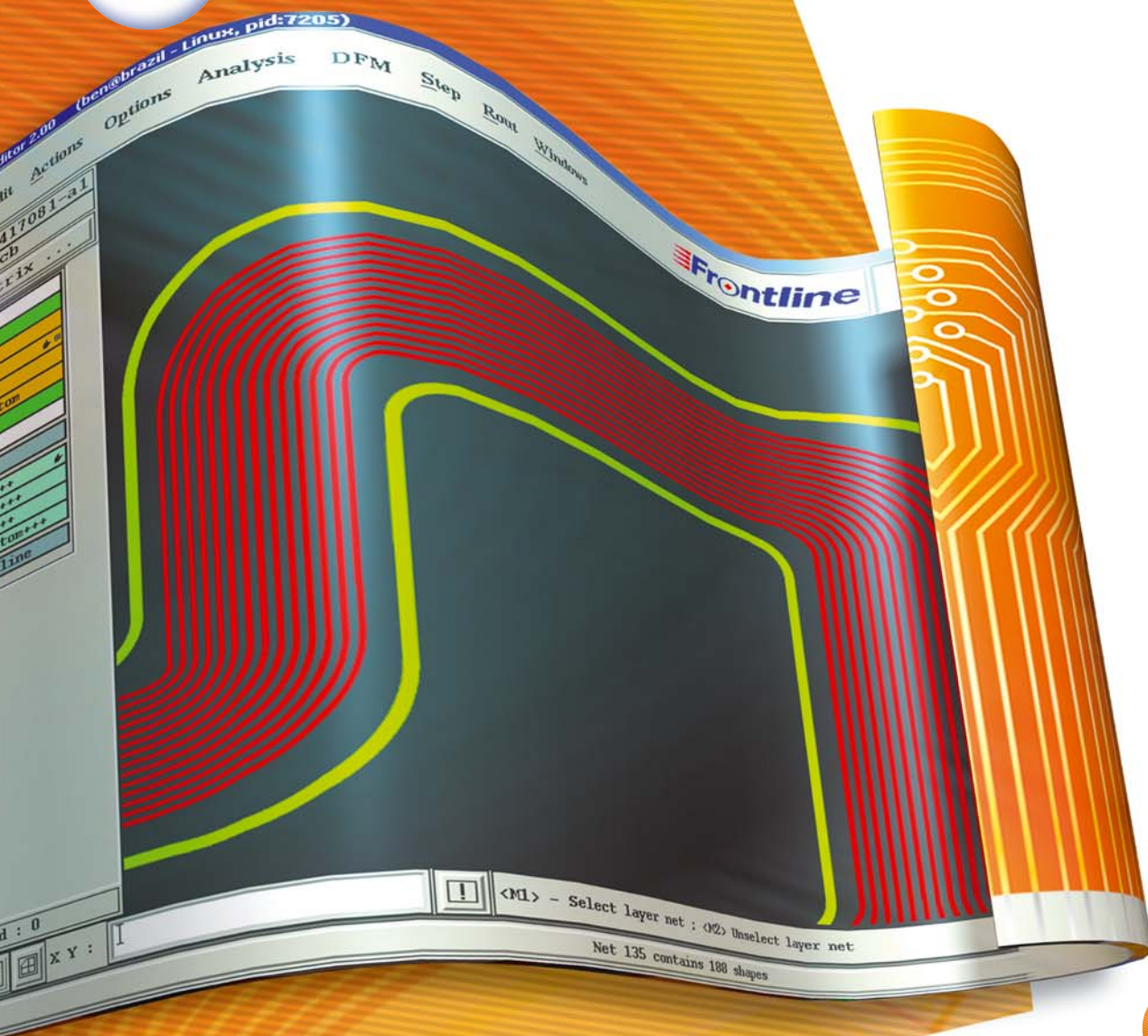The complete CAM solution for flex and rigid-flex manufacturing

GenFlex™

- State-of-the-art analysis and editing for flex and rigid-flex circuit boards
- Fast global revision through dedicated flex DFM tools
- Advanced flex CAD tools improve yield and reduce job cycle time
- Automatic panelization for flex boards, with interlocking and any angle rotation
- ODB++ for seamless integration with design and assembly
- From the world's leading CAM and engineering software vendor

Frontline
PCB SOLUTIONS
An Orbotech Valor Company

The Flexibility you Need. The Ingenuity you Want.

GenFlex, the world's first CAM solution for flex and rigid-flex printed circuit boards manufacturers, streamlines design analysis, editing, tooling and workflow management to maximize pre-production speed and quality.

Using highly sophisticated algorithms, GenFlex supports your most complex and time consuming layout editing tasks. It ensures the highest quality and manufacturability of your production tools. In addition, GenFlex's modular design and user-friendly GUI make it easy to integrate into your production environment. GenFlex can help you increase yields and reduce flex PCB production costs.

