Lean Manufacturing

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Next generation AD solid carbide drill helps wheel hub bearing supplier achieve lean and agile manufacturing

The manufacturing industry is evolving at exponential speed driven by Industry 4.0. Advancements in technology continues to place pressure on manufacturers to embrace new lean practices. To thrive in today's volatile market environment, NTA Precision Axle Corporation in Illinois, United States is taking advantage of OSG's advanced drilling solutions to maximize production efficiency in its wheel hub bearing production.

NTA was established in 2010 in the city of Carol Stream as a joint venture between NTN Corporation, Takao Kogyo Co., Ltd. And Asahi Forge Corporation to integrate forging, heat-treatment and turning in order to pre-process automobile hub bearings. NTA currently employs 270 staff at its 53,500-square-meter site.

The wheel hub bearing is a main product of NTA, which the company has been manufacturing since its founding. A wheel hub bearing is an automotive part used in most vehicles. Wheel hub bearings are located on each axle and have to sustain a variety of forces from the vehicle. Working in conjunction with other automotive components, the wheel hub assemblies connect the wheels to the vehicle body and provide power needed for the wheels to rotate. Wheel hub bearings are mounted and connected to other components by nuts and bolts, requiring the drilling of holes. Each of NTA's wheel hub bearing requires the drilling of five holes in grade S53C carbon steel. NTA produces approximately 840,000 parts per year, accounting for 4,200,000 drilled holes annually.

NTA was originally using a competitor 11.8mm diameter straight cutting edge carbide drill for the application. NTA's objective was to further improve cost per unit without sacrificing quality. NTA is an existing user of OSG taps, but the company has little experience with other OSG tooling solutions. After multiple visits and performing a detailed evaluation of the application, OSG JTA Account Manager Ken Sato proposed the AD-2D solid carbide drill from OSG's premium A Brand series to tackle the challenge of reducing cost per unit.

The AD drill is part of OSG's versatile next generation high-performance carbide drill series. Standard stock is available in 2xD length and 4xD length with diameters ranging from 2 to 20mm. The AD series' special point design allows it to dramatically inhibit margin wear when machining carbon steel and cast iron. Smooth chip evacuation capability further allows low thrust and disturbance-free machining torque, making this series highly adaptable to a variety of machining environments.

NTA's goal for the cutting trial was to achieve an improvement from the competitor drill by making 1,600 parts per drill, which is equivalent to 8,000 holes. When Ken Sato reviewed the AD drill's result with NTA, the performance was too good to believe that he had to double check the numbers. The average tool life of the AD drill was 6,400 parts, which is equivalent to an astonishing 32,000 holes per drill. The AD solid carbide is able to exceed four times the expectation. With consistent performance from multiple cutting trials, NTA was confident to make the switch. In addition to the upfront cost-savings, OSG also provides reconditioning services to further assist NTA to maximize cost efficiency.

Wheel hub bearings today are becoming more and more sophisticated and integrated to achieve

greater efficiency. The increasing demand for quality and performance are putting automotive suppliers to the test in terms of agility. AS NTA celebrates its 10th anniversary in 2020, the company will continue its journey to success by continuous manufacturing process improvement.

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