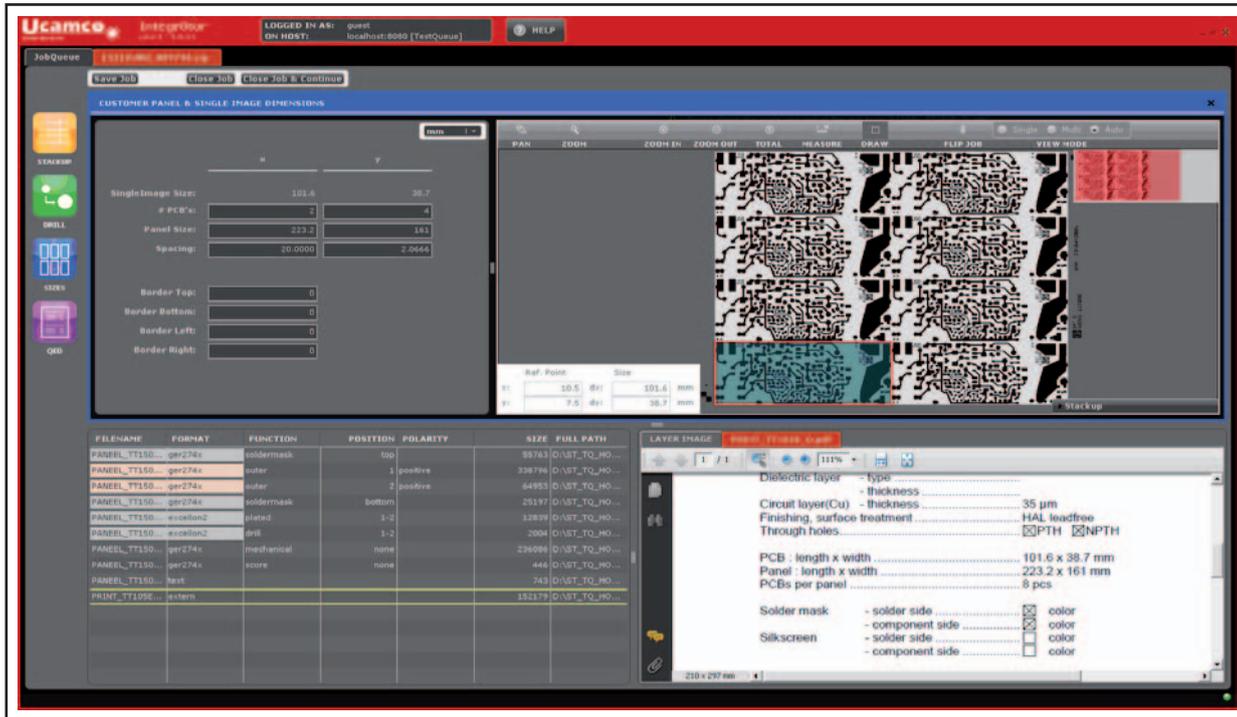


## How Integr8tor is helping Multicircuits



The screenshot shows the Integr8tor software interface. On the left, there are icons for STACKUP, DRILL, SIZES, and QED. The main window displays a 'CUSTOMER PANEL & SINGLE IMAGE DIMENSIONS' dialog with fields for Single Image Size, # PCB's, Panel Size, Spacing, and Border Top/Bottom/Left/Right. Below this is a table of layer data:

FILENAME	FORMAT	FUNCTION	POSITION	POLARITY	SIZE	FULL PATH
PANEL_TT150..._ger274x		soldermask	top		55763	D:\ST_TO_PO...
PANEL_TT150..._ger274x		outer	1	positive	238794	D:\ST_TO_PO...
PANEL_TT150..._ger274x		outer	2	positive	64953	D:\ST_TO_PO...
PANEL_TT150..._ger274x		soldermask	bottom		25197	D:\ST_TO_PO...
PANEL_TT150..._excellan2		plated	1-2		12878	D:\ST_TO_PO...
PANEL_TT150..._excellan2		drill	1-2		2004	D:\ST_TO_PO...
PANEL_TT150..._ger274x		mechanical	none		236984	D:\ST_TO_PO...
PANEL_TT150..._ger274x		score	none		444	D:\ST_TO_PO...
PANEL_TT150..._hvt					743	D:\ST_TO_PO...
PRINT_TT150..._extern					152179	D:\ST_TO_PO...

On the right, there is a 'LAYER IMAGE' view showing a stackup of layers with properties like Dielectric layer, Circuit layer (Cu), Finishing, surface treatment, Through holes, PCB length x width, Panel length x width, PCBs per panel, Solder mask, and Silkscreen.



Multicircuits' winning combination of focus, flexibility and the talent to produce quality product quickly is the cornerstone of 20 years of success. Our proactive approach encourages continuous improvement in both process and product. One example is the implementation of Ucamco's Integr8tor solution. Prior to implementing the Integr8tor solution, our sales team prepared cost calculations from customer data using a Gerber viewer. Although effective, some manufacturing concerns had the potential of not being detected. Consequently, complex jobs were analyzed by the CAM department, which was not an effective use of time.

Since the installation of Integr8tor in May 2009, we are able to provide quicker responses and more accurate quotes to our customers.

Integr8tor automatically imports CAM data, analyzes it and provides detailed output of key production and cost parameters. Its intelligence is able to interpret the stack-up of layers, including identifying blind and buried via drill layers.

In the few cases where the software is unable to complete the analysis, intuitive tools are available to help guide Integr8tor. For example, if the drill file does not contain tool size information, the sales team can easily enter it without the need to send it to CAM by simply viewing the drill drawing, whether in Gerber or PDF, from within Integr8tor. There is no need to leave the application or to print hard copy documents.

While currently the reported parameters are entered manually into the quoting software, Integr8tor provides these parameters in an XML format that can be imported into the quoting and planning software. This automation is in the process of being implemented.

Not only does Integr8tor provide a quick report, it also highlights parameters that fall outside prescribed limits; i.e., a trace width that is too small for the specified copper thickness. It also clearly indicates if information is missing. For example, there is no drill data provided or solder mask layers are missing.

The standard PDF report generated by Integr8tor can be used to provide feedback to customers. As a bonus, the report includes a composite front and back view of the design which affords customers a 'preview' of their finished board.

Integr8tor also improves efficiency in the CAM department. CAM engineers are no longer required to manually load customer data, nor do they have to adjust the layer stackup or the layer naming. These steps are performed automatically by the Integr8tor software.

Integr8tor has become an indispensable tool that assists us in our dedication to respond to the critical needs of our customers and to deliver consistent high quality and competitively priced products quickly.

Michael Thiel

Director of Engineering & Operations

Multicircuits is a leading manufacturer of high mix, high-reliability printed circuit boards, specializing in quick turnaround. Founded in 1990, Multicircuits is located in Oshkosh, Wisconsin. For additional information, please visit <http://www.multicircuits.com>.