



Chicago White Metal Casting

High-Tech Al, Mg, Zn & ZA Die Casting
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CWM mag die casting met stringent specs for Trimble's New TTS™ 500 Surveying Instrument, which offers accuracy in any survey situation

Innovative Trimble Optical Surveying System Extends Total Flexibility to Global Positioning Technology

Satellite-based global positioning systems (GPS) are enjoying astounding performance in surveying, mapping, agriculture, construction and navigation applications.

Even "Astounding" Can Be Improved

No company knows the capabilities of GPS better than Trimble, a world leader in this field with more patents for GPS and related technology than any other organization.

When field survey use of the technology showed the extent that GPS readings would be affected by natural or man-made obstructions, or where necessary access would be impossible or dangerous, Trimble developed the TTS 500 Optical Surveying System.

Seamless Integration with GPS

This new product is an optical extension for the Trimble GPS Total Station® surveying family of instruments and software, designed to provide surveyors with compatible solutions for any task in any location. Both optical and GPS data can be downloaded to specialized Trimble survey software for integration, processing and export to popular survey, CAD, and design software programs.

The TTS 500 uses reflectorless technology and unique, high-performance features to allow a single operator to achieve millimeter-accurate distance readings, more rapidly than with technologies typically used in optical total stations for survey applications.

Mg Die Casting Selected

Four magnesium die cast components are key to the TTS



500's mechanical assembly: the basic vertical frame, called the alidade; the side gear housing; the base mount; and the unit's bearing cup.

Early evaluations for volume processing ruled out CNC machining as cost prohibitive, and desirably lightweight plastic moldings as incapable of providing the required stiffness for this highly precise measuring instrument.

The four magnesium parts are hot-chamber die cast in AZ91D alloy by Chicago White Metal Casting, to near-net-shape. After vibratory deburring, the parts receive CNC machining to bring them to final dimensional



Using pulsed laser electronic distancing technology, the new Trimble TTS 500 optical surveying instrument (above) incorporates four Mg die cast components (left) to achieve stiffness and ruggedness, with light weight. Mg provides the highest strength-to-weight ratio of any commonly-used engineering material.

specifications. All parts were initially produced as CNC machined prototypes for evaluation, with the basic frame later generated as an STL model for marketing exposure. The designs were executed as CAD data, forwarded electronically to CWM for die casting die design in a paperless workflow.

Cosmetic Surface Finish, As Cast

The complex main frame requires tight perpendicularity and a cosmetic surface finish, as cast. The surface specifications are achieved by die casting through a center gate, with all ejector pins located in the gate or in the part's overflows. Die casting provides a shielding bonus of an assured conductive path to ground, essential for this product.

CWM provides a range of CNC secondary machining operations on the Mg parts. All parts receive corrosion-protective treatment, with a powder coat finish on exterior parts.

For further information on CWM high-technology die casting in Al, Mg, Zn or ZA-8, contact your CWM Sales-Engineering Representative, the CWM Sales Dept. or the CWM Website at www.cwmldiecast.com. ■

