Automated processes

between MCAD, ECAD, and ERP

PRO.FILE keeps processes flowing at Baumann GmbH

- **Inventor installation with PRO.FILE for 65 mechanical designers**
- **Combination of mechanical and electrical elements in the always-current PRO.FILE product BOM**
- **A single version of the truth to eliminate redundant tasks for designers, purchasers, and project managers**

If you ask Jörg Weigert, head of the Handling Solutions business division at Baumann GmbH, whether an engineering company needs a product data management system, he will tell you that it is all a matter of size.

According to this logic, there is no way around a PDM/PLM system for his company, which specializes in automation systems and employs 65 mechanical designers and 12 electrical designers.

And it should be closely integrated with the company's CAD and ERP environment.

Baumann Automation relies on Inventor for its 3D design and EPLAN for all ECAD purposes to engineer high-end machinery for assembly, handling, and testing. When Autodesk announced the discontinuation of PSP, Baumann, like every other PSP user, started looking for an alternative.

The introduction of a new PDM/PLM system creates opportunities to improve processes and to increase the level of automation. For companies that settle for basic PDM functionality, Vault as the successor to PSP will suffice. Those with more demanding requirements, however, need to look at more versatile solutions.

"plmteam, our CAD partner of choice, entered the race in collaboration with the PLM experts at PROCAD", explains Martin Kindl, designer at Baumann and overseeing project manager for the introduction of PRO.FILE. "It was not just the outstanding software solution, but also the knowledgeable project teams working for both partners that had us convinced." Baumann introduced PRO.FILE in early 2016 as a fully integrated solution that automates the exchange of product data and documents between the CAD and ERP systems used across the company. PRO.FILE comes with its own integrations for Inventor and the ERP system APplus used by the company.

The PSP job server used to create a DXF file and a PDF file for each drawing and each part as well as a neutral STEP format for each IPT file (the Inventor file format for parts). In total, Baumann had accumulated some 900,000 files with a data volume of almost one terabyte, which they were able to successfully transfer from PSP to PRO.FILE as part of the system migration.

Moving the data from A to B took not more than a day. During preparation, however, the main objective was to rethink field contents and metadata. Which would be absolutely necessary and which were missing? Any descriptive item numbers, for example, were converted into consecutive numbers and the descriptive portion was 'relocated' to another metadata field. On top of that, key characteristics were added to certain product groups. Martin
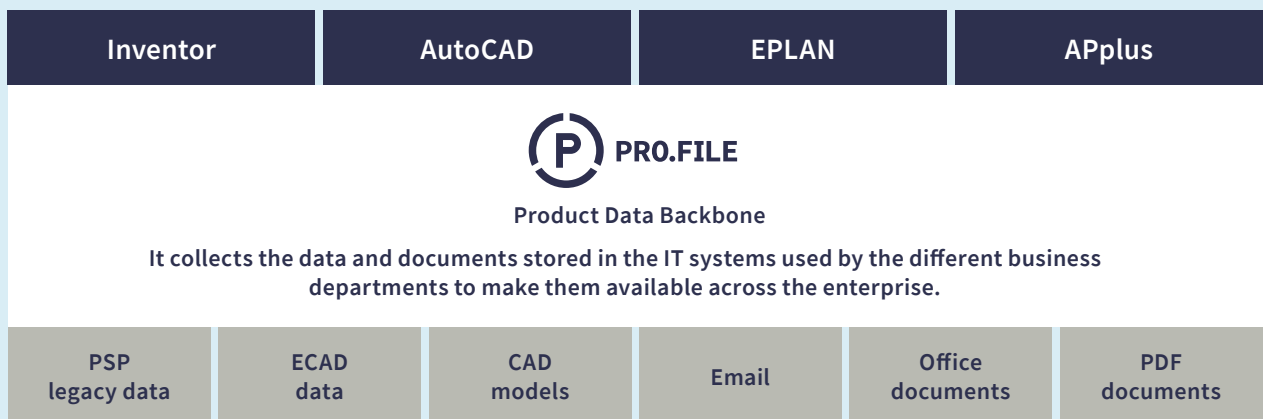

Baumann offers comprehensive solutions, from development of ideas up to the implementation of robot facilities.

Kindl: "If you want to make sure that all documents end up exactly where you need them in the target system, you need to be thorough in your preparatory work."

A central data repository

Baumann adheres to the principle that each department should only be working with the software that is relevant to its particular field. The design computers, for example, have Inventor, EPLAN, and PRO.FILE installed on them. The engineers had to make some changes insofar that with the new PLM system they now always depart from the part. Before, they had to maintain the information both in the item and in the document.

PRO.FILE coordinates collaboration across the various IT systems and document types used by Baumann Automation.

Inventor	AutoCAD	EPLAN	APplus

Ⓟ PRO.FILE
Product Data Backbone

It collects the data and documents stored in the IT systems used by the different business departments to make them available across the enterprise.

PSP legacy data	ECAD data	CAD models	Email	Office documents	PDF documents

Martin Kindl,
head of the design team
and overseeing project manager for
the introduction of PRO.FILE

Automated processes between CAD and PLM

"In PRO.FILE, we start all of our searches from the part master", explains Martin Kindl. "This provides us with a single location to manage our metadata." All documents created throughout the design process are stored in the PLM system, including CAD data as well as technical specifications, project documents, and even commercial documents such as supplier offers. This may seem surprising at first. What do engineers have to do with proposals? The answer is simple: As a plant engineering company, Baumann needs to integrate components from external suppliers (marking lasers, camera systems, cleaning units, etc.) that are defined in agreement with the design department, project managers or the sales department. Consequently, there needs to be a direct line of communication between engineers and suppliers. PRO.FILE and Inventor are closely integrated. The parameters of the Inventor model along with the bills of materials are directly transferred to PRO.FILE, producing a number of very valuable effects. One of Baumann's engineers wrote an Inventor macro into which engineers can enter information regarding materials, product groups, surface treatment, etc. This data is then incorporated into the characteristics of the CAD model and automatically transferred to PRO.FILE when the file is saved, where it is then automatically assigned to the part master.

