

# The Pulse

The Newsletter of Unitek Miyachi Corporation

## Micron Series Laser Welding Systems

### Handle the Demanding Challenges of Medical Device Manufacturing

Laser welding is a key process used in the medical device manufacturing industry; the unique demands of which require ever-greater levels of precision, quality and process control. With the introduction of the new Micron Series laser welding systems, Unitek Miyachi has further extended the state-of-the-art for today's most exacting medical applications, while providing the performance headroom needed to handle tomorrow's new requirements.

The Micron Series' ultra-precision CNC motion systems provide sub-micron XY positional resolution of 100nm and bi-directional repeatability of 500nm. The A Series pulsed Nd:YAG lasers produce focused spot sizes as small as 25 microns and incorporate pulse shaping of up to 20 programmable segments to accommodate complex weld schedules. Real time power feedback ensures extremely accurate pulse-to-pulse stability and repeatability.

In addition to providing flexible programmability to meet the most demanding medical performance specifications, the Micron Series also includes advanced remote diagnostics which enable staff at our Weld Process Lab in Monrovia, CA to provide

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### Unitek Miyachi International Acquires Assets from MicroJoin, Inc.

#### Providing MicroJoin's Former Customers with a Transition Path to Unitek Miyachi Products

Unitek Miyachi International (UMI) once again demonstrated global industry leadership by acquiring selected assets of MicroJoin, Inc. in order to assure a stable forward path for the failed company's existing customers. When MicroJoin, a provider of resistance welding, reflow soldering and heat seal bonding equipment and systems, ceased its operations in August 2002, UMI stepped in to acquire MicroJoin's intellectual property, products, systems, equipment, designs, patent rights, trademarks and brands.

Former MicroJoin customers are being supported through the coordinated efforts of two UMI companies, Unitek

Miyachi Corporation for resistance welding applications and Unitek EAPRO for reflow soldering and heat seal bonding applications.

Although only some of the MicroJoin product line has been integrated into existing product families, warranties will be honored on all MicroJoin products and non-warranty repairs will be made as long as parts are available and in-stock.

In addition, all consumables such as the electrodes used in MicroJoin's welding products will be provided by Unitek Miyachi Corp.

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## MM-122A

### New Compact Weld Monitor Combines Both Precision and Flexibility

Miyachi's new MM-122A offers an industry-leading combination of full-featured functionality in an ultra-compact form factor that delivers cost-effective and highly flexible weld monitoring. With dimensions of only 2.8" wide, 9.7" deep and 7.5" high, the MM-122A can be mounted in virtually any position on a welding machine for tightly integrated process control.



The MM-122A can measure a full spectrum of current types, including single phase AC, DC inverter, AC inverter, capacitor discharge, transistor, single-phase rectified, 3-phase rectified and 3-phase low frequency. The MM-122A

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### A regular column from Pat Jackson

I had originally planned to use this space to discuss UMC's continued commitment to quality and customer service, but instead



wish to address our recent purchase of Microjoin's assets. In many ways, I believe that the two topics are connected: UMC is pledged to superior technical leadership, quality and customer support which, ultimately, has enabled us to continue to prosper while our competitors in

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the industry have failed. Our acquisition of Microjoin's assets, after they closed their doors for business at the beginning of August, was a tremendous coup for Unitek Miyachi Corporation – an opportunity not only to welcome many new customers to the UMC family, but also to demonstrate to them why UMC is the first choice in precision metal joining equipment. We are committed to providing all of our customers the best possible solution for their unique application requirements.

As a special note to our newest customers: we will continue providing consumable items and selected replacement parts for Microjoin equipment and systems for a period of time such that we may provide a reasonable transition path to UMC products. We have

instructed our sales team to contact each and every customer to determine the best available product solution to minimize any interruptions in supporting your manufacturing process. UMC has built its business and reputation on exceptional support, problem solving, and state-of-the-art solutions, and I look forward to demonstrating first hand exactly what makes us special. To our newest customers as a result of the Microjoin acquisition, I look forward to many years of partnership and cooperation. Welcome aboard!

**You may contact me directly by emailing [pjackson@unitekmiyachi.com](mailto:pjackson@unitekmiyachi.com) or calling me at (626) 930-8567.**

## LVDT Upgrade Option for HF25 Provides Precision Displacement Monitoring and Management

Advanced resistance welding technologies provide tools for managing the electrical process: precisely controlled energy, active weld monitoring and closed-loop feedback. The mechanical aspects of welding – part detection, initial part thickness and weld displacement, however, are often overlooked.

Learning to manage both the electrical and mechanical aspects of the welding process can be the key to a successful welding application. To address this specialized requirement, Unitek Peco now offers an integrated Linear Variable

Differential Transformer (LVDT) option with the HF25 power supply, which is easily mounted to Unitek Peco 80 series weld heads to track electrode motion and provide real-time feedback to the HF25.

