or hear about from our customers.

In many ways, Dutchmen is improving the quality for the whole industry, because many supplier issues are detected here first. For example,

recently we found a problem with an electrical breaker that is also used in the automotive industry by the millions. Had it been installed in automobiles, there could have been extensive recalls. But we found it, and the supplier was able to correct it before it reached the field.

How is your working relationship with National?

If I were to rate our suppliers from best to worst, National would be one of our best for certain. National is outstanding, particularly compared to their competitors. We've used National's reactive hot melt for some time but switched from a competitor's liquid polyurethane (LPU) to National's PUR-FORMANCE® LPU just last year. The previous supplier's technical people were difficult to get in touch with when needed. The National sales rep is the best. If you call Roger Lumm, he's there. I swear, if one of us got sick, he'd bring chicken soup. The technical engineers come in, they audit, they check the process. If there is an issue, they provide the testing needed and come back with the answer.

Why do you use both reactive hot melt and LPU?

It depends on our process flow and needs. Hot melt is good where we have double-coated materials and large walls with fast production. Liquid urethane is good where we have floors, ceilings, and unusual sized parts, particularly if one side is to be coated.

When we switched to National's liquid urethane, the R&D chemist Dr. Sara Zhang was very helpful, as was Mike Gefri, their technical service rep. We did

a lot of testing and her knowledge is outstanding. National developed a product that has excellent characteristics for our use. The spread is unbelievable, and its bonding ability to aluminum, which is a difficult bond, is much better than other products we have tried. We haven't had any delamination problems since we started.

And with our previous supplier, inventory was an issue. We had to buy in truck load quantities, but National allows us to order the LPU in two bin quantities. When we get low, they bring in more. So we solved our inventory problem and never have a problem with supply.



Dutchmen employees prepare a floor for vacuum bonding in the laminator. Shown from left to right are employees Jimmy Rivera and Dave Radcliff with Lamination Plant Manager Hank Johnson.

What is Dutchmen planning for the future?

We've opened a beautiful, large facility in Idaho to supply the west coast market. We started with entry level wood frame and aluminum siding units and expect to introduce fiberglass sidewall products to our customers in the west by spring. There, too, National has worked with us from the start in the design and set-up of the lamination equipment. ■

GOING GREEN... AND WHAT IT MEANS FOR THE RV INDUSTRY



In 2007, Ty Adams launched a campaign called "bioTrekker - Motorcoach Adventures in Bio-diesel." He left a salaried position, sold his house, invested over \$30,000 of his savings and hit the road in a 34-ft. Monaco Cayman motor home fueled by bio-diesel and his passion sustainable energy. During the next 12 months, Ty traveled cross country, doing newspaper and TV interviews, giving talks and tours to school children, and attending RV shows and music festivals.

Twenty thousand miles and 125,000 web hits later, Ty's bioTrekker campaign still generate interest. Why? Because people are interested in sustainability. In government, in homes, in industry and manufacturing, the scene is becoming green.

But what exactly is "green manufacturing"? Green means making choices in manufacturing methods that support and sustain a renewable way of producing products that do no harm to people and the environment.

RV Initiatives

Designing and manufacturing products that have the least impact on resources and the environment can yield economic and environmental benefits. As a result, RV manufacturers are making green choices...

- At Monaco Coach Corporation, which manufactured Ty's Cayman, buying pipe in 18- instead of 20-foot lengths, cuts waste by 10%, as reported in "The Manufacturer."
- In Canada, a "miniHome" designed by Daniel Hall and Andy Thompson features winterized and structurally insulated panels (SIPs) in the roof, floor and walls, accompanied by high-performance windows, for a design that is airtight and energy efficient.
- Genesis Products, Inc., manufacturer of laminated and hardwood cabinets, paneling, doors and other interior products for RVs, uses sustainable

materials, including renewable hardwoods. In addition, Genesis recycles 20 million pounds of films, boards and scrap yearly, according to "Manufacturing Today."

- Pilgrim International is eliminating Luaun and wood in floor substrates of selected 2008 models by introducing new composite one-piece substrate for structural flooring. The waterproof composite will never rot, yet is lighter weight than plywood or Luaun. In addition, the composite depletes zero natural resources, is recyclable, and contains no formaldehyde or VOCs.
- Dometic, a leading supplier of refrigeration products and systems to the RV industry, is building all absorption refrigerators with zero Global Warming Potential, offering a full line of "green" cleaning and sanitation products, optimizing products for low energy consumption, and maintaining scrap aluminum and metal recycling programs at its plants.

The Auto Industry Plays a Key Role

To mitigate climate change and alleviate oil dependency, the U.S. government enacted CAFÉ (Corporate Average Fuel Economy) standards requiring ongoing improvement of fuel economy in cars and light trucks. New auto fleets will be required to average 35 miles per gallon by 2020, a 40% increase.

continued on page 4 >>



AND THE WINNERS ARE...

Lori Carter of Carter Associates and Wayne Miller of Jayco, Inc. won Swiss Army watches at the National RV Trade Show in a drawing sponsored by National Adhesives. The choice of the prize was based on the fact that Swiss Army Watches are known for durability - an attribute that National Adhesives stressed about PUR-FECT LOK® adhesives at the show.

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