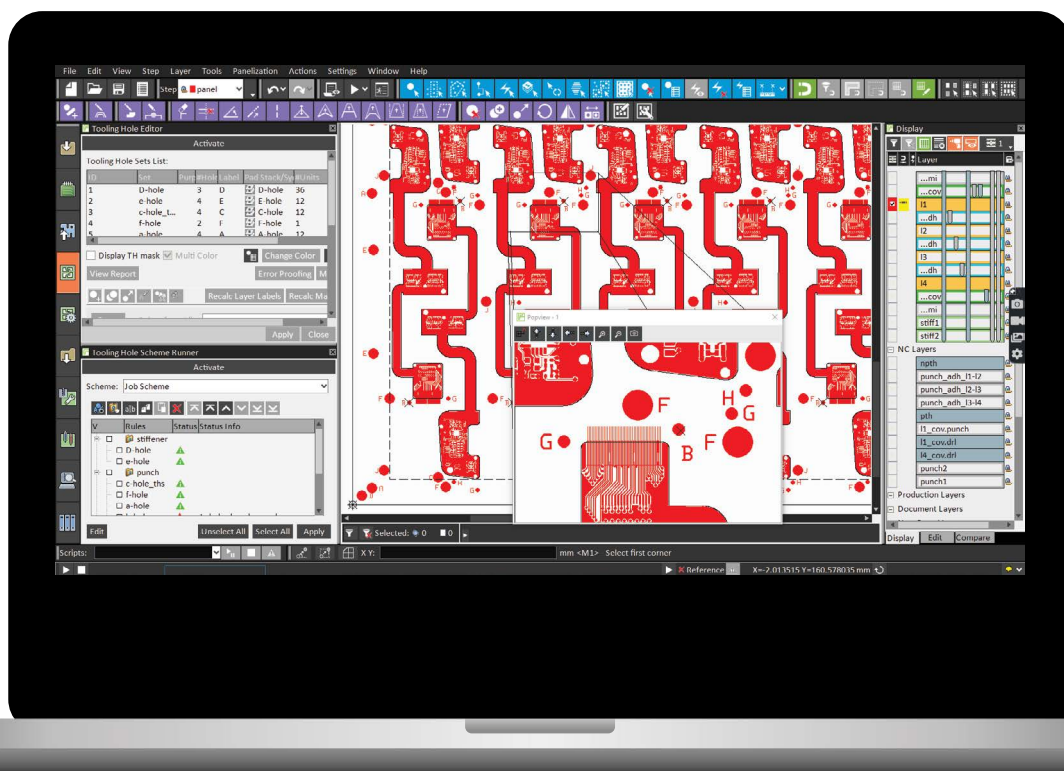


Frontline InCAM[®] Pro Flex

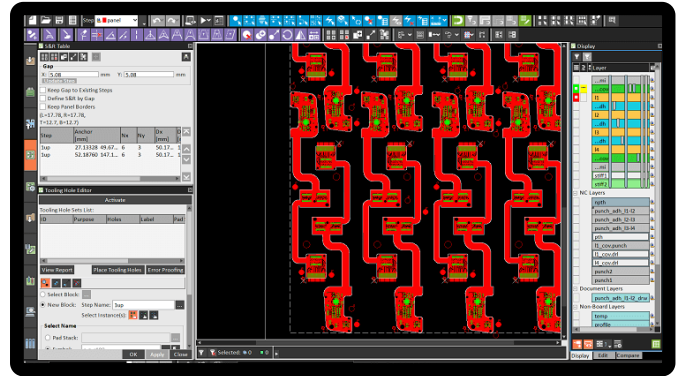
Make the most of your flex process



Make the most of your flex process

Frontline InCAM Pro Flex is a dedicated CAM system for rigid, flex and rigid-flex PCB manufacturers housing some of the most sophisticated technology we've ever developed. Focused on speed, consistency, accuracy and quality, Frontline's new CAM standard redefines what's possible in the CAM we use every day.

- A new era in speed, consistency, accuracy and quality.
- The fastest CAM for flex and rigid-flex we've ever made.
- The most intuitive user interface we've ever made.
- More responsive to evolving needs.

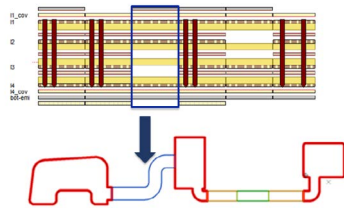


A new era in speed, consistency, accuracy and quality.

Reduce hours of manual work to minutes

Use a realistic FPC multi-zone model

Realistic 3D FPC multi-zone models, synced from Frontline InFlow or Frontline InPlan, enable zone calculation from layer profiles. View zones graphically, define exposed areas on inner layers and understand the construction of the final product.



