OCTAVE

BROCHURE

Analysis solutions for food and beverage industry

Integrated analysis software for accurate and efficient design





Discover Octave's analysis solutions

Introducing Octave's Analysis solutions – now called Octave Aspect. It's a cutting-edge collection of tools designed to revolutionize engineering analysis and design. This comprehensive suite offers unparalleled flexibility and scalability, streamlining every aspect of the analysis process for several industries, including food and beverage. With Octave's Aspect solutions, you gain access to powerful tools that effortlessly create intelligent 3D models, setting a new standard of excellence in design. Unlock the full potential of your engineering projects and experience the future of analysis tools.

Octave's Aspect solutions include:

- Aspect Pipe Stress (formerly CAESAR II)
- Aspect Pressure Vessel (formerly PV Elite)
- Aspect Structure (formerly GT STRUDL)
- Aspect TANK (formerly TANK)

Improving safety and reliability of food & beverage facilities

Designed to assist organizations in the food and beverage sector, Octave's analysis solutions facilitate the comprehensive building of facilities from the ground up. From concrete foundations, to enclosed warehouse structures and everything in-between, Aspect Structure is a structural analysis solution well-suited for facility design of any type.

Pipe bridges and piping/platform support structures for securing segregated and sanitary transfers of fluids can be designed for food and beverage facilities while complying with international standards and codes including IBC, ASCE 7, ASIC and ACI. Structural systems can be designed to ensure buildings can carry all types of loads such as dead, live, wind, seismic, snow and ponding. It is critical that these structures are analyzed for explosion loads due to the number of food production appliances, mechanical components, pressure vessels and flammable liquids/gases in enclosed spaces.

Interoperability with design solutions including Octave Forte 3D (formerly Intergraph Smart 3D) and Octave Forte 3DWorx (formerly CADWorx), ensures piping that penetrates through walls is minimized to prevent unhygienic events such as insects or rodents entering the facility. Informative and accurate routing of pipes during the building design phase is also critical as engineers must ensure piping designs for hot products don't intersect with pipes carrying cold food products, cold processing water or other critical cold liquids.

Pipe routes can be transferred directly from Octave's design solutions to Aspect Pipe Stress for analysis. Once resultant pipe forces are understood, loads from Aspect Pipe Stress on support locations can be transferred to Aspect Structure for further structural engineering analysis, while loads on nozzles can be read by Aspect Pressure Vessel for local stress analysis.

For food processing, Aspect Pressure Vessel enables the creation of jacketed tanks (or vessels) for cooking large quantities of food such as wine, chocolates or sauces. Properly designed tanks are critical to an efficient, hygienic food processing operation. These tanks are used to ensure food is processed evenly, or in the case of chocolates, to maintain precise temperatures during the melting, tempering and cooling stages. In both cases, jacketed tanks need to provide accurate temperature control, often whenever or wherever direct heat could cause damage or spoilage. Non-jacketed tanks such as atmospheric and mixing tanks can be designed using Aspect Tank for wine, beer or other similar applications. Each must be engineered to adjust to load changes, in addition to internal/external pressures.

For food and beverage facility design and beyond, Octave's integrated analysis solutions are the smart choice.

More efficient assets for sustained quality

Aspect Pressure Vessel is one of the most valuable integrated solutions for any food and beverage operation.

In the food and beverage industry, high-pressure processing is critical to ensuring products are not subject to spoilage or microorganisms, in addition to altering the food's structure to achieve qualities desired by customers.

Examples of products that use high-pressure processing:

- Milk and yogurt products
- Seafood
- Meat products
- Dips and spreads

Aspect Pressure Vessel allows organizations to easily design pressure vessels and analyze them, ensuring high pressures are maintained and the overall design can accommodate these pressures throughout their processing lifetime.

But what about further optimizing operations and monetary savings? Aspect Pressure Vessel's heat exchanger design and analysis tools help organizations find more significant savings potential and optimization in food and beverage operations.



