

## **eCI@ss 11.0 - new version shapes the future of Computer Aided Engineering**

**Open product data standards are the prerequisite for Industry 4.0 to become reality. The eCI@ss standard in particular has established in the market in recent years. For the current version 11.0 it has been further developed as never before. But what are the innovations and what advantages do they offer in concrete terms for Computer Aided Engineering (CAE)?**

The further development of eCI@ss is a continuous process. Every year a new version of the standard is released. The new version 11.0 represents a special feature as it contains the most extensive innovations since the launch of the first version.

Two examples in particular make it clear why eCI@ss 11.0 offers far-reaching advantages for CAE: The possibility of functional description of products and the added engineering data for protection parameters. Both innovations relieve design engineers in the planning of switchgear. In the following section we show you how users can benefit from this.

### **Reduced effort: Describing protection parameters with eCI@ss**

The description of the protection parameters is an indispensable information if the network calculation of a switchgear has to be made or if the network protection is ensured by selectivity.

For example, software-supported network calculation requires a large amount of fine-grained technical information in digital form. Researching this information and preparing it for the corresponding tools means an enormous manual effort. Especially if the data originally comes from catalogues or other documents and must first be digitised. It is not possible to automate processes in this way.

Engineering data is extremely diverse and complex. It is a huge challenge to describe them in a standardized way. The reason is, that data can vary due to technical dependencies. Or they result from normative requirements of type test reports. As they are usually represented as graphics, they cannot be described in a flat feature structure. Up to now they have been provided individually by the producers.

## **Depicting of multidimensional data structures**

With the help of eCI@ss, protection parameters can now be described specifically and in detail - language-neutral, machine-readable, sector-independent and unambiguous. The dynamic depictability of multidimensional data structures is a unique selling point of the product data standard. For this purpose, structural elements such as block, aspect, cardinality and polymorphism are used to subdivide information.

In the block, related characteristics are collected under a specific name. It is useful to divide the characteristics into blocks for clarity. If they were listed on a single level, this would result in a long chain of characteristics that would grow as new characteristics were added. In addition, blocks can be reused in different places. To create a block, users must create a so-called reference characteristic.

## **Aspect, Cardinality and Polymorphism**

One aspect is the collection of thematically related characteristics and blocks. An example of this is the "CAx Connections and Functions" aspect, which describes detailed information such as type, position and usable conductor cross-sections, as well as the functions of a product to speed up its use in engineering and enable automated production.

The individual blocks can be multiplied as required. This additional way of organizing the characteristics of a class is called cardinality. For example, imagine a production line is equipped with six identical gripper arms, whose characteristics are grouped together in a block. In this case, it is sufficient to set the reference characteristic "number of gripper arms" to "6": In this example, the corresponding block would be called six times.

In eCI@ss, polymorphism - the "multiformity" - offers the possibility to use different blocks for describing and this depending on a special characteristic value. For example, for connections in electrical, pneumatic or optical design, specifically compiled features (blocks) are used in each case.

### **Functions can be described**

The possibility to describe products functionally is the second important innovation that eCI@ss 11.0 brings to CAE. This is because not only the physical sizes of the components play a role in the creation of circuit diagrams. With the help of a corresponding software, important advantages can be achieved from the new functional descriptions contained in eCI@ss. Especially the time saved during the creation of circuit diagrams. For example, the AmpereSoft ToolSystem in conjunction with eCI@ss 11.0 enables the automated generation of circuit symbols, which can then be easily inserted into the circuit diagram. This applies to both standardized and non-standardized functions. Up to now, designers had to create these symbols themselves in a time-consuming process. For economic reasons, manufacturers are often unable to supply all the symbols required for all CAE systems on the market.

### **Milestone on the way to Industry 4.0**

The previous versions of eCI@ss were already important steps on the way to Industry 4.0. The new release goes one step further and represents a real milestone. The even more detailed description of the product data enables a correspondingly detailed engineering process.