

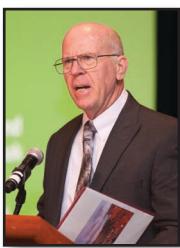
RTA Conference Presenters Share What's Ahead For 2016

Experts from all facets of the railroad, hardwood and wood tie industries were on hand at the 2015 RTA Conference & Technical Symposium in Tucson, Arizona, in November to share their insight with attendees.

Not only did they identify challenges the industry would face over the coming year, but they also brought attendees up to speed on the improving manufacturing outlook, the latest in R&D initiatives and legislative updates. Read below for highlights of their comments.

Economic Session

Daniel Meckstroth, Manufacturers Alliance for Productivity & Innovation



The U.S. trade deficit for the sawmill industry will be \$240 billion worse in 2015 than it was in 2014. This is typical of what you see in the manufacturing industry, yet the wood preservation industry is running a [export] surplus. If we see a period of calm in December, I think we will see the Fed raise interest rates. The Fed desperately wants to raise rates to normalize them. When you have interest rates that are exceptionally low, and the economy has recovered, you have to let rates normalize.

Anthony Hatch, ABH Consulting

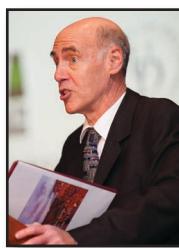


This has been a great century so far—great railroad expansion in market share, recovery in perception and terrific stock performance. This is a privately funded network maintained without tax dollars. This industry can speculate on new opportunities that compete with a heavily tax dollar subsidized, declining highway network. That's one of the reason's railroads's have been successful – return on invested capital has exceeded the cost of that capital. The railroad of the future will continue to be lighter, faster and more nimble.

"Today, we have a wonderful and sustainable resource."

- Jeff Hanks, Bill Hanks Lumber

Dr. Allan Zarembski, University of Delaware



Knowledge is power, and to be able to do our jobs effectively, we need to know more on the economic side, the technological side, and on all the other sides of the business world. In conjunction with RTA, we have implemented a series of one- to two-hour modules available on various areas of railroading associated of railroads in general and the use of timber ties in track. The program consists of six modules. The first two modules are an introduction to railroads and transit systems for non-railroad professionals. A third module is an introduction to railroad crossties for the non-railroad professional. The last three modules are geared toward engineers and designers involved in business end of the railroad tie business.

Procurement, Resource & Utilization Session

Judd Johnson, Hardwood Market Report



The U.S. hardwood stream is long, complex and fragmented, and does not respond quickly to significant demand changes. Most of the timber comes from privately held timberland.

One challenge is that most of the owners are not dependent on timber sales to sustain the standard of living and do not have to sell in a down market. U.S. hardwood sawmills have to buy their materials from people who don't have to sell. Above all, financial strain

is putting your sawmills at risk. Markets have changed and are changing, and prices have not leveled out. We have not seen any stability in years, which has created a vulnerable situation for sawmills. That more than anything has put your tie supply at risk.

Jeff Hanks, Bill Hanks Lumber



Today, we have a wonderful and sustainable resource, we have continually developing technology, and we have a pretty good group of innovative producers. We have an institutionalized legal system that encourages commerce, and we have a very good transportation infrastructure and capabilities both inland and from a port standpoint. These capabilities have made us the largest hardwood producing country in the world, and I believe the long-term opportunities for us are pretty terrific.

Don Finkell, Anderson Hardwood Floors



The shift is toward sliced- or sawn-faced floors that look like solids but have the attributes of engineered in that it's stable and you can glue it down to a slab. It's a whole new area that we think it's going to grow, and it's where we have put our capital investments and research and development efforts in trying to develop that type of floor. What I see in the broader market is that [some of these products] will come out of the same log you use as the crosstie.

**Jeff Edwards,
Edwards Wood Products**



Most of the timber sold in our area is sold by consulting foresters, who are keenly aware of the markets and advising timber owners, putting less timber on the market. This puts an extreme amount of pressure on margins and profitability. You've got to have wood in front of you and wood in front of your mill, high cost of timber is a challenge to us due to current market conditions in last 12 months or so.

Dick Maggiore, Innis Maggiore



If you want to compete with anyone in a number one position, never go head on. You'll lose, so you need to go against them. Position by finding an inherent weakness in the leader's strength. Attack at that point, on as narrow a front as possible. You can always find a weakness in a leader's strength [to position your product or company against].