Heat exchangers are typically required for:

- Milk and cheese pasteurization
- Beverage and juice pasteurization
- Beer wort heating and beer cooling
- Soft drink and sports drink heating
- Bottled water treatment
- Heating and cooling for soups and sauces

See a substantial return on your investment as you witness your energy costs decline over time by recycling heat (or cold) from assets throughout your process system. Use heat exchanger design to ensure products stay within specific temperature ranges, ensuring longevity and allowing excess heat to be used in other processes.

Heat recycling not only contributes to cost reduction but also bolsters productivity across the board. By diverting heat effectively, your business can ensure its processes are as safe and optimized as possible. This roundabout treatment of heat results in a highly productive lifecycle for your food and beverage operation, drastically improving efficiency while reducing environmental impact.

50–70%
Savings

Did you know?

The potential energy savings from regenerative heating using heat exchangers can be 50-70% according to "The Handbook of Water and Energy Management in Food Processing" – 2008

Streamlined hygienic design

It is critical that assets designed for the food and beverage industry comply with specific standards to ensure sanitation requirements are met. Equipment must be made of premium-grade materials, ensuring a hygienic environment for all liquids and foodstuffs being processed. Food-grade stainless steel is the material of choice due to its resilience and non-corrosive properties—a potent safeguard against potential contaminants. Besides its robustness, food-grade steel effortlessly withstands extreme temperatures and pressures.

Utilizing materials like ASTM 304, 316 or 430-grade steel for pressure vessels and piping systems is important due to their unique chemical resistance. This becomes especially important when these assets are exposed to acidic compounds found in products like tomato or orange juice.

Employing streamlined software like Aspect Pressure Vessel or Aspect Pipe Stress enables organizations to design their pressure vessels or piping systems by utilizing the right stainless-steel alloy. These tools offer precise analysis and efficient design capabilities, making sure that your chosen steel grade meets the varied requirements of your operation.

Food & beverage industry benefits:

- Develop crucial warehouse infrastructures like piping/ platform support structures and pipe bridges for building food and beverage facilities from the ground up
- Efficiently conceptualize and examine tanks, jacketed tanks, piping configurations and pressure vessels, tailor-made for food and beverage activities
- Enhance the effectiveness of heat recirculation across facilities
- Employ food-safe steel in designs, guaranteeing hygiene standards
- Craft integrated systems, compatible with clean steam generators to maintain asset cleanliness

By using solutions for:

- Pressure vessel design and analysis
- Structural design and analysis
- Piping design and analysis
- Tank design and analysis





Additionally, a thorough system for maintaining sanitation safeguards the reputation of your business, reassuring customers about the quality and safety of the food and beverages they consume. Instituting such rigorous sanitation management processes contributes significantly to industry best practice standards and can yield both increased customer satisfaction and regulatory compliance. From streamlining operations to enhancing the overall quality of the food and beverage production process, the intricate design of sanitary process systems, enabled by Aspect Pressure Vessel and Aspect Pipe Stress, is vital for success in the food and beverage industry.

