The Cogegaz story

Cogegaz is a company specialize in the engineering of gas pressure reducing and metering stations. Because of the specific requirements of the customers, it is very difficult to standardize gas pressure reducing and metering station. Each customer has its own technical specifications, technical requirements, and standardized devicesŠ Furthermore, the design depends on the location: the station may be installed in a cabinet, in a building, in a cellar. The inlet pipes may come from the bottom, from the top or sometimes are horizontal.

New three-dimensional CAD-System for the Design of Gas Stations

So, we need to build tailor made stations with an attractive cost and short delivery time. The first step in the construction is the design and the drawing of the station. Beginning of 1997, we invested in a CAD two-dimensional drawing system based on AutoCAD R13. We increase the quality and the speed of the drawing but the engineering was still a bottleneck for the production. Beginning of 1998, we decided to look for 3D piping systems as an add-on for AutoCAD. It was difficult to find a system adapted to our needs. Most of the piping software is made for the design of piping network in factory, distribution-piping grid in citiesŠ but not for gas stations. These software don't allow detailed design and valves, for instance, are represented as symbols only and not as real drawings. In the drawing of stations, it is very important to go deep in the details to improve the design and to avoid mistakes.

Another condition was to work with a company that can guarantee the perenniality, the development and the maintenance of the software. Finally, we found a system that meets our needs: the software PLANT-4D sold by the company CEA. It was the add-on for AutoCAD R14 we looked for. CEA is a company specialized in piping engineering software. They have offices in France, Germany, and the Netherlands.

PLANT-4D is an object-oriented software of the new generation. All the graphical data are recorded in a database and not in a drawing, there is no difference between the database and the CAD. The modification done in the database appears automatically on the drawings. The database is independent from the CAD software. As an example, you can create a project with AutoCAD and use it with MicroStation. The connection between the components is automatic as well as the insert of gaskets. From the 3D drawings, we can automatically extract 2D

drawings that are still necessary for construction. We generate also detailed drawings of the piping for the welders. The bill of material is generated with different lists for valves, piping, gaskets. In addition, we get the weight of the station, which is useful for the load calculation and the transport.

We realized a customized database including almost all the products we use such as valves, regulators, meters, flanges. This database contains 4,000 items. It was a big job to program all these items, not as symbols but as real 3D drawings includinglevers for the valves, pilots for the regulators. A programmer was dedicated for this job for several hundreds hours. After that, we controlled the whole database.

Four people of our staff followed a one-week training in Paris to use this software efficiently. Two of them followed also a 5-day training on the database software Access.
Access is the selected database for the description of the components and for generating the bill of material.

It took nearly one year to get a full operational CAD system. Now, the system gives its benefits. The time to design the stations has been reduced by about 30%, so we are able to reduce our delivery time for gas stations to meet customer requirements.Three-dimensional drawings help the customer and workers in the workshop to understand what the station will look like when it will be completed. We are able to simulate different designs, for example to reduce the space required for the station. Doing 3D drawings with actual and accurate representation of the devices (not symbols) reduces also design mistakes. The next step will be to increase and to update the database of components.

We are convinced that doing the design in three dimensions with PLANT-4D wasthe right choice. The support of CEA France was also useful to complete this project within the expected time.

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