Optimize wet processes for fine lines

Maximize yield using etch compensation tools that optimize fine lines, also for mSAP.



Original Design
No Etch Compensation



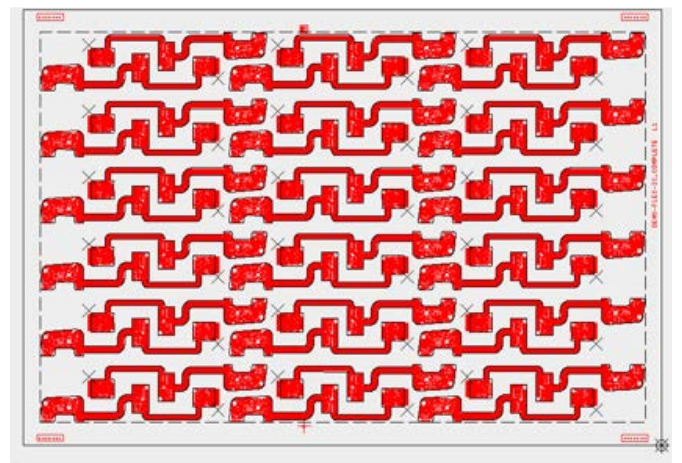
DFM
Etch Compensation



Compensated
Data

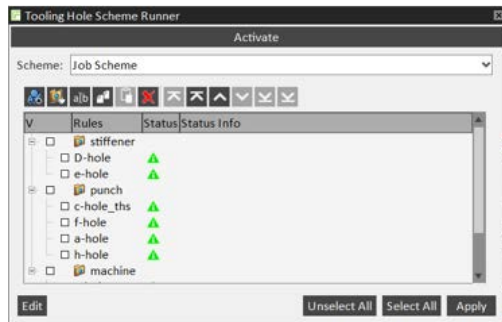
Create realistic and manufacturable FPC panels

- Create production panel layouts that can align stiffener shapes during panelization.
- Build production panels from a single PCB or group of PCBs; consider accessory strip requirements.
- Place tooling holes automatically or sync calculated tooling holes from Frontline InPlan Flex.



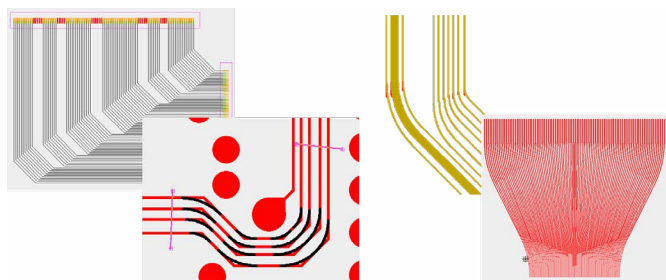
Accelerate the tooling and documentation process

Automatically place tooling holes quickly and accurately on the panel without spacing conflicts according to rules. Sync rules from Frontline InPlan Flex as required.



Take control of flex editing

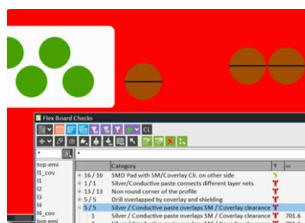
Extensive editing tools help operators adapt layer data to meet production requirements.



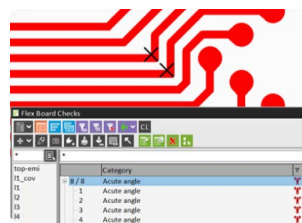
DFM automation and over 900 automatic checks

Dedicated flex and rigid-flex checks

- **Flex Board Checks** – Bend Area vs. Signal Layers, Drill, Stiffener & Coverlay, Air Gap Vs. Drill and more.
- **Rigid-Flex Checks** – Checks the interface areas between the rigid and flex areas on rigid-flex boards.
- **Inclusion Checks** – Generic analysis between features on different layers, inclusion and coverage checks.



