

PLANT EXPANSION AT BASF ANTWERP: DIGITAL PLANT DOCUMENTATION SPEEDS UP LOOP CHECKS



Fig 1: Loop checks in view: With digital plant documentation, project leaders always have an overview of the current testing status (Copyright: Rösberg)

Martin Dubovy, head of plant solutions at Rösberg Engineering, explains the benefits of the LiveDOK tool during both the plant commissioning and operational phases

Every time a process plant is newly built, modernised or expanded, its reliability has to be exhaustively tested before it can go into operation. Plant constructors or operators implement loop checks to ensure that all loops are functioning correctly, that the sensors and actuators assigned to them are correctly parameterised and that they are interacting as planned. Plants in the process industry often have several hundred loops that need to be tested by consistently following checklists. If several teams are working in shifts in order to speed up acceptance, it is almost impossible to keep an overview with paper checklists. In this situation, digital plant documentation is the remedy.

Anyone who has been involved in commissioning a plant in the process industry is familiar with the time-consuming procedure: checklists are generated (as far as the plant planning tool allows) for the loop checks which are one of the essential preliminaries. Then all loops have to be rigorously tested in

the field. The results are noted on the checklist. At the end of the day, each employee returns a stack of checklists to the project manager. Depending on the size of the project, he accumulates files full of documents which he has to go through if he wants to get an overview of the present status of the project. If testing is being done in several shifts to speed things up, a proper handover from one shift to the next is basically not possible. If shiftwork is not used, it would be possible for the project manager to catch up on his overview after work – overnight, so to speak – and then prepare the test assignments for the next day. However, this is extremely laborious, and who wants to manage a project by working a night shift for weeks?

Everything is a great deal easier with the digital plant documentation tool LiveDOK NG by Rösberg. Many plant constructors and plant operators use the tool for documentation in the operational phase. It renders valuable services in commissioning, Factory Acceptance



Martin Dubovy (top), head of plant solutions at Rösberg Engineering

Helge Laubach (above), account manager plant solutions at Rösberg Engineering

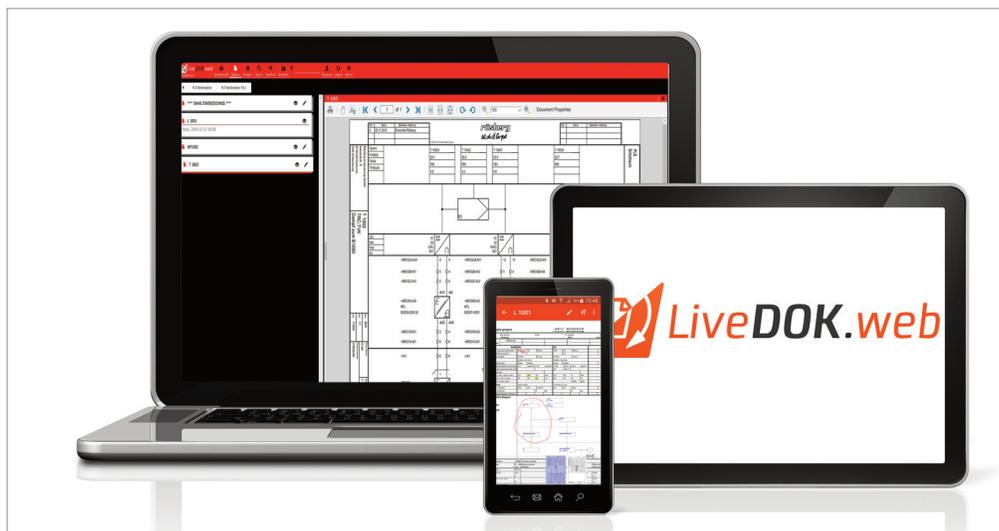
Tests, and of course loop checks: during checks, the tool enables data to be directly digitally recorded, meaning that the project manager has an overview of the test status in real time. This enables good planning and the effective deployment of employees, and has a determining influence on the time management of a project. "I assume that by using the software, the time for loop checks can be cut by as much as half, depending on the application concerned" said Helge Laubach, account manager plant solutions at Rösberg.

