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Maximum Vision



AutoVue Electro-Mechanical Professional handles the heaviest visualization jobs while maintaining 'light' footprint

By Viktor von Buchstab,
Technical Field Editor

In today's increasingly digital design environment, sharing CAD data with clients, suppliers and other departments or workgroups has become as necessary as design software itself. But once a design is ready to be shared, a whole new set of demands arise that may have little to do with the primary "authoring" CAD software.

For example, it's often necessary to share design detail in an accurate 3-D format, giving design team members, clients with approval routines and component subcontractors access to various views and other details. At the same time, such access has to be controlled to limit proprietary design detail corruption, leakage or unauthorized sharing of parameters and design geometries past a certain point.

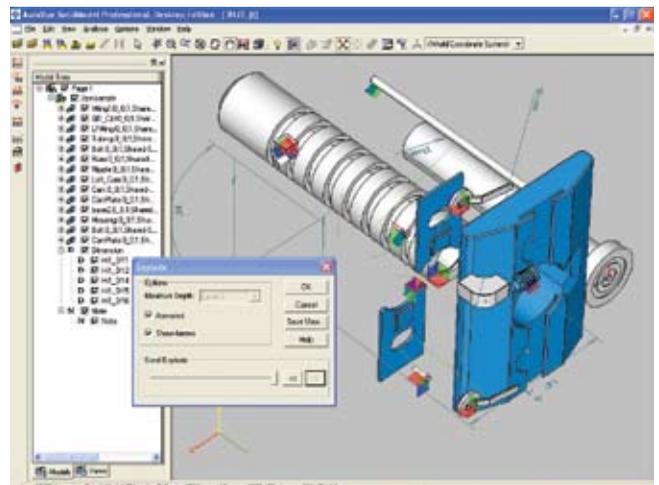
And while design change annotations have to be possible, the ability to copy details must be constrained. Also troublesome, various levels of access, viewing and annotating must often be implemented without a particular workstation having the native CAD software loaded on the local terminal.

Montreal-based Cimmetry, the developers of the AutoVue CAD and EDA document visualization package, says its product serves the visualization, data sharing and design annotation needs of the modern production environment without sacrificing security or requiring time-consuming and expensive IT support services.

Version 19.2, released last year, comes in various flavours to cater to the needs of a wide client base. At the entry level, AutoVue offers an "office" product, designed for viewing non-CAD data such as PDFs and MS Office-suite files created by MS Word, PowerPoint, etc. A tick up from that is the "professional" version, which has the ability to create annotations or mark-ups.

In total there are eight different versions but, of them, the Electro-Mechanical Pro version seems more robust in its ability to interface with some of the more electronics-oriented designs, where files may move to and from advanced process and quality-control programs like those by Mentor Graphics, Cadence and others.

In total, the company says this version of the application boasts the broadest format support in the industry, capable of viewing some 450 different 2-D and 3-D CAD file formats as well as graphics files and office software documents. Version 19.2 now also supports a wider



Capable of viewing 450 different MCAD, ECAD, graphics and office document file formats, AutoVue 19.2 also allows users the ability to explode assemblies, take precise measurements and extract bills of materials, among other features.

range of ECAD and associated electro-mechanical formats, including support for CADSTAR 8.0, Mentor Board Station 8.10 and Altium Designer 6.x, among others.

While the list of compatible file formats is impressive, Celine Beck, a marketing communications specialist with AutoVue, is quick to point out that AutoVue is more than simply a visualization solution.

"It doesn't just allow people to open up these CAD files," says Beck, whose 20-year-old Cimmetry group was bought by Agile, which in turn was acquired last summer by Oracle. "We're able to perform a lot of analysis and interrogation of the data models as well. You can do precise measurements; you can explode whole assemblies; you can extract bills of materials; and you can look at the entity properties, among other features.

"Basically, we're reading the native geometry of the file," she adds, "but without the need of having the native CAD software installed on the local workstation."

In fact, a stand-alone version of the software isn't required since the package comes in a server-based version as well. Cimmetry's solutions team leader, Jeff Singer, notes that the server-based product keeps absolute control of the master file by never actually letting it onto another workstation.



Rather, he points out, only a light version of the file goes to other team members (who may be local or global). When the sharing processes—viewing, annotating/red-lining, change suggestions—finishes, the commentary data is synchronized with the primary file as layers, without altering the original file.

“We never allow anyone to modify the native file,” he says. “It’s as if you were taking a transparency and then writing over it with a red pen. Then you can stack multiple transparencies on top of each other. The same applies for 3-D: These are separate files that are just linked to the native file.”

Singer says access protocols are maintained in the document-sharing process by a double layer of security.

“First of all, the back-end access rights are enforced,” he says. “That means, if I’m opening my SAP system or some sort of portal to my supplier, then he’ll have access only to viewing the documents I’m giving him access to.

