



THE NEWS

# CIRCUIT

Newsletter of the Newbury Electronics group of companies



## From the MD



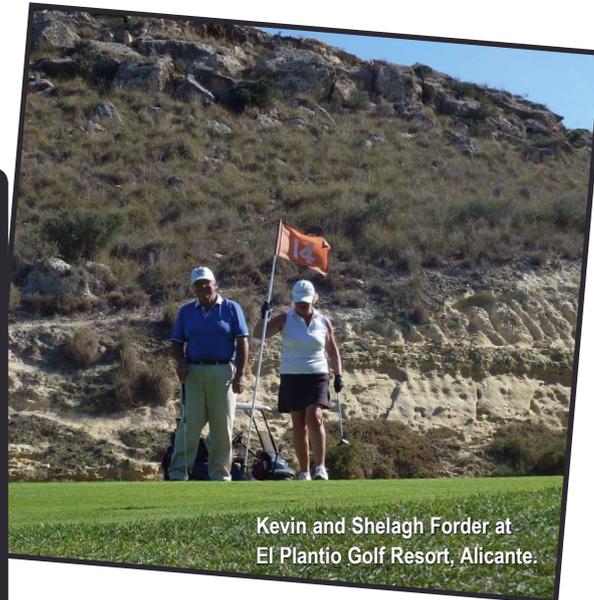
Welcome to The News Circuit, issue 6. There are many more exciting projects happening and much to report, including phase one of our building extension.

Since publication of our last newsletter, Kevin Forder, my business partner of some 35 years, has retired.

Under Kevin's leadership, Newbury Electronics has become one of the UK's leading high mix manufacturers of PCBs and suppliers of contract electronic manufacturing services.

Kevin's plans now focus on bridge, golf, travelling, horses, a love of Spain, and his family and we all wish Kevin a happy and long retirement.

Philip King,  
Managing Director. 



Kevin and Shelagh Forder at El Plantío Golf Resort, Alicante.

## New SMD placement machines on order

Recently ordered are three new Yamaha I-Pulse M20 SMD placement machines, to be installed in August 2014. These machines are additional to our five existing I-Pulse machines and will add considerable extra SMD assembly capacity to our production plant. The feeder platform boasts 144 positions and has an optimum speed of 19,000 components per hour. We are sure our family of I-Pulse SMD placers will be working very hard for us in the future. 



With 144 positions and racey speeds, five I-Pulse M20 SMD placement machines will be installed by August 2014.

## AT A GLANCE

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Read More... wherever you see this sign.

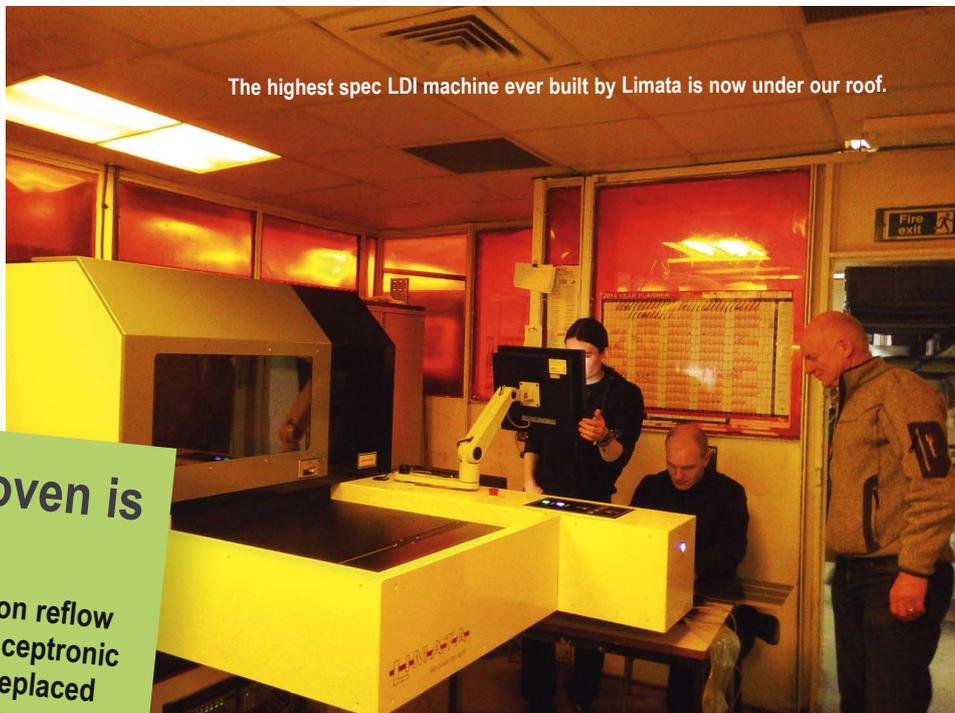
## First of its type in the UK - the Limata LDI

