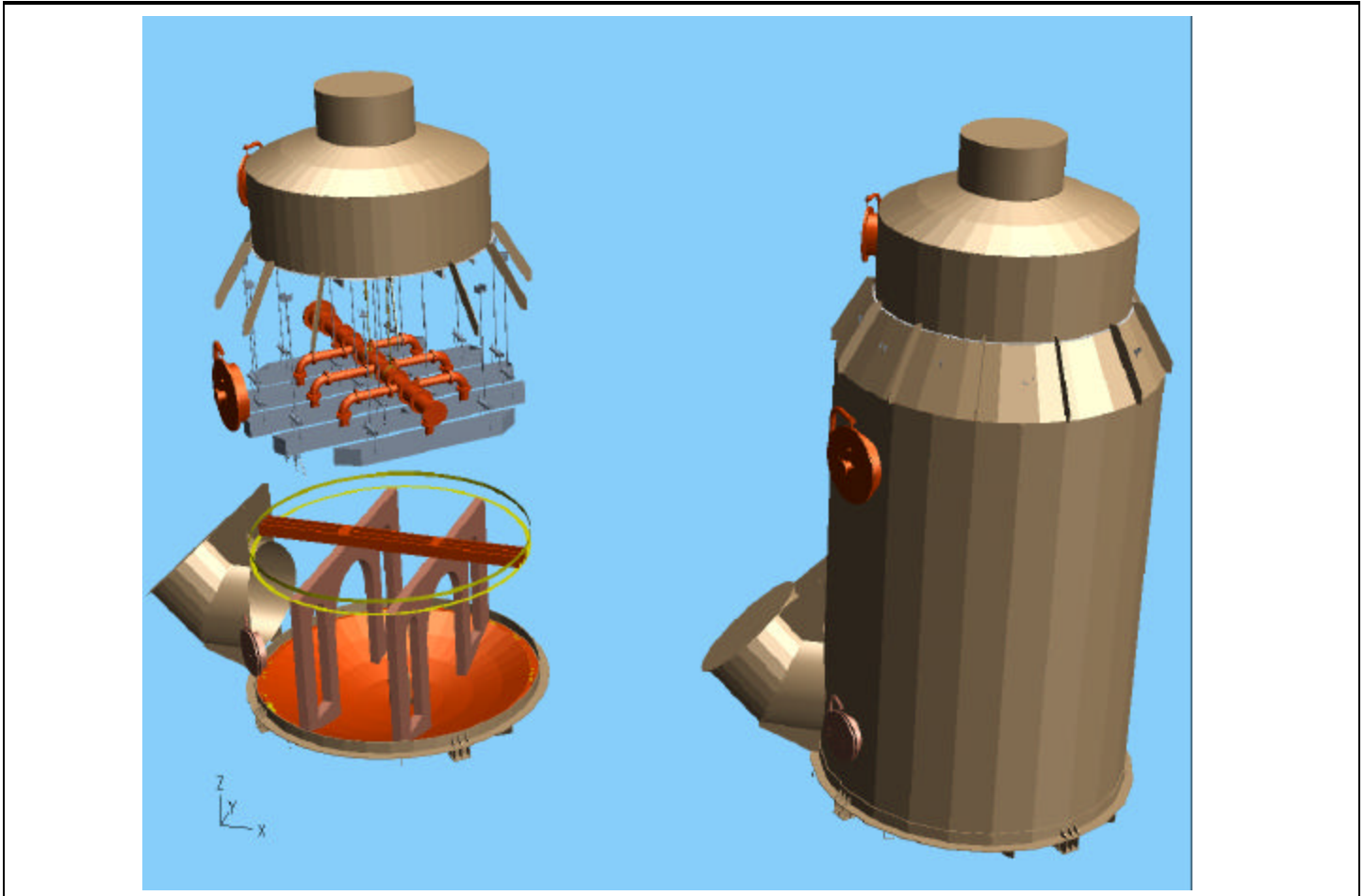


Design Power Success *Monsanto Enviro-Chem Systems*

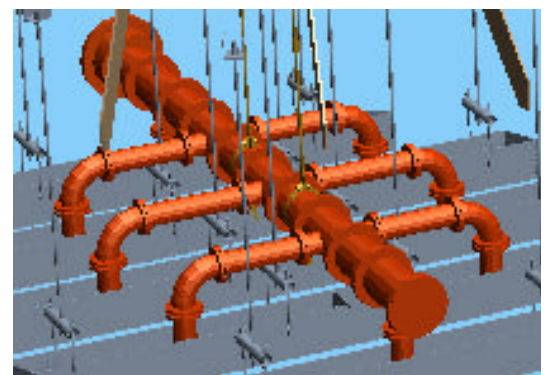


Absorption tower design generated automatically using AutoTower, a Design++-based Intelligent Design System

A Leader in Quality Design and Construction

Enviro-Chem Systems, Inc., a wholly-owned subsidiary of Monsanto Company with 300 employees, designs and constructs plants for the sulfuric acid industry. The St. Louis-based company also designs and sells equipment to solve environmental emissions problems. It offers clients complete, turnkey solutions built to their requirements or any part of a solution, as well as modernize older plants.

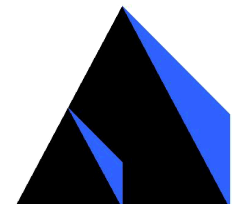
A leader in its worldwide market, Enviro-Chem has designed plants for many long-term clients who come back for new plants and modernization projects. The company prides itself on total quality in design, which is important



Highlights:

- High estimate accuracy
- High design quality
- Faster delivery
- Reduced engineering hours
- Reduced field re-work

Partners in Productivity



Design Power Group
We Put Knowledge to Work

Project Vision

The vision that drove the AutoTower project at Enviro-Chem was to create a design system that automated as much of the design process as possible while freeing engineers to optimize design configurations. The key focus was to substantially reduce the number of engineering man-hours needed to design absorbing and drying towers.

The development team took the knowledge of their own human experts and applied it through computerized tools. This type of automation, called Knowledge-Based Engineering or KBE, applies knowledge and company standards, performs analysis to determine the configuration of the internal systems, then passes the data to build a 3D model of the tower and generate the 2D drawings.

Building the System

Enviro-Chem, along with a Design Power VAR [value added reseller] Integration Partners, Inc. utilized Design++ to form the knowledge engine core of the AutoTower system. With Design++ the team was able to develop a system that captured the

work process knowledge that is used in creating tower designs. Using a custom designed graphical user interface [GUI], engineers enter the design parameters for a tower design and AutoTower handles the rest.