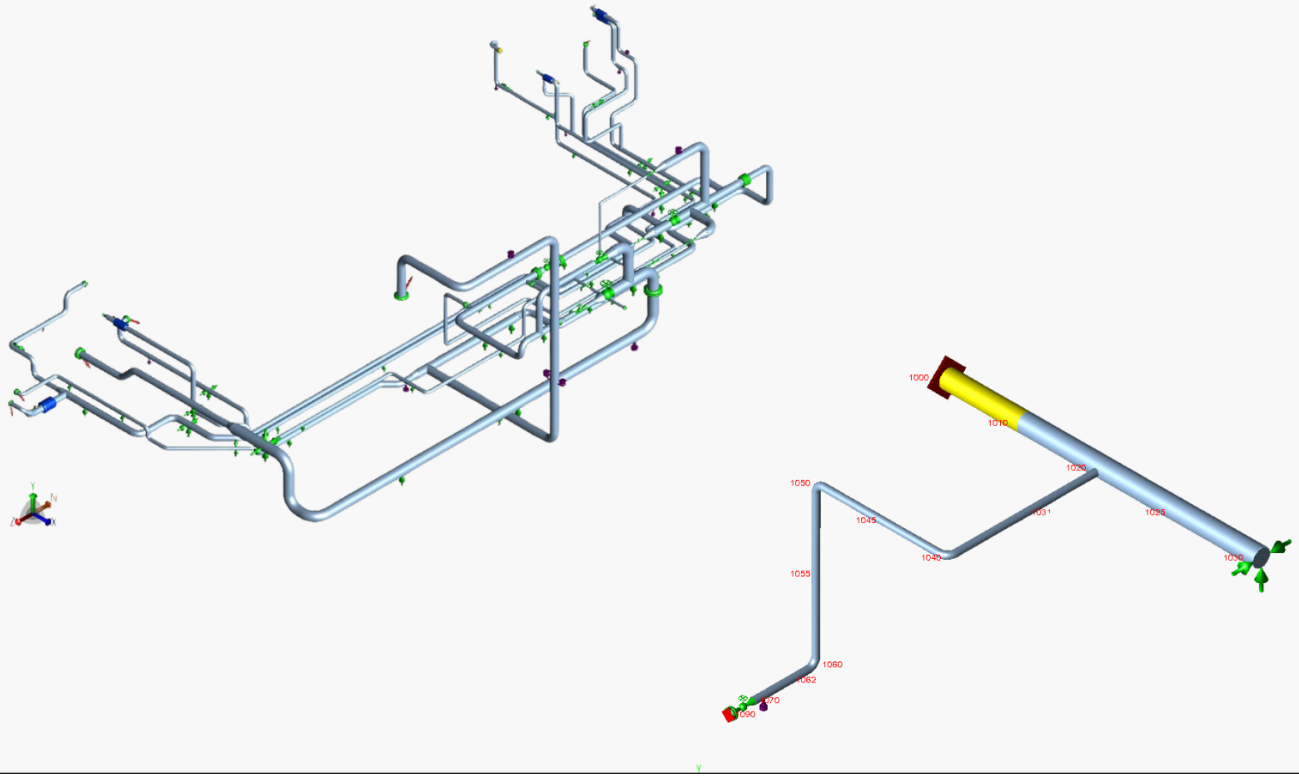
Organizations also need a solution for keeping pressure vessels clean, which is where the design of sanitary process systems comes into play. Both Aspect Pressure Vessel and Aspect Pipe Stress can be used for creating systems compatible with clean steam generators, ensuring the foodstuffs and liquids inside both pressure vessels and piping stay sanitized using clean steam.

The multiple temperature conditions in Aspect Pipe Stress combined with the automatic recommendation of load cases covering all possible conditions, not just ambient-to-operating but also covering all extremes, can significantly streamline manual workflows and reduce the potential for mistakes.

Hygiene-centric designs are not confined to food production operations but also extend to commercial kitchen environments. For companies operating these large-scale kitchens, it is imperative that every use of sanitary valves, tap pumps and other related fittings meets stringent hygiene standards. Leveraging Aspect Pressure Vessel can help ensure these fittings, particularly valves and pumps, maintain consistent design across multiple kitchens or facilities.

For organizations needing to implement clamped connections across kitchens or facilities, Aspect Pressure Vessel allows nozzle to pipe flange clamp analysis to be performed as per ASME VIII Div 1 Appendix 24. Widely used in the sanitation field, analysis of these connections is imperative for safe design.

Having standardized designs simplifies maintenance processes, reduces the risk of equipment downtimes and facilitates a more cohesive and coordinated workflow. This uniformity not only streamlines the setup for new business locations but also paves the way for a more effortless scaling-up strategy, ultimately boosting the overall productivity and profitability of the enterprise.