**Laser direct imaging (LDI) is the big development in printed circuit board manufacturing.**

The technique eliminates the intermediate photography stage, as well as improving fine line capability and registration between drill holes and pads. The printing part of the printed circuit manufacturing process is done by lasers beams. Our machine is equipped with 8 lasers which enhance speed and reliability, and two sets of loading drawers so that a new job can be loaded whilst the previous job is printing. It is both the first machine of its type installed in the UK, and also the highest specification machine ever built by the manufacturer. 

**Read More...** 

The highest spec LDI machine ever built by Limata is now under our roof.



## New reflow oven is less hungry

The very first convection reflow oven we bought, a Conceptronic Concept 60, has been replaced after 10 years of reliable service.

New generation machines use less electricity and are capable of reflowing larger thermal masses.

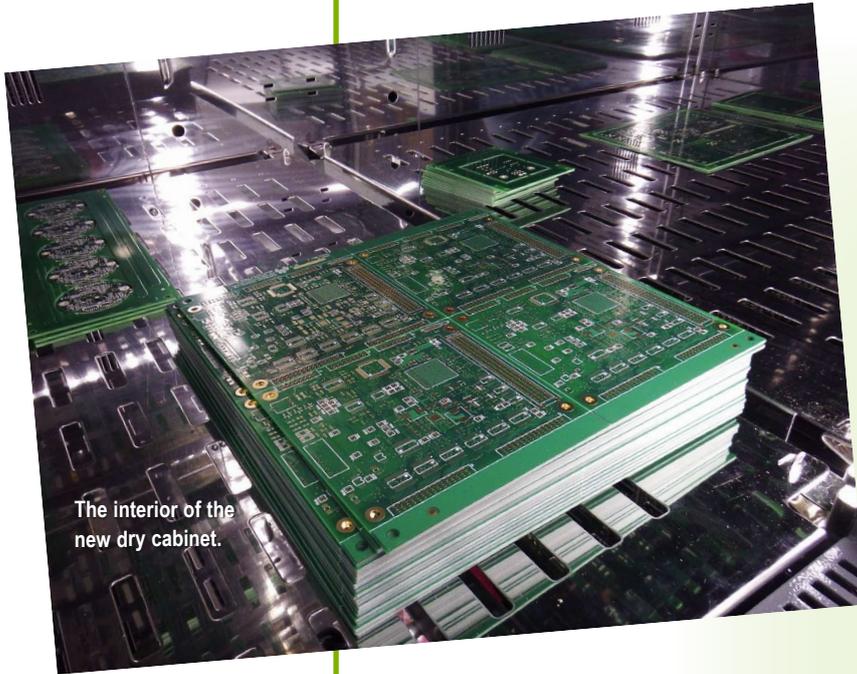
The replacement reflow is another Heller 1707 Mk3, to add to the two we already have. These three machines together use less energy than the Conceptronic did on its own. Our overall energy consumption will reduce by 7.5% with this single innovation.

Alongside this installation, Heller are retrofitting additional cooling zones to all three machines. Higher thermal mass devices need the extra cooling to produce finer crystal structures in the solder joint which are more reliable. Nothing stands still for long in the electronic assembly industry. 



Fresh out-of-the-box - the Heller 1707 Mk3 convection reflow oven.





The interior of the new dry cabinet.

## Controlling humidity with dry storage cabinet

**All electronic components tend to absorb moisture from the atmosphere.**

This is not a problem unless the parts are rapidly heated to over 100 degrees C, which is just what happens in the soldering process, either wave soldering or reflow. Moisture turns rapidly to steam, causing blowholes and failed solder joints. A dry storage cabinet will keep the atmospheric moisture content to under 2%. Sensitive components stored in the cabinets will not exhibit out-gassing when reflowed, and a pre-baking process to remove moisture is unnecessary. 