Design++ was used to create a detailed data-centric model which represents the process of designing and engineering a tower. Based on input from designers, the model interacts with CAD, Oracle and an engineering analysis module to automatically configure a detailed tower design. As a result of this highly automated process, engineers and designers are free to optimize tower designs.

Powerful Results

The initial goal with the Design++ based system was to automate up to 80% of tower design while still allowing the engineers some freedom for decision-making and creativity. Design changes are easy and fast since the Intelligent Change Manager feature of Design++ automatically modifies components of a design that are affected by a change while non-affected components remain untouched. With AutoTower, engineers are more effective because

their time is focused on optimizing the configurations instead of executing repetitive CAD and/or analysis operations.

Most importantly, Enviro-Chem application developers have been trained by Design Power in the development of

Design++ based applications. This has resulted in Enviro-Chem assuming full ownership of the application which allows timely modifications and enhancements to extend its capability to meet the evolving requirements of their enterprise.

Management endorsement

Barbara Van Hee, Project Manager for AutoTower says "With Design++ we were able to create a system that is easy to use and produces the design results we need in a fraction of the time we have been accustomed to. We continue to add additional functionality to AutoTower and are evaluating other potential applications. This is truly powerful technology."

The Design Power Advantage

For manufacturers that intend to compete successfully Design++ solutions accelerate sales of complex products with instant turn-around of design-based proposals complete with 2D drawings, 3D models and technical specifications.

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The AutoTower development team: back row l to r Chris Krug, Roy Wall, Kerry Kinkade; front row: Jerre Reily, Scott Nesler



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