



EFFICIENCY OF DATA IMPORT INCREASED THREEFOLD

SAP Integration at Cooper Power Systems (CPS) and Cooper Industries

The supplier of equipment for electrical power plants invested in an efficient PDM solution that has already paid itself off after a few months.

Progress report by William M Stoiber, P.E., Chief Engineer Design Automation, Cooper Power Systems and Mladen Milter, EBS OPS PLM Team Lead, Cooper Industries

About Cooper Industries and Cooper Power Systems

Headquartered in Waukesha, Wisconsin, Cooper Power Systems (CPS) is a division of Cooper Industries. Cooper Industries Ltd. is a global manufacturer, with 2008 revenues of \$6,5 billion, approximately 88 percent of which is from electrical products. Cooper employs approximately 31,000 people and operates eight divisions: Cooper B-Line, Cooper Bussmann, Cooper Crouse-Hinds, Cooper Lighting, Cooper Safety, Cooper Power Systems, Cooper Wiring Devices and Cooper Tools Group. Cooper Connection provides a common marketing and selling platform for Cooper's sales to electrical distributors. CPS engineers and manufactures medium and high-voltage electrical equipment, components, and systems, and provides related products, services, and solutions used for public, commercial, and industrial power generation systems worldwide. CPS products focus on the electrical distribution market and include indoor and outdoor switchgear, transformers, automation solutions, and related products and services.

Starting with DMS in SAP

As Cooper Industries (CI) and Cooper Power Systems (CPS) continued to grow globally, it became obvious that a product data management (PDM) system for managing its CAD and other related documents was needed and

that it had to be integrated with its SAP business system. In 2006 Cooper began an expansion of its SAP document management system (DMS) to handle CAD and other engineering-related documents.

A key component of this expansion was automating the creation of a neutral exchange format (PDF, DWF, etc.) of CAD files so that they could be readily accessible and easily used by all groups inside and outside of engineering.

PDF files are Adobe Acrobat "Portable Document Format" documents viewable in Adobe's free Acrobat Reader, while DWF files are Autodesk "Design Web Format" files – highly compressed, secure, neutral format versions of Autodesk CAD files viewable with its free Autodesk Design Review software. These formats of drawings and 3D models are made available by designers and others to third parties for review or other purposes. At Cooper Industries, all 2D drawings are made available as PDF files while 3D Autodesk models use DWF.

Previously: a great deal of manual work

Under the SAP PDM system, the CAD Desktop was used to manually check in and check out CAD documents, enabling us to process CAD files only one at a time. Each native CAD file was manually checked-in after its updates were completed. Then, each designer converted the CAD file on his or her personal workstation, using a "save as" process, to the neutral PDF or DWF format. The neutral format file was then added to the CAD document record in SAP. Only after those manual steps had been completed could the drawings/models be used by the general CPS business community. The entire process was slow, tedious, and lacking in needed strong, central controls and discipline.

Because we were experiencing significant growth in the number of CAD files we needed to process, it quickly became clear that we had to speed the check-in and conversion processes to improve productivity and ensure absolute accuracy throughout the process, end-to-end.

The challenge was daunting. Our goal was to both (1) automate the conversion of CAD files to a neutral format upon check-in/import and (2) automate check-in of about 100 programmatically generated CAD files (no human intervention) every day. Some of these files are highly complex 3D models ranging in size up to 500 MB or larger and consisting of more than 100 smaller components and sub-assemblies.

What we needed was clear. It was a system capable of:

- Checking-in/out a spectrum of CAD files generated by different CAD packages and programs;
- Automating the conversion of each CAD file to a neutral format (PDF or DWF) in a process that executes in the background;
- On-demand automated import and processing of CAD files.

We had to get away from manually handling all that processing and conversion; our engineers and designers' talents were best leveraged doing the things we really needed, which was certainly not those non-value added administrative tasks.

Some members of Cooper were familiar with CIDEON and recommended it based upon positive experiences. Moreover, CIDEON was (and continues to be) a SAP Development Partner and Special Expertise Partner for SAP PLM.

