elconews e-zine
belgium
April / May 2007

Measuring moisture to keep the beers coming

Nick Rourke, Quality Analyst, Diageo, tells about how Elcometer moisture meters make his job easier.

Diageo is the world's leading premium drinks business with an outstanding collection of beverage alcohol brands including Guinness, Smirnoff, Baileys and Johnnie Walker to name but a few. Diageo are a global company, trading in over 180 markets, employs 22,000 people in 80 countries.

Nick Rourke is the Quality Analyst for the Diageo Packaging Quality Department in Runcorn, UK. Responsible for laboratory procedures, measurement methods etc, Nick was required to establish the level of moisture in wooden pallets.

The site in Runcorn produces canned and bottled beer, including Guinness and Kaliber, and export stock around the world to destinations including USA, Europe and Japan. As part of the quality control process, moisture levels in the shipping containers needed to be reduced to ensure the products were travelling in the optimum climatic conditions. They therefore needed to know the moisture levels in their wooden pallets. Nick decided to contact Elcometer for advice on what he required to do this accurately and efficiently.

Nick told us "I contacted Elcometer because they are local to our site and when I called, I received a good friendly service and ordered the Elcometer 7400 Compact Moisture Meter. After receiving information on all the moisture meters Elcometer had to offer, I decided this was the best suited to my particular application. I found the gauge quick and easy to use, and am so happy with it's performance, I have now ordered another meter for our site and two for the Dublin site."

The Elcometer 7400 Compact Moisture Meter is a hand held meter with thin pins, making it ideal to measure moisture in wood. As the pins are integrated into the meter, there are no separate electrodes or leads required making it easily portable.

Measuring the moisture content of their shipping pallets, the Packaging Quality Department are helping to ensure that these bottled favourites reach their destinations in the best possible conditions.

For further information on Diageo, please visit their website www.diageo.com or for further information on the Elcometer Moisture Meters, visit www.elcometer.com

Elcometer's 60th Birthday!

A few of the products available from Elcometer in 2007.

April 2007 sees Elcometer manufacturing and supplying coatings instruments for 60 years! The first Elcometer coating thickness gauge was sold in April 1947 and Elcometer has gone from strength to strength.

Over the years, Elcometer has seen substantial growth and now have seven offices around the world. With an additional international network of more than 150 stock holding distributors and the recent and current expansion of not only the UK headquarters, but also Belgium, French and Singapore offices, Elcometer continues to create the highest quality products for the coatings, concrete and metal detection industries.

To mark the Diamond anniversary, Elcometer have a number of celebrations planned. This includes the official opening of the new UK factory, 100% bigger than it's current size, to satisfy the needs of our ever growing business. Elcometer are also launching an unprecedented number of products this year, showing just how far technological capabilities have advanced in the last 60 years. There will also be a world conference bringing distributors and offices together.

product of the month

Elcometer 270 Pinhole Detector

The Elcometer 270 range utilises the wet sponge technique and has been designed to set a new standard got wet sponge detectors – a high quality, low voltage detector with similar accessories to a high voltage spark tester.

The wet sponge technique is suitable for measuring insulating coatings less than 500µm (20 mils) on conductive substrates such as powder coatings.

Features of the Elcometer 270 include: automatic sensitivity calibration checks, visual and audible alarms, integral and separate wand functions and four model variants in single, dual or triple voltages. There are a wide range of fully interchangeable wand accessories and the gauge is supplied ready to use.

For further information on the Elcometer 270, or any of our other products, please visit our website www.elcometer.com or contact your local Elcometer distributor.

coatings on site

NEW Porosity Range

Elcometer have this month launched 2 new porosity products – the Elcometer 260 and the Elcometer 266.

The Elcometer 260 Surefire® Fluorescenator provides a quick, low cost method of testing coatings for pinholes.

Developed for the industrial and marine markets, the Elcometer 260 features a six Watt purple Class 1 light emitting diode. A base coat with a UV reflecting additive is applied. When the UV flashlight shines the purple light on the coating, any areas where the base coat is not covered by subsequent coating, fluoresces clearly identifying any pinholes.

The Elcometer 266 DC Holiday Detector has been specifically designed to revolutionise high voltage DC testing of coatings by making it safer, easier and more reliable than ever before. Features include:

- Automatic Voltage Calculator sets the correct voltage from your coating thickness gauge.
- Voltage adjustable using the keypad – no need for a screwdriver.
- Internal jeep tester ensures that the selected voltage equals the test voltage.
- 5kv, 15kv and 30kV DC versions available.
- Audible and visual alarms are activated when a flaw is detected.
- Specialised ribbing provides superior protection while an optional second hand grip is ideal for two handed use when measuring pipes and tank floors.
- Dual safety switch on handle to avoid accidental switch on.
- Battery packs can be charged inside or outside the gauge for continued use.
- Outstanding battery life of up to 40 hours with backlight off (20 hours with backlight on) and fully recharged within 4 hours.
- Adapters enable use of accessories from other manufacturers.
- Accurate sensitivity adjustment allows for use on metallised or slightly damp coatings.