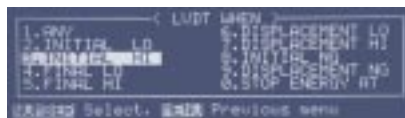
The LVDT can be set up to measure displacement in either inches or millimeters

and can be programmed to provide alerts to the operator or to trigger relay actions. For example, LVDT displacement measurements can be used to detect and verify the presence of the parts prior to welding. If parts are not detected, the weld is aborted avoiding

inadvertent blowout of the electrodes. For some applications, using the LVDT to dynamically measure variable displacement during the weld process can be critical for managing “set down” of the parts and/or triggering “weld-to-limit” energy stop points.



LVDT Screen – Program limits and view results.



Program relay outputs to signal automation.

When combined with the HF25's closed-loop feedback for managing electrical characteristics, the LVDT's ability to dynamically measure displacement provides a complete picture of all mechanical and electrical factors that can impact the weld, thus improving both process control and overall quality results.

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## UMI Acquires MicroJoin Assets

Without UMI's intervention, MicroJoin's closure would have left customers with obsolete and unsupported products.

According to Jim Malloy, Unitek Miyachi's Vice President of Sales, “Our immediate focus is to make sure that former MicroJoin customers do not experience any interruption in their on-going business operations as a result of MicroJoin's exit from the marketplace. In the mid- to longer term, we are committed to providing a smooth transition for all MicroJoin customers to move their applications on to supportable leading-edge Unitek Miyachi solutions.”

For more information about supporting and/or transitioning former MicroJoin products, contact:

Resistance Welding Products  
**Unitek Miyachi Corp.:**  
626-303-5676

Heat Seal and Bonding Products  
**Unitek EAPRO:**  
858-536-2746

# Unitek Miyachi's Global Support Staff Helps Resolve ESD Issues for China-based Manufacturer of Magnetic Disk Drive Assemblies

Customer Spotlight

Unitek Miyachi's customers are already accustomed to support staff "going the extra mile" to solve their problems, and in a growing number of cases, around the world as well. A prime example is the key role played by Unitek Miyachi's Mark Gomez in helping Shenzhen Kaifa Technology Co. Ltd. solve Electro Static Discharge (ESD) issues that were causing problems on their prototype assembly line using Giant Magneto Resistive (GMR) heads in Shenzhen, China.

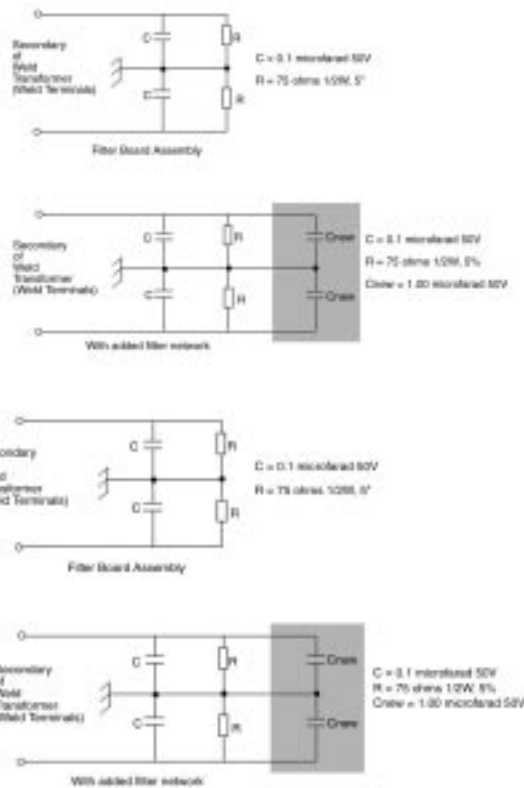
As a leader in the growing high-tech industry within the Peoples Republic of China, Shenzhen Kaifa Technology has enjoyed sustained levels of rapid growth over the past few years. Today Kaifa has become one the world's leading manufacturers of component assemblies using GMR heads for computer disk drive applications. Systems from Unitek Miyachi have played a key role in Kaifa's ability to meet escalating production goals by providing solutions for high-throughput reflow soldering of leads on the head stack assemblies. However, Kaifa began to encounter ESD issues at wire bonding stations using reflow soldering machines.

According to Kaifa's Randy Bordeos, "When using solder reflow machines for assembling head stacks there is a risk of direct induced current from the thermode tip to the

GMR inputs. Depending on the sensitivity of the head and the magnitude of the transient current, this condition can cause either catastrophic failures or latent damage to the GMR head."

After visiting the Kaifa facility in Shenzhen and collecting data on the production floor, Mark returned to the Applications Lab in Monrovia, CA and quickly replicated the current leakage problem on lab test equipment. By modifying the existing filter network on the transformer terminals (see figure), Mark was able to achieve a 75% reduction in the leakage current.