GenFlex is based on the ODB++ format for smooth, end-to-end data exchange integration and communication. ODB++ is the most intelligent CAD/CAM format available today, capturing all CAD/EDA database, PCB fabrication and assembly knowledge into an enhanced, unified database.

The Dedicated CAM Solution for Flex and Rigid-Flex PCB makers

GenFlex gives you all the advantages of CAM with dedicated solutions to meet your specialized Flex PCB production needs.

What Can GenFlex Do For Your Production Line?

GenFlex has been carefully structured to help you meet the special challenges of flex board production- and to do so better, faster and more efficiently than ever before. With GenFlex, you can achieve:

- Uncompromising design integrity
- Optimal operator efficiency and speed
- Minimal revision spins
- Maximal yields

GenFlex's top-of-the-line CAM gives you state-of-the-art, highest-quality flex PCB production in a fraction of the time.
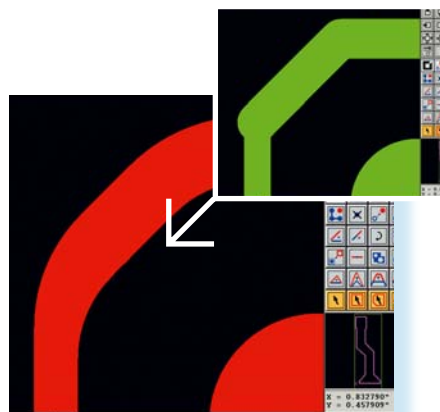

Smooth Joints

Analysis

The GenFlex Design Analyzer gives engineers the freedom to review designs before, during and/or after tooling. The Design Analyzer's user-friendly interactive environment facilitates pre-production review and manufacturability analysis.

- *Flex analysis* checks the construction restraints of the flex boards and reports any anomalies related to stiffeners, air-gaps in adhesives, pre-bend areas in the flex board, I-beam trace overlap, sharp trace joints, and conductive silver masks.
- *Panel gold plating checks* check that all gold-plated tabs are correctly connected to the appropriate gold plating bars in the production panel.
- *Tooling holes checks* analyze defined tooling hole sets and ensure that they do not interfere with production and that they are not misinterpreted during the production process.
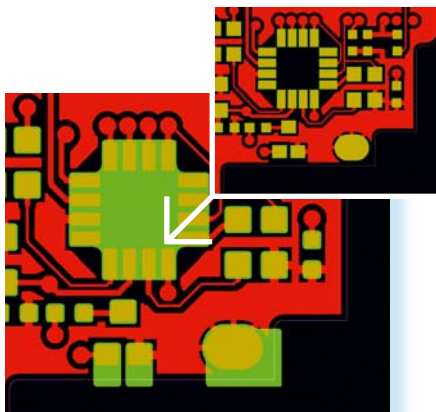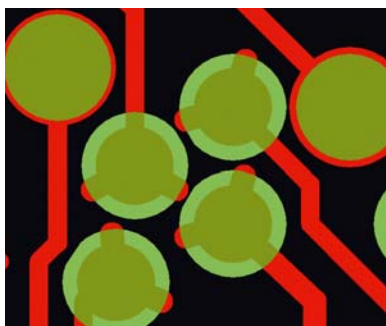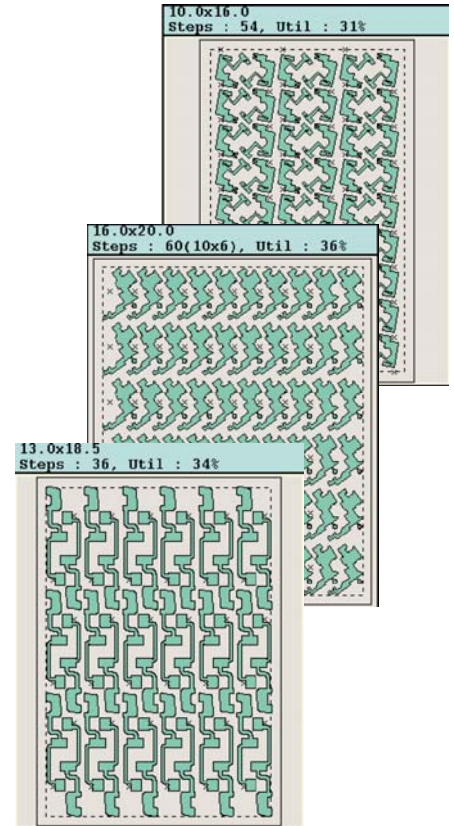
Coverlay optimization
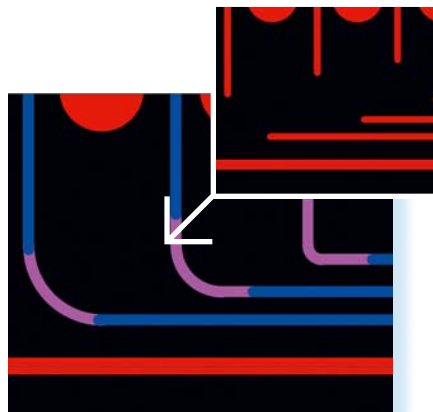
Connect bundled lines

Automatic panelization

Tie down generation

Round bus

Design for Manufacturability of Flex PC boards

GenFlex's dedicated, powerful DFM (Design For Manufacturing) tools fully automate manual editing sessions to reduce errors and cycle time and to significantly increase yields.