**Jack Shannon,
JT Shannon Lumber Company**



The issue we need to be concerned about is the millennial generation. They don't have interest in our industry. In this business, you're brought up in it. I'm a fourth generation lumberman.

I guess if my father and grandfather weren't involved in it that, would I have ever considered it? Millennials want flex hours, weekends off, and they don't want to fight mosquitoes and snakes. How do we attract younger people? We need [the revenue] to increase wages.

"Not to be in tune with the ESA is throwing your hands up and saying, 'This won't happen to me.'"

- Scott Jones, Forest Landowners Association

**Scott Jones,
Forest Landowners Association**



The biggest policy priorities we have at this time are issues putting the most pressures on us to manage forest lands. The Endangered Species Act as it relates to protecting private property rights, Waters of the U.S., defining sustainability and why carbon accounting and sustainability is so important on forestlands, and tax reform. Not to be in tune to the ESA is throwing up your hands and saying, "This won't happen to me."

**Robert Crosby,
Crosby Land & Resources**



Instead of laws coming from the lowest levels of government having the greatest input from citizens, the administration is now sending out executive orders and allowing agency reinterpretation of existing laws and rules. It's expanding authority without congressional or public input. You can help combat this by looking to ForestAmerica.org. It has become a major tool for making people aware of regulatory issues.

Engineering Forum

David Fink, Pan Am Systems



A project we've done jointly with NS is the Knowledge Corridor, which was one of these government projects to reinvest in rail infrastructure. We were able to come to agreement for one Amtrak train a day on our line. Pan Am did the installation of ties on our line and started to do installation on the rail. 40 new turnouts, 30 new crossing upgrades, all while freight operations operated on track. We did 13 miles in the first years. We knew we were not going to make it in time, so we called up our friends at NS, and they brought us a couple of miles of men and machines, and in two three-week periods

finished the whole balance of the project. It was an unbelievable project, and it was done on time and on budget. Three miles a day is an amazing feat.

Brian Lindemood, Alaska Railroad Corporation, AREMA



AREMA is having a very successful year. We met at Railway Interchange 2015 in Minneapolis, where more than 9,500 people attended. Planning is already underway for Railway Interchange 2017, 2019, 2021. We've also done a large number of seminars on intermodal terminal design, railway loading and railway safety. We are continuing to develop our web-based educational programs for our 6,800+ members.

John Cech, BNSF Railway



We have put a lot of money into our network and invested in the right places. Since 2000, the amount of money BNSF has reinvested on network is a staggering \$50 billion—44 million ties replaced, 1,500 miles of central track and control, 11,000 miles of rail, 65 new or extended sidings. If you look at 2015 and even 2014, it was \$5.5 billion in 2014 and \$6 billion in 2015. In general, the railroad is running very well and in some cases better than it ever has in terms of velocity. Plus, capacity is improving.

Randy Bowman, Norfolk Southern



We currently have 10 T&S gangs that install all of our program ties. Five super gangs install 300,000 to 400,000 ties per year. Three standard gangs that install around 200,000 ties a year and two yard gangs that install just over 100,000 ties a year each. In 2014, our T&S gangs worked over 3,100 miles of track, installing over 2.7 million ties new and relay and just over 45,000 switch ties. Our 10 T&S gangs are on similar pace for 2015.

Kevin Hicks, Union Pacific

We did a study last year on end-plating of crossties. We looked long-term effects of plating. We will continue to do selective end-plating on crossties, but nearly all of them get end-plated.

We do still also use tie raters walking track. We have 20 some tie raters that walk our entire system, 30,000 plus miles, and that's how we set up our tie programs. Whenever a tie gang puts them in, they put them in that exact place mapped previously.

Tod Echler, CSX Transportation

I cannot stress enough the importance of safety around railroad crossings for anybody but especially log trucks. Some of my concerns are burning regulations. We're putting 100 percent borate ties. Can I burn borate in 20-30-40 years? We are not quite there yet, but I'm told we will be. Price volatility is also a concern of mine. What's next past borates? Is there something else we can do to improve tie life?

Research & Development Forum**Bror Moldrup, IWT Moldrup**

Creosote manufacturers have changed in their formulations, which has encouraged plant manufacturers to change plant design. There has been the introduction of odor-free creosote, which requires temperature in the plant of 150 degrees Fahrenheit. In order to try to improve the quality of the treated tie, we made changes in the plant design to ensure that the working temp could be increased from 122 to 185 degrees Fahrenheit to 225 to 248 degrees Fahrenheit. This leads to a much drier tie at the end of the process, and improves conditions for workers on the lines and also on the treatment plants.

