

INVESTMENT PROTECTION AND A BASIS FOR INNOVATIVE APPLICATIONS

BASF has switched to the new system generation ProDOK NG from Rösberg

For 30 years, the BASF Group has been using the I&C-CAE system ProDOK by Rösberg for the planning and operational support of its production plants. User acceptance in day-to-day work is high, but there is also a new demand for the inclusion of innovative applications. For this reason BASF decided to switch to the new system generation ProDOK NG. This involved a Europe-wide migration of the I&C data of about 300 plants with approximately 1.3 million loops at locations as far apart as Antwerp, Basel, Ludwigshafen, Schwarzheide and Tarragona. Without disturbing day-to-day operating processes, within two years the historically-grown, partly heterogeneous data formats were brought up to a unified international standard (eCl@ss Advanced) so as to enable analysis and the use of applications on both a plant-wide and a cross-locational basis.

'Spring Clean' for documentation

During the switchover it was also planned to check up on the existing data. Where had unnecessary data and documents accumulated? Where was the data inconsistent? Where were there reports, forms and documents with almost identical content but differently formulated? Where were links that were now inaccurate or irrelevant? In a consulting process, the experts from Rösberg gave BASF intensive support in answering these decisive questions. Thus not only did they deliver their I&C-CAE system ProDOK NG – they also supported the migration process throughout, from beginning to end. Here it proved a big advantage that Rösberg's employees are continually planning and supporting new plants and the modernisation of existing plants. They understand the planning



processes represented by the software and are familiar from their own experience with the typical challenges. Before transferring database contents they were first checked for data consistency and integrity by adapted ProDOK standard tools, without changing the engineering technology. Any discrepancies were then removed semi-automatically before migration. Even without migration, this would have been a useful step in itself.

Standardisation and future security

The migration involved all the big BASF locations in Europe. Over the years various different data formats were used there. In some cases, several different documentation standards were even in use at the same location. The migration was taken as an opportunity to consolidate the individual master data



Fig.1 a & b: At the BASF location of Ludwigshafen alone, around 200 plants were migrated from ProDOK to ProDOK NG (Copyright: BASF)

Fig. 2 a & b: The I&C-CAE system supports the planning and documentation of large process plants (a). The I&C plant documentation can be visualised on a PC or mobile device (b). (Copyright: Rösberg)

records throughout Europe and reduce the number of I&C device specification forms used from around 250 originally to about 60. The unified basis for these device specifications is now eCl@ss Advanced. This standard, which is cross-sectoral and compliant with ISO and IEC standards, is ideally suited to describe process data and is unrivaled at present – at least in Europe (Fig. 4). Ralph Rösberg, managing partner of Rösberg Engineering GmbH, said: "To my knowledge ProDOK NG is the only I&C-CAE system now on the market that comprehensively supports this future-oriented standard for the process industry. Yet in our view significant parts of Industry 4.0 can only be realised if the devices used in plants can also be consistently described in a standardised way. Thus eCl@ss Advanced will be indispensable to enterprises in the medium term if they want to build and operate plants that are future-proof." The Europe-wide reduction of the master data together with the unified use of eCl@ss Advanced provides more clarity and facilitates location-wide and cross-location comparisons and analyses for I&C planners, plant operators and production workers.

Of course, access by many different users in the individual plants at the various locations require basic regulations regarding data and information protection to be observed. For this purpose the BASF Group operates a central administration system for access to all its IT systems. Both the I&C-CAE system ProDOK NG and the as-built documentation system LiveDOK NG are connected to this central system.

Trouble-free I&C data migration in production plants

The migration in Europe was carried out gradually over two years. It was important not to let it interfere with operating processes, so to achieve this a unified migration plan and realistic time schedules were drawn up for all BASF's production plants in Europe. After exhaustive testing of the whole migration process at selected pilot plants, it was implemented successively. Each weekend the data of about 20 plants at a time were transferred: to do this, at the end of the week the plant operators blocked access to the databases of the old system generation ProDOK 9.5, started the automatic checking of the database contents for consistency and integrity, performed any corrections, and stored the pre-checked data contents in a standard

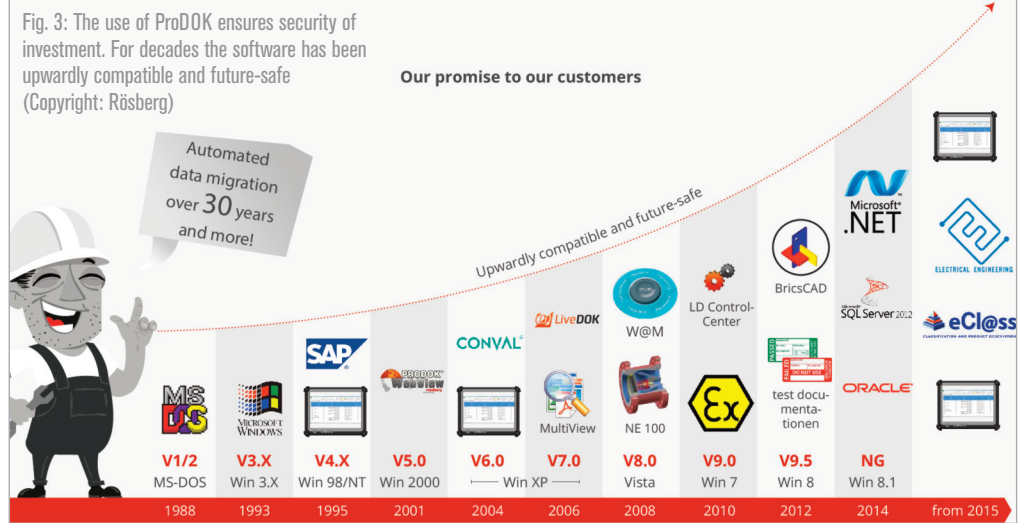
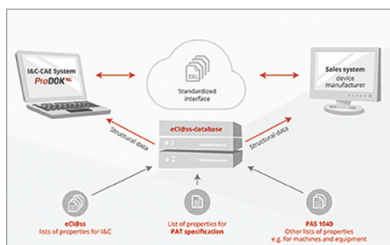
format. These were then made available to Rösberg by remote access. Then, each Friday evening, the IT specialists loaded the data packages onto high-performance servers. There, they were automatically migrated and compared with the predefined standard format for the results, any discrepancies that occurred were analysed and semi-automatically corrected. Additional support by BASF personnel was not required for this. On each Monday morning the migrated databases were then installed by BASF on new central database servers. The employees in production and technical units at the BASF locations, who had been trained beforehand, were able to start working with the new system straight away. Of course, Rösberg had prepared a fallback plan in case at any point the migration did not run smoothly over the weekend – but they never had to use it.