## Solder resist and plating resist developer lines replaced

**These machines are the heart of most PCB manufacturing plants.**

Our current photomech process machines were requiring increasing maintenance, so we ordered two new lines from UK manufacturer, Muscat Ltd, in Kent, who have manufactured most of our wet processing equipment. This commonality promotes ease of maintenance where wearing parts can be replaced from the same stockholding. 



The new dry storage cabinet tightly controls humidity to under 2%.



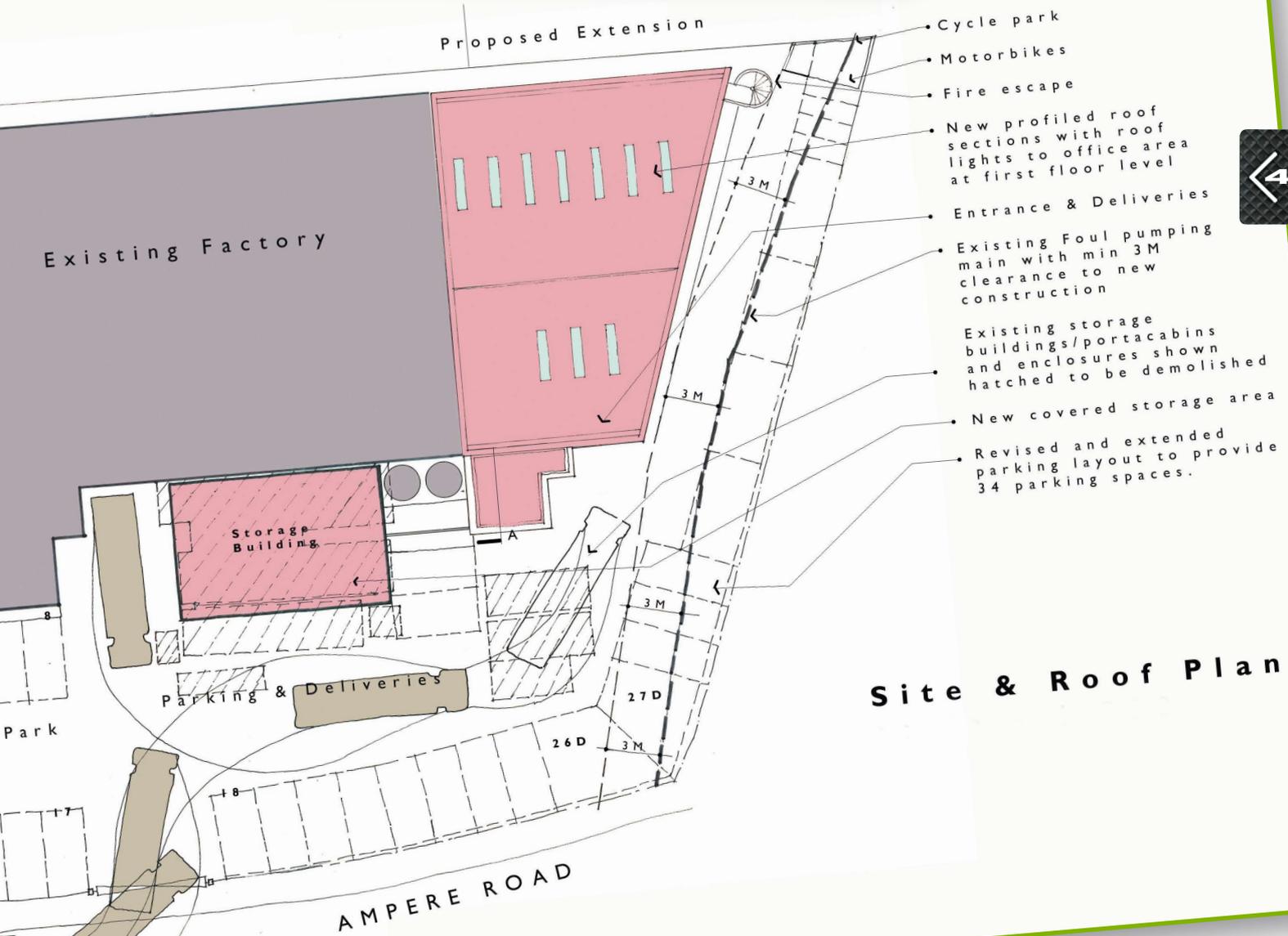
Sounding like a fine new wine: the new Muscat developer lines.



# New building project starts

Phase one of the expansion of our Faraday Road PCB plant started on 6th June 2014.

