Higher CAM productivity

Right first time production

Enhanced customer service

Shorter design cycles

Lower costs

Longer-life product performance

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 pieceparts. 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, plated 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.