elconews e-zine international
June 2007

Do it once. Do it right!

Steve Lawson, Finishing Engineer, Quality Industries Inc. USA, tells how Elcometer gauges have saved time and money.

Quality Industries Inc. of La Verne, Tennessee are a fabricator of truck, appliance and other metal components. They wanted a way to measure powder coating before cure that would help save in material costs, so they chose the Elcometer 550 Non-Contact Powder Thickness Gauge.

Steve Lawson, a finishing Engineer at Quality Industries Inc is impressed with the Elcometer 550 Non-Contact Powder Thickness Gauge.

“I wanted to have real time data for set up, ability to check before cure, as well as the ability to zero in our process.” He further added, “We would paint heavy, a much higher film than needed. We were able to reduce film build from 4 mils (100 µm) average to 2 mils (50µm) average. In the first year it saved nearly $60,000 just in powder costs, not to mention savings in time and rework.”

When Steve was asked his opinion on this gauge, he replied by saying, “It is outstanding. It does exactly what Elcometer markets it to do.” He adds, “I have recommend it and I will recommend it again.”

The Elcometer 550 gauge is designed specifically for use before powder curing. This gauge uses an ultrasonic transducer with the ability to read a powder thickness of 1.2 – 4.3 mils (30 – 110µm). A menu driven display allows the user to view the last 10 readings, an average of those readings, and also whether or not the thickness limit has been violated.

The gauge comes pre-calibrated for most powder types, allowing for shrinkage dry cure. A charger unit is supplied for continuous use. A heavy-duty foam-lined carry case provides easy transportation and storage.

For more information on Quality Industries Inc. visit www.qualityind.com or for more information on the Elcometer 550 or any Elcometer instruments, visit www.elcometer.com

Half a million readings and still calibrated

Markus Korn, Elcometer GmbH, Germany reports on the durability of the Elcometer 456 gauges.

A ship building business, who are a long established customer of Elcometer Germany, recently sent in a ferrous Elcometer 456 probe and gauge for service.

Markus told us, “The customer thought that after more than 500,000 readings, it was time for re-certification.

In the certification procedure it quickly became apparent that the probe was still in the specified range.

It demonstrates perfectly that Elcometer products are built to last and are robust enough to keep going in certain cases for well over 500,000 readings.”

product of the month

Elcometer Coating Inspection Kits

Site inspection requires a range of portable testing equipment. In order to make these products easily available and transportable, Elcometer have developed a range of Coating Inspection Kits.

There are 3 kits in the range, each carrying a range of Elcometer inspection equipment.

For example, the Elcometer Inspection Kit 3 (pictured above) includes a foil gauge with coarse and extra coarse Testex tape, digital surface profile gauge, Elcometer 319 digital dewmeter, stainless steel precision hexagonal wet film comb, Elcometer 456 coating thickness gauge and a cross hatch adhesion gauge.

Inspection kits can also be tailor made to suit your particular needs, simply contact Elcometer for more infromation.

For further information on the Elcometer Inspection Kits please visit our website www.elcometer.com or contact BAMR at sales@bamr.co.za.

coatings on site

South Africa exhibitions

Graham Duk, BAMR, South Africa recently attended two successful exhibitions.

The first exhibition was Lab Africa, Africa's leading exhibition of industrial, medical and scientific laboratory equipment. Held bi-annually in Johannesburg, this year was the biggest exhibition yet with over 70 exhibitors.

The unusual problem that had to be overcome by Graham and his team was that some of the products destined for the show were burnt in the delivery truck after it was involved in an accident.

Remains of the truck carrying BAMR's products

Despite this set back and a quite empty stand, BAMR managed to make many contacts and meet a lot of potential customers, making the show a great success. There was particular interest in the Elcometer 2300 Rotational Viscometers, the Elcometer 215 Oven Data Logger and the range of Elcometer 456 Coating Thickness gauges, even though the products themselves were not on the stand.

Graham also attended ICCX – International Concrete Conference and Exhibition which was held for the first time in South Africa at the International Convention Centre in Cape Town where BAMR and Elcometer concrete products were both very well received. The Elcometer 331 Covermeter with Half Cell capability was of particular interest to those that visited the stand and was a popular solution to many visitors requirements.

Upcoming exhibitions

For a complete list of exhibitions for the next year, visit our website www.elcometer.com/exhibitons.html

June		
13 – 15	Austrotec www.messecentergraz.at/austrotec07/	Austria
13 - 16	10th Taipei Intl. Instruments Show www.instrument.org.tw/2001_8_e.htm	Taiwan
July		
4 - 7	MTA Vietnam www.mtavietnam.com	Vietnam
September		
4 - 5	North African Coatings Congress www.coatings-group.com	Tunisia
8 – 12	EXPOGAZ www.expogaz-expo.com	France
11 - 13	Tehran International Industry Fair www.iranfair.com	Iran

coatings in the lab

NEW statistical glossmeters

Elcometer are pleased to announce the launch of their new range of statistical glossmeters – the Elcometer 406L and the Elcometer 407.

Statistical Glossmeters measure surface gloss by directing a constant power light beam at an angle to the test surface and monitoring the reflecting light.

