Ward Vessel & Exchanger: Beyond the blueprint -

As a manufacturer specializing in industrial heat transfer equipment, Ward Vessel & Exchanger is dedicated to delivering exceptional service and value. The company's guiding principles are centered on continuous improvement (via innovations and research) and always prioritizing people, including employees, families, and the communities it serves. Heat Exchanger World recently interviewed Jon Ward, President of Ward Vessel & Exchanger, to discuss the factors that distinguish the company in the heat transfer industry and why a people-first approach has remained a fundamental aspect of its values over time.

The Ward Vessel & Exchanger sales team conducting their mid-week follow-up meeting.

By Ellie Pritchard and Sara Mathov, Heat Exchanger World

Initially established in 1982 as 'Ward Tank Corporation', Ward Vessel & Exchanger has been providing quality solutions to its customers for over 40 years.

In 1982, during the energy crisis recession, brothers John and Don Ward initiated Ward Tank Corporation in Charlotte, North Carolina, USA. They began in a small location outside downtown Charlotte and later relocated in 1987 to Harris Blvd as the company expanded. The facility has grown through numerous expansions. In 1996, recognizing the evolution of their services, the company underwent a significant transformation by changing its name to Ward Tank and Heat Exchanger as a reflection of their expanding capabilities and the growing demand for their expertise in designing and building heat exchangers. This shift demonstrated the Wards' commitment to not only manufacturing tanks but also to delivering high-quality, efficient, and innovative heat exchanger solutions. As Jon Ward tells us now: "We are always striving to be better than we were yesterday."

Trusted legacy, new developments

Fast forward to 2017, the company took another stride towards aligning its identity with its advanced capabilities. The rebranding to Ward Vessel & Exchanger was a deliberate step that encapsulated the sophistication and precision that had become synonymous with their projects. "In our industry, there is a perceived quality difference between a heat exchanger and pressure vessel, versus a tank. Heat exchangers and pressure vessels fall under the ASME Code, whereas tanks fall under the API Standard,"

Ward Ownership Group (left to right, Jon Ward, Bob Besh, and Tim Ramsey).

prioritizing people and progress through innovation

says Jon Ward. "We were not building field erected tanks and/or traditional shop tanks as often and needed to ultimately align the company name to be a better representation of the sophisticated, quality work we were doing at the time, so the renaming in 2017 was necessary." The new name echoed the quality engineering that went into each vessel and heat exchanger they crafted.

In 2003, Jon Ward, son of founder Don Ward, was promoted to President of the company. "By the time 2003 rolled around, in the wake of another recession post 9/11/01, it was time to turn the company over to the next generation," Jon explains. In 2005, after hearing the demand by many of their customers, the company opened a grassroots facility in Houston, Texas, USA. "We did a lot of work in the Gulf states, but over time, we realized that Texas was the place we needed to be with brick and mortar." Says Jon. "Originally, we leased a small location and hired some local employees in Pearland, TX; a year later we bought a facility a couple of miles down the road, and ultimately built a state-of-the-art modern fabrication shop in Fort Bend County, Houston, in 2015." Following their developments in Texas, the company built a new 4,500 sq ft machine shop in Charlotte and, in March of 2022, expanded its corporate office into a new 13,000 sq ft complex located next door to the fabrication facility.

For the future, Jon sees the most growth occurring in the company's Field Service Group and in the Houston facility. "We have purchased four acres of land next to our existing facility and we plan to expand there, as we did with the Charlotte location."

Customers trust competency

Ward Vessel & Exchanger is a prominent figure in the heat transfer industry. The company's core focus encompasses pressure vessels, columns, reactors, and shell and tube heat exchangers.

Ward's expertise extends across diverse industries, including petrochemicals, oil and gas, pharmaceuticals, food and beverage, clean water filtration, and energy sectors. A cornerstone of the company's approach lies in their unwavering commitment to engineering, quality, and fabrication processes that transcend the minimum stipulations of the ASME Code, Section VIII, Div. 1. Ward Vessel & Exchanger holds both a U & R stamp from ASME.

