

NIGHT AND DAY CHANGES

COMPARED TO 1996, RETREADS - AND RETREADERS - ARE BETTER THAN EVER

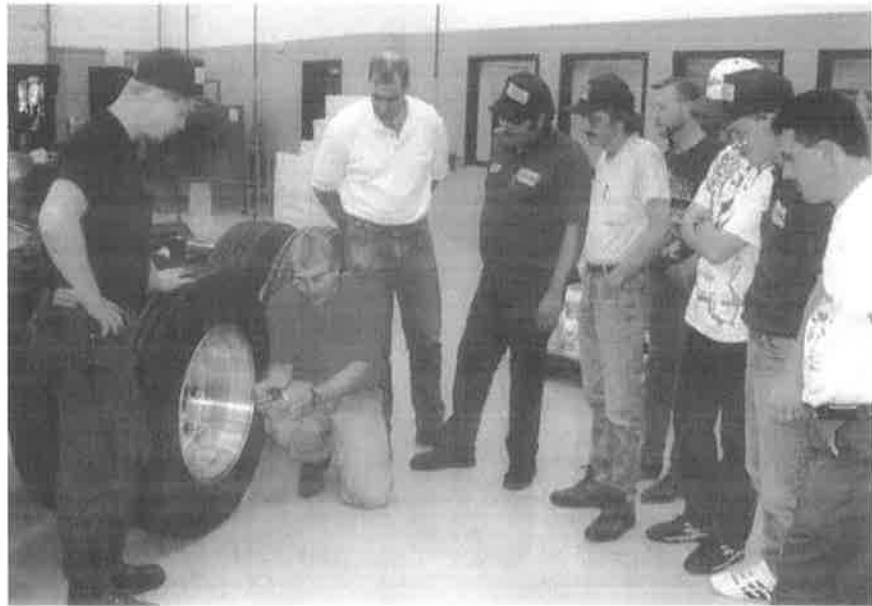
By **Kevin Rohlwing**

This year marked my 37th in the tire industry. I started what seems like a century ago, at age 15, stacking tires when I wasn't cleaning white-walls at our family tire dealership.

By the time I was 18, I was running road service calls all over the Chicagoland area.

Just a few years later, the service manager position at our dealership opened up and my whole life changed. Suddenly I had the responsibility of keeping service trucks, salesmen, and three bays running and profitable every day. One of those duties was to manage retreads on a weekly basis. We used two retreaders back then: one for "top-caps" (pre-cure) and one for "full-caps" (mold cure.) Most of the truck tires went for top caps because there was more leeway with the casings. The best truck casings, skid steers, and farm/earthmover section repairs went to the full-cap retreader. Up until I joined the old International Tire & Rubber Association (ITRA) in 1996, that summed up most of my experience with retreading.

In May 1996, Marvin Bozarth hired me as the new director of commercial tire service at ITRA, with the goals of developing both a publication for truck tire technicians and a leader-led commercial tire training program.



Here I am in the old ITRA Training Center teaching a commercial tire service class. Based on my waist and hairline, I'm guessing it's around 1998.

Prior to my arrival, the American Retreaders Association (ARA), which preceded ITRA, had built a state-of-the-art training center in Louisville, Ky. When I arrived, all of the facility's classes were associated with retreading since it had been a fully functioning retread

plant that was relatively modern. In the most popular class, students would come in for a week, and each of them would physically retread a tire from start to finish — in many cases, for the first time. Most students worked for suppliers and tire companies without a retread system, so the goal was to give them a better understanding of every step in the retread process. As simple as it sounds today, it wasn't that simple back then.

Inspection at the time consisted of a spreader, an NDT and an NDI detection machine. Each student would put their casing, supplied by a local retreader, on the spreader and conduct a complete visual inspection on the inside and outside of the tire, much like today. Then they would run the casing through the NDT to find any holes in the innerliner and then through the NDI to look for any separations. Sometimes the instructor would purposefully make a small hole in the tire so the students would know what to look for and how to repair it. The instructor would then walk them through each step of the inspection process so they



Bob Majewski, then-technical director for the American Retreaders Association (in red at the buffer), teaches a hands-on retread class at the new training center.



In the early 1990s, the American Retreaders Association (ARA) strongly believed that hands-on training led by an experienced instructor was the best way to teach the retread process.