For more information on these new products, please visit www.elcometer.com and download the Porosity brochure.

coatings in the lab

Spectrophotometers now with 2 year warranty

Effective April 1st 2007, X-rite will institute a 2 year warranty period for all X-Rite hardware devices sold within the European Community.
The warranty covers durable products sold in a business to business transaction that have defects in material and workmanship only. The warranty period starts at the time of shipment. The warranty does not cover any product certification and any repair necessary to abuse, misuse etc. Elcometer products covered by this warranty include:

Elcometer 6070,
Elcometer 6075/1
Elcometer 6075/2
Elcometer 6075/3
Elcometer 6060
Elcometer 6060/4

For further information on the range of spectrophotometers available from Elcometer, please visit our website www.elcometer.com

Upcoming exhibitions

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

April		
14 – 15	MARUTE Painting Fair	Japan
18 – 22	12th International Exhibition of Oil, Gas & Petrochemical Industries & Products – Iran Oil Show www.iranoilshow.com	Iran
19 – 22	Expolink 2007 www.expolink-fair.gr	Greece
25 – 28	PRIMUS: INTERGARBA 2007 www.primus-exhibitions.com	Kiev, Ukraine
May		
8 - 10	European Coatings Show www.european-coatings-show.de/	Nuremberg, Germany
9 – 10	Materials Engineering	Holland
16 – 18	AUTOSTRADA-POLSKA www.targikielce.pl/targi/autostrada/en/	Poland
16 – 20	Metaltech 2007	Malaysia
16 – 21	TATEF 2006 Machinery & Equipment Exhibition www.tradelink.com.my/metaltech/	Turkey
21 – 26	FEIMAFE 2007 www.feimafe.com.br/	Brazil
22 – 25	Vietship Exhibition www.vietnamtradefair.com	Vietnam

concrete inspection

New specification for hot weather concreting

The American Concrete Institute (ACI) have recently released a new specification: *ACI 305.1-06 Specification for Hot Weather Concreting.*

This specification provides requirements for hot weather concreting that the Architect/Engineer can make applicable to any construction project by citing it in project specifications.

It is intended that the Architect/Engineer use the checklists included in the specification to customise the project specification. The document includes hot weather requirements for production preparations, delivery, placement, finishing, bleed water evaporation, curing and protection of concrete. Provisions governing a preplacement conference, concrete mixture proportions, maximum allowable concrete temperature, measurement of the rate of surface evaporation, evaporation control measures and acceptance of a concrete mixture from past field experience or preconstruction are also included.

To learn more or to order this document, visit the ACI website www.concrete.org or e-mail the book store bkstore@concrete.org

Wind Power increases

With the ever increasing search for alternative power sources, data from the European Wind Energy Association (EWEA) shows wind turbines with a generating capacity totalling 7.59GW were constructed in Europe last year. The value of this is estimated at €9 billion which is a 23% increase on 2005, with Germany and Spain accounting for 50% of this growth.

Wind turbines are mostly constructed of steel or concrete, while the blades are generally made of glass fibre reinforced polyester (GRP).

To reach the 20 – 25 years intended lifespan, before the wind turbines are commissioned, rigorous testing is carried out. This ensures they are able to withstand the harsh environments without constant maintenance.

The hardness of the concrete must be measured to ensure durability. Using a concrete test hammer, such as the Elcometer 181, provides accurate, repeatable results. Good adhesion of the protective coating is also paramount to the wind turbine's longevity. The adhesion of the protective coating must be strong enough to resist the variation in the weather conditions found in these exposed locations and to protect the structure. The Elcometer 106/6 Adhesion Tester has been specifically designed to measure coatings on concrete. This pull-off adhesion tester allows for a 50mm (2mm) dolly to be used and displays results in N/mm² (mPa) and lb/in².

standards news

Elcometer present to ICORR

On 26th March 2007 Elcometer organised and presented at a seminar for the Institute of Corrosion (ICORR) in Widnes, England.

The Institute of Corrosion, a Society and Registered Charity, has been serving the corrosion industry since 1959. ICORR Specialises in corrosion science, technology and engineering management, as well as the economic needs of individuals, in the fight against corrosion, which costs the UK around 4% of GNP per annum.

A paper written and presented by John Fletcher, Technical Support Manager, highlighted the importance of surface profile in protective coatings.

For a protective coating, it is critical that the surface profile of the substrate is correctly prepared, or the coating could fail prematurely.

The importance and merits of selecting the correct blast media were discussed as well as identifying and measuring the blasted profile. Elcometer's wide range of profile instrumentation was shown and demonstrated by Steve Pollard, Customer Support Manager. This illustrated the means of measuring and controlling peak to valley heights to ensure specifications are achieved.

For more information on surface profile and roughness contact editor@elcometer.com for a Product Group Focus document discussing surface profile.

For more information on Elcometer's range of surface profile instruments visit our website www.elcometer.com

Expand to meet demand

The expansion of Elcometer's UK facility is to enable Elcometer to meet the growing demand for our internationally renowned range of coatings and concrete inspection equipment and will also create a brand new group headquarters, complete with state of the art conference and training facilities.