The Elcometer Statistical Glossmeters store the results in the internal memory and can perform statistical analysis of the readings stored in the internal memory.

The LED light source has a long life and can be expected to last up to 10 years. The LED light is also shock-resistant, cooler and uses less power than traditional lights. Different surfaces require different reflective angles. Gloss measurement is used to monitor the uniformity, compatibility, or possibly the deterioration of any protective gloss finish.

Elcometer 406L Statistical Glossmeter

The Elcometer 406L is available in two versions; single angle measurement (60°) or dual angle measurement (20°/60°) and is ideal for measuring large surface areas.

Elcometer 407 Statistical Glossmeter

The Elcometer 407 is a triple angle glossmeter and measures at 20°, 60° and 85° angle. The gauge is able to simultaneously take readings and calibration of all three angles. The move and read feature is also useful for measuring large surface areas.

Other features of the Elcometer 406L and Elcometer 407 include:

- Auto-ranging – measures matt to mirror finish
- LED light source and light detector
- Calibrate to any gloss standard
- Accurate and reliable readings
- Extended-life light source – over 10 years under normal operating conditions
- Statistical analysis gives and instant indication of batch quality

Using the Novo-Soft™ Software, supplied free of charge with both gauges, allows you to download, analyse and store readings from the gauge on a PC. This easy to use package is ideal for reporting purposes, archiving gloss measurements and for further detailed analysis.

For further information on the range of glossmeters, shade and opacity meters and products for measuring appearance available from Elcometer, please visit our website www.elcometer.com

concrete inspection

CoverMaster® Software update

Elcometer CoverMaster® Software for the Elcometer 331 Version V1.04 has been modified and the following addition has been made:

During discussions with some users of the Elcometer 331 Half-Cell unit, it was mentioned that surveys and reports for half-cell are often reported as $Cu/CuSO_4$ (copper/copper sulphate) values regardless of the probe type used ie: copper/copper sulphate or silver/silver chloride.

The Elcometer CoverMaster® Software has now been updated with the ability to enable all reports to be $Cu/CuSO_4$ if required.

Taber accessories

The following products have now been added to the list of Taber accessories for rotary abrasers:

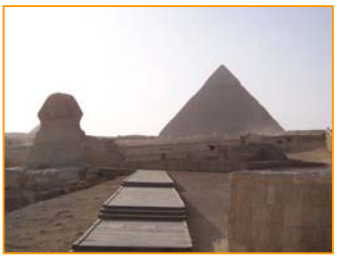
ST132950 Quick Release Wheel Hub

ST132030 Calibration Verification Kit

The Quick Release wheel hub is an expandable collet hub design to allow quick wheel mounting. Activated by a push button, a spring-loaded, beveled retaining nut provides a positive locking force on the hub retaining lip making certain that wheels remain securely fastened until disengaged.

The Calibration Verification Kit is a cost-effective method that enables users to verify if an instrument is in calibration or determine if the instrument should be recalibrated or repaired. Each kit is individually calibrated and provides a fast, reliable system check.

Egypt's Pyramids



In new research on the great pyramids of Giza, a scientist says he has found more to their construction than cut natural limestone. They have more than 5 million blocks of limestone, until now believed to be carved stones but new evidence suggests they were cast with agglomerate limestone concrete. The limestone blocks were cast in-situ, employing an advanced technology that was later lost, leaving a puzzle hidden for thousands of years inside the pyramid stones.

This theory undoubtedly shed an amazing new light on what really happened in Egypt and if true, this is the earliest known use of concrete.

For information on the Elcometer Concrete Product range visit www.elcometer.com or contact BAMR at sales@bamr.co.za.

standards news

ISO 9001 and ISO 14001

In March 2007, Elcometer Instruments Ltd completed two routine surveillance visits by Lloyds for the ISO 9001 and ISO 14001 management systems.

In both cases the systems were found to be working correctly and no new items were identified for attention.

Please note that the current ISO 9001 and ISO 14001 certificates can be downloaded in PDF format from the Elcometer website.

Visit www.elcometer.com/downloads and click the ISO Certificates button.

Measuring range change

The measuring range of the Elcometer 8720/1 Standard Balance has changed from 0 – 1010g (0 – 35.6oz.) to 0 – 1210g (0 – 42.7oz.)

Elcometer offer a range of laboratory scales for accurate measurements during the development of a coating. Elcometer offer a choice of standard, analytical or precision balances. The Elcometer 8720 KB range of balances is a compact, low cost balance offering extensive weighing functions.

Visit www.elcometer.com/balances.htm for further information on balances or www.elcometer.com for information on our entire product range.

WEEE regulations

Waste Electrical and Electronic Equipment (WEEE) is a waste disposal scheme for electronic items. In the UK, WEEE compliance becomes law on 1st July 2007.

Any business that manufactures, brands or imports electrical and electronic equipment will be responsible for the cost, collection, treatment and recycling of products and components.