Hands-on meant hands-on, as this student got some rubber dust on his white sweater while Bob Majewski taught him how to skive a tread injury on a truck tire.

understood what it took to inspect a casing.

From there, things got complicated. The student would have to select the proper buffed radius for the size, make and model of the casing before installing the correct template on the buffer. Then the student would make multiple passes with the buffer, each one a little deeper, until all of the tread design was removed. A quick check of the circumference with a tape measure would determine when the buffing process was

complete. Today, technicians scan casings and install tires on a computer buffer. All of the buffed radius and circumference data is loaded into the program, so the technician doesn't have to measure anything.

Back then, the hard part was far from over. The buffed casing in the precure process would have to be sprayed with cement, and then a thin layer of calendared cushion gum would need to be applied after minor damage to the top belt was removed. Then it

was filled with raw rubber from an extruder gun. In the classes, students would simulate skiving and filling. On a real-world casing at the time, the skive and fill station was a physically demanding job, and cushion gum application required a higher level of skill and precision. Fast forward 23 years and cushion gum extruders have eliminated cement and rolls of cushion gum while filling most of the skives. You now get a much more consistent bonding surface on

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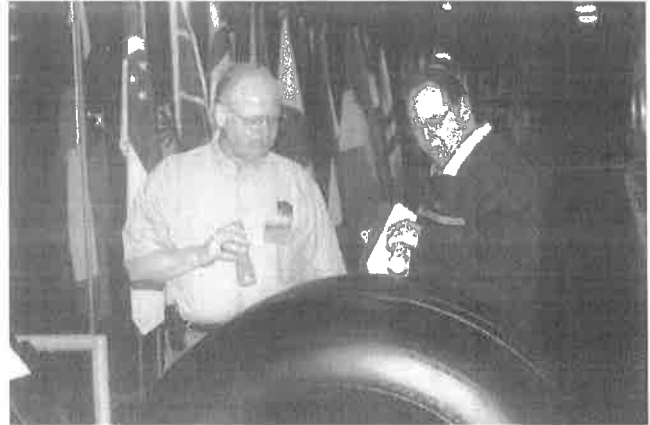
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Past, Present, Future: Retreading



This is a classic example of a student "eye-balling" the tread to see if it is centered and straight on the truck tire casing during the precure building process at the training center.



The late Raymond "Gus" Hawkinson Jr., left, was a former ARA and ITRA board member and retread appearance contest judge who put a lot of effort into grading every retread that was entered.

the casing, with a more even layer of raw rubber before the tread is applied.

Watching students struggle with building during classes was painful. Each roll of tread rubber would sit on the floor, and the builder would straddle the tread and physically hold it in place and guide it around the casing as it spun on the hub. Achieving a state of perfect straightness was rare. It took strength and a lot of skill to control the tread rubber in proper alignment. The students never had a chance, but there were a lot of precure builders in plants across North America who could consistently get them pretty straight most of the time, and only slightly off the rest. The best of the best would even know where to position the splice so it would match up with the other end of the tread. It was as much art as it was skill.

In 1996, the ARA had just changed its name to ITRA at the annual Retread Expo in April. My first unofficial job after joining ITRA was to attend the Expo, which gave me my first look inside the retread industry. The

Expo featured a retread appearance contest, where association members would send in their best-looking retreads in several different categories. As I walked down the aisles of retreads for the first time, I honestly thought some of them were new tires. The craftsmanship was incredible. For precure retreads, the splice would be positioned at the top so everyone could get a good look at it from shoulder to shoulder. They didn't look anything like the "top cap" retreads I was used to seeing, and entrants in the bead-to-bead mold cure category blew my mind.