This initial phase consists of a new plant-room and chemical stores building. Within this will be installed new energy efficient air compressors, water filtration and water recycling plant, and fume extraction equipment. Phase two is a much larger project and consists of 10,000 square feet of new manufacturing and office space. 



Large stocks of components, stored on reels and ready for automated SMD assembly.



## Over 1000 free component part types from PCB Train assembly

We have published a new and expanded list of PCB Train assembly free components. These are reeled stocks of commonly used parts kept on our shop-floor ready for use.

Over one thousand capacitors, resistors, diodes, ferrites, LEDs, MOSFETs, transistors, and voltage regulators are available. If any of these parts are called up on a BOM which is being assembled by way of the PCB Train assembly service, you are entitled to use these parts free of charge in that assembly.

Follow [this link](#) to download the PCB Train free components list. 

If you experience problems downloading this spreadsheet, you can request a copy by email [pcbtrain@newburyelectronics.co.uk](mailto:pcbtrain@newburyelectronics.co.uk)

[Read More...](#) 



Philip King positions the new robotic solderer.

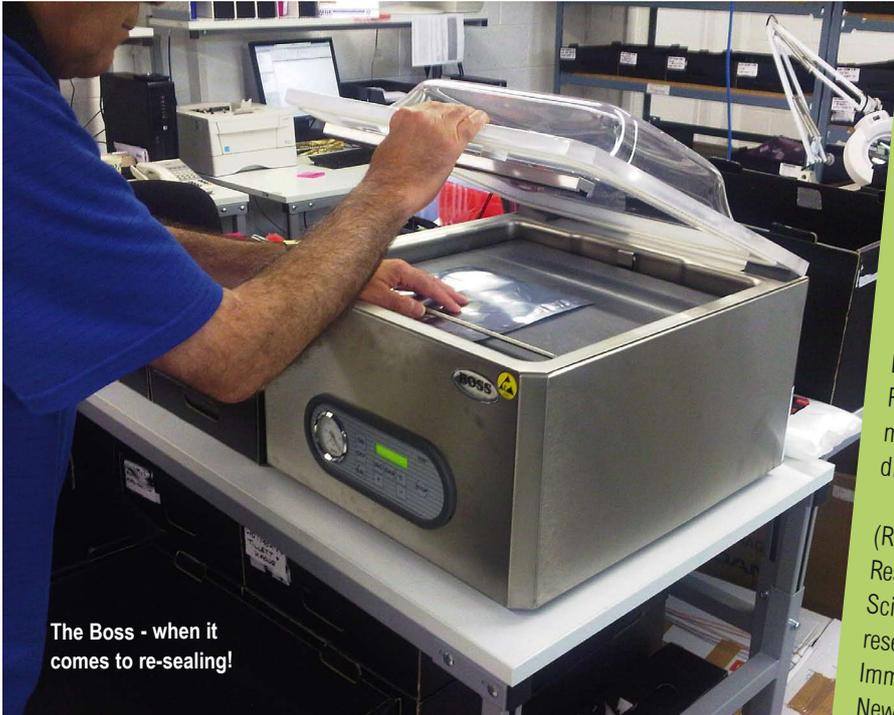
## ERSA Eco Select - fully automated selective soldering

**A selective soldering machine is a type of robot solderer. It does the work of hand soldering, but automatically and repeatably.**

Many assemblies still have a few leaded parts which have to be soldered. If all the SMD parts are on one side, and all the leaded parts are on the other, then the leaded parts can be wave soldered, a simple and efficient process. If leaded and SMD parts are mixed on the same side, then wave soldering is impractical because the SMD parts will fall off in the solder wave.

This situation is increasingly common, hence the need for a solder robot. The selective solderer solders with a mini 'pencil' solder wave moved under CNC control. It is easy to program and will solder all day long without getting tired, and it is very good at soldering high thermal mass devices such as connectors on backplanes. 

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The Boss - when it comes to re-sealing!

## Boss Vacuum-packing to re-seal against humidity

**This machine allows us to re-seal the packaging of humidity sensitive components.**

This avoids the need to store the parts in a humidity controlled cabinet, and they can be kept where they are easy to find, in the relevant kit box. At goods inward, we have to check the contents of every sealed package to ensure the parts delivered are correct. Once the seals have been broken, we must re-seal the package under vacuum to exclude the ingress of moisture. 