“The second level of security, on top of that, is that even for the documents that he does have access to, the native files actually never go down to his system,” he adds. “It’s all rendered on a server and it’s just intelligent data that’s streamed down to him. There’s no footprint that remains there. [His system] works like a thin client. There’s no installation either since it’s browser based.”

Don Sinclair, PLM team leader for former Siemens VDO Automotive Canada Inc., says the simplicity of AutoVue’s server-based offering was one of its main selling points.

“Our original viewer had to be installed and upgraded on all local machines, requiring a great deal of IT manpower,” he says. “With a server install, the upgrade can be co-ordinated quite easily. Even upgrading the remote servers could be done [and] co-ordinated easily.”

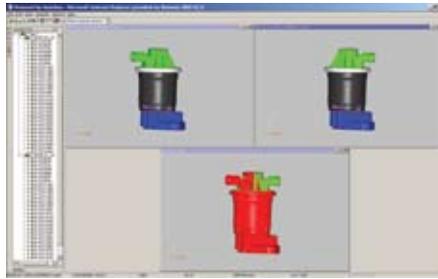
Based in Chatham, Ont., the company is now a unit of Continental Corp. but remains a major supplier of automotive pollution emission control systems, notably electromechanical assemblies such as exhaust gas reclamation/recycling systems.

The company has tested AutoVue with a “view” to implementing and expanding the application in 2008, but Sinclair says it was a lengthy process getting to that point. In essence, he says the drivers behind Continental (then still Siemens VDO) buying into the AutoVue camp had to do with the limitations of existing software.

“Initially, we used a mix of native CAD tools and UGS VisView,” he explains. “Translation problems and lack of CAD formats plagued VisView at the time. Plus, storage of translations within a PLM environment was a major concern. JT format required a separate storage of 3-D viewing data within the PLM environment, which complicated the release process.”

Sinclair says other key points of appeal were the dynamic viewing capabilities of the application’s server-based model; all the other viewing tools they had, including VisView, SolidWorks’ eDrawings and Adobe 3D, required a local install, which was time consuming for the IT staff.

“Native CAD tools, of course, required additional training and a



AutoVue allows Continental Corp. (formerly Siemens VDO Automotive) to compare revisions of its electronic exhaust gas recirculating valve, a pollution control component the company manufactures in its Chatham, Ont., facility. Differences between the models are highlighted in red.

high price tag,” he says. “In addition, we could see the potential for reduced engineering cycle time by making ‘preliminary’ CAD data available to the engineers via the Cimmetry [AutoVue] viewer. The idea here was that with dynamic feedback from the engineers, changes could be incorporated quickly, avoiding the formal engineering change-revision/change-order process.”

Beyond those challenges, Sinclair gave specifics about why he chose not to use one of a number of alternatives, such as Adobe Acrobat, which claims the lion’s share of the entire image/viewing software population. (Their group is only using the 2-D PDF format at present.)

“We have experimented with the 3-D PDF format with mixed results,” he says. “The major issue, however, is storage/release within a PLM environment. We do not store any 3-D viewable files within our PLM system.”

Sinclair’s automotive design sense is based on extensive experience in his firm’s multi-faceted design practice, spanning design and manufacturing partners globally. He observes that the light design files may be shared by participants worldwide, “from Mexico to Germany, and from Chatham to China.”

One example he brought up was the company’s large family of electro-mechanical car exhaust sampling valves and pump subsystems that epitomize the dual MCAD/ECAD setting for the firm’s design teams. These largely mechanical designs normally have an integrated PCB to handle the digital electronic interfaces. This duality may be seen as enhancing the usage of the viewing programs that interface with both design worlds.

Here again, Sinclair finds the dual affinities useful in AutoVue’s ability to absorb details of the electro-mechanical linkages in pump and valve components along with overall design constraints. These, in turn, are defined by the fact that these subassemblies typically sit on top of a car’s air intake structure alongside other increasingly electronic mechanisms such as the division’s electronic throttle control or the instrument clusters the company manufactures in its Huntsville, Ala. location. Sinclair says this unit is implementing AutoVue to check between ECAD and MCAD models to ensure that adequate clearance is available.

He also notes that, aside from its ability to create a single ubiquitous format that can be used across the entire distributed enterprise/supplier/client chain, the AutoVue suite is exceptionally easy to operate. A single icon-click generally suffices to bring the image of interest on screen, typically in well under a minute and without cumbersome excursions via CAD-native or third-party code translation routines with their attendant extra-file creation and risks of translation errors.

Sinclair says that even through an awkward political environment existed when Siemens acquired the UGS/Teamcenter CAD software suite—along with its tendency to move everything to the JT file-viewing format—his design group opted to work with a light, CAD-neutral program that left the files alone.

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