The following year, I became intimately involved in the retread appearance contest. Retreads would arrive at the training center in Louisville and they had to be cataloged, stored, and eventually shipped to the convention center. In some cases, the shipping container was a shrink-wrapped tire on a pallet. We took great care not to damage or alter the appearance of the entrants as we positioned them on stands for judging. Someone put a lot of work into building and shipping each

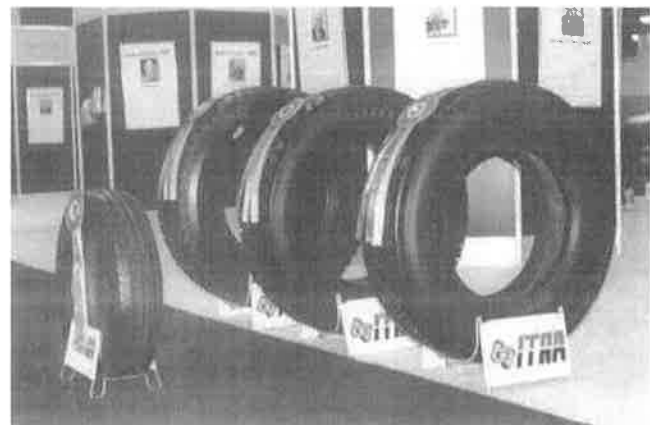
retread to us, so we took our jobs seriously, out of respect for their efforts. A committee of current and former board members judged each retread. Contestants were anonymous so it was a fairly honest assessment of each entrant's appearance, which meant the Best in Show Award winner was usually the best-looking retread.

Retreading required a lot of effort in the 1990s. It was a physically demanding job that required a high level of skill. Some equipment and machines made the process a little easier or a little faster, but the human element still played a major role in the quality and performance of each retread. You could have five different retreaders using the exact same process and get five different results. Good people in good plants made good retreads, average people in average plants made average retreads, and low-cost retreaders typically produced low-cost retreads.

Computerized buffers were probably the first major technological achievement for the industry. Keep in mind, there was