GenFlex offers an arsenal of dedicated flex PCB pre-production tools to help simplify data, optimize production and increase yields.

- *Smooth joints/surfaces* - Signal layer data is curved and smoothed automatically - where needed.
- *Coverlay optimization* - GenFlex fully automates the optimization of coverlay, covercoat and solder mask, reducing to minutes what would otherwise take hours of manual operation.
- *Tiedown creation* - Increasing pad size, adding vector extensions or extending SMD length can add tie-downs automatically.

- *Coverlay tool creation* - Coverlay tooling is optimized automatically and minor modifications are applied to achieve the specifications required for punch, drill or rout of the coverlay.

Ensured Editing Safety

GenFlex's easy-to-use Graphic Editor eliminates operator-introduced design errors. Based on an on-line Netlist and DRC technology, its highly intuitive interface reduces training time, increases productivity, and allows operators to view all affected layers in each process simultaneously. Various CAD-like functionality provides maximal effectiveness in yield increase. Among the tools are: rounding busses, moving complete pad stacks with their related connections, connecting line bundles, offset polyline, and a specially designed interactive spacing repair tool.

Automatic Panelization

GenFlex's Automatic Panelization package consists of two parts:

- An automatic panelization layout optimizer helps you locate the optimum position for flex PCBs on the panel in just seconds by combining automatic interlocking of complex shapes with the best rotation angle to allow maximum material usage.
- A panelization wizard, which helps users automatically apply a panelization scheme to a PCB and create a ready panel. The wizard places dynamic text, tooling and registration targets and plot stamps according to user-defined rules. An index number for each array or PCB can be printed on the panel layer automatically to easily identify and track each part in the panel.

Optimal Flex PCB Production

Accessory Tool Creation

- Automatically create the required punch shapes from designer-defined outlines.
- Define repeatable sets of punch tools or accessory materials (such as coverlay and stiffeners) that can be combined for different PCBs at once in the panel, each with their own set of tooling holes.
- Stiffeners added after lamination may be automatically panelized separately.
- Create dimensioned drawings based on pre-defined templates to create the production documentation set.
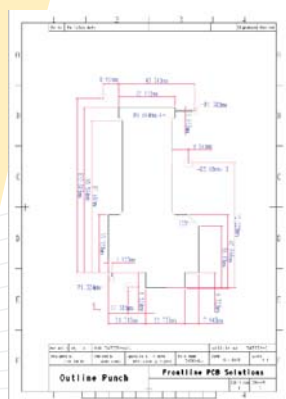
Dimensioned drawing

Rigid-Flex Production

- Define different outlines for rigid and flex layer sets and use them in different analysis, editing and DFM functions.
- Dedicated rigid-flex checks combine flex analysis tools with dedicated checks on the interface area between the rigid and flex parts of the board.
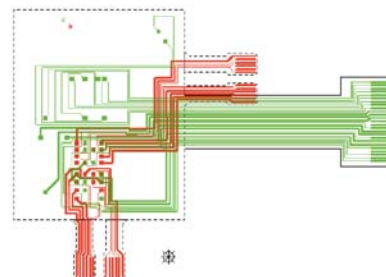
Rigid-flex board with different profile per layer

Minimal System Requirements

Platforms	HP-C3750, SUN Blade 1500, Intel Pentium IV and above.
Monitors	Minimum 17" color monitor, resolution 1024 x 768 for HP, 1150 x 900 for SUN.
Memory	Minimum 1 GB RAM; recommended 2 GB
Hard Disk	Minimum 40 GB; recommended 80 GB
OS	HP-UX11 - HP-UX11i, SUN Solaris 7 - Solaris 10, Windows XP, Windows 2000 and LINUX RH & SUSE

About Frontline

Frontline PCB Solutions is the world leader in pre-production CAM and engineering software solutions for the PCB industry. Frontline draws on proven technologies from Orbotech and Valor to create new standards in vertical and horizontal integration for the PCB industry. Frontline builds on the strategic vision, knowledgebase and hands-on track record of two market leaders, as well as over two decades of experience and the largest installed base of front-end solutions in the world of over 7000 seats.

Integrated Engineering Solutions

GenFlex™ is part of a complete integrated engineering product suite, from the quoting stage, through process planning and CAM all the way to the production floor. The Frontline suite comprises industry leading, rules-based engineering applications, all revision controlled.

InCAM™ **Genesis2000** **GenFlex™** **InPlan™** **InPlanFlex™** **InStack™** **InCoupon™**

Leading you
UpFront.

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