Jon emphasizes that their customers' loyalty is a product of more than just functional design capabilities. Beyond the thermal and mechanical engineering competencies and their advanced fabrication facilities, they cultivate a customer relationship based on partnership. Ward asserts, "We are not here for the one-time projects; we look to partner with our customers – helping them achieve their goals year after year."

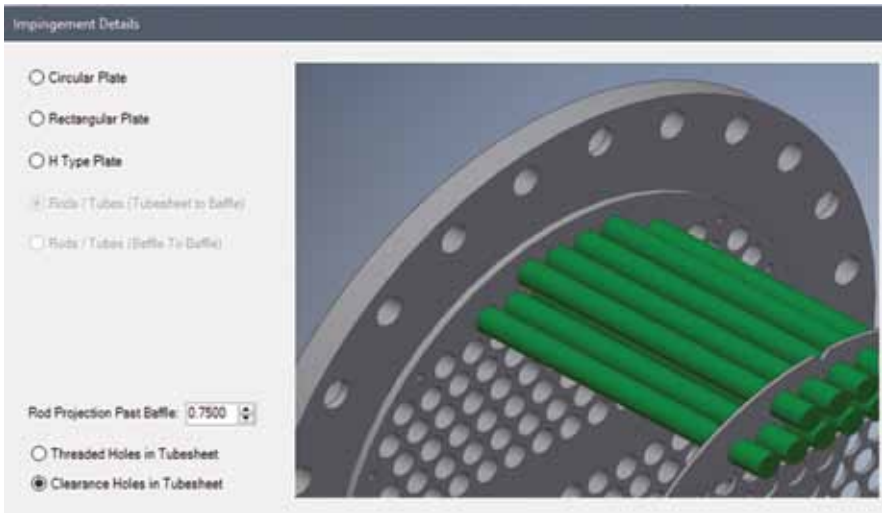
"We are always striving to be better than we were yesterday."

Central to Ward's operational efficiency is an expansive engineering team, surpassing the size typical of fabricators of their stature. This enables a unique approach where the relationship with the customer is given paramount importance. This client-centric philosophy extends to their direct sales model, with customers benefiting from a single point of contact overseeing every aspect of their project's progression. "We want to create the best possible experience for our employees, our customers, and our partners," Jon explains. "This single contact point means we can nurture trusted connections with our customers, and they will have that contact person with them throughout the process. We make sure we exceed client expectations and secure long-lasting relationships."

Software innovations

It is hard to overstate the progressive mindset of Ward Vessel & Exchanger. Jon himself says that the team works in a constant state of 'Positive Discontent': "We are never satisfied with where we are at. We are always trying to move forward and make things better."

In recent years, the company has introduced a unique approach to fabrication engineering through their



The Impingement Pop-up Screen shows the graphical easy-to-understand nature of the program.

proprietary software, 'Projex'. This innovation, honed over two decades, streamlines everything from initial quotes and design to fabrication. Projex autogenerates a bill of materials using design data, assigns specific functionalities to each part, and provides real-time updates on components throughout prefabrication stages. This comprehensive system ensures that quality control standards are met before the fabrication process begins, reducing errors and saving time and money for the customer as well.

The company embraced 3D modelling through AutoCAD's 'Inventor' almost a decade ago. This transition has offered a trifecta of advantages: expediting the design phase, facilitating shop floor operations by providing accurate visualizations, and offering customers a reliable model that integrates seamlessly into their plant design software.

Now, Ward Vessel & Exchanger is making strides in reducing fabrication time through their latest custom software initiative, 'HxCreator' and 'PvCreator'. These tailor-made interfaces streamline the 3D modelling workflow, simplifying data input by importing values from various ASME code design software tools. The Creator features intuitive drop-down menus and graphical inputs for swift entry of essential design data for any unit.

In particular, the 'HxCreator' software enables efficient management of baffle, cage, and tube layouts using a straightforward ACAD 2D tube sheet layout, facilitating the automated generation of the 3D model/drawings. This approach embeds the company's high standards within the interface, ensuring rapid and consistent design completion. This acceleration equips customer project teams and workshop personnel with comprehensive information earlier in the process, not only enhancing efficiency but also empowering precision and informed decision-making across the board. "Essentially, this program is going to result in higher quality products, leaving fewer questions unanswered across the board," Jon explains.

