Spot on: MCAD, ECAD and PDM fully integrated in SAP PLM

Optimization of product-related processes by lighting expert Waldmann

Innovative lighting solutions for industry, office, care and health as well as light therapy systems: All this is developed and produced by Herbert Waldmann GmbH & Co. KG, a global player with headquarters in the German town of Villingen-Schwenningen. Since the company was founded in 1928, Waldmann has consistently focused on quality, safety and efficiency – not just for its own products. And as the obsolete company system was to be discontinued at the end of 2015, the choice fell to a proven, secure and efficient solution: SAP ERP with SAP PLM and SAP Engineering Control Center. With this, Waldmann has now modernized the company’s IT so that it is future-proof. At the same time, the IT landscape was streamlined and product-related processes optimized – as a result of the seamless SAP integration of MCAD and ECAD engineering. Important aspects of the implementation and its successes are described here in detail.

Going the whole hog: everything in a single system

In MCAD Engineering (Siemens NX) and ECAD Engineering (Pulsonix), product data and metadata as well as changes and releases used to be managed with the use of a PDM system. The solution was only rudimentarily connected to the ERP system in which material masters and BOMs were managed. So data had to be transferred from one system to the other. This procedure cost a lot of time and was prone to errors. Plus: in order to be able to react, order logistics wanted not just to see what was changed in engineering but also what was new. Due to the system break, this was not immediately possible. The companywide SAP rollout was seen as an ideal opportunity to remove the system and media breaks and improve the flow of information. To this end, the PDM system was to be replaced by an SAP-integrated solution: SAP Engineering Control Center from DSC.
SAP ECTR integrates all kinds of authoring tools seamlessly in SAP PLM – over standard interfaces such as SAP Engineering Control Center interface to NX. With this solution, drawings, 3D models, BOMs, etc. automatically flow into the SAP system and are then available company-wide, up to date and consistent. At the same time, designers get access to SAP data and functions: whether in their authoring tool or in the intuitive user interface of SAP ECTR. There they can view all types of SAP objects as required, structure and manage them, and link them logically, e.g. to material masters. This saves them the manual transfer of material numbers, and new and current BOMs are automatically communicated to order logistics.

**MCAD processes integrated and optimized**

Since SAP ECTR is a product of DSC, it was obvious that DSC should also be entrusted with the implementation of the integration project. First, Siemens NX was integrated in SAP PLM and the usual MCAD processes mapped in SAP ECTR. Besides the above-named integration benefits, which result automatically, Waldmann also wanted further-reaching optimizations. Accordingly, DSC adapted and extended the processes as follows:

- **Document creation:** This now demands a change number to which also assigned material refers. Thus order logistics can see if new documents and BOMs have been created.
- **BOM creation:** A BAdI (Business Add-In in the SAP system) specially implemented by DSC prevents BOMs from being created without a reference to a change number.
- **Status tracking:** Thanks to an individually implemented status network, not only the usual PDM status (e.g. “pro-visions”) but also other statuses are available that belong to Best Practice (e.g. “replaced”).
- **Neutral format generation:** Neutral formats for production, sales, and suppliers, such as PDFs for drawings or JT, STEP etc. for 3D models, are mostly automatically generated (++batchEngine add-on).
- **Document release:** Checking automatisms prevent (for example) the release of documents without a material reference, or versioning on the basis of obsolete versions (++processAutomation add-on).

**ECAD Engineering integrated**

SAP ECTR enables the holistic mapping of design processes across all engineering disciplines. To exploit this opportunity, Waldmann also wanted to integrate Pulsonix in SAP PLM. This took place over the standard interface SAP ECTR interface to ECAD, a joint development of XPLM and DSC. The relevant implementation work and Pulsonix-specific adaptations were done by XPLM. In this way, ECAD designers
gained access to relevant SAP data and functions. Since then, circuit diagrams, PCB layouts, Gerber files, etc. can be processed not only with SAP support. They can also be integrated in the mechanical product structure, logically linked. The greatest benefits of parallel MCAD and ECAD integration:

- Easier interdisciplinary teamwork thanks to constantly updated overall view of the product
- More transparent interdependencies and history as well as easily tracked project progress
- Automatic augmentation of BOM with the latest ECAD data
- Joint, consistent configuration, change, and version management
- Consolidated BOMs and design releases for all relevant follow-on processes

Step by step to success

Since the integration solution has been running productively since January 2018, bringing decisive benefits for Waldmann:

- Less manual work and possible error sources
- Reliable data consistency and seamless information flows
- Easier collaboration between interdisciplinary engineering teams
- Simpler product data and document management
- Faster, more efficient procedures and greater process security

Existing data formatted and migrated

Perhaps the greatest challenge of the project was the migration of the existing CAD data. For the data model of the old PDM system could not be assigned unambiguously to the SAP data model: mainly because of the completely different structure, but also because, for example, the metadata in the PDM system permitted only limited conclusions about the data contents. So Waldmann’s internal IT consultant decided to inspect the old data and modify it to meet SAP norms – as far as possible using SQL scripts with internal Waldmann know-how. In view of the great data complexity and the many parameters and criteria to be taken into consideration, that was a major effort. Even if the result of the test migrations thus improved each time, it remained unclear whether the productive migration would ultimately work. But in the end, everything went well, thanks not only to DSC but also significantly to the outstanding engagement of Waldmann’s internal IT consultant.

Not only management but also users are very satisfied and have quickly found their way around the new system. One reason for this could be the iterative project execution. This made it possible to approach the final solution step by step. Thanks to a test installation, the key users involved were able to try out various things right from the start. Additionally, regular workshops were held to specify requirements, which DSC then immediately implemented in the test system. This led to functioning interim statuses that could be tested straightaway and then optimized. So key users got to know SAP ECTR better and better and were then able to pass their knowledge on to their colleagues. This reduced training effort and costs to a minimum.
And on it goes...

The new solution is to be rolled out soon in further design locations such as Switzerland and China. A possible expansion of the solution to include such things as variant handling has also been discussed. For the BOMs for individual product variants are still being derived manually. A job that will disappear when the SAP variant configuration is put to use: on the basis of a super BOM and a detailed material classification with the assignment of dependencies. Then, the SAP system can generate BOMs for variants dynamically by resolving the super BOM according to specific classification features: table lamp or standard lamp, LED or halogen etc. The SAP variant configuration is only one of many possibilities of how Waldmann can benefit even more from the SAP system – particularly in the PLM context. The potential is enormous. And with SAP ECTR, Waldmann has created all the prerequisites for exploiting it: simply, flexibly and effectively!!

About DSC Software AG „Fascination with Integration“

True to this motto, the SAP PLM experts at DSC Software AG make the use of SAP software in the areas of CAD integration, document management, collaboration and Smart Factory more profitable than it has been ever before. With over 30 years of worldwide consulting and project expertise, especially in discrete industry, the Karlsruhe company relies not only on their vast know-how but also on a strong customer orientation as well as a strong partnership with SAP – now with platinum status.