

# The Cold, Hard Truth

SALOF Refrigeration  
Lowers Costs and  
Strengthens Job  
Bids with Bentley  
AutoPLANT Software

For more than two decades, New Braunfels, Texas-based SALOF Refrigeration has been meeting the needs of its global customer base by delivering the most innovative and advanced refrigerant systems in the world. While many people may not be familiar with the industrial-refrigeration industry, it is one of the most competitive fields in the CO<sub>2</sub> liquefaction market.

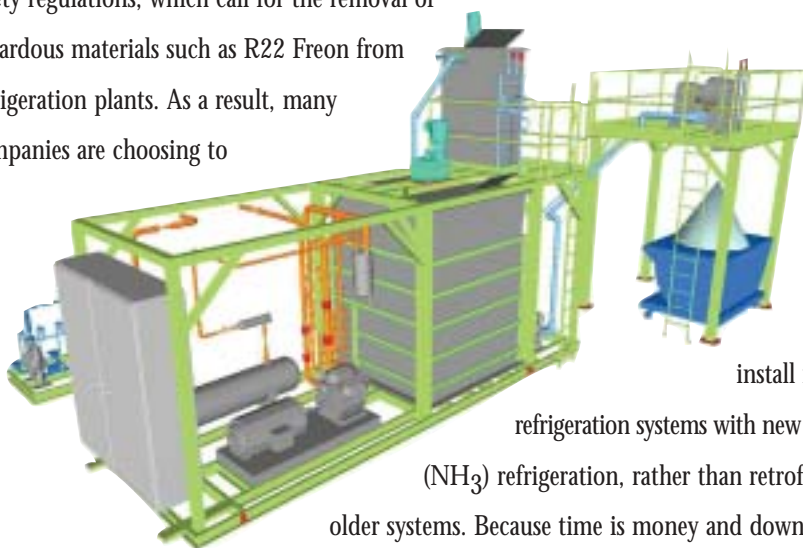
In order to set itself apart from the competition and win new customers, SALOF has incorporated an unusual element into its sales process. The company creates a detailed, 3D model of the system that the prospective customer would receive if it chooses SALOF. Using the model, SALOF engineers are able to walk prospects through the proposal with ease and clarity, giving the customer a degree of confidence in SALOF that other vendors are simply unable to match. The models enable customers to see in great detail what is required for a project — all the way down to the equipment that will be used, piping designs, steel frameworks, and structural supports.

SALOF's "secret weapon" in the creation of these models is Bentley® AutoPLANT®. SALOF uses AutoPLANT to design all of its custom-built refrigerant and liquid CO<sub>2</sub> systems. And the benefits of AutoPLANT aren't limited to sales support. SALOF has also realized significant time savings in construction and delivery, which lowers the firm's cost of goods sold and enhances customer satisfaction. SALOF estimates that AutoPLANT has cut product design and delivery time by half. To date, SALOF has engineered, constructed and delivered more than 50 refrigerant systems around the world with the help of AutoPLANT technology.

"Bentley provides a complete package and AutoPLANT does everything we need," says Michael Johnston, piping designer, SALOF. "We don't go back and forth between software design packages anymore. We do all our work in 3D using AutoPLANT."

## Lower Operating Costs, Safer Equipment for Customers

One of the emerging trends in the refrigeration industry is the growth of environmental and safety regulations, which call for the removal of hazardous materials such as R22 Freon from refrigeration plants. As a result, many companies are choosing to



install new refrigeration systems with new ammonia (NH<sub>3</sub>) refrigeration, rather than retrofit much older systems. Because time is money and downtime can be devastating to business, customers expect their vendors to

deploy the new systems with minimal, if any, interruption to ongoing operations. Fortunately, the modular nature of designing and building refrigerant and liquid CO<sub>2</sub> systems with AutoPLANT lends itself to this end.



One example of this is Southwest Bakery, a SALOF customer and the baker of McDonald's hamburger buns. Not only was SALOF able to build and install a new refrigeration system for Southwest Bakery without forcing the customer to shut down temporarily, it was able to greatly reduce the customer's operating costs through innovative capabilities built into the new system.

Refrigerant systems designed by SALOF produce liquid CO<sub>2</sub> that can be sold to other industries. In order to accomplish this, SALOF built a cooling system that extracts a pure stream of CO<sub>2</sub>. The gas can be captured and sold as dry ice, or as a freezing medium, or as the carbonation found in soda. Another SALOF business unit, Acid Recovery Systems, Inc., separates a bi-product called iron-sulfate during the refrigeration process. This bi-product is used as an iron supplement in everyday foods such as Hostess Twinkies and other iron-fortified foods. In both instances, the incremental revenue that comes to plant operators means that the net cost of owning and operating SALOF-built refrigeration systems is extremely low.



