

Research theme	Computer Aided Software Tools & Design automation
Research title	Improving Designer's efficiency at NEM
Researcher	Arjan Pek
Research period	From 2007 to 2012
Company	NEM Industrial & Utility Boilers, Hengelo
Supervisor	Ir. H. Tragter

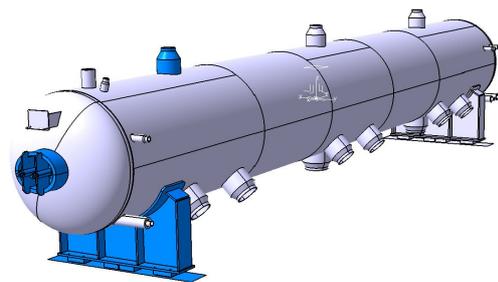
Background

The application of high end CAD systems and related automation techniques influences the design process on many aspects. On one hand it contributes to the efficiency of the design process and the quality of the designs. On the other hand, automation can result in limitations in flexibility and innovation possibilities and it requires specialized skills and substantial investments.

The NEM is a manufacturer of industrial boilers used in the process and energy industry. At the end of the past decade, a start was made to implement CATIA™ V5, a high end CAD system. CATIA™ V5 is commonly used in the aerospace- and automobile industry. This CAD system comprises different dedicated tools and techniques to improve designer's efficiency in the process and energy industry. The study investigates the influence of the application of different ways of using CAD techniques on the NEM organization.

Results

During the research, different CAD automation techniques were explored. Three scenarios of using CAD were sketched, each scenario using a different combination of the available techniques. The influences of the scenarios on the NEM organization were investigated by exploring their impact on a NEM design case: a steam drum. The influence on design time, costs and lead time were impressive: the most advanced use of CAD lead to a reduction in design time by 90 percent and design costs by 70 percent compared to current CAD usage.



A boiler under construction in Egypt (left) showing three steam drums. On the right the 3D CAD model, created using CATIA™ V5 with different automation techniques.

Personal experience

The NEM used 2D CAD systems to create their designs. The introduction of 3D CAD is not only a technical issue. It is an organization issue as well.

The application of high end CAD systems in the Process & Energy industry is not common practice. This means that there is a lack in expertise in Holland and even in Europe how to deal with CAD in this area.

Both aspects made the research very challenging. My two months on site in Egypt were an extra bonus.