As soon as the fix was communicated to Kaifa, Randy Bordeos rapidly applied the filter modification to all solder reflow machines to be used in production, which prevented the occurrence of ESD damage issues on products and enabled Kaifa to achieve all of their on-going quality



objectives. According to Bordeos, "This story shows a prime example of Quality Management Principle No. 8 of ISO9001: 2000, which focuses on creating 'Mutually Beneficial Supplier Relationships'."

## New . . . From the Weld Wizard's Files:

Watch this space in each issue of *The Pulse* for more examples of the hundreds of real-world questions already answered by the Weld Wizard.

**Q** I am currently welding two tantalum leads together using a laser weld process under a vacuum, however, there are several drawbacks to this procedure, so I'm looking at the possibility of resistance welding these leads. Since copper contamination is not an option, I was hoping that a specially treated tantalum electrode could be used in place of standard copper electrodes.

**A** Have you considered using Tungsten electrodes? Tungsten has a slightly higher melting point than Tantalum and is readily available as a standard electrode material. Because Tungsten is very hard and resistive, however, you may encounter electrode sticking. If you do, use the highest force and largest electrode face possible. To reduce the electrode-to-part contact resistance, polish the electrode faces until they are shiny. Make sure there are no sharp edges or burrs on the electrodes.

**Ask the  
Weld Wizard!**

**We want to hear from you!**

If you have a specific welding, marking or metal joining problem and need assistance, or if you're looking for ways to increase production, write the Weld Wizard at:

[weldwizard@unitekequipment.com](mailto:weldwizard@unitekequipment.com)

## See us at the following TRADE SHOWS:

**Fiberoptic Automation Expo**  
December 4-6, 2002  
San Jose, CA

**Medical Design &  
Manufacturing West**  
February 19-21, 2003  
Anaheim, CA

**WESTEC**  
March 24-27, 2003  
Los Angeles, CA

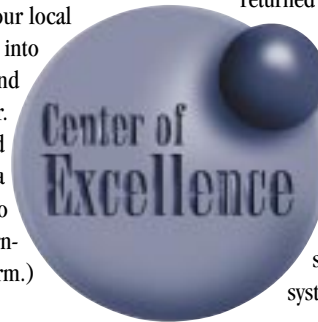
**OFC**  
March 25-27, 2003  
Atlanta, GA

## New . . . Behind the Scenes at Unitek Miyachi

**E**ver wonder what happens behind the scenes when you send us a request for support, submit a process for evaluation or request a quote? Beginning with this issue of *The Pulse*, we'll address some of these questions in this new "Behind the Scenes" section.

### Applications Lab: Processing Samples for Evaluation

As soon as the product samples and request for evaluation arrive from you or your local representative, they are logged into our Applications Lab database and assigned a tracking number. Generally all requests are handled on a first-in, first-out basis with a turnaround of no more than 7 to 10 days. (If you require faster turnaround, please note it on the form.)



The application is then assigned to one of our experienced Applications Lab engineers, all of whom are welding experts with 5 to 15 years of hands-on experience. Because we have a complete suite of welding systems, you may specify the type

of equipment you'd like us to use for running the test process; if you don't specify a platform, the engineer will select the most appropriate system for your application. After setting up, running and evaluating the application, the engineer will generate a complete report on the process used, the weld parameters applied, and the results achieved.

The written report and welded parts are then returned to you, along with any suggestions or recommendations, if applicable, for changing the design to improve weldability. If appropriate, you'll also receive a quote detailing the best equipment configuration to handle your welding application; if you are a current user, we may suggest upgrades to your existing systems to optimize the new process.

*What do you want to know? Send us an email at [info@unitekmiyachi.com](mailto:info@unitekmiyachi.com) and we'll put it on the list to cover in future "Behind the Scenes" sections.*

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### MM-122A

#### New Compact Weld Monitor

also handles current ranges from 0.010 to 199.9kA and can monitor RMS or PEAK values, conduction angles, upper/lower limits, etc., for up to 31 weld schedules.

Integrated error signaling features and versatile I/O functions (RS-232 and RS-485) enable the MM-122A to provide seamless process control in deployments ranging from bench top fully automated welding systems.

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### Micron Lasers . . . for Medical Apps

virtual on-site assistance optimizing medical welding processes to customers all over the globe.

Vision directed motion and automatic laser power confirmation are just a few of the available system options.

Three standard models are currently available: the MX40 is designed for applications with limited floor space; SMX40, for applications such as guidewire assembly which require longer work envelopes;

and the MX60 which provides larger work envelopes and extended XY travel of up to 450mm. The Micron Series sets industry standards for process control, weld quality and repeatability. Built-in auto data-logging capabilities meet FDA lot-tracking and monitoring mandates, and standards-based communications links (RS-232, RS-485, Ethernet and USB) enable smooth integration with overall manufacturing and quality systems for medical manufacturing environments.