

New Elcometer 456 Ultra/Scan Probe

Ever since the development of the coating thickness gauge in the mid-1940's, dry film thickness measurement has relied upon individual measurements being compared to a coating's specification.

With the introduction of digital coating thickness gauges, in addition to coating thickness measurements becoming easier, more accurate and repeatable than ever before, the task has become much more simplified.

Modern gauges, such as the Elcometer 456, have significant processing power built in – allowing users to automatically compare thickness values to a coating's specification, display trend graphs, store the reading together with the date and time the reading was taken, into memory. The gauge can even transfer data wirelessly to a mobile cell phone, recording the GPS coordinates of precisely where the measurement was taken.

Measurement speeds have also increased significantly, almost doubling, from approximately 40 readings per minute back in the 1980's, to in excess of 70 readings per minute in the new Elcometer 456.

At first glance, you may ask why this is important, especially if only a small number of readings need to be taken at any one location. The measurement speed is used by manufacturers to indicate how quickly an *accurate* reading can be taken and therefore how soon any subsequent reading can be made.

Imagine, if you will, two inspectors measuring the dry film thickness of a pipeline. Inspector 1 is on one side of the pipe and Inspector 2 is on the opposite side. Both are tasked to take 3 spot measurements every 5 meters. If Inspector 1 is using a gauge with a measurement rate of 70 readings per minute, and Inspector 2, a gauge with 40 readings per minute, then it will not be too long before Inspector 1 is significantly further ahead of Inspector 2.

Other than the time it takes to move to the next measurement location, the limiting factor for increasing the measurement speed – thereby reducing the time taken to undertake a coating thickness inspection – is the time required to lift the probe off and replace it back on to the coated substrate.

If the inspector can simply set up the gauge to automatically take a pre-determined number of readings, without the need to lift the probe off the surface, then the measurement time can be increased even further.



Additionally, if the probe could be dragged across the coated surface, without damaging the probe or the coating then the need for prescribing the number of readings to be taken over a defined area can be brought into question.

Introducing the new Elcometer 456 with Ultra/Scan Probes

When connected to the latest Elcometer 456 coating thickness gauge, the newly developed Elcometer 456 Ultra/Scan probe has a reading rate (in scan mode) in excess of 140 readings per minute - further enhancing the speed and accuracy of field based dry film coating thickness measurement on Ferrous (F) and non-Ferrous (NF) substrates.

Each Ultra/Scan probe has been designed to take a 'snap on' replaceable end cap, so that the sliding action required to achieve a scan of a coated surface does not cause any wear to the probe tip, crucial to maintaining the accuracy of the probe over its life.

Using the Elcometer 456's patented offset feature, the thickness of the cap is excluded from any coating thickness measurement and, as the cap wears during use, the wear effect is also accounted for. The gauge will even display a warning message when the wear cap needs to be replaced.

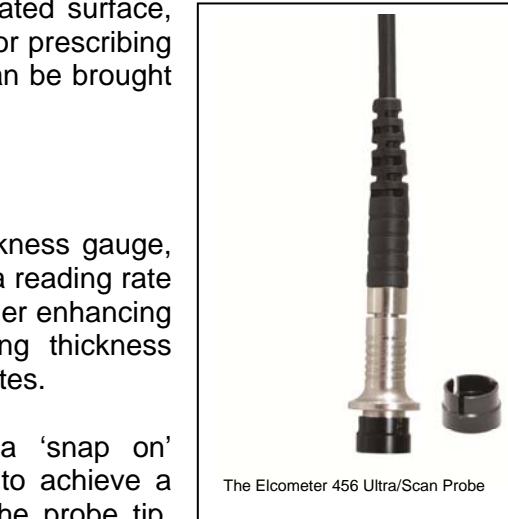
The Elcometer 456 Ultra/Scan probe can be used in either Scan or Auto Repeat Modes.

Scan Mode

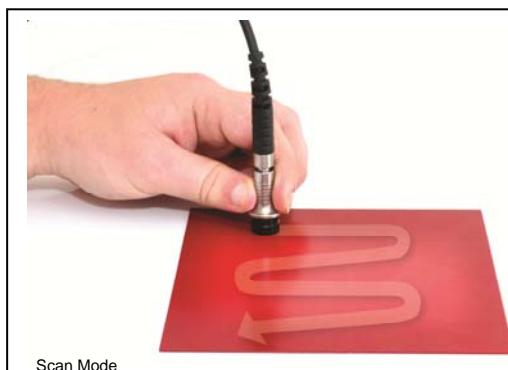
When selected, Scan Mode allows users to slide the Ultra/Scan probe over the entire surface area. As the probe is lifted off the surface, the gauge not only displays the average coating thickness, but also the highest and lowest coating thickness values over the entire scan.

Each set of three readings is then stored into memory, together with the date and time of the scan. The values can also be displayed on the gauge's display as a run chart.

During each scan, the Elcometer 456 displays the live thickness reading – together with an analogue bar graph which graphically indicates the thickness relative to both the nominal thickness and any user defined thickness limits.



The Elcometer 456 Ultra/Scan Probe



Put simply the user can now simply 'drag' the probe continuously across a coated surface and, upon removing the probe from the surface, at a glance, view the display to see the average, highest and lowest readings, as well as whether they are inside or outside any

pre-determined limits - thus providing invaluable and immediate information.

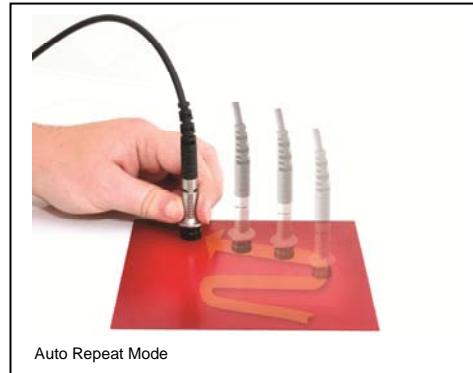
The Scan Mode can also be used with a 'hold' function. This feature allows the probe to be momentarily lifted from the surface to clear areas such as welded joints or cut outs and then placed back in contact with the coating to continue data recoding without interruption of the data set.

Using the pipeline example to demonstrate how useful the Scan feature can be, the inspector can simply walk along the pipe - with the probe in contact with the coating - and upon removing the probe from the pipe, immediately assess the high, low and average coating thickness values on the gauge screen.

Auto Repeat Mode

In Auto Repeat Mode, as the probe slides across the surface, more than 2 readings are taken every second, with each individual reading stored in the memory of the gauge.

With a reading rate in excess of 140 readings per minute the Auto Repeat Mode significantly speeds up the inspection of large areas of coatings which require the recording and analysis of individual readings.



Working with Standards and Test Methods

International Standards and Test Methods often describe the number of individual gauge readings to be taken in a spot measurement and/or the number of spot measurements required over a defined surface area.

SSPC PA2, for example, requires a minimum of three gauge readings to be taken per spot measurement and five spot measurements over a 10 m² area. Using the Elcometer 456's Counted Average and Fixed Batch modes with the Ultra/Scan probe set to Auto Repeat, the gauge automatically takes 3 readings, stores the average and is then ready for the next set of three measurements.

In this way, the user no longer has to lift the probe off the surface in between each gauge reading – reducing the time it takes to measure according to SSPC (or similar test methods) by up to 40%.

For more information please contact Elcometer or visit our website; www.elcometer.com