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CHRISTINE COSTELLO

Bartlett Experimental Forest lab and conference building, an important building that supports researchers and partners in conducting field research. Current cooperating Bartlett Experimental Forest researchers are not permitted to use this building at this time. Read the full story on page 20.

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On the cover: Multi-ring forestry chains manufactured with an innovative hardening process.
Photo by Natalie Blake, Wallingfords, Inc.

NATALIE BLAKE, WALLINGFORDS, INC.

Continuous flow case-hardening furnace.

MAINE MANUFACTURER INVESTS IN FORESTRY CHAIN TECHNOLOGY

BY ERIN KESSLER

Wallingford's Inc., a wholesaler of logging supplies and forestry tire chains, has roots in the logging industry of northern Maine. Before its incorporation in 1975, current company President Chip Wallingford's grandfather owned a large logging operation on what was known as the "10,000-Acre Tract," west of the Kennebec Gorge.

At that time, cable skidding was the main method of transporting logs out of the woods. The '70s was a time of great transformation in the industry, with mechanization coming to the forefront. Being an innovator, Chip's grandfather, Richard Wallingford, developed the J1 choker, a low-cost conversion from chain choker systems to cable choker systems. This allowed for increased productivity as smaller diameter softwood became more prevalent. He founded R.L. Wallingford and Son in 1972, which was incorporated in 1975 as Wallingford's Inc. – now celebrating 50 years in business. As the business grew, Chip's uncle, John "J" Wallingford, increased sales of forestry supplies and forestry tire chains. The chains were a popular item that sold well from the mid-1970s to the mid-1980s. Recognizing the potential for American-made forestry chains, his uncle decided – with two partners – that they would try manufacturing them, which grew out of a garage in central Maine. Hence how Babac, Wallingford's own brand of tire chains, was born in 1986.

Since then, Wallingford's has continued to innovate through research and development, introducing new products on the market based on industry needs. The company sells a variety of international and domestic brands of traction systems, cutting systems, logging supplies, and grapples. In 2021, the company was acquired by the Pewag Group, based in Austria. Pewag is one of the oldest chain manufacturers in the world with roots that date back to the 15th century. It is a top manufacturer of chains for different segments, including tire protection chains for mining, overhead lifting chains, factory conveyor chains, truck and tractor chains, and normal chains for passenger cars. "We fit into what their goals were for expanding their footprint in forestry here in North America, from a global perspective," says Chip. It was that same year that Chip took over the business from his uncle and his uncle's partner.

With the acquisition came a visit from their Austrian counterparts and a SWOT (strengths, weaknesses, opportunities, and threats) analysis. That's what kicked off the heat treatment project. "Babac chains have had a good market presence, but as skidders, forwarders, and harvesters got larger and more powerful over the years, the underlying quality of the chain we were producing needed to improve, but to improve there had to be a significant investment in the heat treatment in particular," says Chip.

For Pewag, having a cutting-edge forestry chain manufacturing facility in the US – combined with Wallingford's experience with Babac brand chains – fit into their goals of manufacturing Pewag products close to the market they serve. It was decided that Pewag would make a multi-million-dollar investment in a heat treatment technology known as case hardening at Wallingford's facility in Winslow, Maine.

Before this investment, Babac chains – and most other tire chains manufactured in the US – were hardened by a process called through hardening. This process transforms the hardness of metal by heating it to austenitization temperature and then rapidly cooling it, making the metal more wear resistant.

Case hardening, Wallingford's Vice President and General Manager of manufacturing Eric Gagne says, utilizes the same heating to austenitization temperature and subsequent rapid cooling but in addition it puts carbon into the surface of the steel. "So, you're heating it under a carbon rich atmosphere. The carbon soaks into the chains and then there is the rapid quench to lock that hardness in."

Eric adds, "The way I like to explain it, is you think of your finger, and you think of the durability of the cross section of your finger. Then you think of the durability of the cross section of your finger with your fingernail on top. You have all the same benefits down below but now you have a nice hard case layer on the top, which adds to the performance and longevity and makes it a better product for the customer."

When considering buying forestry tire chains, one takes into account the chain's lifespan, usually in number of hours of operation before having to buy a new set. Another consideration is the type of terrain you are working on – soft soil, mud, hard-packed snow, ice, or rough, rocky conditions – all common situations in the Northeast and Lake States. "With the new process you're basically getting chains that are designed to give you greater longevity," says Chip. "And the other thing, what's really noticeable for the operator is in the past they would have to make adjustments fairly regularly even when they were brand new, whereas with the case hardening on the outside, it tends to be that they get a pretty good number of hours before they really

have to start adjusting them and before they get through that really hard layer on the outside."

Rumford logger Scott Nicols has been working in the woods of western Maine for over 20 years, and he's been testing chains with Wallingford's for the same amount of time. In previous years, he had a crew and multiple pieces of equipment, but these days he works alone, subcontracting for other companies. He owns a processor and a 948L, John Deere's biggest and heaviest four-tired skidder. He is currently using Pewag's double diamond chains with 3/4" chain links and studs on all tires.

"I like the tire coverage because tires are expensive and if you have a good chain on it, you protect them and prolong the life of the tire. The pair that's on the front I think I'm at 1,800 hours. The pair that's on the back are fairly new, probably only 7 or 800 hours on them and they're just like the day I put them on," Scott says.

With his current setup, Scott does 12-15 hitches a day by himself and sends out around 10-15 loads a week to the mill. "With this case hardening stuff there's less maintenance. I'd have to guess, but we're getting 20 to 40% more life out of a set of chains than we used to compared to just the welded hard steel." He adds that he appreciates the backing from Wallingford's. "They back their product 100%. The extra life is a super big plus because you're not working on them, you're not tightening them, you're not missing a day's work. Not having to mess with the chains for a day is a big plus."

NATALIE BLAKE, WALLINGFORDS, INC.

Pewag case-hardened chains come in a number of designs and chain lengths.

There are a number of different designs and chain lengths. Scott has bought a few different sets. "I actually bought some from them that have gone through the hardening process but are two different lengths of chain. They're built a little different. You put one on one tire and one on the other and you can see what they are doing for wear, and that's kind of what I've done with them as far as testing and they have adjusted their design off of the good and bad results," Scott adds.

The large investment in a state-of-the art hardening furnace is one thing that has given the company an edge. GM Eric Gagne says, "We could have done this on a smaller scale and budget, but Pewag wanted the right piece of equipment to carry us forward decades, not an old, tired piece of iron that was in somebody's field that we just resurrected."

The case hardening machine's control system is fully computerized, and the process is fully automated. Getting the chains into the furnace, the hardening process itself, moving them out of the furnace, into a washer and out of a washer takes place without human intervention. "We can watch these processes and make sure they are done appropriately, and of course if something goes wrong there's human intervention, but it helps us not do things as they were done 50 years ago," says Eric.

Pewag forestry chains sold in North America are all designed and manufactured at the Wallingford's facility in Maine. The "Made in USA" label is something Wallingford's takes great pride in. Chip Wallingford states, "We are feeling very positive because we are selling more chains than we did last year and we expect to see ongoing growth in market share, hopefully as word gets out. It's a good American-made product that has a little bit of tailwind behind it, so we are feeling pretty positive overall." **NL**