Ucamco
Former Barco ETS

SOFTWARE   **LASER PHOTO PLOTTERS**   **DIRECT IMAGERS**

From complexity to competitivity through Ucam

As a leader in the manufacture of quality quick-turn small series and prototype PCBs, Ilfa manufactures anything from simple single-sided products up to the most technologically advanced 32-layer multilayers and 28-layer rigid-flex circuits. Its wide variety of materials and products makes its business potentially very complex, so a decade ago, Ilfa decided to pull its many products, materials, systems and processes together into a single integrated automatic production system. This now enables Ilfa's CAM engineers to work incoming customer data and generate all the files, tooling and data that are necessary for production, at the click of a mouse. At the heart of the integrated system is Ucam, the PCB industry's most open CAM system, and the one with the greatest potential for automation. Using HyperTool, Ucam's automation programming language, Ilfa has tailored Ucam to its very specific needs to bring order, efficiency and high productivity to Ilfa's high product mix business.

Sylvia Liemer – CAM / Engineering Manager and
Dieter Guthardt - Software R&D Engineer, explain:

As a leader in the manufacture of quality quick-turn small series and prototype PCBs, we are perhaps unique in Europe for the exceptional variety of our products. This includes anything from simple single-sided products up to the most technologically advanced 32-layer multilayers and 28-layer rigid-flex circuits. We currently have a library of more than 5000 widely varying stackups, a number that grows daily, and a product range that uses a multitude of materials, components, technologies and techniques to satisfy some 7000 orders a year. These come in from clients in sectors as diverse as medical, aerospace, military, automotive and general industry. All of this makes our business extremely complex in terms of logistics, materials, products and processes, so our manual and automatic operations must be combined as intelligently and efficiently as possible.

We started automating our processes about a decade ago. At that time, we had a limited version of Ucam which had actually come to us as the controlling software for our Barco laser plotter. After early experiments with it showed that it was capable of doing far more for us than our existing Lavenir CAM system, Ucam was naturally among the systems we chose to benchmark when it came to investing in new CAM seats. After careful consideration we chose it above all the other candidates for its openness and its greater potential for automation, and we've never looked back. Today, we have 15 full Ucam seats in our CAM/Engineering department and 3 reduced seats for the technical sales and drill/rout departments. Without Ucam, we would probably never have been able to build the business we have today.

We first opted for the standard Ucam package, and it proved ideal for our standard CAM jobs. But we quickly realised that we could get far more from the system by using it to automate our systems. As this was before the days of Visual HyperScript, Ucam's current entry-level easy-to-use automation package, the route forward was to learn and use HyperTool, Ucam's deep-reaching automation language. Like Ucam, this is heavily based on Java: a fast, easy, open, universally-used standard that is currently the most powerful programming language out there. The benefits of this are huge, as it means that automation is an integral part of Ucam rather than being the add-on feature that it is for other CAM systems. It also means that Ucam can be relatively easily accessed and altered to suit the needs of whomever is using it. Indeed it is so open that it does not distinguish between Ucamco's original code and ours – to the point that the casual observer would be hard-pressed to recognise our own Ucam system as such: when we switch it on, a bespoke Ilfa GUI appears that has been especially tailored to our specific needs.
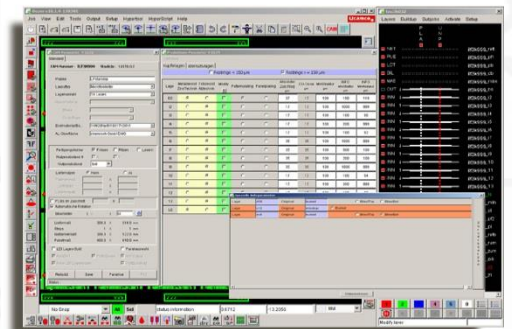
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Flat Panel Display

