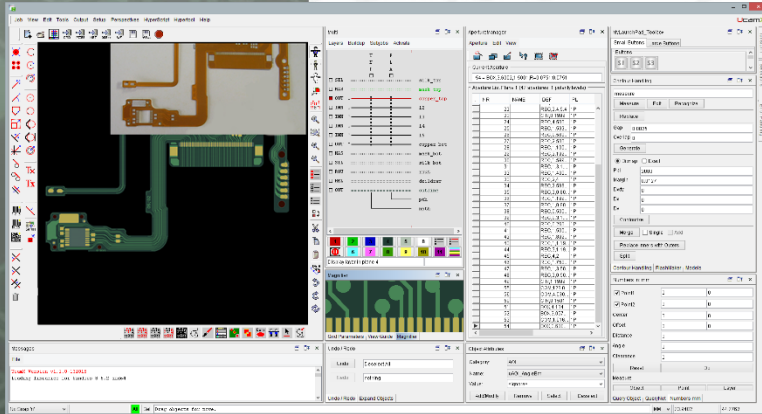**SOFTWARE** | **LASER PHOTO PLOTTERS** | **DIRECT IMAGERS**

UcamX uFlex

The smart Flex & Tape Automatic Bonding solution

- Higher CAM productivity
- Right first time production
- Enhanced customer service
- Shorter design cycles
- Lower costs
- Longer-life product performance

MARKETS

Rigid PCB Mfr
Flex PCB Mfr ✓
Flex-Rigid PCB Mfr ✓
HDI PCB Mfr
PCB Masslam Mfr
PCB Equipment Mfr
PCB Traders
PCB Designers
PCB Test Centers
IC Packaging
Chemical Milling
High Resolution Graphic Arts
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

The Challenge

Flexible circuitry and Tape Automatic Bonding (TAB) is the fastest growing area of PCB fabrication, but it brings special production challenges. Developments which brought high yields and high productivity for rigid boards need to be rethought. Increasingly complex and increasingly diverse build structures, new materials and new technologies impose new demands on CAM, design verification, yield optimization and tool generation. Many earlier automation technologies are now ineffective.

The Solution

Ucamco's new uFlex software has been launched in response these challenges. Powerful tool-sets help product engineers develop innovative and effective solutions for cutting-edge designs, while highly flexible automation routines take care of the repetitive and time-consuming manual tasks which hamper engineering creativity.

DFR – Design for Reliability
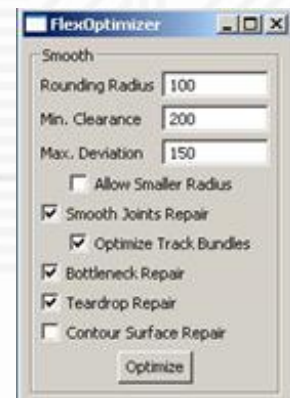*DFM – Design for Manufacturability*

Each incoming design must be verified and optimized to meet the twin demands of manufacturability and long-term product reliability.

Inputs & Outputs

uFLEX is fully integrated with world-beating UcamX software. Automatic recognition handles all standard input format. Field-proven outputs are automatically optimized for fast machine set-up, maximum shopfloor throughput and maximum yields.

Flex Optimizer

Offers DFR tools to verify and optimize every part of the design for best future performance: copper layout, hole, copper and profile geometry, coverlay, covercoat, adhesives, solder mask and legend.

DFM Tools

DFM tools maximize yields and productivity during fabrication: clear lay-up presentation, compensation for linear and non-linear distortion due to differential material movements, dynamic etch compensation for variable copper geometries in X, Y and Z axes.
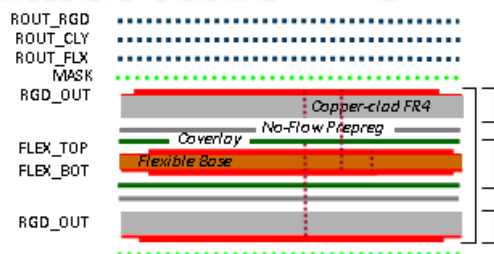
FlexPanelizer

FlexPanelizer is designed to cut material costs. All are backed by automatic on-line verification. The powerful and effective user interface ensures ease of use and a fast roll-out with minimum training times.

Fast, secure stack-up

Use **uFlex**'s unique customized Z-axis display to build your job on screen. Layers, materials, SBU builds and sub-assemblies are crystal clear. Print out the full-color display or transfer to PC browsers to share information for design reviews or shopfloor lay-up.

Download material data (thickness, part codes etc) and standardized builds and sub-builds from **uFlex**'s enterprise-wide engineering database. Automated links transfer the data into ERP systems for BOM, costing and planning.

Smart stack panelization

Automatic panelization procedures developed for rigid circuits remain useful for flex-rigid and TAB circuitry with regular profiles and for separate piece-parts. Otherwise flex fab needs a new solution for maximum material usage and minimum CAM time – **FLEXPANELIZER**. Take the outline layer only, rotate to any angle, mirror, flip and interweave onto the fabrication panel. Drop piece parts or even another job into waste areas.

FLEXPANELIZER panelizes all layers to the same pattern, adding dynamic coupons, targets, plating bars, text, and plot stamps fully automatically. Set up **FLEXPANELIZER** following the clear *dynamic automation* wizard. Roll out new solutions fast or modify for new technologies: no need to wait for scripting. **FLEXPANELIZER** delivers optimum material utilization, fast, simple automation, more CAM productivity and less error risk.

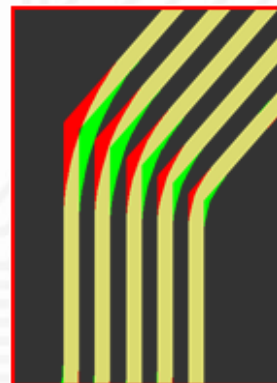## Manufacturability optimization

uFlex adds special flex functionality to UcamX's well-proven standard DFM routines. Radius coverlay corners automatically for milling or steel-rule die-cutting. Solve linear and non-linear distortion due to material instability: automatic routines offset zone-drilling co-ordinates and set plot commands for differential stretching. Etch control is critical for fine-line TAB, dense HDI or COF and differential copper thicknesses. Use **uFlex**'s Dynamic Etch Compensation to set precise compensation for different locations and copper thicknesses. Its unique algorithm adds the correct compensation, fully smoothed, 100% automatically.

Unlimited layer classes

Define your own layer-classes without vendor limits. No need to wait for scripting: with **uFlex** you set up secure open-ended automation routines directly on screen.

Automatic design verification

uFlex delivers unlimited automatic design verification checks. Confirm within seconds that conductors meet the stress requirements for flex areas, that sequential drilled, photo-imaged or screened vias are correctly staggered, that coverlays or covercoats embed conductors and overlap pads correctly, that adhesive layers, rigidizers, stiffeners and mechanical profiles meet all your specifications for high-yield fabrication and product life.

DFR reliability optimization tools

uFlex gives you a full automatic tool-set to counter dynamic flex stresses. Time-consuming manual operations are completed in seconds without escapes. Automatic on-line verification ensures complete accuracy. **FLEXOPTIMIZER** automatically rounds and smoothes joints, surfaces and width changes on individual conductors and on bus-bundles. Optimize bus-line spacing. Snap conductors to any angle to fit flying-lead geometry. Counter pad stresses with tie-tabbing and teardropping. All 100% automatic. **uFlex** automatically optimizes coverlays and covercoats: no conductors are exposed, all pads are correctly overlapped and soldering areas kept clear of film and adhesive.