

Finally, a cow with all its spots!



A strategic member of one of the world's largest PCB manufacturing groups, Taiwan-based Unimicron, Ruwel heads the Group's High Reliability Business Unit, supplying the needs of the world's Automotive, Industry and Renewable Energy sectors from its plants in Geldern, Germany and Kunshan, China. In recent years, Ruwel has undertaken an ambitious investment plan aimed at improving its small series production costs, throughput and flexibility, while eliminating human error from its high reliability production processes. Part of this is its latest investment in a Ledia V6 3-Wavelength Direct Imaging system for its soldermask line.

Just 10 weeks on, soldermask exposure is no longer a bottleneck, Ruwel is saving up to 4 hours daily in set up, and product quality has improved significantly. Key to the company's decision to buy Ledia is the top quality support it receives from Ucamco and FineLine, Ucamco's representative in Germany.



Head of Technology Rico Schlueter and Soldermask Engineer Manfred Hax explain



Among the first in Europe to understand that long-term success and growth would depend on advanced technology products, our company invested heavily in state-of-the-art technology, expertise, and organisational skills. It's not always been easy, as anyone in the European PCB industry will know, but our focus on high-end advanced products for demanding applications has always stood us in good stead. Today, as one of Europe's oldest and largest PCB manufacturers, we are a leading supplier of high-reliability PCBs for the world's Automotive, Renewable Energy and Industrial sectors, and a strategic member of one of the world's largest PCB manufacturers, the Unimicron Group.

Competence Centre

Shortly after our acquisition we were designated as the Group's competence centre for the Group's newly-established High Reliability Business Unit (HRBU). As part of this, Unimicron entrusted us with the development and management of its Kunshan facility in China. It was highly unusual for an Asian group to put the management of an Asian facility in European hands and it took us several years to standardize it to Automotive level, but it was worth it: several years ago the plant was approved for automotive manufacture for clients all over the world.

Now our Geldern plant focuses on product development and optimisation, rapid prototyping and the production of small to medium volumes of highly complex PCBs. If products are required in high volume, we either transfer them to Kunshan so that our clients can benefit from the lower cost base, or, as in the case of non-fail automotive products such as car radar systems or ABS systems, we continue making them in Germany. Thus we are in the unique position of being able to offer the safety-net of twin manufacturing sites, so we can guarantee uninterrupted supply no matter what the volumes and no matter what natural calamities might happen.

Thanks to Unimicron's strong financial position, we have been able to execute an ambitious investment programme in Geldern, keeping us right at the leading edge of our very demanding high technology marketplaces.

Most of our investments have been driven by a few key issues:

- **Labour costs** – By investing in Direct Imaging (DI) in all our exposure departments in combination with other investments in x-ray, drilling, etc., we have digitalized most of the production processes for our small and medium lot-sizes, deploying high level technologies that have enabled us to automate the production cycle as much as possible, minimalising operator intervention so that we can redeploy our employees more usefully elsewhere in the business.
- **Quality** – Eliminating human error, improving positioning accuracy, and increasing our resolutions

- were especially important for our fine feature, high-reliability products.
- *Flexibility* – Particularly for our small and medium lot-size production, we needed to reduce setup times between one job and another.

Direct Imaging

To this end, we installed a state-of-the-art European-made Laser DI system 4 years ago in our outerlayer line, and then 2 years ago in our innerlayer line. Based on Blu-Ray technology, the systems are extremely fast, satisfying our need for speed and throughput.

These DI systems are proven in our production for dry-film exposure, but not for soldermask applications and we noticed that other DI manufacturers already had much more proven results in soldermask technology. Early in 2015, when we decided that it was time to put DI technology into our soldermask area, our MD drew a cow on the whiteboard with the comment: “This time around I want a cow with everything – a tail, a head, hooves, knees, and all its spots”.

The importance of good technical support

It was time to explore Ledia properly. We had already evaluated it as a possible candidate for our innerlayer work and had been impressed then, with its capabilities and, just as important, with its ease of use. Screen, Ledia's manufacturer, already has an excellent reputation in Asia and equally important, we knew we could rely on Richard Wagner at FineLine Technologies for top quality customer support, and Ucamco, for full technical support and product knowhow. For us, reliability is absolutely key: we are in the business of mass production, 24/6, so support is everything.