PRODUCT FAMILIES
CAM ✓
PreCAM and Engineering
Electrical Test
Equipment Front Ends
Format Converters & RIP's
OEM Software

Laser Photo Plotters
Direct Imagers

64 Bit

Multi Core

Ilfa's first experiences with Hypertool included the automation of job data input and linkage to the ERP system. With Ucamco's help, we also automated plotting by using a standard naming protocol that contained a great deal of information about each layer: a principle that we subsequently applied to many other downstream processes. Then 7 years ago as part of Ilfa's push to automate further, Dieter joined from the Gerber company, bringing with him a wealth of experience in PCB manufacturing software. One of his first tasks was to update the plotter automation language. Then we went to work on linking Ucam with our then standalone Product Engineering Database, which contains an enormous amount of information about our products and clients. This was an essential step as our CAM engineers were then accessing the Product Engineering Database and Ucam in parallel to read data from one into the other – a time-consuming, painstaking and potentially error-ridden task. We used Hypertool to link the two so that with minimal tweaking, our engineers could quickly and automatically set up jobs. We have since pulled all of our systems into a single integrated whole, automating our processes wherever it makes sense. Now, with a single click of a mouse, this single system automatically generates files, tooling and data for processes such as routing, drilling, plotting, LDI, electrical test and AOI. And because it's an intelligent self-learning system, it takes what it knows about a product, a board or a material, and applies this to the task at hand. For example, over the years, the system has downloaded plenty of data from our x-ray drilling machines about the dimensional behaviour of the materials we use, so it factors this in when generating drill files. Similarly, it takes into account the fact that different layers in the same board may require different Design Rule Checks for AOI.

And the work is ongoing. Whenever a manual CAM task becomes repetitive, Dieter steps in to enable its automation and integration into the system. Similarly, we are constantly integrating new products and manufacturing capabilities, as well as new hard- and software so that they are supported by the system.

All of this has streamlined our CAM function enormously. We spend 30 minutes less on each order, which, when you consider that we receive between 30 and 60 orders a day, is phenomenal. And it's reduced the potential of errors to an absolute minimum as well as freeing up our engineers to focus on essential complex tasks such as panelisation, etch compensation and stackup combinations.

It seems almost impossible that a business as complex as ours, with such varied and seemingly incompatible products, can be integrated into a single automated production system. But thanks to Ucamco's unwavering support and Ucam, we have been able to do just that, and to thrive in our fiercely competitive marketplace.

Sylvia Liemer – CAM/ Engineering Manager and *Dieter Guthardt – Software R&D Engineer*
ILFA Feinstleitertechnik GmbH

SOFTWARE

AutoCAM

FaultStation 4

FixGenius

FlashRip

Format Converters

Geometric Correction System

Integr8tor

Mult Job Panelizer

OEM Software

SmartAOI

SmartPlate

SmartTest

Ucam CAD Review

Ucam CAM++ ✓

Ucam Chemical Milling

Ucam ET+

Ucam SmartView

Ucam uFlex

UcamX

For more information on any of our products or services please contact us:
By e-mail: info@ucamco.com

About ILFA

Founded in 1979, Ilfa is a leading manufacturer of quality quick-turn small series and prototype PCBs. Employing 178 people at its Hanover and Dresden facilities, it is renowned for its innovative solutions and state-of-the-art very fine and microfine conductor technology, and is perhaps unique in the variety of its products, which range from simple single-sided products up to the most technologically advanced 32-layer multilayers and 28-layer rigid-flex circuits. Ultra-thin multilayers, embedded micro cooling systems, micro BGAs, integrated RFID chips, EMC compatibility, impedence control – whatever the requirements, Ilfa works closely with its clients, from initial design to support in the field, to implement their products.

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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 Ucamco's success is the company's uncompromising pursuit of engineering excellence in all its products.

About Ucam

Ucam is Ucamco's best selling CAM product with over 2000 installed packages in production.

For more information on Ucam,
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