As the building is growing, so too are the numbers of staff. As part of our commitment to our customers, not only are we recruiting more staff in Research and Development and Production but also in Sales and Customer Support.

Elcometer's Spanish speaking customers can now talk to someone in sales their native language. Sandra Isabel Cooper, Export Sales Executive and is looking after various regions including Mexico and South America. Born in Mexico, Sandra speaks fluent Spanish and English. She obtained her BA Degree in International Business and holds a Masters Degree in Quality Management.

Customer Support queries will now be able to be handled more quickly, with the appointment of Daljeet Singh Bagri to the team. With an engineering background including a Masters Degree in Computing and Networking Technology and 4 years in the RAF working on avionics. Daljeet will be able to answer your technical queries and will also provide application advice and training.

We wish both Sandra and Daljeet very well in their new positions and they are looking forward to helping you.

Anodising and plating

In this new series of articles, we will be looking at specific applications and discussing the most commonly asked questions and providing practical advice. This month, we will be looking at anodising and plating.

Metal finishing prepares a surface so it is hard wearing, corrosion resistant or to produce an aesthetic finish as part of a design requirement.

The processes that apply these coatings usually use the combination of electric current and time. The quality of the resulting finish is judged mainly in terms of the final thickness of the coating. Although this thickness can be estimated by a calculation, the actual coating thickness on a component can be different. These differences can be due to such factors as poor electrical connections, insufficient time, shadows in the plating bath and the chemistry of the process.

The best way to determine if the metal finishing process was successful is to measure the final thickness of a sample taken from a particular batch.

The method of measurement that can be used depends upon the combination of the substrate and the coating.

METALS & COATINGS

There are many different coatings and a wide variety of substrates. But unfortunately, there is not one gauge available that can measure all of them. In practice, there are certain coating and substrate combinations that are very popular and gauges for them, making it easy to choose the correct measuring system. The less popular combinations need to be discussed in order to determine the most suitable testing method for them.

TYPES OF PROBE – F, N

F (ferrous) probes are used on ferrous metal and ferrous alloy substrates. These materials usually attract a magnet and are based on iron. The most popular form is mild steel, but there are others, and Elcometer's F type probes respond to them. Providing the coating is not of iron (Fe), cobalt (Co) or nickel (Ni), its thickness over a ferrous metal or ferrous alloy substrate can be measured with an F probe.

N (non-ferrous) probes are used on non-ferrous metal and alloy substrates. These materials do not respond to a magnet but they are conductive. Examples include yellow brass, brown copper, grey zinc and 'white' aluminium. Elcometer's N type probes respond to them. Providing the coating is not a metal, its thickness over non-ferrous metals and alloys can be measured with an N probe.

Popular coatings	***Substrates***		***Probe***
Anodising	*Aluminium, magnesium*		*N*
Hard chromium	*Steel*		*F*
Powder coating	*Mild steel, aluminium or zinc alloys*		*F N*
Zinc, galvanizing	*Steel*		*F*
Lacquer	*Copper*		*N*

RULES OF MEASUREMENT – "S S S"

S S S, or Substrate, Shape and Surface must all be considered when measuring coatings. When using the eddy current or electromagnetic induction techniques, the main variables must be made constants. This takes place during calibration, leaving only one variable – the thickness of the coating.

Substrate: The magnetic properties or conductivity of alloys vary. It is important to set the gauge to the same substrate as the coated item.

Shape: Convex surfaces, on average, appear further away from the tip of the probe and concave ones much nearer. This either increases or decreases all the readings. It is important to set the gauges to the same curvature as the coated items.

Surfaces: Polished surfaces give lower readings than rough ones because the probe tip is nearer to them. The setting of the gauge must allow for this. Rough surfaces also scatter the readings but averaging can be used to reduce this effect.

It is best to obtain an uncoated part of the same substrate, same shape and same surface as the coated one and then calibrate the gauge to it.

ADAPTERS & PROBES

It is important to consider the geometry of the sample to select the best way to make measurements. Many anodised and plated parts have small or awkward areas, which are difficult to place a standard probe on.

In the first example *(see left)*, the concave surface and small area require a Miniature Probe. To aid visibility and make it easier to place the probe correctly, the 45-degree version is chosen. To calibrate, an uncoated item is used together with a calibration foil cut into a narrow strip to avoid it crinkling.

In the case of tubes and rods, the standard probe does not position very well, especially on medium sized curves. So, attaching a Vee Adapter *(above)* and even holding the probe upside down, helps place the probe and the sample together consistently, producing repeatable results.

With small parts, especially in large quantities, a Jig enables repeatable placement of the probe on a sample. If the block or clamp, normally supplied as accessories, are not quite suitable, other ways can be tried to hold the components being measured. The picture *(right)* shows modelling putty holding some rivets.

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

Published for the benefit of our customers by Elcometer. Editor: Vicky Meldrum, Assistant Editor: John Podvoiskis, editor@elcometer.com • tel. +44 161 371 6000 • fax: +44 161 371 6010. We welcome your contributions.