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IDF for Inventor

With the development of 3D modeling tools, such as Autodesk's Inventor, DXF is no longer adequate for transferring data between PCB and other isoteric design software and CAD applications.

An increasing number of products now contain some degree of electronics, mostly in the form of PCBs (Printed Circuit Boards). These would normally have been designed using specific PCB design software, such as CADSTAR, PADS, PROTEC and MENTOR.

When product housings, the plastic or metal components that form the cases that contain, or hold the PCBs, were being developed using 2D CAD systems, the shape of the PCB could, quite happily, be transferred between the two systems in DXF format.

Now that most product development is undertaken using 3D modelling tools with intelligent objects to be transferred as well as the model drawings, DXF is no longer adequate, and IDF (Intermediate Data Format) was introduced instead for transferring intelligent PCB data in 3D.

A company that has been developing and supplying IDF tools for integrating MCAD and PCB design since 1998, is LatimerCAD, based in Horsham, West Sussex. Recently, as an ADN member, LatimerCAD has released an IDF interface for Autodesk's Inventor software. The company is already supplying IDF interfaces for AutoCAD software from Release 14, up to MDT 6 -integrating them with CADSTAR - for whom they are Accelerator members (CADSTAR's AND equivalent).

How is IDF used?

The shape, size and location of the PCB are, of course, determined by the product designer. Whether or not he provides the PCB designer with sufficient space to load the board with the components needed to power the product, or positions the critical connections, switches and displays correctly, IDF is always used to transfer the shape between the systems repeatedly throughout the design process until both design and function requirements have been met.

The designer's initial layout, including important placement, 'keepin' and 'keepout' parts, are used as the basis for the broad layout of the PCB - sections of the board that have been designated as 'usable', or 'unusable' areas for the PCB, which may not be modified without significantly altering the functionality of the product. IDF then supplies the basic board and component geometry information. It also contains design constraint information on the 'keepin' and 'keepout' regions - which are supported as 'intelligent' design entities. All of this design data can then be used throughout the mechanical design phase, the PCB layout and through any physical analysis without losing the functional intent of the data.

Using this first release of the IDF Interface for Inventor, the PCB and its' components are imported into the Inventor environment to create a sub-assembly and part file. The next release of the software, due out very shortly, will allow subsequent modification of the PCB, and the movement of components to enable the PCB to be updated within Inventor.

All components are held in an intelligent PCB component library within Inventor, which records how the components were created and imported, ensuring that modified components are not overwritten, during the design process, whilst imported components are uprated.

Items within the 3D component library are also capable of being modified to reflect more complex shapes, such as connectors that may not be accurately represented in an IDF file.

Besides providing a vital function in adding PCB design capabilities to standard CAD modeling software, LatimerCAD's IDF interface can also be used to enhance basic productivity. In common with all LatimerCAD tools which utilize PCB component libraries within the MCAD design environment, designers have the ability to start a PCB within MCAD, create the profiles, place mounting holes and critical components whilst the circuit is being completed, drastically improving the design workflow.

Release one of this software for Inventor can only handle imports. The next release of the software will include editing and export commands. CU

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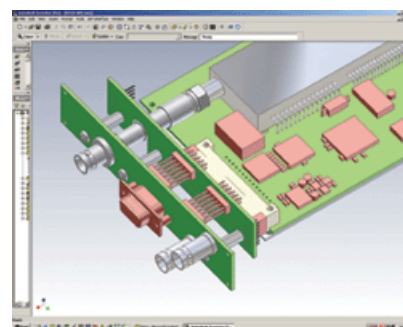


Fig.1

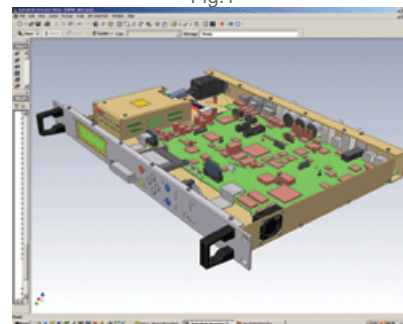


Fig.2