In addition, all drawings created with Bentley AutoPLANT software are in accordance with the OSHA 1910-119 standard. This mandates that companies maintain "a Refrigerant Flow Diagram and a Process and Instrumental Diagram for all ammonia refrigeration systems with an ammonia charge over 10,000 pounds," says Johnston.

## Parallel Efforts Mean Accelerated Project Completion

Once a project is set, the engineering, design and construction teams begin a collaborative process. The highly accurate models generated by AutoPLANT allow all three teams to work in parallel, saving a tremendous amount of time versus the traditional system in which each team completes its work and then hands off the project to the next team.

At SALOF, working in parallel is particularly useful because all the equipment is delivered on skids that must be built individually for

## Bentley Database Gets Better with Age

SALOF designers have been using AutoPLANT technology for more than five years. In that time, SALOF has amassed an extensive database of equipment specifications and design information. Each time the database is expanded, it allows SALOF to speed up delivery of the next project. “Since we work in a modular fashion, we consider the AutoPLANT database to be the backbone of the design suite,” says Johnston. “We are at a point where we have built up such an extensive library of data that we can reuse drawings or make modifications to existing drawings with very little new design work required for each project.”

Another component of the Bentley AutoPLANT suite, AutoPIPE®, allows for consistency throughout a project’s lifecycle. All piping and

valves are designed and color-coded, and then identified in accordance with the ANSI/ASHRAE-15 Safety Code,

as well as the IIAR Bulletin on Piping Identification Recommendations.

Additionally, SALOF can design and install all systems in accordance with ASME B31.5, ANSI/ASHRAE-15 Safety Code, National Electric Code IIAR-2 and local codes.

AutoPLANT is tightly integrated with the Instrumentation and Wiring, Datasheets, Hookups and Data Manager modules. All data entered into any of the modules can immediately be viewed, manipulated and included on reports in AutoPLANT. Any additions or modifications made to data are instantly available to the other modules for deliverable production. This integrated environment allows SALOF’s project engineers and project managers to view and manage all aspects of project data from a single interface.

each new system. The construction team can begin building the skids as soon as the schematics are generated, long before the unit is actually assembled. “We’re able to design a skid in less than a week, and even though revisions on large projects are common, the flexibility of the Bentley software allows us to make changes on the fly. We’re ready to transport a finished system the moment it’s completed,” says Johnston.

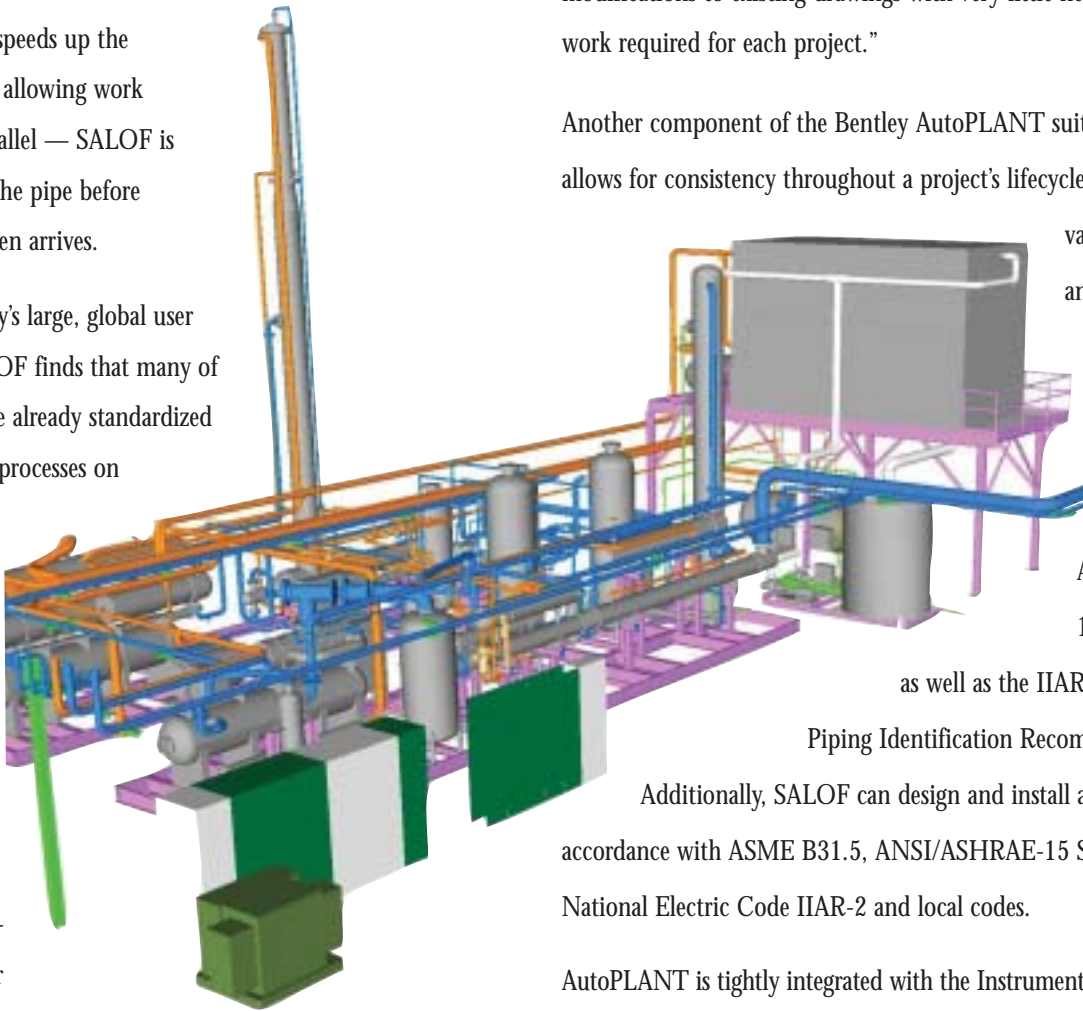
Another time-saving feature of the Bentley software is its ability to help engineers build pre-fabricated piping with the help of a component of AutoPlant® AutoISOGEN™.