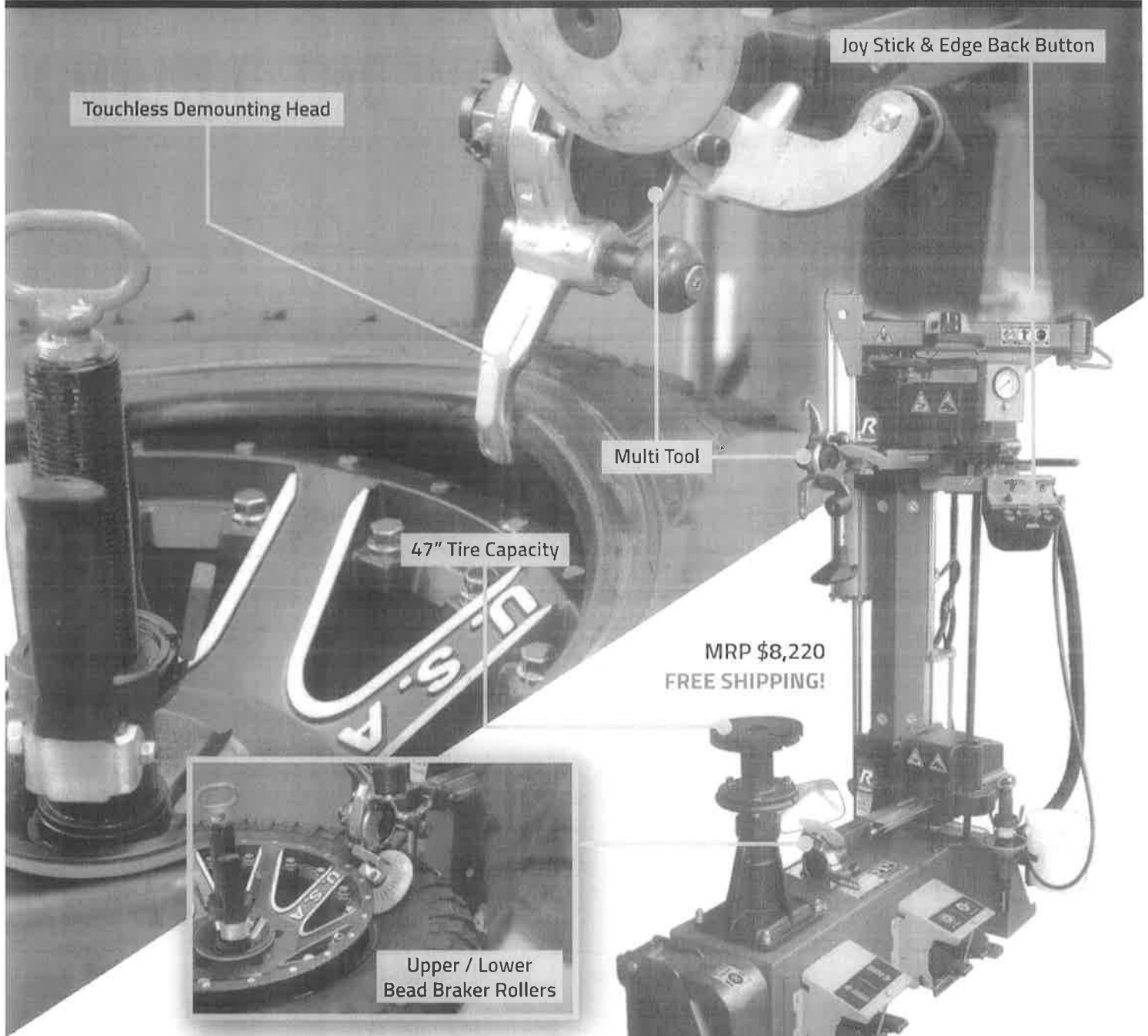


The retread appearance contests were prominently featured at the Retread Expo in Louisville, Ky.



A Best in Show Award at the retread appearance contest was the sign of a beautifully crafted retread.

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a considerable difference in cost between a standard buffer and a computer buffer when I started my career in retreading. There still is. Initially it was more about productivity. One computer buffer could buff more tires in a shift than a manual buffer. After the return on investment was proven, computer buffers became an easy sell to high volume retreaders. Consequently, smaller retreaders without the volume needed to pay for computer buffers found it increasingly harder to compete with those who were jumping on the high-tech bandwagon. What made it worse was the fact that automatic computer buffers did a much better job while lowering cost and improving the performance of end products. Better and cheaper is tough competition for any small business in a price-sensitive segment like retreading.

The reliability of retreads also has increased tremendously with shearography inspection technology. By detecting movement between the belts and belt edges, the retreader can definitively reject a casing with the pictures to show why it wasn't retreaded. Allowable guidelines are established and then the machine provides the information that either falls within or outside those guidelines. With a more stable casing, the benefits are easier to realize because fewer retreads will fail in service.

With the growth in automation, computerization and advanced inspection technologies, the need for skilled retread plant workers started to decrease. In 1996, most of the retread plant workers in North America were still craftsmen, to some degree. Now workers let the machines do most of the work. They just need to know where



Marvin Bozarth, left, former ITRA executive director, hands a Best in Show Award to the late Harvey Brodsky, former managing director of the Tire Retread & Repair Information Bureau, on behalf of one of his members who could not accept the award in person.

things go and what buttons to press. There are still a few craftsmen and skilled workers, but the majority can be trained to run a machine in a short period of time. I was fortunate enough to see the end of an era in retreading and then get a front row seat to a retread revolution that is far from over.

MORE OPPORTUNITIES

To say retreading has changed over the last 23 years is an understatement. There were probably 2,000 to 3,000 retread plants producing 15 million to 16 million retreads a year back then. Annual retread production has stayed relatively the same, with a slight drop to the current 14 million to 15 million-unit range, but the number of plants has dwindled to less than 800. Combine continued consolidation with more production improvements and you are going to get a growing number of

plants that retread more than 1,000 tires a day, which was unheard of back in the mid-1990's. Retreading is as modern of a manufacturing process as you will see, and I believe technology is only going to get better.

The other side of the business is the industry itself. I've always said that marketing and giveaways sell passenger and light truck tires, while math sells commercial truck tires. For a lot of fleets, it's cost versus price. With most wheel positions on the cost side, tire and retread manufacturers must continue to deliver the best cost-per-mile in order to compete. Some applications like waste and recycling collection will always benefit from retreading. They are the definition of severe service when you consider the brake heat and scrubbing alone. As long as there is garbage that needs to be picked up, waste haul fleets will need retreads. The keys to the future, in my opinion, are the pickup and delivery, regional and long-haul segments, where most trucks operate. I also believe that the economic advantages to retreading will become harder to ignore as new truck tire raw material and manufacturing costs continue to rise.

From a vehicle perspective, the most likely major shifts in trucking will focus on replacing/assisting the driver or an alternative energy source other than diesel fuel — in other words, automated and/or electric trucks.

