

# ALD Thermal Treatment, Inc.

**A** wholly owned subsidiary of Germany's ALD Vacuum Technology, ALD Thermal Treatment provides metallurgical expertise and contract heat-treat services to a wide variety of markets.

With global service centers in Germany, Michigan, South Carolina and Mexico, ALD Thermal Treatment specializes in vacuum heat-treat services that incorporate its unique high-pressure gas-quenching (HPGQ) technology, which is used in several market segments – from the processing of automotive transmission components and roller bearings in aircraft wing construction to high-technology applications such as the production of materials to construct photovoltaic cells.

ALD Thermal Treatment was formed to demonstrate the value of its distinctive technology on conventional heat-treat processes and subsequently, to offer this technology on a contract basis.

In a series of developments, ALD Thermal Treatment's equipment and process technology received quick acceptance in the area of precision-manufactured components, including diesel-fuel injection nozzles for a German manufacturer. While



its processes provided excellent thermal results, hidden benefits in the control of distortion and surface cleanliness became apparent.

Subsequent expansion into the North American market soon followed with its first production plant near Columbia, S.C., in 2001. The plant was positioned to demonstrate ALD's ModulTherm and DualTherm equipment, which provided low-pressure carburizing (LPC) and HPGQ. As ALD Thermal Treatment grew, the LPC and HPGQ process was released on six-speed transmission components designed cooperatively by Ford and General Motors. This resulted in the creation of high-volume automated production facilities in Port Huron, Mich., and Ramos Arizpe, Mexico, to support transmission production. The success of this program – minimal distortion, excellent metallurgical results and cleanliness of process – resulted in three additional transmission programs.

ALD Thermal Treatment's signature technology is based on its specialized equipment. HPGQ provides precise control of the quenching process (volume of gas and pressure) to achieve the right balance in structure and hardness. The company can reproduce the results from quench time after time with its particular blend of control technologies. Since no oils are used in the processes, ALD Thermal Treatment is able to incorporate high-technology fixturing concepts that keep the processed parts flat and impart little heat in the quenching process. These fixture types have great longevity and are a significant cost savings in long run/cycle life products.

Further advantages of this technology are related to cleanliness of treated parts and reduction of distortion. Parts coming out of ALD's LPC/HPGQ treatment process are clean, shiny and do not require any specific post-treatment steps unless re-



quested by the customer. With the precise control of the decisive quenching parameters, the HPGQ process can be customized to the specific application in order to minimize distortion. Depending on the part's specific properties, it is even possible to completely abandon hard machining after heat treatment.

ALD Thermal Treatment utilizes safe and environmentally friendly processes and even captures and reuses its Helium gas from quenches. No process effluent flows to a drain and very little gas escapes into the atmosphere. With cool-wall construction and electric heating, the technology is designed to be friendly to the environment.

ALD Thermal Treatment actively seeks high-volume opportunities to develop specialized processes that add value and reduce costs within the supply chain. In addition to its HPGQ and LPC processes, the company currently offers: vacuum/plasma carburizing, hardening, carbonitriding, annealing and high-temperature brazing. ALD Vacuum Technology also supplies vacuum equipment for the North American market through a joint venture with Michigan-based ALD-Holcroft.

**For more information,** contact Michael Pode, Vice President of Sales, at 803-546-6686 or [mpode@aldtt.net](mailto:mpode@aldtt.net). Visit our website: [www.aldtt.net](http://www.aldtt.net)