

CTG™

IMPACT-ECHO BASED CONCRETE THICKNESS & FLAW GAUGES



2007 PRODUCT LINE

*You no longer need to drill, core or excavate
to determine concrete slab thickness using our*

CTG™ GAUGES

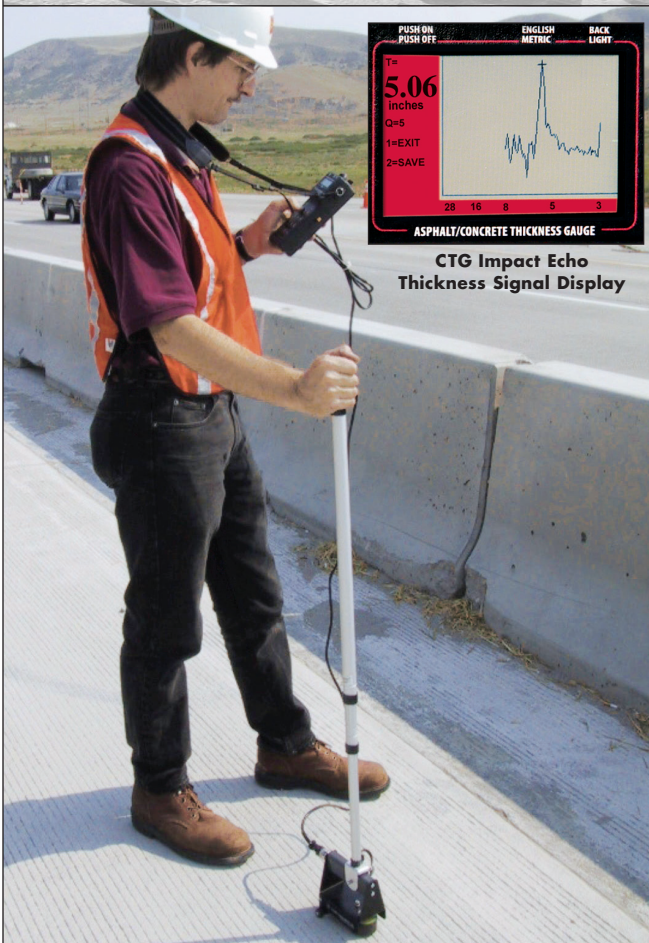
The CTG™ line of instruments are nondestructive, battery powered, handheld systems for measuring the thickness and integrity of concrete slabs, pavements, tunnel linings, walls and other plate-like structures. These systems feature a gauge that records thickness information, a test head for generating and receiving resonant sound waves and a telescoping pole for use on flatwork or overhead.

The CTG™ requires no special knowledge or training for thickness measurements! It reliably measures the thickness of any type of concrete using the Impact Echo (IE) principle. Use it right out of the case with built-in default concrete parameters, or for greater accuracy, simply calibrate the CTG instrument by testing at a point of known concrete thickness as a calibration reference for the speed of sound in that concrete and start testing!



[CTG Test Head]

VERIFY CONCRETE PAVEMENT THICKNESS IN 1-EASY STEP!



