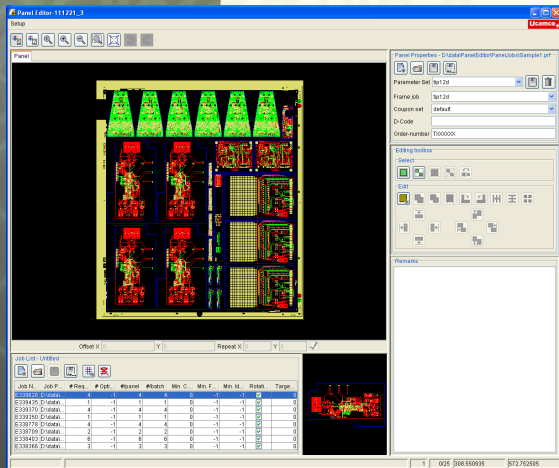**SOFTWARE** | **LASER PHOTO PLOTTERS** | **DIRECT IMAGERS**

# Multi Job Panelizer

## Easy Panelization of mixed-PCB Panels

Multi job Panelizer is a suite of software modules designed to help create production panels containing different single images. Depending on the modules installed and the level of integration required, Multi Job Panelizer can run in a variety of modes, ranging from manually driven over operator-assisted to fully autonomous and anything in between. In manual mode powerful algorithms and a state-of-art graphic editor assist the operator while composing the optimum panel layout. At the other far end of the scale, in fully automatic mode, the system crunches through literally thousands of layout combinations to come back only minutes later with a list of possible panel layouts, sorted according to the criteria which you as a customer have judged decisive for your production.

### Interactive Panel Editor

The Interactive Panel Editor is a purpose-built, highly intuitive graphical tool that will guide the operator through the process of creating a mixed-PCB production panel. Amongst many other things, it features a panel properties section, a panel image area, an editing toolbox and the job list.
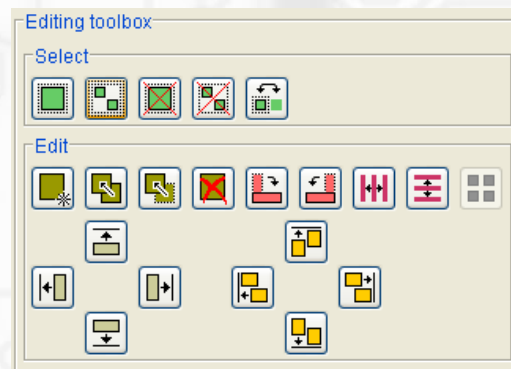
### Job List

The job list is a pooling area in which the jobs are gathered that need to go onto the production panel. In the basic version of Multi Job Panelizer, the operator will compile the job list by hand prior to making a production panel layout. For each job added to the job list, a number of parameters are set either automatically by the system or manually by the operator.

Once the PCBs to be produced are in the job list, the operator can start working on the layout of the production panel. Stay clear values and on-the-fly clearance checks will prevent him from placing layouts inadvertently too closely together or dropping them outside the panel's useable area. Integrated step and repeat functionality turns the single image into a multi-up at the click of a mouse, which can then be simply drag-and-dropped onto the production panel. Further functionality from the editing toolbox includes PCB rotation, move and copy, a smart "distribute space horizontally or vertically" feature and powerful tools to easily align PCBs both horizontally and vertically.

### Clearance & Layout Optimizer

After finishing manual PCB placement, Clearance Optimizer will spread PCBs over the full surface of the panel, thus using some of the panel's left-over real estate. The resulting clearance increase between the PCBs will allow pouring fill patterns much more effectively in order to even out potential plating imbalances between more and less dense copper areas for instance. Clearance optimizer can work on the full panel area or on a selected set of PCBs.

The function of the Layout Optimizer is to generate a list of alternative panel layouts using the same PCBs as the original layout. The generated panel layouts are presented in the Shuffled Jobs list. Clicking one of the proposed layouts in the Shuffled Jobs list will promote it to become the preferred panel layout.

## 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

## Plating Analyzer

The Plating Analyzer calculates an index for the top and bottom side of the panel giving an indication of how well the panel can be plated. Plating indexes are calculated on the fly as you edit the production panel or on-demand by hitting the Update Plating Index function. Plating Analyzer features an integrated fill pattern generator which floods the areas in between PCBs with a fixed, averaged or dynamically calculated fill pattern to help you achieve optimum plating results and fewer scrap panels. When Plating Analyzer and Layout Optimizer are both installed on your system, the latter can list alternative panel layouts in descending order of plating efficiency, an absolutely unique feature currently available on the market. As soon as plating indexes are available, the Interactive Panel Editor features an extra tab page with the predicted plating result: Green color indicates good plating. The different shades of blue indicate under-plating. The different shades of red indicate over-plating.

## Geometric Optimizer

Geometric Optimizer takes the creation of a mixed-PCB panel one step further. Starting from the items in a job list, it proposes a number of possible production panel layouts without the need for human intervention. Taking the outline of the job, the requested number of PCBs, the minimum clearance required and a few other job properties, this module examines a massive amount of possible solutions for either all entries in the job list or for a selected subset only.

With the option "Single Panels" or "Panel Combinations" you impose more or less stringent rules as to whether or not a PCB may occur on different production panels. The Geometric Optimizer produces a Solutions Table which lists the various production panel configurations within the constraints you imposed. One single solution within the Solutions Table will typically consist of several panels, each holding a number of PCBs from the Job List. Every production panel in a solution has a "required number of panels" information field. Launching production batches with the stated number of panels guarantees that when production is finished, all PCBs on the panels will have been produced in sufficient quantities to satisfy your customer orders.

## Solutions Table

The solutions table shows details of each solution and the panel jobs it contains. In case of single panel mode, only 1 solution is shown containing all proposed panel jobs. The table is sortable by clicking the header.

## Panelizer

Panel Editor stores the information about production panel layout in the form of text files which can be saved, reloaded and edited as required.

## Batch Processor

To achieve the highest level of automation, the Batch Processor option can be added on. In this "full-option" configuration, Panel Editor monitors a predefined directory for incoming Multi Job Panel requests. These requests come as XML-formatted documents containing the jobs to be panelized with the associated information. Typically these documents will be generated by the Production Module of an ERP system.

As soon as such an XML document is available, Multi Job Panelizer will pick it up, convert it to its own Job List syntax and start building a Solutions table. Customer scripts can be plugged in at this stage to take decisions which in an interactive mode would be taken by an operator and which define for instance your definition of "the optimum solution".

Based on this input, the system automatically qualifies hundreds of possible solutions as sub-optimal to come out of the batch modus with just a handful of options left. From this short list, one will be more optimal than the others. This solution will be loaded automatically as the active solution in Panel Editor.