

Directly at the source

An important component of each customer project in plant construction is the creation of the complete documentation of the plant. This comprises a few or several hundred file folders in dependence on size. Apart for the description of the system, it must thereby serve for its operation and servicing as well as for maintenance and repair

by Dr. Uwe Wächter

The individual components of the entire documentation originate from different sources. Further parts come from editing systems and are looked after thereby technical editors. The in-house construction supplies drawings. Added to that are standard documents, drawings and servicing documents of supplier parts by different suppliers. Due to this heterogeneity, the required documents are present in different data file formats and qualities. But also the storage variants of different documents in the company can be very different.

The linking of all relevant documents with the individual position of the manufacturing piece list in the PLM system and the storage in the integrated DMS is ideal in the sense of an efficient process. In practice, the documentation location must sometimes fall back on copy presentation on paper or data files on a file server. The compilation of an extensive plant documentation is usually an elaborate, lengthy work, and also prone to errors. Despite the partial monotony, the work must be carried out by highly qualified personnel. Errors often result in practice through the use of wrong document versions and must partially be accepted in an approving manner, as the final version is not yet complete.

Changes at the last minute

The creation of the documentation additionally often takes place under time constraints, as it is the last step in the manufacturing process. Nevertheless, all changes shall be included up to the last minute before the official delivery. Payment goals of the customers are also often linked to the delivery of the documentation.

Thus, the faster the delivery of the documentation, the earlier the receipt of money. Sometimes documents are necessary in advance or partial documents, when preparing work on the customer side demand this: foundation construction or other building phases, authorization procedures at public authorities etc. Intermediate states already generated (partial documentations) can often not be used again later or can no longer be reproduced.

Plant manufacturers also earn from orders and services for maintenance, repair and extensions of the plants. Extensive, exact plant documentations are thus the condition to be able to deliver high quality performances. They create a competitive advantage compared to other repair firms.

The solution

The entire provision process of the technical documentation can for example largely automated or improved by the use of the direct publishing solution in DPF technology of SEAL systems.

Delivery variants: Paper and electronically

A completed plant documentation must often still be delivered on paper in folders; partially, the provision as a structured PDF format is sufficient. A suitable PDF/A format is also needed for the electronic long-term archiving. A compromise between both media paper and data file can often be found here: the issue in PDF must possibly have features, which are rather typical for a paper issue, as the recipient wants to generate further copies by printing the PDF.

When the documentation is very extensive, or several copies must be delivered, the production possibly takes place through a reproduction service. In this case, other criteria, for example page size, or color issue will become important for the compilation for the creation of the documentation – and will be conscientiously considered by the direct publishing.

The solution also permits the automatic creation of DVDs or the feed-in of customer portals. For later searches, the completed documentation can be stored automatically from the direct publishing process at a central location, in the PLM system or on the file server

Image: iStock

► info: Direct Publishing

What is achieved with Direct Publishing?

- System documentation at the push of a button
- Standardization of the document structure
- High process security
- Content and structure of the documentations can be extended and adapted efficiently during the creation or project runtime
- Analog and digital documentations
- Progress control of the creation/adaptation of the documentations
- The delivery of documentations can be reproduced in the ERP system
- The final document is available at the same time with the end of the engineering without manual after-processing

Where does the most savings potential occur?

- Automated creation of a documentation, which only contains the changed documents
- The documentation processes can be adapted flexibly at any time
- Parallel processing guarantees a very high throughput
- Reuse of existing process components possible in other processes
- High solution transparency
- Graphic process presentation
- Gapless order tracking
- Protocol data files with all important system information
- Fast implementation time
- Process security through automatic exception handling.

- Partial documentations can now be reused at any time
- Highly qualified specialist engineers can essentially work on their actual tasks
- Automatism for the generation of electronic documentation
- Further cost reduction can be achieved via external print services
- Electronic archiving is substantially more favourable than analogy archiving
- Customer wishes can be taken into account in a flexible manner and without large effort
- The creation times for documentations are considerably shortened

Processing

Folder directory and folder contents

The extent of a system documentation can as described comprise between one and several hundreds of file folders. From a certain amount of folders, a separate folder contents is necessary for the overview, which is generated in an automated manner by the direct publishing process. Each folder itself contains again a table of contents, which only lists the contents of the respective folder and offers numerous partial documents, which are individually checked, converted and stamped.

Page layout and numbering

All pages of the newly created documentation obtain new, continuous page numbers. All pages obtain new headers and footers. Pages have to be filled for the duplex issue.

Interactive contents/bookmarking structure

Further navigation aids exist for the digital issue as PDF. The PDF data files thus have interactive content, that is, they permit the jump to the respective beginnings of the listed subchapters. Bookmarks show the structure of the documentation and permit the jump to the respective beginnings of the listed subchapters. If bookmarks are already present in the original partial documents, these are included as a subtree in the self-generated bookmarks.

Complete integration of supplier documentations

The actual content of the documentation originates from various sources. Other parts, in particular supplier parts, are documented by the original documentation of the supplier. A seamless integration into the entire documentation is ensured here by checking and adaptation in the direct publishing process.

Automatic missing sheets/placeholders

Parts of the documentation can possibly not be ready at the time of the compilation of the entire documentation. Missing sheets are inserted at these locations. The creation of partial documentations is also possible in advance without problems.

Adding original documents

For the future operators of the plants, original documents in the application format (the format of their creation system) can also be important. After consultation, these can be finished within the scope of the document creation and be passed on in digital form by the system.

Monitoring

Especially with tight deadlines for document creation it is important that the progress in the creation process and possible and possible problems can be recognized quickly and reliably. For the

supervisors of the documentation generation, there are numerous possibilities in the operating surface of the direct publishing workflow, the digital process factory to control and monitor the procedure. In addition to the high performance administration tools, which is contained in the PDF, the direct publishing workflow independently generates warning notifications (for example by email), in order to notify about abnormal, possibly undesired states.

Customizing

The direct publishing workflow can be adapted to the special circumstances and requirements of each customer in a highly flexible manner. Thus, chapter separation sheets between individual chapters can for example be printed on stronger paper. The issue of these separation sheets then takes place separately from the entire documentation on a different issue channel. Data or tables which are not present as documents can be processed with an extensive report generator in PDF and added to the documentation. In this manner, all data are always in the most current state. (remark).

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