CTG Impact Echo
Thickness Signal Display

CTG™ Features

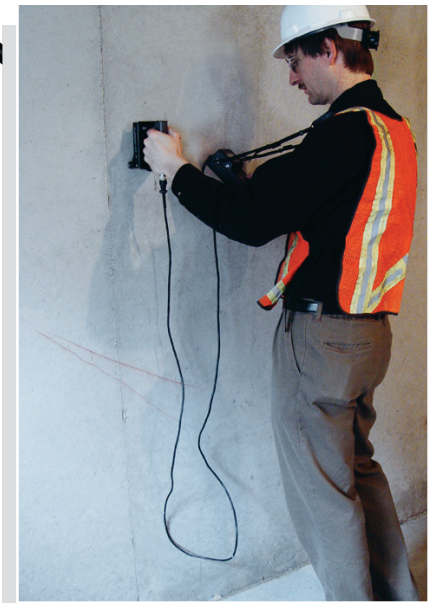
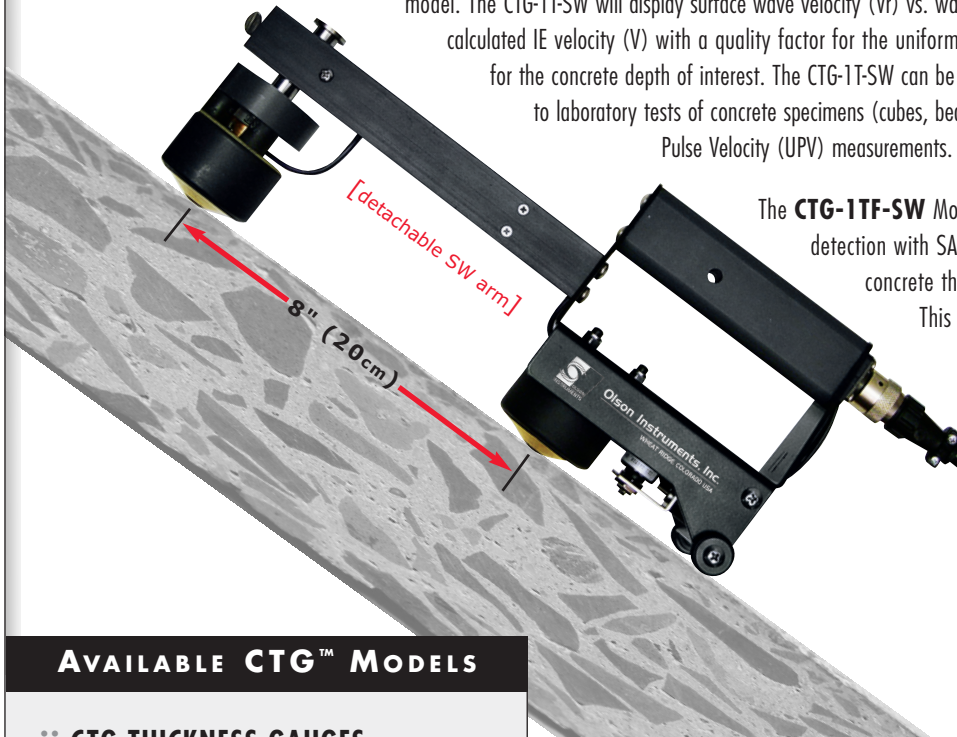
- ▶ Ruggedized handheld test head with integrated displacement transducer and solenoid impactor
- ▶ No coupling agents required for use of test head on concrete or masonry
- ▶ Works on cured, hardened concrete suspended in air or slab on grade
- ▶ Works through hard paint and most types of bonded tile (checks tile bonding too!)
- ▶ Easy to read LCD display for outdoors with switchable backlight for indoors
- ▶ English (inches) or Metric (centimeters) thickness and spectral impact echo thickness signal display
- ▶ Easy velocity calibration at known thickness locations
- ▶ Store 300 tests and download test time/date and results into your PC
- ▶ Thickness data table can be imported into popular spreadsheet programs
- ▶ Save selected date/time and spectral thickness results for reviewing at a later time
- ▶ Super Thin (ST) concrete option on various models
- ▶ Surface Wave Velocity (SW) option on various models

SURFACE WAVE (SW) VELOCITY OPTIONS

The SW models incorporate the capabilities of our existing CTG-1T, and includes a detachable 20cm long arm to the front of the test head with a second displacement transducer to also allow for Spectral Analysis of Surface Wave (SASW) testing.

The advantage of the **CTG-1T-SW** Model is that it can check concrete quality/velocity from one side without having to know the thickness of the concrete being tested, which is required for backcalculation of the IE velocity in the CTG-1TF model. The CTG-1T-SW will display surface wave velocity (V_r) vs. wavelength (λ) on its screen (see below) and the calculated IE velocity (V) with a quality factor for the uniformity of the result of measuring an average velocity for the concrete depth of interest. The CTG-1T-SW can be used for correlating strength vs. velocity in the field to laboratory tests of concrete specimens (cubes, beams or cylinders) with Impact Echo (IE) or Ultrasonic Pulse Velocity (UPV) measurements.