**Right: The Southampton University ELISA Research Project team hatching a plan with Philip King.**



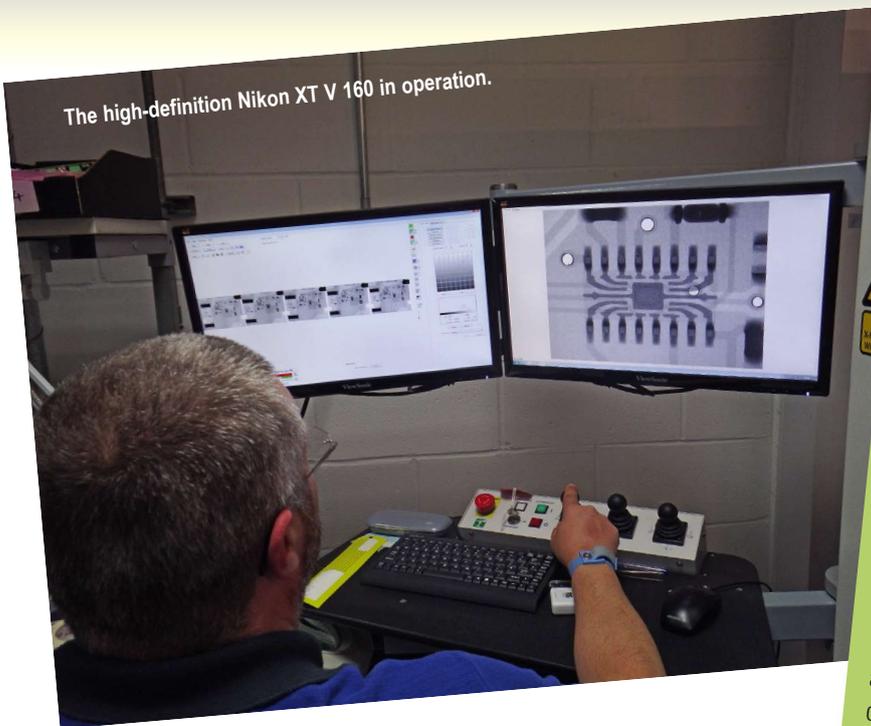
## Partners in University of Southampton medical diagnostic project (ELISA)

**Newbury Electronics is the manufacturing partner on a £1 million grant funded research project.**

The grant has been awarded by the EPSRC (Engineering and Physical Sciences Research Council), to develop the technology for manufacturing low-cost, disposable, point-of-care, diagnostic devices.

Working with Dr Themis Prodromakis (Reader in Nanoelectronics within the Nano Research Group of Electronics and Computer Science, at the University of Southampton) and researchers in The Department of Infection and Immunity of Imperial College Healthcare NHS, Newbury Electronics will bring its wide experience of modern production manufacturing methods and materials to this innovative work. 

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The high-definition Nikon XT V 160 in operation.

## Getting to the core with the Nikon X-ray machine

**We expect to make electronic assemblies to demanding quality levels, especially now that very high 'first time' test pass rates are required.**

Visual inspection techniques are useless when solder joints are hidden beneath the body of a component. Many components such as BGAs can only be properly inspected by X-ray. Low cost X-ray inspection machines do not give a good enough image to be effective.

We chose the Nikon XT V 160 machine because it has excellent resolution combined with very good penetration. The high anode voltage of 160Kv gives it the power to image dense high layer count PCBs. PCBs under test can also be remotely rotated under the X-ray beam to allow oblique viewing of points of interest. This is essential to find an uninterrupted field of view on densely packaged PCB assemblies. 

**Read More...** 

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## Moritz Waldemeyer 'Easter egg competition'

**Newbury Electronics supplied 250 individual PCBs to leading designer Moritz Waldemeyer for use in his latest project.**

The internationally renowned artist was asked by the Metropolitan by COMO, London (COMO Hotels & Resorts) to participate in a charity project for their charity partner, Noah's Ark Children's Hospice. The Park Lane located hotel commissioned eight well-known designers, artists and fashion bloggers to conjure their own interpretation of an Easter egg. Waldemeyer's artform used etched metal for the mechanical components combined with PCB-mounted LEDs to create the structure that was on display in the hotel lobby throughout April 2014.

The charity auction was held in the Met Bar on April 30th and was a huge success, raising £1,200 for the Hospice, despite a scheduled London tube train strike on the same day which threatened to disrupt the event. 



Moritz Waldemeyer's entry was constructed using 250 PCBs supplied by Newbury Electronics.



Showing all eight entries for the Easter egg competition.