Octave Aspect Pipe Stress

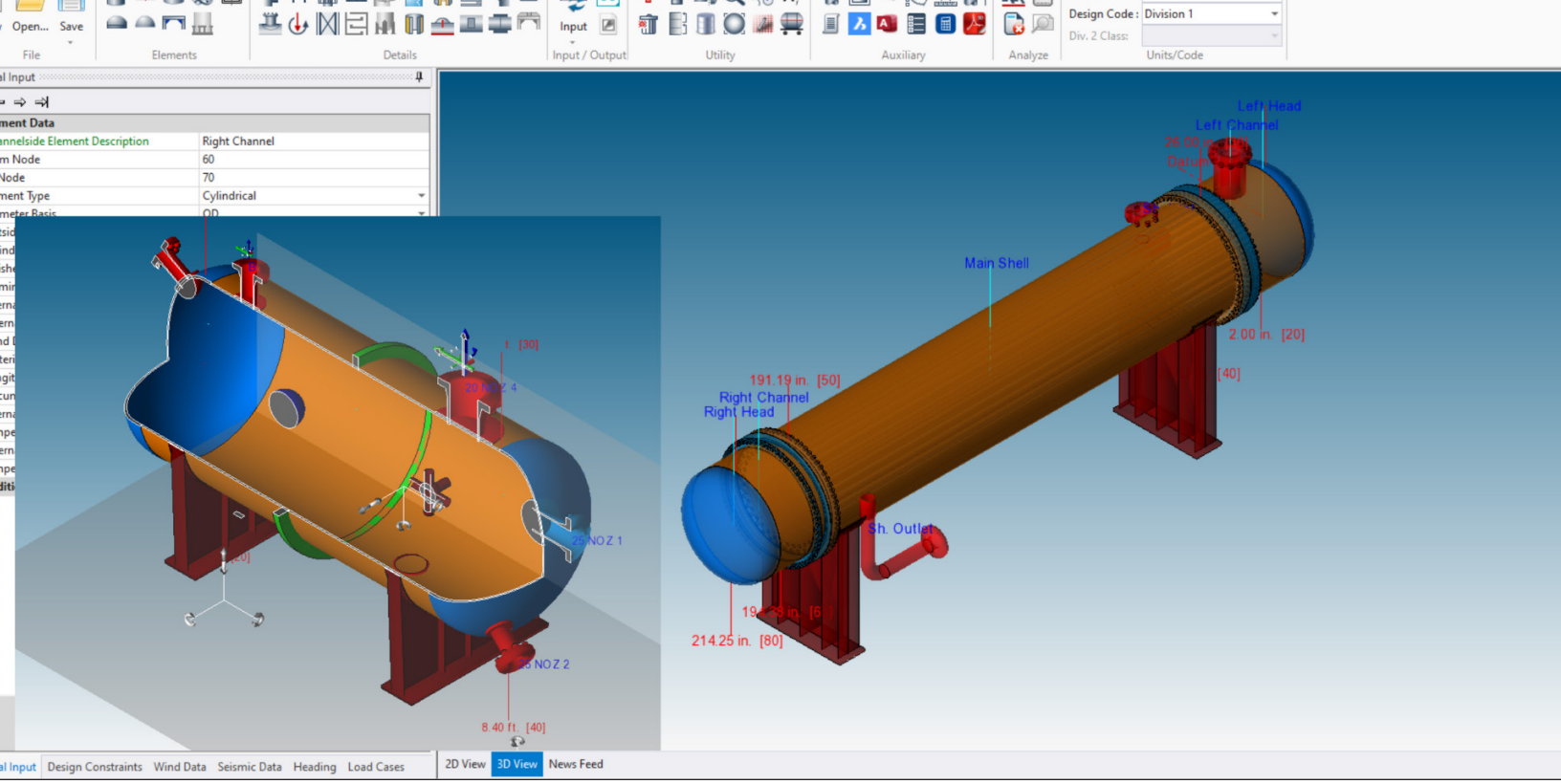
The engineer's standard in pipe stress analysis

Aspect Pipe Stress is the industry-leading software for pipe stress analysis, enabling engineers to design and evaluate piping systems of any size, type and complexity. Whether you are working on underground, above-ground, offshore or subsea piping, Aspect Pipe Stress can help you comply with more than 40 international codes and standards, as well as your own custom specifications.

With Aspect Pipe Stress, you can perform static and dynamic analysis, account for wind, wave, seismic, thermal and pressure loads, weight and support loads and also optimize your piping design for safety, performance and cost.

Develop and conduct analysis on piping designs and integrated systems for clean steam to ensure hygienic standards throughout operations. Create piping with food-grade steel, ensuring sanitary standards are met.

Aspect Pipe Stress is the trusted choice for thousands of engineers and piping professionals worldwide. Whether you are designing a new system, modifying an existing one, or performing a fitness-for-service assessment, Aspect Pipe Stress can help you deliver your projects on time, on budget and with confidence.



