Necessary Support – In order to operate a plant safely and reliably, the first prerequisite is to know exactly what shape it is in. It is essential for the plant documentation to reflect plant reality as accurately as possible. Here, instrumentation and control planning systems (I&C-CAE systems) provide the necessary support. In the classic process industry the plants involved are usually large production plants consisting of individual plant components which are mostly non-centrally organized. These individual components are often built up gradually. Depending on their date of construction, an I&C-CAE system may often not have been planned in originally. It would then have to be integrated into an already-existing IT environment.

In this kind of situation, the use of standard formats is particularly important, for instance, the NEC standard. This software solution has already been developed at the Technical Center of the Karlsruhe Institute of Technology for the design and documentation of industrial plants. When designing a new plant, NEC is used as a “digital plant object” on the computer. The plant is then delivered in standardized form. Thus for instance if a change request is subsequently implemented, all the details affected by the change can be automatically identified and centrally stored and updated if there are changes. Via another interface, specifications for individual instrumentation and control systems are transmitted for ordering purposes (via SAP PS to SAP MM). To keep an eye on costs at all times, there is an export from the I&C-CAE System to a set estimation module Kelpro. Calculation data for valves and differential pressure transmitters pass to the calculation program Conval, from which the results are re-transmitted. Of course, there is also an interface to Livebook for the maintenance of digital plant documentation.

Fig. 1: Thanks to numerous interfaces, the I&C planning system can be integrated into an existing IT infrastructure.

Precise Specifications in NEC

In NEC, the concept is based on a standardized structure. This makes it easier to keep an overview. If there are problems with a component, or if a device in use is decommissioned, all components of the same type that are built into plants can be located simply by calling them up. This also makes it easier, because fewer manual interventions occur when reading plans with a standardized structure. The NEC-CAE system also accommodates this idea of standardization. Ralph Roesberg, managing partner of Roesberg Engineering, explains: “Instead of many different documents in various formats such as Excel, PDF or CAD, with all I&C information integrated into one system, we use standard NEC.” To ensure that the same devices always have the same designation, details of the most important devices used in the plants have been entered in a central master database. If a device is to be represented in the I&C-CAE system, the user selects it from this standard library. Although the initial recording of the information is relatively time-consuming, the standard library can then be used through-out the group and - after adaptation into the appropriate language - even internationally. Thus everyone is always connected to one standard, and this makes it much easier, for instance, to organize changes from the central office in Ludwigshafen.”

Plant Service – Over the Whole Life Cycle

In many instances, the automation experts from Karlsruhe continue to provide support for plants over the whole life cycle. This means that they are closely acquainted with customers‘ real needs, for one thing, and for another, that they also have an interest in ensuring that their software adapts simply and straightforwardly to changing requirements. Whereas external engineering firms frequently tend to regard plants as being static, with Prosek continuous technical development is catered for. This is apparent, in fact, that the migration from one software version to the next highest version can take place automatically. BASF’s use of Prosek has demonstrated that this really works. At the Ludwigshafen site there are more than 300 differ- ent plants and plant components and more than 700 registered users to be taken into account. Despite this great size, changing the version of NEC only took one weekend. This is an undeniable argument for many plants in the process industry which have been operating in many cases for over 30 or 40 years – or even longer. Provided the software adapts uncompromisingly to technical innovation, it is possible for an “old” plant to remain always state-of-the-art.