The external costs of Rösberg for the Europe-wide migration project were manageable. Expressed in terms of the individual loops in the 300 or so production plants, they worked out at approximately half a euro per loop.

The benefits for users in production and technical units

The cost and effort of the migration is demonstrably worthwhile – as evidenced by the many advantages of the unified databases for the whole of Europe that were created during the migration.

The new system architecture of ProDOK NG now fulfills the current requirements of BASF's IT for a centralised server, IT installations as unified as possible and Europe-wide accesses compliant with general information protection regulations. This makes it possible to conduct analyses and integrate new applications both on a



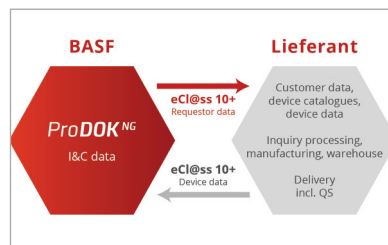
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BASF creates chemistry for a sustainable future, combining economic success with environmental protection and social responsibility. The approximately 122,000 employees in the BASF Group work on contributing to the success of its customers in nearly all sectors and almost every country in the world. The portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated global sales of around €63 billion in 2018. www.basf.com

plant-wide and a cross-locational basis. The unified datapool based on standards like eCI@ss Advanced also helps avoid 'uncontrolled growth' in future, thus minimising the necessary maintenance effort in the long term.

Thanks to the standardisation of reports and forms in ProDOK NG it is largely irrelevant which big location within Europe employees are assigned to – they will quickly find their way around the I&C plant documentation there. Thus

Fig. 4 a & b: eCI@ss Advanced is an ISO- and IEC-compliant, cross-sectoral standard ideally suited to describe the technical data of devices. It is unrivaled at present, at least in Europe. (a). In future, suppliers of equipment to BASF will have to supply the data for their devices in eCI@ss Advanced format. This will further improve the as-built documentation (b). (Copyright: Rösberg)



personnel can be deployed more flexibly, and the same flexibility extends to contract partners, further simplifying the outsourcing of individual work steps. This also applies to all work with I&C documentation based on the web application LiveDOK.web, which can be used independently of the operating system on all the usual mobile devices on the market.

Asset management also benefits from this. For the first time, information can be called up at the touch of a button about which technical components/devices are installed in which plants throughout the whole of Europe. This is advantageous, for instance, if there are faults relating to a specific device, as well as in failure analyses and the preparation of DCS migrations. As equipment suppliers are required in future to deliver device data in eCI@ss Advanced format, these device specifications can be directly integrated into the I&C-CAE system, making the as-built documentation even better.

The switch to an I&C-CAE system is definitely worthwhile

Companies who have not yet acquired a modern I&C-CAE system can also benefit from all these advantages. In this way they can avoid the problems that crop up in everyday work again and again without an efficient I&C planning and documentation tool. In such cases inconsistent documentation, as typically produced with the use of Office tools for planning, is a standard point of criticism with audits by customers, supervisory authorities and internal revision management. In the worst case, if safety problems occur in the plant and it needs to be demonstrated that all relevant regulations have been observed, reliable documentation can be extremely important for an enterprise.

Rösberg Engineering
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ABOUT RÖSBERG ENGINEERING...

Rösberg Engineering GmbH, founded in Karlsruhe in 1962, offers tailored automation solutions created by around 100 employees working at five locations in Germany and China, for internationally active enterprises in the process industry.

Today RÖSBERG is an internationally successful solution provider for automation technology and innovative software applications. Its scope includes basic and detailed engineering for the automation of process and production plants as well as the configuration, delivery and commissioning of distributed control systems. The enterprise also has extensive project planning and user experience in the implementation of safety-related controls, is an expert in functional safety, and offers sector-specific software solutions in the area of information technology. The I&C-CAE system ProDOK has enjoyed international success for more than 30 years now. Under the name of Plant Solutions the new system generation ProDOK NG, the digital plant documentation system LiveDOK NG – with the app LiveDOK.web – and the Plant Assist Manager (PAM) support production plants over the whole life cycle, from planning, construction, commissioning, modernisation and expansion, through to decommissioning.