The **CTG-1TF-SW** Model combines Impact Echo (IE) thickness and flaw detection with SASW velocity measurement for the most powerful concrete thickness, integrity, and quality gauge in the world! This option includes our WINTFS-IE and WINTFS-SASW software for IE flaw/velocity analysis.



The CTG gauge can be used overhead, on a wall, or attach the telescoping pole for use on flatwork and hard to reach places

AVAILABLE CTG™ MODELS

CTG THICKNESS GAUGES

Standard Model **CTG-1T™**

Enhanced Feature Models for the **CTG-1T™**:

- **CTG-1T™** + Super Thin (ST)
- **CTG-1T™** + SW Velocity Option (SW)
- **CTG-1T™** + (ST) + (SW)

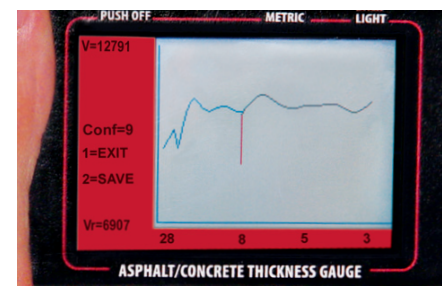
CTG THICKNESS/FLAW GAUGES*

Standard Model **CTG-1TF™**

Enhanced Feature Models for the **CTG-1TF™**:

- **CTG-1TF™** + Super Thin (ST)
- **CTG-1TF™** + SW Velocity Option (SW)
- **CTG-1TF™** + (ST) + (SW)

* Same equipment as thickness gauges, but with enhanced software capabilities. The "F" indicates FLAW capabilities in product identifications.



CTG-1TF-SW V_r vs λ for V calculation in IE

CONCRETE THICKNESS GAUGES — THICKNESS ONLY MODELS

Standard Model CTG-1T™

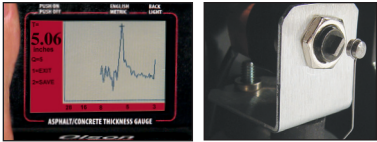




The **Standard Model CTG-1T™** features a ruggedized hand-held gauge with an easy to read LCD display for outdoors with switchable back-light for indoors. Thickness and spectral echo signals can be displayed in English (inches) or Metric (centimeters) units with just a click of a button located at the top of the gauge. If you currently own one of the standard models, it can be reconfigured/modified at Olson Engineering to handle a broader range of tests and thicknesses as shown below, or you can purchase any of the unit(s) with the necessary components already configured.

The Impact Echo (IE) based **test head** is used for generating and receiving sound waves for reliably measuring the thickness of most any type of concrete. The **extension pole** is easily attached for overhead use or flatwork.

Standard Model Specifications:

- ∴ Thickness Range: 2.6 inches to 6 feet (66mm to 1.8m)
- ∴ Report Capability: thickness summary table for spreadsheet

CTG MODELS WITH ENHANCED FEATURES	Components	Thickness Range	Report Capability
CTG-1T-ST™ SUPER THIN (ST) 	<ul style="list-style-type: none"> ■ Gauge ■ Test Head with High Frequency Impactor ■ Extension Pole 	1.5 inches to 6 feet (38mm to 1.8m)	Thickness Summary Table for Spreadsheet
CTG-1T-SW™ SW VELOCITY (SW) 	<ul style="list-style-type: none"> ■ Gauge ■ Test Head ■ Extension Pole ■ SASW detachable arm 	3.2 inches to 6 feet (80mm to 1.8m)	Thickness Summary Table for Spreadsheet
CTG-1T-ST-SW™ (ST) + (SW) 	<ul style="list-style-type: none"> ■ Gauge ■ Test Head with High Frequency Impactor ■ Extension Pole ■ SASW detachable arm 	1.5 inches to 6 feet (38mm to 1.8m)	Thickness Summary Table for Spreadsheet

