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# High precision grinding made affordable

**TGS**  
Total Grinding Solutions

Total Grinding Solutions (TGS), a partner company of GCH Tool Group Inc, has unveiled its new TGS-CL-6020 CNC centreless grinder, which has been developed specifically to provide the manufacturing community with a high precision machine at an attractive price point.

"There are high-end, expensive centreless grinders on the market, and there are basic, entry-level machines," explains Daniel Geddes, company president of both TGS and GCH. "With the TGS-CL-6020 we have struck the middle ground, where there is currently a real gap in the market."

Configured for both thru-feed and in-feed grinding, the company says that the TGS-CL-6020 centreless grinder can handle even the highest volume production runs with extreme accuracy and consistency. Designed for years of uninterrupted service, the new machine has been developed by a team that boasts over 150 years of combined grinding experience. With this in mind, TGS is well placed to suggest auxiliary equipment and machine upgrades that will increase production rates and efficiency. From simple enhancements such as bowl feeders through to the integration of fully automated load/unload systems, the TGS team says it can share its expertise by reviewing current processes and equipment. Numerous automation options are available, which can be adapted to a variety of workpieces including engine valves, universal joint crosses, piston pins, fuel injection components, valve stems, bearings and others.

A recent grinding test conducted by TGS showed impressive results on an alloy steel engine valve. Using an A60K5VS3 grinding wheel, the TGS-CL-6020 centreless grinder was able to maintain 0.2 Ra surface finish, roundness of 2 µm and cylindricity of 2 µm, while achieving stock removal of 0.15 mm (roughing), 0.025 mm (semi-finishing) and

0.02 mm (finishing). Cutting data included peripheral wheel speed of 45 m/s and 2.5 m/min feed rate.

"The machine is pitched at sectors such as the fuel injection industry, fastener manufacturers and the bearing industry," says Mr Geddes. "Essentially, any production requiring tight tolerance components will benefit from the TGS-CL-6020. It offers sub-micron level precision, thanks largely to its high rigidity – the machine weighs 8000 kg."

According to TGS, the machine bed is constructed from high quality cast iron that is stress relieved for life-long accuracy and years of reliable, trouble-free operation. The use of a high rigidity honeycomb structure is said to improve overall machine rigidity and dampen vibration, while another factor influencing accuracy is the deployment of integrated, heavy duty, preloaded rolling guideways.

Among numerous other machine features, a regulating wheel spindle incorporates high precision, greased-for-life roller bearings, while outboard bearing support claims to provide maximum spindle rigidity and extended operational life. In addition, the upper and lower slideways feature a micro-feed attachment for fine adjustment of less than 0.001 mm. A wheel speed inverter facilitates speed adjustment, while wheel tilt angle of +5° to -3° is offered for thru-feed grinding. The

TGS-CL-6020 is capable of running with conventional, CBN or diamond wheels.

The grinding wheel head itself is mounted on the machine bed for maximum rigidity and enhanced precision. Furthermore, a two-axis CNC grinding wheel dresser is said to accommodate any part profile. According to TGS, dynamic and static FEA (finite element analysis) has been conducted on all critical machine parts and sub-assemblies to ensure maximum performance under demanding strength and stress requirements.

"As a centerless grinder manufacturer we seek to lead the industry by continuously engineering innovative equipment through significant investments in R&D and proactive product training," says Mr Geddes. "Along with the company's initial mission to manufacture quality equipment at an affordable price, TGS also focuses on machine reliability, which minimises downtime, lengthens machine life and reduces cost of ownership."

The TGS-CL-6020 CNC centreless grinder is available worldwide, directly from TGS. The machine can accommodate minimum and maximum diameters of 3 mm and 120 mm respectively, and up to 200 mm in length. For further information [www.totalgrindingsolutions.com](http://www.totalgrindingsolutions.com)