Aspect Pressure Vessel

Industry-Leading pressure vessel analysis software

Aspect Pressure Vessel stands at the forefront of pressure vessel design and analysis solutions, containing every major code and standard needed to engineer innovative designs for both vessels and heat exchangers in the food and beverage industry.

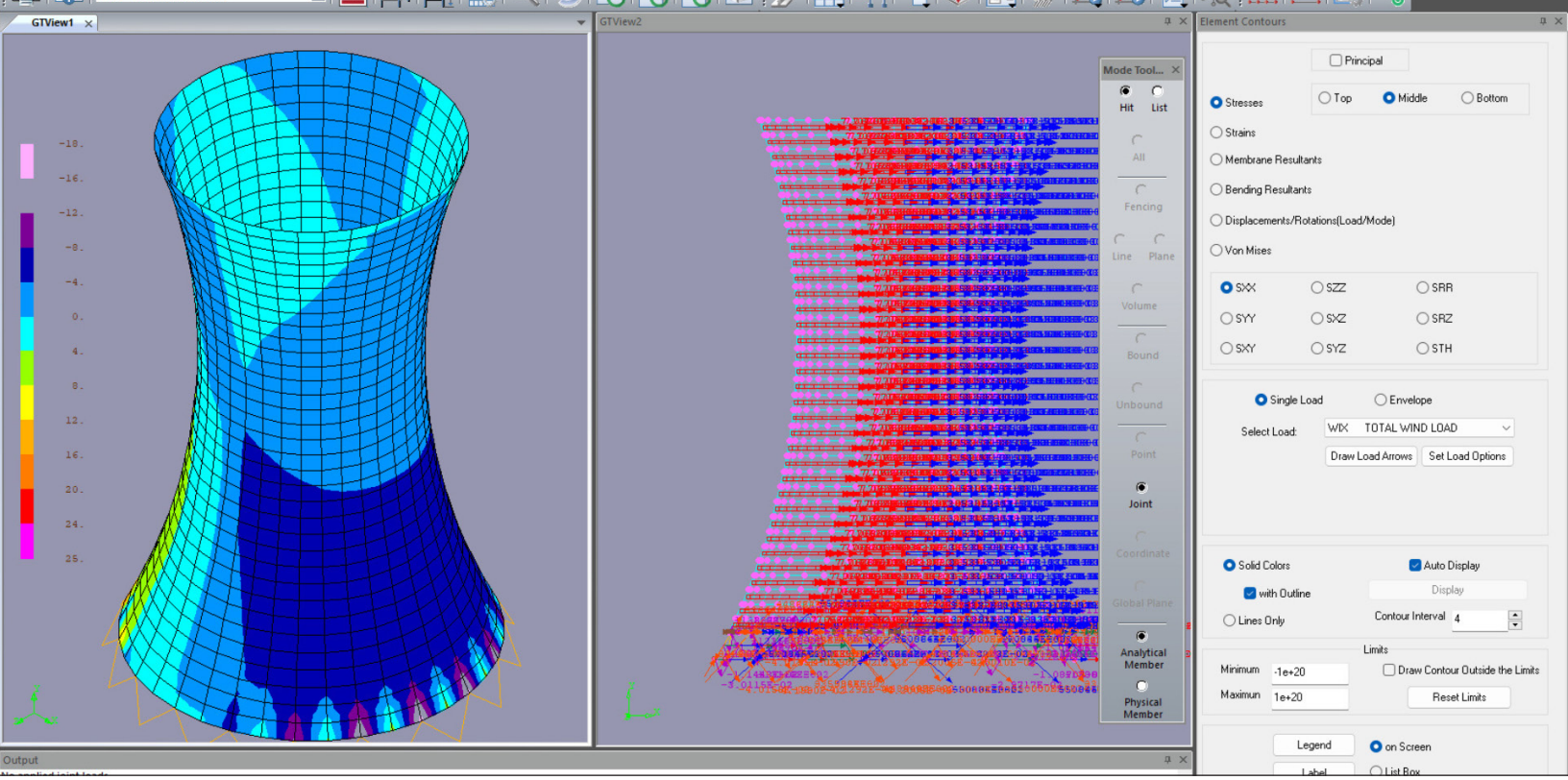
Automated 2D and 3D visualization enables easier design, analysis and review, in addition to improved communication between engineers and fabricators, saving valuable time and resources.

