


# The Woodworth Group

**Whatever market you serve, you can count on this company to go the extra mile to make sure your gears and components are heat-treated properly and made of the right stuff.**

By Russ Willcutt



When Pierce Woodworth launched his new company in 1968, it was a small tool and die shop generating some \$250,000 in sales annually. These days The Woodworth Group has five locations, and with more than \$20 million in revenue in 2009 it ranks as one of the top-five commercial heat treaters in the country. What's their secret?

"We set out to help our customers solve problems and increase their throughput while reducing their operating costs, and we place a great deal of emphasis on doing things right," according to Terry Woodworth, the company's president, CEO, and son of the late founder. "And that means doing it right the first time."


Over the past three decades the company has grown in significant ways, both in terms of its capabilities as well as its physical footprint. During the eighties, for instance, it began implementing the quality systems required by the various industries it planned to serve, also building a new facility in Detroit featuring cutting-edge equipment for processes such as nitriding and ferritic nitrocarburizing. In the nineties it transitioned to QS 9000 and built a facility in Southfield allowing high-volume throughput for neutral hardening, and carburize and hardening. Then, beginning in 2000, it gained TS 16949 and ISO 14001 accreditations, installed three vacuum hardening and carburizing furnaces at the Detroit facility, and built another one in Plymouth with four lines capable of neutral hardening and carburizing up to 50 tons per day. It then designed and installed four tip-up nitriding and ferritic nitrocarburizing furnaces that are 32' long by 8' wide and tall, locating two of them in Detroit and the remaining two at yet another new facility, this one in Ashland, Virginia.

According to Lonny Rickman, technical director, "Gears are an integral component of many applications, whether they be petrochemical, wind power, transmissions, engines, oil field, mining, recreational or medical," he says. "As a result, the design engineer has many options to consider."

These options include the cost, availability, machineability, and properties of raw materials; the processing sequence determining the flow from raw materials to finished goods; dimensional stability; and reliability and durability. The Woodworth Group has positioned itself to assist its customers and their engineering groups in addressing all of these design objectives. By way of example, each of its facilities features a standalone metallurgical laboratory that is equipped to conduct regular and superficial Rockwell hardness testing, Brinell hardness testing, microhardness testing, chemi-

cal analysis, and metallography with image analysis. Rickman thinks back to a project that exemplifies the company's collaborative approach.

"We have a customer that was developing a ring and pinion gear set for an off-highway military application," he says. "They were producing the gear sets to their customer's specifications, but in field tests at -40 ° F the gears were fatiguing at accelerated rates. Our engineering department reviewed the standards and specifications and recommended an alternative material, as well as heat treating. The end user wasn't receptive to either recommendation initially, so we took a proactive approach and selected three carburize and hardening grades of material, including the material that was already being used. We then machined four Charpy 'V' notch samples with each receiving a different case depth, including the customer's current specification. Each sample was then frozen to -60 ° F and subjected to Charpy impact testing. This allowed us to demonstrate that our recommended material and cycle provided a 400-percent increase in impact toughness."

The Woodworth Group is currently a Tier 1 supplier to customers including Caterpillar, General Motors, and Chrysler, and a Tier 2 supplier to American Axle, Cummins Engine, and Toyota, among others. With customers located throughout North America, the company is constantly seeking out new opportunities, such as expanding its operations in China and India. The list of services it provides is long, with capabilities such as neutral, bright and vacuum hardening; atmosphere and vacuum carburizing and hardening; solution annealing and aging; and normalizing, annealing, and stress relieving. "We also perform nitride and ferritic nitrocarburizing, as well as steam oxide and carbonitriding," according to John Crowe, sales engineer. "In short, no matter what our customers require, we're in a position to make sure that all of their needs are met." 

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