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DownStream Technologies Announces Release 2018 with 3D Technology for PCB Manufacturing Data Visualization and Documentation.

Marlborough, MA – September 11, 2018 – DownStream Technologies, LLC today announced Release 2018 for CAM350®, BluePrint-PCB®, and DFMStream® as part of the company's integrated manufacturing data preparation solution. Release 2018 is a major release that delivers 3D technology for PCB post processing including manufacturing data visualization, stack-up definition, PCB panel visualization and support for 3D PCB documentation. The objective of this important release is to provide a superior environment to visualize, verify and document a printed circuit board.

Key 3D Features for Release 2018 include:

- 3D manufacturing data visualization – Allows modeling of imported Gerber, Drill, ODB++, or IPC-2581 data into a 3D PCB facsimile as well as model the 3D PCB on a fabrication or assembly panel.
- 3D Design View Port – Quickly switch between 2D and 3D views using the new 3D Design View port.
- New 2D/3D PCB Stack UP visualizer – A "What if" sandbox to orientate artwork layers, insert construction materials, define via technologies, and add thickness and other material attributes in a stack up environment to ensure the 3D rendering has been implemented.
- 3D documentation – Use the 3D PCB model in documents to further clarify design intent or augment traditional 2D documents.
- Support for 3D objects in PDF export – Users can export the 3D model or 3D document in Adobe® PDF format.
- Cross Product Integration – Release 2018 creates an integrated 2D/3D manufacturing data preparation environment.

3D PCB Manufacturing Visualization

"We believe 3D technology can be instrumental in preparing manufacturing data that transforms virtual PCB designs into physical PCB components more efficiently," said Rick Almeida, one of DownStream's Founders. "The implementation of 3D, along with other major improvements into Release 2018 is the most ambitious and extensive product release in the 16-year history of our company," he added.

Traditionally when a PCB design is completed, it is exported into a number of disassociated Gerber and NC drill files removing all the design's interrelationships and intelligence. For

example, a two-layer PCB could require at least 9-10 different Gerber, drill, and netlist files to fabricate the PCB. Each file has no intelligent relationship to any other file. The re-assembling of the files to create the PCB is left to the PCB fabricator using whatever PCB documentation was provided. The introduction of 3D technology in Release 2018 will allow users to model their unintelligent PCB manufacturing files to create a virtual model of the finished PCB component including the various PCB construction materials. The result is a more accurate representation of what the finished PCB should look like when it returns from fabrication. Users can also provide that model to their manufacturer to further clarify the original design intent.

“Many PCB design engineers, at a minimum attempt to verify their manufacturing data visually or through some level of netlist comparison. Using traditional 2D technology, this view is limited to a top-down, or bottom-up view. 2D viewing makes discerning layer thicknesses, via technologies and material selection virtually impossible when it comes to understanding how the finished PCB component will return from fabrication,” said Almeida. “By leveraging 3D technology to model the finished PCB using their manufacturing data, users can now inspect the design from any angle, including between the layers and see how the placement of artwork, cores, and dielectric materials interact to create the final PCB product.”

Contained within a new 3D Design View Port, Release 2018 3D visualization also supports features specific to PCB technology. Features such as modeling colors by layer types as opposed to individual layers allows the PCB to be rendered more realistically – soldermask are green, conductive layers are copper, silkscreen is white. In addition, negative data such as solder masks and power planes are automatically rendered as positive, allowing users to minimize design file size but still see what the conversion to positive will look like on the finished PCB. Release 2018 also supports the ability to “spread” and “peel” PCB layers. This allows users to easily see differing via technologies, material thicknesses, and layer placement within the design and stack up. The 3D View Port supports all camera and zoom level controls. Users can also elect to adjust components, layers, and nets visibility if required. The 3D View Port in CAM350 and DFMStream also display the PCB net/pin labels as well as error markers resulting from analysis operations.

Stack Up Visualization

A new 2D/3D Stack Up Visualizer (SUV) has been developed to provide a clearer insight into the PCBs construction. Users can visualize PCB stack ups in either tablature, 2D cross section, or as a 3D model including construction materials and via/drilling technologies.

The SUV allows users to quickly order imported files when using conventional Gerber and Drill or modify layer ordering based on the imported ODB++ or IPC-2581 data. This process more accurately reflects the layer orientation intended in the design. Users can then add dielectric materials to increase the accuracy of the PCB model. Both conductive and dielectric layers can be assigned attributes such as thickness and electrical properties that are applicable to the data layer. The stack up information can then be exported via an IPC-2581 subset to their manufacturer of choice for validation or modification. Any changes made by the manufacturer can then be reimported into the stack up.

The SUV acts as the primary environment to model the PCB and Panel design. Any changes made in the SUV are automatically rendered into the 3D models.

3D Documents

Release 2018 now adds 3D PCB views and interactive document elements to traditional 2D fabrication and assembly drawings. Any number of 3D PCB models can be added to a BluePrint-PCB drawing including the whole PCB, the stack up, or side views. Any 3D View can be uniquely modified from any other view. Users also have the option of importing a STEP file to place on drawings. Both the STEP file data and the natively rendered PCB can be viewed and modified in a new 3D View Port.

In addition to 3D PCB views, users can add scrolling parts lists and noteblocks for the purpose of generating electronic PDF documents. These scrolling document elements allow the user to place data within a finite size and position and scroll through the data source. 3D document elements can exist side by side with traditional 2D document elements that are typically found on fabrication and assembly drawings.

3D PDF Export

All DownStream products now support the export of 3D objects into PDF. All 3D objects are automatically detected during export. When exported into PDF, 3D objects become interactive meaning the user can interactively adjust camera angles or zoom levels, hyperlink between parts list and PCB views and scroll through parts lists, and noteblocks independent from 2D objects.

Availability

Release 2018 for all products will be available in the Fall of 2018. Upgrades will be available to all existing customer with a valid maintenance agreement at no cost. Actual features and content will vary based on the end-user configurations. Contact local sales offices for configurations and pricing.

For more information log onto DownStreamTech.com, email sales@downstreamtech.com or contact your local DownStream Value Added Reseller (VAR)

About DownStream Technologies

DownStream Technologies, LLC is a software and services company focused on helping engineering organizations optimize and automate the PCB Release Process. CAM350® provides verification, optimization and output generation to efficiently drive PCB fabrication. DFMStream® is a comprehensive, yet easy-to-use tool suite designed to help engineers and designers verify design and manufacturing rules on PCB design databases, Gerber and NC data any time during the PCB design cycle. BluePrint for Printed Circuit Boards® works with CAM350® (and other PCB CAD systems) to help users quickly produce comprehensive electronic drawings to drive PCB fabrication, assembly and inspection processes. More information about DownStream can be found at downstreamtech.com