But those are my views. Because technology will continue to play a major role in the evolution of retreads and the retreading process, I recently reached out to Edd Burleson, the president of Central Marketing Inc. in Colonial Heights, Va., and a member of the Tread Rubber and



There is a certain amount of pride that goes into the craftsmanship of building your first retread, as evidenced by these former ITRA retread students.

A black and white photograph of a man in a workshop pushing a hand truck. The hand truck is heavily loaded with a stack of tires. The man is wearing a dark t-shirt and pants, and is looking down at the tires. The background shows a workshop with various tools and equipment.

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Past, Present, Future: Retreading



This young female trainee was so proud of her truck tire retread that she wanted her own picture with it.



In the early 1990's, training was the key to success in retreading because there was a much higher level of skill required in the plant. That's why ARA built a training center and hundreds of students attended classes during that period.

Tire Repair Material Manufacturers' Group (TRMG), for his thoughts on retreading equipment. Edd was a pioneer in bringing automated retread technology from Europe to the North American market in the early 1990's and will be awarded the prestigious 2019 Ed Wagner Industry Leadership Award for his role in the technological retread revolution.

I wanted his thoughts on the future of retreading, and one statement he made really stuck out. He said, "Retreading advances are a little like Thomas Jefferson not inventing things but continuing to improve existing things." I asked Edd to weigh in on all the different ways that retreading equipment has changed and will continue to change.

On inspection: "I feel shearography is a major technological advance that has become affordable at the retreading level. Today, these systems offer bead-to-bead inspection with automatic grading of the casing based on the parameters given for each tire. The grading can split the tire into zones so different parameters can be used in different zones. Also, 3D mapping of the tire is now available, which makes the results more understandable for the operator."

On buffing: "We installed our first computer buffer in 1994, and if we compare what we have today to what we had then, the advancements in this technology are unbelievable. The latest innovations include automatically profiling the tire and calculating all the parameters needed to buff the casing. Also, the machine will automatically adjust the buff profile to a set distance over the steel belt, adjusting each section of the tire and making sure the shoulder circumferences are the same. In

addition to technology advances, there are also productivity improvements with twin hub buffers, so mounting, inflating, demounting and deflation time is reduced."

On AZ Cushion Applicators: "This is one of the machines that has had a major impact on the industry. The AZ machine has improved quality and saved waste from cutting the sides of calendared cushion off to fit the casing, plus filling the skives. Normal improvements have been many, including decreasing cycle time, but the latest advance is the automatic setting of the wing formers with a laser camera to gauge the thickness of the cushion applied to the casing."

On building: "This involves different types of machines, as there are different systems being used in the industry today, so they need to be addressed separately.

* Precure. "Major improvements have been in the areas of tread pattern matching and tread tensioning that improves balance. These machines measure the tire circumference and measure the correct tread length to apply at an even tension with a splice that matches the tread pattern."

* Spliceless. "This type of tread is cured in one piece so there is no splice, providing an optimal amount of tension with no need for a tread match."

* Mold cure. "There are new extruder builders that automatically measure the casing and apply the correct amount of rubber based on the exact mold for the retread.

Also, new extruders can extrude tougher rubber compounds that are required to be competitive in today's retreading industry."

On curing: "We still cure tires the same way by using a chamber or a press for mold cure, but there have been many improvements that have resulted in shorter cure times, with automatic controls that alert and prevent improper cures."

On final inspection: "The major change in this area is technology that can quickly and efficiently inflate the retreaded tire to operating pressure and check it for any quality issues before the tires leave the retread plant."

No matter how future products or services are delivered, there is a strong likelihood they will depend on vehicles with tires. Large warehouses scattered across the continent must be supplied by traditional tractor-trailer units, regardless of how they are powered or piloted. Those warehouses will then need a fleet of smaller vehicles to deliver the product directly to the consumer.

In an age where e-commerce is exploding, the Transportation Research Board estimated that the number of city truck trips may double by 2022. In many cases, tires on these urban delivery trucks may have a higher degree of retreadability. As more of them are needed to solve the challenge of the "final 50 feet," it could mean more opportunities for retreading. ■

"I FEEL SHEAROGRAPHY IS A MAJOR TECHNOLOGICAL ADVANCE THAT HAS BECOME AFFORDABLE AT THE RETREADING LEVEL."



EDD BURLESON

Kevin Rohlwing is the Tire Industry Association's senior vice president of training.