With the ability to perform fitness-for-service assessments on older equipment, you can extend the life of your assets and ensure their safety and reliability for years to come. This data can be easily verified using a variety of equations and reporting methods.

Pressure vessel systems can also be designed using food-grade steel while ensuring those systems are integrated with clean steam generators for increased hygiene.

Easy heat exchanger design allows organizations to improve asset performance, minimize spoilage and save money through heat recycling across the facilities.

Design, analyze and innovate with confidence using Aspect Pressure Vessel while streamlining your workflow to save you time and resources.



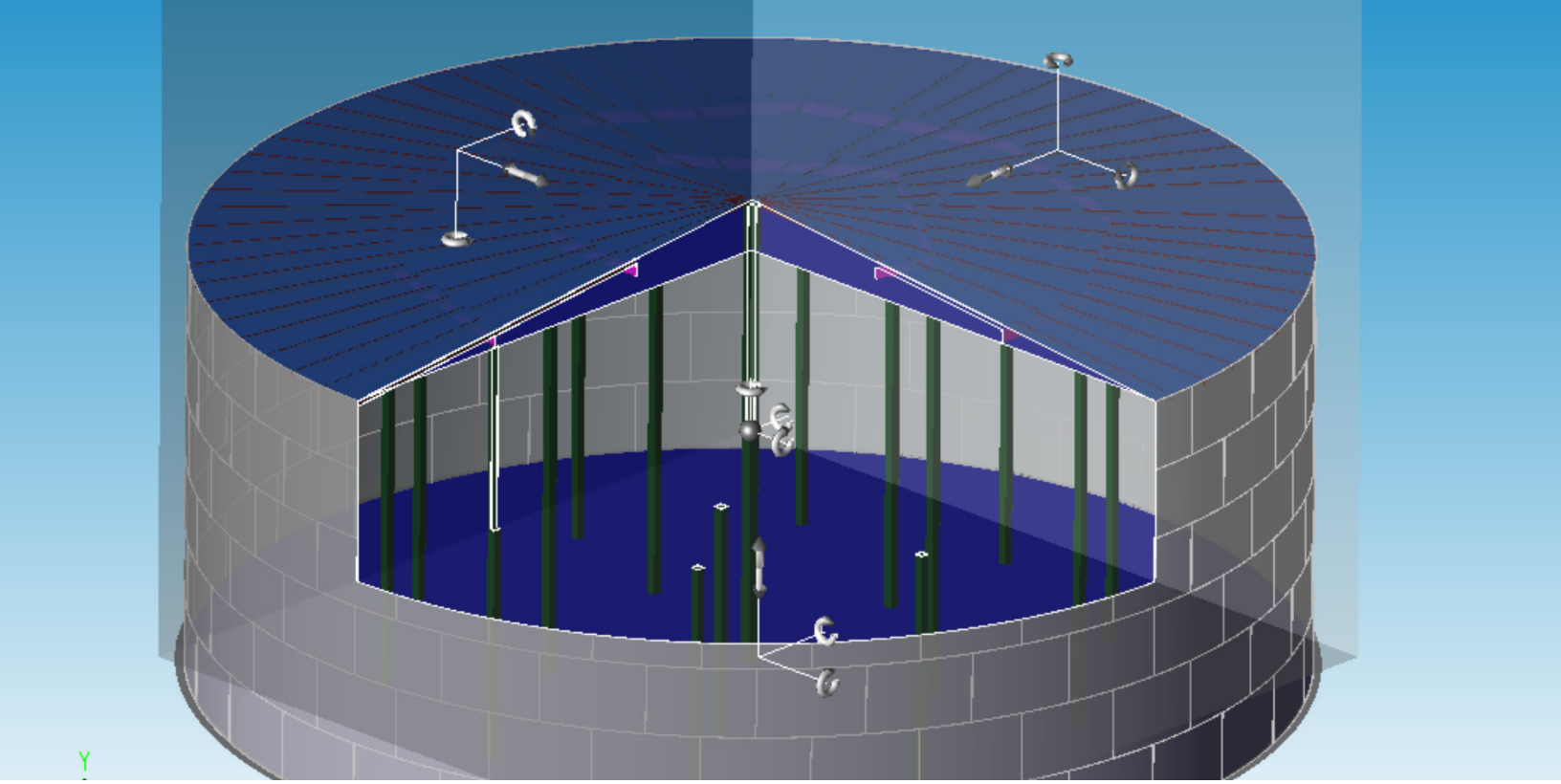
Aspect Structure

Comprehensive structural analysis and design

Aspect Structure is a must for any organization seeking to ensure their structural designs are safe and up-to-code, while at the same time being cost-effective and efficient.

With Aspect Structure, engineers can consider weight, pressure, thermal, seismic, or any other static or dynamic conditions. Aspect Structure also features beam and finite element analysis (FEA), providing a complete range of design codes, including AISC, ACI, Canadian, European, Indian, Chinese and NF codes.

With Aspect Structure, you can validate the viability and integrity of your structural projects, including enclosed warehouse structures and piping bridges, anywhere in the world. Trust Aspect Structure for your structural analysis and design needs, and achieve safety, performance and cost-effectiveness.



Aspect Tank

Comprehensive tank design and analysis for product storage

ransform your storage tank analysis with Aspect Tank, the cutting-edge software designed to streamline and enhance your engineering experience. With its intuitive menu-driven interface, Aspect Tank simplifies the complex process of adhering to American Petroleum Institute (API) standards, ensuring precision and reliability in every analysis.

Embrace unparalleled flexibility as Aspect Tank empowers you to select any unit combination for analysis or reporting. Its user-definable unit files liberate engineers from restrictive defaults, offering the freedom to tailor settings to your unique requirements and even convert existing jobs to any unit format with ease.

Aspect Tank's intelligent user interface presents only the necessary information at each step, eliminating the hassle of out-of-sequence data entry. It asks for what's needed, when it's needed, making your workflow as efficient as possible.