Mechatronics incorporates MCAD and ECAD

In addition to the MCAD systems, the PDM system is also integrated with the EPLAN ECAD solution. The company employs PRO.FILE to combine its mechanical and electrical BOMs, finally bridging the traditional and costly divide between the worlds of mechanics and electronics.

Purchasing is always up to speed

The purchasing department, which is deliberately restricted to working with APplus, also benefits tremendously from the PLM system and its centralized storage. Purchasers are now able to directly access the supplier information stored in PRO.FILE. They can open and view the PDF files for the drawings of any of the parts offered to them through a link in APplus. Before, the engineers had to first store proposals in PSP or on the drive AND in APplus.s.
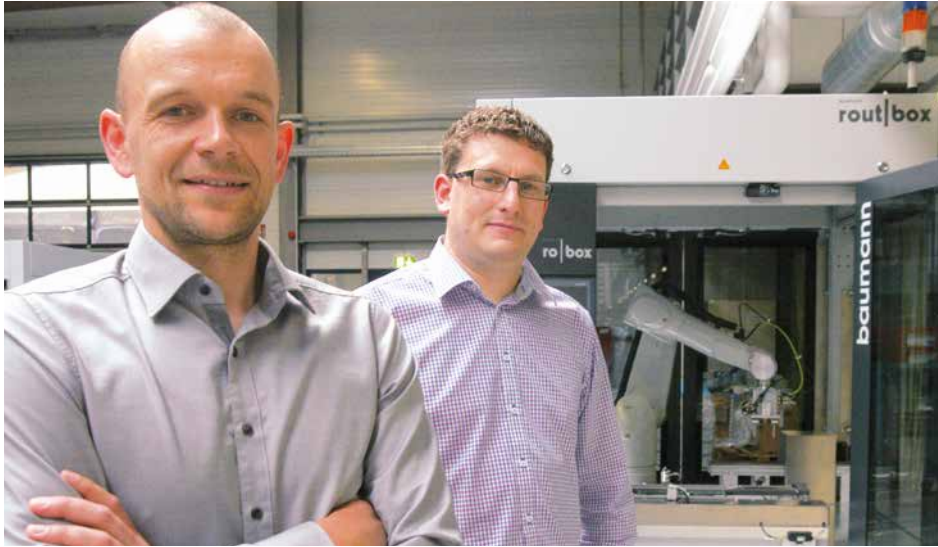
The challenge

The need to replace PSP should be taken as an opportunity to close gaps and remove obstacles in the product development process.

The solution

Part master data serves as the governing element to merge product data and documents. PRO.FILE now automatically synchronizes part master data between the CAD system and the ERP system. Employees from all departments now use the same data.

The result

The exceptional quality with which data is synchronized makes sure that everyone involved in a process is kept fully informed without any delays. All project stakeholders and purchasers always access the valid version of the documents they are working with.

Jörg Weigert (Head of Standard Products) and Martin Kindl (Designer) from Baumann

Neutral formats (DXF and STEP) used to be created by the job server and directly stored in the SharePoint Server of APplus rather than in PSP. Now, there are filters in place for the APplus integration that determine the documents to be available in APplus. This allows all employees working with APplus to view all supplementary documents (PDF, DXF, STEP) and supplier offers, however, only if they are in a 'permitted' status.

In analogy to the Inventor integration, Baumann also defined automated processes between APplus and PRO.FILE. Whenever the status of a part master in PRO.FILE changes to "CAD – approved", the metadata of a part master is transferred to APplus and the supplementary documents (PDF, DXF, STEP) are created by the Inventor job server. Once this is finished, the status of these documents is changed so that they can be viewed in APplus. If any changes are made to the native documents (revision or status changes), the status of the supplementary documents is automatically changed to "outdated", which makes them invisible for APplus users. This is to make sure that purchasers place all orders based on the latest drawings.

Spare parts lists at the click of a button

Baumann Automation is also making extensive use of the reports and web reports in PRO.FILE: The report generator collects data so that users can, for example, display a list of all drawings and supplementary documents of the entire structure for a specific part. One example for the numerous web reports is the automatic collection of the spare and wear parts for a project and their display in the spare parts usage list.

Creating an end-to-end DMS system

As a next step in the project, Baumann Automation is planning to expand the PLM system to include traditional DMS tasks, that is, managing project-specific documents. Jörg Weigert: "In the future, we will manage our schedules, cost control, customer and project manager correspondence, offers, and requirements and performance specifications with PRO.FILE as our document management system. PRO.FILE's focus on technical projects (DMS[tec]) gives us structure and simplicity." In early 2016, Baumann started to use the PLM solution as a ticketing system for its service organization, allowing the support staff to view the CAD document itself or its PDF document when responding to customers reporting problems or requesting spare parts and to create the corresponding ticket.

Why did they choose PRO.FILE?

After the discontinuation of PSP was announced in mid-2014, Baumann Automation was forced to reconsider its PDM/PLM strategy. PRO.FILE proved to be the perfect successor as it met Baumann's demanding requirements with ease: a seamless PLM system, DMS[tec] functionality, multi-CAD capabilities, mechatronics, and project management. PROCAD also stood out from the competition with its knowledgeable project team.