Further advantages of HxCreator:

- Streamlined DXF generation for burn shapes, reducing risk of human error.
- Automated PDF creation for vendor sketches and sends notifications to Purchasing and Vendor departments upon any model alterations.
- Design aids for front-end engineers, such as expedited inputs for gasket dimensions and body flange type, instantly generating the body flange - tubesheet joint. This enables rapid feasibility assessment and efficient final design determination.

"We want to create the best possible experience for our employees, our customers, and our partners."

Quality, quality, quality

Ward Vessel & Exchanger operates an impressive quality control program, employing Level III and Level II inspectors. "We have standalone Quality Control Managers who oversee both of our shops and our field service crew, and then each one of them report through our Director of Quality and Engineering and then directly to the President of our Company," Jon explains. "Our experienced QC staff enables in-house

Radiography of tube to tubesheet welds

5-axis burn table technology laying out and cutting nozzle penetrations in the dished head.

NDE (non-destructive examination), including PMI (positive material identification), helium leak detection, radiography, liquid dye penetrant, mag particle testing, and examination, etching and polishing of weld joints/ mock-ups."

The company's 4,500 sq. ft. machine shop features three CNC centers for tubesheet and baffle machining, ensuring quality up to 12 ft. in diameter. By managing manufacturing and testing in-house, they ensure swift, high-quality task execution, a cornerstone of their approach.

"Quality is so important to us because, in our minds, it's not about what we do but HOW we do it," says Jon. "We want to be setting that high standard in everything we do."

Commitment to progress

Ward Vessel & Exchanger is an active participant in key industry associations such as MTI, TEMA, STI, SPFA, LCA, and TCC. This strategic engagement empowers them to better serve their industry. According to Jon Ward, these associations offer valuable firsthand insights into the challenges faced by customers, suppliers, and competitors, which they leverage to develop effective solutions.

A heat exchanger nearing completion photographed with Inside Sales Manager, Tomas Canchola

The company's commitment to staying ahead is demonstrated through dedicated resources for team attendance at conferences, webinars, and training sessions. This proactive approach ensures they remain well-informed about emerging trends and adaptable to evolving practices. Jon emphasizes, "Our team maintains diverse industry connections, allowing us to monitor market dynamics and anticipate changing needs."

Driven by the ethos that "If we are not growing, we are dying," Ward Vessel & Exchanger not only invests in associations but also channels significant effort into their own R&D initiatives. A testament to this drive is their aforementioned software programs, 'Projex', 'HxCreator' and 'PvCreator'. Beyond this, the company harnesses advanced equipment to refine fabrication processes. For instance, it was an early adopter of five-axis burn table technology, enabling precise hole cutting with prepped weld bevels in dished heads. Furthermore, the company boasts one of the few automated welding machines for half-pipe reactors nationally, ensuring high quality welds and extended equipment life cycles.

The central aim behind this is for the company to offer a one-stop-shop service for its customers and provide assistance at every stage. "We want to be able to help customers in our fabrication facilities and on-site, we want to be an engineering resource and a technical thought leader," says Jon. "So, regardless of the challenge a customer is facing with their heat exchanger or pressure vessel, they can call us and we can assist." ■

Product offering

Ward Vessel & Exchanger addresses diverse requirements for shell and tube heat exchangers, with shell sizes ranging from 4" to 264" in diameter and design pressures spanning full vacuum to 5000 PSI. The company's design and fabrication facilities prioritize efficient and cost-effective designs. Leveraging Aspen Technologies for thermal and mechanical designs ensures accuracy with high quality automatic tubesheet drilling equipment, accurate to 0.0002".

All standard TEMA configurations are offered in accordance with ASME Code, Section VIII, Division 1 and TEMA C, B and R requirements. Special fabrication requirements such as 100% radiographed welded tube ends and stress relieving are also available.

For more details on product offering, check out the website: https://wardvesselandexchanger.com/heatexchangers/