SM/Coverlay overlaps EMI

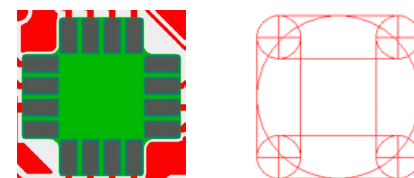
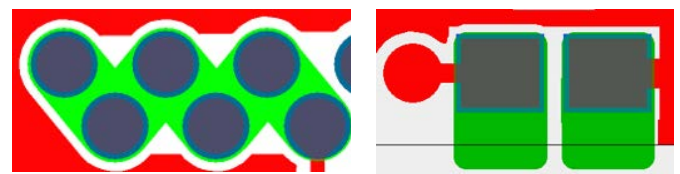


Copper surface in bend area

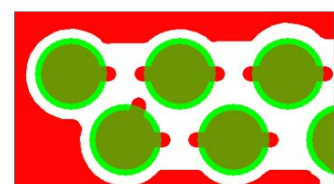
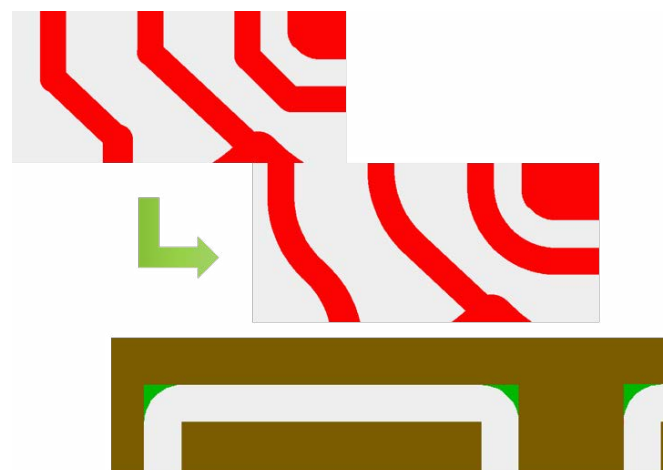
Dedicated flex DFMs

Automatically fix flex-related issues in minutes. DFMs include:

- **Coverlay Optimization** – Repairs clearances or underlying copper, enlarges clearances to obtain optimal clearance AR and converts square/rectangle clearances to drills or slots.
- **Coverlay Tool Creation** – Creates tooling layers from a coverlay design layer and places features in tooling layers according to size and shape.



- **Smooth Joints** – Rounds trace corners and creates tapered smooth corners for different width trace connections.
- **Smooth Surfaces** – Rounds surface corners.
- **Tie-down Generation/Recognition** – Generates enough tie-down for each pad.



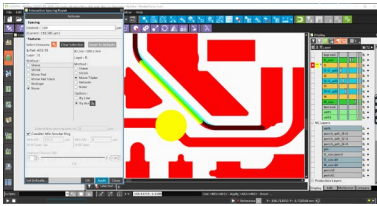
The fastest CAM for flex & rigid-flex we've ever made.

Increase revenues and accelerate time to market

Frontline InCAM Pro Flex enables faster turnaround for flex and rigid-flex job types and speeds up automated flows, courtesy of clever algorithms and infrastructure, simultaneous processing, and extended RAM usage.

New interactive tools

Save Interactive Spacing Repair (ISR) settings



Quickly solve spacing challenges without redefining parameters every time, and get alerts if spacing cannot be achieved. Maintain minimum annular ring.

Fast Interactive Silkscreen Repair (ISSR)

Shorten cycle time using ISSR tools for silkscreen handling. Identify, resize and edit similar frames and texts, including any rotations and scale.

Snap between layers

Snap to all displayed layers using several snap modes at once—so there's no need to switch modes or layers.

Smart selection

For fast editing, select multiple elements at once, using one or more selection methods.

The most intuitive user interface we've ever made.

More complex jobs in less time, shorter training

Astonishingly easy to learn, Frontline InCAM Pro Flex enables the fastest and most efficient human-machine interactions with minimum training, helping CAM operators achieve more in less time.

Popup-oriented design

A popup-based interface allows easy access to different functions and multi-tasking on multiple screens, enabling quick interaction with the system.

Command Line Interface (CLI) and shortcuts

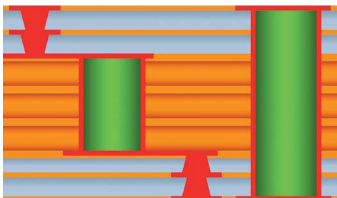
Typed commands and keyboard shortcuts enable fast orientation and operation. The auto-completion feature means you only need to input the first few characters.

Easy, efficient and personalized

With its customizable and ergonomic design, Frontline InCAM Pro Flex features a Layer Matrix for layer management and a Layer List showing the layers you need now and hiding those you'll need later.

More responsive to evolving needs.

Ready for emerging technologies



Designed to meet growing demand for smaller geometries and smarter electronic devices, Frontline InCAM Pro Flex integrates support for the industry's

most exciting emerging technologies and trends – flex, 5G, substrate-like circuits and Industry 4.0.

Join the Smart Manufacturing and Industry 4.0 revolution

Frontline InCAM Pro Flex supports automation and data exchange in manufacturing technologies via advanced traceability and PCB numbering.