Ronald Clawson, Kop-Coat

Where Tru-Cor really shines is to have instantaneous, full penetration of sapwood. In a study of white oak tie, very deep creosote retention, down into the heartwood. Borates everywhere. The Tru-Cor process has allowed dual treating of ties in hours instead of months. The process can also be used on bridge members.

Dr. Richard Bennett, University of Tennessee

Bridge tie replacement is not a trivial pursuit for the railroads. Install cost is a lot greater than typical crossties. Replacement is a slower, manual process. Larger timbers are susceptible to decay. Heartwood is harder to penetrate. One to two percent weight loss translates into losing a lot of strength. So, just a little bit of decay means losing a lot of strength. Final conclusion, [ports used to inject borates] have no huge effect on strength on bridge timbers.

Nate Irby, Union Pacific Railroad

Our philosophy is trying to maximize the quality of the material by dipping a green tie and allowing it to air season naturally. Even with some of the refractory species that are hard to treat, we dip the green tie to allow diffusion, and the borate migrates. You still have problems associated with processing different aspects of how the ties came in. There's a saying that "junk in is junk out." So, you have to maintain a level of inspection to make sure things are done right, and we have great suppliers [that pursue that goal].

"I cannot stress enough the importance of safety around railroad crossings for anybody but especially log trucks."

- Tod Echler, CSX Transportation

Mark Porter, Shoreline Plastics

We came up with Dura-Sleeve as an "enhancement" for wood treatments out there today. It adds abrasion resistance. Increases fire retardancy. Increases the strength and increases life-cycle.

Easy to install and 100 percent recyclable. At end of life, you can cut it off and reuse it. The two wood ties we sleeved still look like the day we sleeved them. Sleeves add a protective barrier that is like keeping it indoors. We did a fire test and found that PVC by nature is self-extinguishing. You can install Dura-Sleeve on-site or at the treating plant.

Bill Bushman, Anderson & Associates

On our bridge tie replacement program, we know where gusset plates are going to hit on that tie, and you can use that information to determine where the daps should be. NS has gone to a pre-plating feature in its bridge ties. Our program allows that to be reflected. Once we know where the placement of ties are, tie size is determined by the program and done so that the daps, which are necessary in order to avoid gusset plates if they are too deep into the tie the program, will adjust so that next appropriate sized tie is used to maintain structural integrity of system in accordance with standards set by the owner.

Recycling & Disposal Technology Forum**Stephen Smith, Stephen Smith Consulting**

Torrefaction provides an alternative to direct combustion of wood and has some advantages and disadvantages to regular combustion. You start with used ties and grind as normal. Going through the torrefaction process can produce a kind of charcoal that can be pelletized for higher density or for transport or used as is. There are a lot of railroad ties replaced

Dual-Treated Perfection

The 2-Step Borate + Copper Naphthenate Treatment

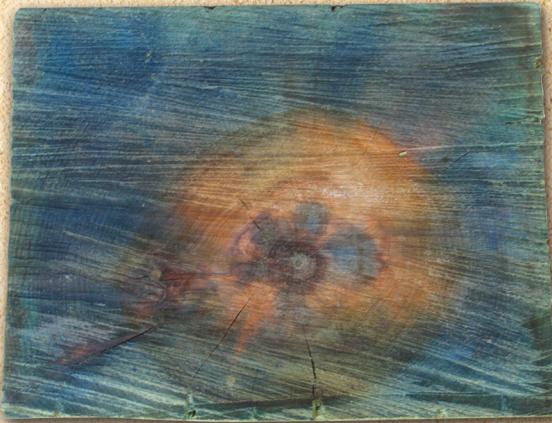
Add dual-treated ties to your green sustainability program using a Cellutreat® DOT borate treatment prior to air seasoning followed by a QNAP® copper naphthenate overtreatment.

CELLUTREAT®
DOT BORATE WOOD PRESERVATIVE



Diffusion of Cellutreat into hardwood (gum) shown by red curcumin indicator.

QNAP®
COPPER NAPHTHENATE



QNAP penetration into hardwood (gum) shown by blue Chrome Azurol S indicator.

- ✓ Eliminates incipient decay during air seasoning.
- ✓ Reduces stack burn.
- ✓ Prevents corrosion & core-induced decay.
- ✓ Reduces checking and protects heartwood.
- ✓ Data shows dual-treated ties are stronger than untreated ties.