Ledia

There were a lot of good reasons to go for Ledia, and we were also driven by the references we already had in Europe with Richter and ACB and also from our mother company: Unimicron already has a couple of Ledia systems in its Asian plants. Not least, it's the fastest DI system out there for soldermask exposure. So in April 2015 we ordered Europe's first 3-wavelength Ledia with 6 exposure heads, opting for the top model for its speed and capabilities with a very wide range of different coloured soldermasks.

Then Manfred visited Screen in Japan to get an idea of the company's manufacturing and quality. They really impressed him – on the production floor, 8 machines including ours were being made to order – ours is the 208th Ledia made to date. It was clear that this is a production platform, it's tried and tested, and that Screen knows what it's doing. We are used to testing our new equipment at the manufacturer's before signing off for delivery. At Screen, this was neither possible – we would have lost our manufacturing slot – nor necessary. They told us “we deliver your machine to you on time, to all our quality standards, in full working order – you do not need to test it”.

Delivery and set up

And so it was. Our Ledia was air freighted to us in July 2015, on a Monday, and by Wednesday of the same week it was in full production mode and we exposed our first working panel. The technicians who delivered the machine were excellent, and the project manager was extremely professional, answering every one of our queries fast and clearly – even those about automation, which will be delivered independently by ASS Luippold by the end of 2015. We are very pleased indeed with the support we have received. And as we go on, we know that we are covered, either remotely, via Teamviewer, or directly, by our suppliers.

Throughput

Since then we have had no problems at all. Ledia is extremely easy to use, and it's reduced our job setup times with respect to conventional exposure from 10 minutes to just 1, so we are saving up to 4 hours in a 24-hour day: a phenomenal result. We have 2 soldermask production lines – a conventional curtain coater with which we use conventional soldermasks, and a new spray coater, with which we will use new soldermasks. Ledia can process the soldermasks from both lines – even conventional non-LDI materials – without problems, and at production speeds, making our soldermask department even more flexible.

At present all of our small lots are going through the Ledia, as well as all of our high technology high reliability boards, so we're talking about 1 in 3 of the boards we make. We foresee that by the end of the year, we will have filled Ledia's considerable capacity, with 30-35 jobs/day.

Conclusion

We are very pleased with our Ledia so it is very likely that when we need to replace our conventional Ono Sokki exposure machine in the near future, we will choose another Ledia. It's a great system, but not just for us – we believe Ledia will be very successful in Europe, for larger companies like ours, but also, thanks to its flexibility, for smaller companies. Ledia offers excellent performance capabilities, of course, but it is also supported exceptionally well, by both FineLine and Ucamco. Everything they promise is delivered, on time, without delay and as agreed when we ordered the machine. We are absolutely delighted with them as suppliers, and we heartily recommend them, and Ledia, to Europe's PCB makers. ””

About Ucamco

Ucamco (formerly Barco ETS) is a market leader in PCB CAM software, photoplotting and direct imaging systems, with a global network of sales and support centers. Headquartered in Ghent, Belgium, Ucamco has over 25 years of ongoing experience in developing and supporting leading-edge photoplotters and front-end tooling solutions for the global PCB industry. Key to this success is the company's uncompromising pursuit of engineering excellence in all its products.



For more information on the Ledia range of LED Direct Imaging Systems please contact Ucamco:

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About Ruwel

A 100% subsidiary of Taiwan-based Unimicron, Ruwel International GmbH is one of Europe's oldest and most important producers of circuit boards. It is in the unique position of having production plants in Europe and Asia managed by one team of highly dedicated professionals based in Germany. With its engineering and production capacity in Germany, Ruwel helps its clients to optimize PCB designs, provides rapid prototyping and sample production, and places particular focus on producing small to medium volumes of highly complex PCBs. By continuously transferring our process know-how and technology within the High Reliable Business Unit, we make sure that our high volume clients are served equally well, while getting great value from the lower cost base in Asia.

With over 300 highly dedicated employees and through an ambitious targeted investment programme, Ruwel aims to stay at the forefront of the PCB industry, continuing to serve its customers in the high-end automotive, industry and renewable energy sectors worldwide.



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About FineLine Technologie

For over 25 years, Richard Wagner has been Ucamco's representative in Germany, Austria, Switzerland and Slovenia, active in the PCB industry and for special applications.



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