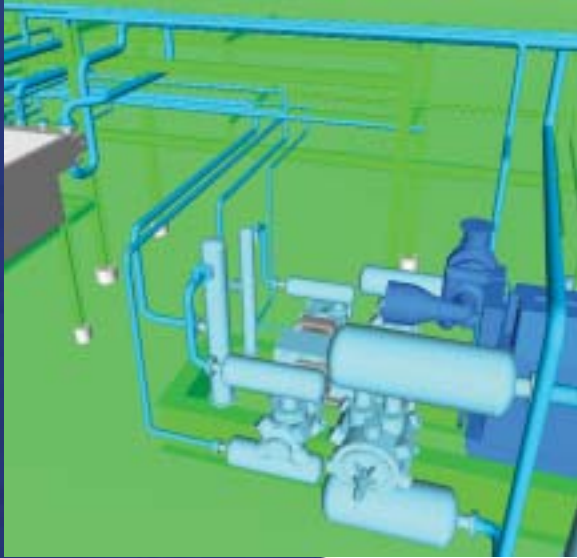
Once again, this speeds up the overall project by allowing work to be done in parallel — SALOF is able to spool up the pipe before the equipment even arrives.

Thanks to Bentley’s large, global user community, SALOF finds that many of its customers have already standardized their own design processes on AutoPLANT.

This makes it even easier to walk through system designs with customers, and it creates a comfort level between customer and vendor

that is often hard to build from scratch. It also allows customers to make changes to designs from SALOF, instead of trying to verbalize everything to a SALOF engineer and have the engineer interpret the new instructions. On average, it takes SALOF less than four weeks to progress from initial schematics to final design, a process that once took six to eight weeks.





SALOF estimates that it saves up to \$5,000 (USD) on engineering costs alone on typical projects, a figure that can increase the profitability per project while allowing SALOF to bid more aggressively.

## Highlighting SALOF's Expertise

While many engineering firms are hesitant to standardize on a single platform, SALOF has found it to be a significant competitive advantage. "AutoPLANT software complements our experience with AutoCAD®," says Johnston. "Not only does this allow us to generate original, custom-built plants quickly and easily, it also eases the training and increases the productivity of our entire staff. I can't stress enough how much it makes the expertise of our engineers really shine. It takes a lot of confidence on the part of our sales engineers to guarantee projects on time, on budget and within extremely narrow windows of opportunity. Bentley software makes this possible by giving us the tools we need throughout the project life cycle."

SALOF has undergone Level 2, Advanced 3D Piping Package training. According to Johnston, SALOF's team originally expected a long 3D learning curve but they were pleasantly surprised to see how easy it was to take knowledge from the classroom and apply it straight to project work. "From contract signed to ship, we deliver within four to five months and this just wouldn't be possible without Bentley technology, support and commitment to the user," says Johnston.

For more information on Bentley please contact us.

1-800-BENTLEY

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