From the end of May 2006, Elcometer Instruments Ltd became a member of the GAMBICA B2B Compliance Scheme in accordance with WEEE regulations 2005. Under this scheme, B2B Compliance, operating as a Collective Compliance Scheme, takes responsibility for and support Elcometer in achieving compliance with WEEE.

Elcometer are encouraging all our Distributors in the EU, to be registered as an importer or producer of Electronic & Electrical Equipment (EEE), as appropriate to local regulations.

Please note that mechanical products such as the Elcometer 106 Adhesion Testers and Elcometer 211 Coating Thickness Gauges do not come under WEEE regulations.

Elcometer's WEEE Compliance Policy can be found at www.elcometer.com/downloads/#rohs

Galvanising

In this series of articles, we look at specific applications, answer some of the most commonly asked questions and provide practical advice. This month, we are looking at galvanising.

The protection of steel from corrosion by the art and science of hot dip zinc galvanising, has been practiced for almost 150 years. The reason it has continued to be popular is because of the double-action protection it provides. When left unprotected, steel will corrode in most environments. This cannot be allowed to happen to a critical steel structure so we choose to sacrifice zinc instead. Some 85 microns (3.35 mils) of it can last 60 years.

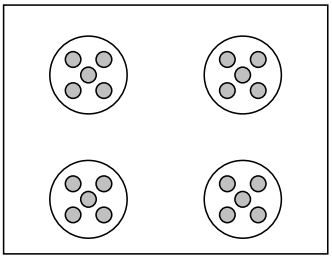
A coating of zinc protects steel by providing a physical barrier as well as cathodic protection. If there is damage to the surface, the zinc corrodes first, blocking the surface with its corrosion products. This happens when two dissimilar metals are joined together in an electric circuit (loop). Current flows when the ends of this circuit are joined together by rain or seawater and so the zinc begins to corrode, not the steel.

THE BATH

The process of galvanising is a hot one. Steel is immersed in molten zinc (~450°C / 842°F) for a few minutes. Some of the iron from the steel dissolves in the zinc, forming an alloy. When the steel item is pulled out, zinc quickly freezes on its surface. A metallurgical bond is formed; there is a transition from one metal to the other with a mixture of both in between.

MEASURING THE THICKNESS OF ZINC

The length of corrosion protection depends on how much zinc is on the surface. The quantity of zinc used to be described as 'weight per area' of the item. However, the



Counted Average Mode
Average of the averages of spots in the significant area.

thickness of that zinc actually depends on the mass of the steel and its chemical nature. It can vary considerably from place to place. These days, ISO 1416 requires the thickness be measured in zones, according to significant areas. It also requires any local variation in the zinc thickness in each zone to be evened out by calculating the mean of the means of groups of 5 readings in a spot. The overall average is then compared to the job specification. The zinc weight in grams per square metre can be converted to microns by dividing it by the density of zinc (7.14kg/m³). [US: 2 ounces per square foot of surface = 3 mils of zinc]

THICKNESS OF STEEL

When the wall thickness of galvanised pipe is required, to investigate corrosion or erosion damage, the reading will be affected by the zinc. Fortunately, the interference will be very small. Because there is no interface between the two metals (both have melted into each other), the sound pulse will not be reflected. The speed of sound in zinc is slower than in steel (4216 compared to 5918m/s) so the reading is increased, in this case from say 100 to 140 microns. For example, when measuring 10mm steel with 50 microns on each side, this shows as 10.14mm, which is often insignificant in most surveys.

ADHESION SCRATCH TOOL

Molten zinc will mix with iron (from the steel) provided the surface is clean. Otherwise, the zinc may simply cover the steel with very little adhesion to it. This can be investigated using a scratching tool such as the Elcometer 1537.
A grid of 25 squares is cut by hand and it should remain attached to the surface. This is repeated in other areas until 3 such tests have been performed, according to ISO 1416.

PAINT ON ZINC

Large structures sometimes need particular aesthetics as well as advanced corrosion protection. Paint is coated on to galvanising, usually after a period of exposure to the weather. Measuring the thickness of this paint requires an F-type probe calibrated to mild steel. The zinc surface cannot be used as a calibration ‘zero’ because firstly, it is not uniform and secondly, the linearity (and accuracy) of the scale would be greatly affected. If there is no access to the bare steel or a similar piece, use the default calibration in the Elcometer 456. Then measure the thickness of the zinc and record this. Later, the reading will be paint plus zinc so will need to be corrected.

THIN GALVANISED STEEL

When corrosion protection does not need to last more than a few years, for example, for domestic appliances and motorcars, thin zinc is sufficient. It can be applied by electroplating or by a hot-dip process and even processed continuously as a sheet and wound into a coil. The steel substrate is usually thin too. Measuring paint applied to this material for aesthetics can sometimes be difficult. One technique is to ignore a few microns of zinc as part of the paint thickness reading. Another more appropriate to 10-15 microns layer is to perform a 2-point calibration and measure the paint directly. Trying to measure against the zinc as a non-ferrous substrate does not work because it is too thin, almost transparent. If these methods are not satisfactory, contact Technical Support for specific advice.

Should you require any further information on galvanising or if there is a subject you would like to see covered, e-mail us at: editor@elcometer.com