How does the digital documentation tool support loop checks? With I&C-CAE planning tools like ProDOK, for instance, (see Technology Box 1) checklists can be generated for the stored loops. These are transferred to LiveDOK in PDF format. The project manager then distributes their individual tasks to the employees who are carrying out the tests, usually via a tablet. When working through the tests they can tick off the individual steps on the checklist, and also stamp

the document appropriately. And with LiveDOK a differentiated status like e.g. “installed”, “tested” or “released” can be assigned individually to documents, depending on the project in hand. This enables people working on the project to see the status without having to open the document. When the installation of a plant component is completed, the employee assigns e.g. the status “installed” to the document. Ideally, the employee carrying out the test is connected to the company network during testing. His changes are then not only stored locally on his operating station but also centrally on the LiveDOK server. This gives all employees access to the current data of the plant documentation. For the project manager this means, for instance, that he can generate at the touch of a button an overview of which plant components already have the status “installed”. Thus rather than having to wait until the end of the day’s testing and then work through countless lists, the project manager receives the exact up-to-the-minute status while the tests are running, and can plan accordingly. If the tests are taking longer than anticipated, more manpower can be brought in at an early stage. This makes sense particularly if plant modifications are planned to be carried out during a strictly-defined time window – e.g. a scheduled plant downtime.

USE CASE - BASF ANTWERP

At BASF Antwerp, two new plant sections for the production of aniline and nitrobenzene were added at the end of 2018. When the extension work was completed, around 300 loops had to be tested in the field. For this BASF used the digital documentation tool LiveDOK. To avoid the use of paper altogether, the testers worked with tablets. This enabled them to enter all the necessary information directly on-site. Once a loop had been successfully checked, the relevant checklist received the



TECHNOLOGY BOX 2: HARDWARE – HIRING INSTEAD OF BUYING

For the loop checks at BASF Antwerp, the chemical company hired the complete test environment, comprising laptops, Ex zone tablets, LiveDOK licenses and much more, from the automation experts. Users who hesitate to invest in buying the hardware and software for similar applications, because they may only need to use them once, can benefit from this complete care-free package. All components are hired out on a monthly basis.

Fig 2 (above): LiveDOK Web can be used on a wide range of mobile devices because it is independent of any specific operating system. This means that during testing, changes can be entered in the digital documentation directly on-the-spot (Copyright: Rösberg)

appropriate status. If changes had to be made to individual I&C devices, these could be directly noted using the redlining palette of the documentation tool. These checklists were then returned to the planning office where they were checked, the noted changes taken over in the planning tool and a new documentation without redlining generated. This procedure has already proved very advantageous in practical use, because it simplifies the work, gives better results and substantially reduces the time needed for the checks.

Because there are frequently Ex-zones in the chemical industry, Ex-approved tablets were required for this application. In situations where more Ex-proof tablets are required at peak times than in everyday business, it may make sense to

hire additional Ex-safe tablets. For cases like this, in addition to their software tools and project management know-how, the automation experts from Rösberg offer suitable hardware for hire (Technology Box 2).

In past years, the choice of Ex-safe tablets on the market was relatively small, but in the meantime numerous variants using different operating systems are available. Therefore the automation experts have now created LiveDOK Web (Fig 2), a solution that is operating system-independent and web-based, and can be used on a wide range of different mobile devices. Users do not need to install any software in order to use the web application; they simply need an internet browser on the relevant operating device. The software solution is designed for touch operation, and works independently of the operating system, so it can be used equally well with Windows, Android or iOS devices. The user interface is responsive, i.e. it adapts flexibly to different display sizes.

A digital plant documentation solution of this kind can also be very useful at the commissioning stage. It makes plant constructors’ work easier, and enables them to deliver the as-built documentation to the plant operator promptly following commissioning. In many cases this is not just “nice to have” – it is an essential requirement. Many contracts specify that a project will only be regarded as completed, and will be only be paid for, once the current documentation has been handed over. With digital plant documentation tools, changes can already be made to the original documentation during the test phase, and the as-built documentation can be delivered directly after completion of the loop tests.

Rösberg Engineering
www.roesberg.com
www.LiveDOK.com

TECHNOLOGY BOX 1: THE I&C-CAE SYSTEM PRODOK

Modern process plants can only be effectively operated if the data from the engineering phase are also available for operation, maintenance and modernisation. As-built plant reality has to reliably match the documentation at all times. Only if all data are consistent can costly new entries and the unnecessary use of engineering resources be avoided. This is exactly where the I&C-CAE system ProDOK comes in. It ensures an integrated planning process with unified rules. Because all the data are collected and exchanged within the same system, there is no more trouble with tiresome data transfer errors. Functions include basic and detail planning, functional planning, implementation planning and installation planning for new construction projects, plant alterations and extensions, as well as operational support, covering the whole life cycle of a plant. By its continuous, consistent documentation ProDOK ensures that the documentation really does reflect plant reality at all times. In combination with the real-time documentation system LiveDOK, it enables the complete documentation to be centrally administered and maintained, simply and inexpensively. The result is a significant improvement in quality and efficiency, plus substantial savings in terms of time and costs. Security of investment is ensured by wide acceptance of the system in the process industry and the use of state-of-the-art software technology.