- ✓ Performance equal to or better than other oil borne preservatives.
- ✓ Clean handling characteristics.
- ✓ Non-corrosive to skin.
- ✓ Virtually no drippage.
- ✓ EPA non-restricted use preservative.
- ✓ Great for crossties, switch ties & bridge timbers.

Dual Treatments. Just a 2% weight loss from decay can create a 30%-50% strength loss. Dual synergistic treatments using Cellutreat® DOT borate prior to air seasoning followed by treatment with QNAP copper naphthenate will improve your return on investment and provide worker and environmental safety while supporting your green sustainability tie and timber program.



Call Kevin Kirkland or Ken Laughlin
800.264.0870 or visit www.nisuscorp.com

every year. Currently, most ties are being used as fuel, but there are some challenges on regulatory side, including NHSM. We still don't know how that's going to come out. May or may not make direct combustion of ties more feasible. Also, there is a growing emphasis on reducing greenhouse gases and using used treated wood as a fuel since wood is a renewable fuel.

Nikki Labb  , University of Tennessee



Goal of project to develop technology to recover creosote from used ties. 56 percent of ties being used for fuel, if cannot use for fuels, will end up in landfills. Idea is can we recover creosote from used ties and then use it for different applications. It is a thermal chemical process that allows us to dissolve creosote from the ties. It will create a biomass that can be converted to different products-fuels, electricity, chemicals and carbon fibers. This is a way for us dealing with low cost of natural gas by creating higher value biomass.

Railroad Purchasing Forum

Cory Thomas, BNSF



We've spent in last two years \$11.5 billion on capital. Replacement is a significant piece of our capital budget. There are nearly 120 million installed in our system. Our tie program the last few years has been north of 3 million. About 3.5 million in 2015 and well north in 2016. We are continuing to put a lot of money into our network to support the velocity needed by our customers.

Sheila Gudenrath, Union Pacific Railroad



On average in 2015, we installed 350,000 ties per month. We really are a wood tie railroad. In 2016, we're estimating 3.4 million wood ties. Of those ties, we do have a demand for 1 million borate-treated ties. Our concrete tie program is estimated at 400,000 ties for a total estimate of 3.8 million ties for 2016.

Larry Fenwick, CSX Transportation



CSX has and will continue to be a wood tie railroad. However, we are now using concrete for new main line, and we're trying out steel in our yards. Composite ties may become an option in the future. We'll continue with the program between 3.1 – 3.5 million ties. We are testing copper naphthenate in Louisiana and in the central Georgia area in zone 5 areas. The jury is still out on that. All of our wood ties are borate treated.

Kristine Storm, Genesee & Wyoming



In 2015, I estimated we would install 1 million ties. We had some interesting projects come to light that we did not expect, including on the Chicago, Fort Wayne and Eastern. We put \$22 million in that one particular short line—150,000 ties, 280 crossings, we did a lot of work on that railroad to bring it up to 40mph. At the end of October, we are pushing about 1.3 million ties. Next year's projections are a little bit down from that—about 900,000 crossties.

Corey Plunkett, Norfolk Southern Corp.



We're in a healthy spot, and we want to continue that. The entire supply chain looks healthy. Logs are at the sawmills, ties are in the tie yards, and our inventory is higher at the plants.

And, finally, we had sufficient tie supply to keep the production gangs operational. Our projected requirement for next year is to purchase 2.6 million crossties, 131,000 switch ties and about 30,500 bridge ties.

Bill Blaise, Kansas City Southern



We expect next year to be slightly down both from the U.S. side and maybe a little bit flat in Mexico. From a preliminary perspective, we expect 654,484 ties for this year. We do anticipate 2017 to be a growth period with regard to ties. We have some projects in Mexico that will require an upgrade in network and growth in capacity. We're looking to build our inventories and are continuing to look for opportunities to expand our green tie inventory.

Rob Churma, Canadian Pacific Railway



For CP, 2015 was quite a large year. We installed 1.2 million ties for production and maintenance. We are 100 percent hardwood, very little steel, very little concrete. Total 1.3 million installed. Going forward, we will be a little down from this year. Our tie program looks to be fairly strong next three years at 1.2 million ties. 100 percent black tie. 100 percent hardwoods. Continued strong requirements going forward.

"There is a growing emphasis on reducing greenhouse gases and using used treated wood as a fuel since wood is a renewable fuel."

- Stephen Smith, Stephen Smith Consulting