Why Select CIDEON Import?

Cooper chose the CIDEON Import and Conversion Engine to migrate, convert, and save 3D CAD models and drawings. We first examined several other alternatives, but this solution looked to us like the one that would give us the

greatest increase in productivity, daily or on demand, and that was pivotal.

We also regarded CIDEON as a technical leader, something that would be critical to their ability to fulfill our needs going forward. An example of their technical depth is their familiarity with integrating the Autodesk solution into SAP. The solution CIDEON tailored for us not only checked in documents relatively seamlessly, it created the neutral exchange format in the background that we needed. Implementation at CPS was above our expectations.

After we explained our issues and our problems to CIDEON, it was clear they knew their software and they understood our needs.

The most significant problem we posed to CIDEON regarded our requirement for automated CAD file import-on-demand – real-time importing which is outside the scope of simple legacy data import. In response, CIDEON helped us with a solution that has worked very well.

Today's Process

Today, CIDEON conversion technology all works in the background. The Conversion Engine that CIDEON provides takes care of the conversion to the neutral formats seamlessly. Knowing specifically which documents they will require for a day's work, CPS engineers today use SAP tools to locate the appropriate documents. They then check them out, make their changes, then check the documents back in using the SAP CAD interface developed by CIDEON. The conversion process of the CAD file to the neutral exchange PDF or to the DWF format for use by the rest of the organization is triggered by the document status change in SAP's DMS. It executes automatically in the background. Many documents are checked in in seconds, and even files several hundred megabytes in size take only five to 10 minutes to download – including routine integrity checks and the time necessary to authenticate that the engineer requesting particular documents is authorized to access them.



Work for colleagues outside of the engineering department has become more productive

Once an engineer checks out a file, he or she uses it in their normal CAD environment. After each file has been updated, the file's document structure is automatically verified to ensure that related parts maintain the design relationships and integrity essential in complete, final assemblies. To engineers checking out files, the importation and translation process is seamless practically to the point of invisibility.

Bottom-Line Metrics

When Cooper and Cooper Power Systems implemented this system, we sought enhanced productivity, accuracy, and information security.

We expected the payoff to take a few months, until after we had everyone trained and operating at full speed. That was the point at which we could compare our experience before CIDEON and after.

The bottom line is that we achieved a three-fold increase in productivity. Within nine months of our PDM go-live at CPS using the CIDEON solutions, more than 230,000 CAD-related files had been brought into the system - 80% of our division's active drawings.

CPS is a large division with ten different design centers. We did a staggered rollout by design center, experiencing the same three-fold increase in productivity at each design center worldwide. We expect the same improvement as we complete the implementations at the remaining design centers/plants.

Implemented CIDEON Products:

- Import
- Conversion Engine
- SAP Inventor Integration

What's Ahead

We started implementing the SAP – CIDEON PDM solution at CPS in mid-2007 in our design centers. The next step was expanding the availability of more types of integrated documents in SAP.

Formerly, people who needed data had to contact Engineering on an individual basis to request access. Through the SAP DMS they are now able to access neutral DWF or PDF data files created using the automated CIDEON solution. The instant availability of these CAD and neutral files to authenticated individuals worldwide in Sales, Marketing, Engineering and Operations has improved collaboration and better connected the global organization, 24x7.

For every need we have expressed, CIDEON has offered us an effective solution. We can not think of any place where we could hope for a better job. We get many favorable comments from outside Engineering – from Operations, Marketing, Sales, and Quality because their operations are experiencing significant productivity gains as well thanks to the accessibility of business data from these documents. They do not necessarily need nor have access to all native engineering data, but the business data they receive helps them achieve their objectives.

CIDEON has been central to our ability to realize these major productivity improvements.

At a Glance



Company:	Cooper Power Systems and Cooper Industries, USA
Challenge:	Creation of efficient product data management
Solution:	Import and Conversion Engine by CIDEON
Benefits:	Major productivity improvements, automated conversion, unlimited access
CIDEON Services:	SAP Integration for Autodesk Inventor, implementation, adaptations