CONCRETE THICKNESS AND FLAW GAUGE MODELS

The CTG-1TF™ models offer the user not only thickness measurements and the download of a thickness summary table identical to the above CTG-1T™ models, but the actual time domain Impact Echo data can be digitally transferred via a serial port for flaw analyses. With our Windows based WINTFS-IE software, you can identify such internal flaws as void, honeycomb, cracking, delamination, etc. Up to 300 test records can be stored prior to data download being required. A notebook computer combined with one of our CTG-1TF™ models will provide customers the benefit of an easy to use, portable tool with instrument quality measurement and data analysis capabilities. For the SW models, our WINTFS-SASW™ software will display phase, velocity or modulus data vs. frequency or wavelength of a single test.

Standard Model CTG-1TF™*

Enhanced/Modified Options:

- ▶ **CTG-1TF-ST™**
- ▶ **CTG-1TF-SW™**
- ▶ **CTG-1TF-ST-SW™**

*Same equipment as thickness gauges, but with additional software capabilities.

**You have the questions, we have the instruments and knowledge to
FIND, CHARACTERIZE and ASSESS the condition of structures.**

"SOUND" SOLUTIONS, USING SOUND TECHNOLOGY

OUR GUARANTEE TO YOU...

*durability, robust construction, long battery life and
quality are built into every instrument we sell!*

OUR COMPANIES

Since 1985, Olson Engineering has focused on assessing the condition of structures with NDE methods for the civil engineering industry. As the company grew and became a leader in the industry, both government agencies and independent engineering firms came to depend on Olson Engineering for their expertise. This experience led to the founding of Olson Instruments in 1995, with the development of instruments for NDE and Geophysical systems for non-destructive on-site testing.

OUR COMMITMENT TO QUALITY

OLSON INSTRUMENTS, INC. is committed to providing reliable products manufactured with quality components and delivering without delays. This commitment to our customers provides timely and effective project solutions with the benefit of excellent support and training from Olson Instruments (USA) and our agents around the world. We distinguish ourselves through performance and solutions.

OLSON ENGINEERING, INC. has provided state-of-the-art Nondestructive Testing and Evaluation solutions for the construction and industrial communities since 1985. We have been continually refining our applications of NDT&E methods and engineering evaluation judgement through thousands of tests in a wide variety of investigations. Our field testing, special projects, and research capabilities are world class, and we have successfully taken on projects of all sizes and types. The bulk of our investigations center on concrete and concrete related structures, in addition to performing extensive evaluations on masonry, asphalt, soils, rock, wood, metals, and other materials.

Mr. Larry D. Olson, P.E., Founder, is the President and Principal Engineer of Olson Engineering, Inc. and Olson Instruments, Inc. From 1980 to 1985, he worked as a Project Engineer with a geotechnical pavement and materials engineering firm in Denver, Colorado. Mr. Olson is an internationally recognized expert trainer/speaker in NDE and is an instructor in ASCE's course on "Structural Condition Assessment of Existing Structures" (www.asce.org).

Olson Instruments develops and manufactures three main product lines, as well as custom systems depending on your needs:

1. The Freedom DATA PC with 16 add-on systems for NDE/Geophysical Evaluation
2. The Concrete Thickness/Flaw Gauge Product Line (CTG™)
3. The Freedom DAS (Data Acquisition System) for Structural Health Monitoring



Freedom DATA PC - NDE/GEO Systems

Used for nondestructive evaluation of structures and geophysical engineering surveys. A ruggedized battery powered field system. Options available for 16 add-on ultrasonic, sonic, seismic and vibration test system solutions.



Freedom DAS - Structural Health Monitoring (SHM)

Up to 16 channels of data acquisition and general testing of strain, temperature, vibration, etc.

Custom Systems Available!

*To learn more about Olson Instruments, Inc. and
Olson Engineering, Inc., please visit our websites at:*

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www.olsonengineering.com

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