Stay compliant with confidence; Aspect Tank performs calculations in strict accordance with the latest API Standards 579, 620, 650, and 653. It also accounts for environmental factors such as wind, seismic activity and settlement conditions, plus calculates air venting requirements to API 2000 Section 4.3.

Elevate your engineering projects with Aspect Tank – where precision meets flexibility.

Take advantage of integrated solutions

Octave's array of analysis tools seamlessly merges with other offerings within Octave's software catalog, such as Forte 3DWorx (formerly CADWorx) and Forte 3D (formerly Intergraph Smart 3D) to enhance food and beverage projects.

Furthermore, organizations can enhance team collaboration by linking analysis results with Octaves advanced data and document management system. Serving as a nexus for data amalgamation and interoperability, this system harmonizes and assimilates all analysis data within your organization, promoting synergy among different teams and departments.

For example, Aspect Pipe Stress can share pipe load data which allows structural departments to access these loads through Aspect Structure for designing pipe supports. This cross-functional operation can yield significant cost savings by eliminating rework, maximizing circumvention of errors and fostering collaboration across various disciplines and departments.

Similar bidirectionality is possible through integrations between Aspect Pipe Stress, Aspect Pressure Vessel, Forte 3D and Forte 3DWorx. Each allows the transfer of design data, eliminating rework during project design, construction and maintenance phases. Aspect Pressure Vessel shares a bidirectional link with Forte 3DWorx, allowing design alterations in either software to be synchronized with the other, reducing data entry errors and saving time.

Pipelines with their analysis data and conditions can be exported from the design tool to Aspect Pipe Stress and vice versa. This integration not only speeds up modeling time per pipeline, but also enables analysts to consider possible design changes or improvements within the context of the original model. Aspect Structure also integrates with Forte 3DWorx and Forte 3D for modeling and analysis, in addition to Octave OnSite Construction (formerly Smart Construction) for modular and staged construction sequence analysis.

This interoperability empowers Octave customers to collaborate on varied food and beverage projects with diverse teams. Harness collaboration between departments and disciplines with Octave's interoperable design and analysis solutions to see improved productivity, more accurate results and a unified digital ecosystem.

Interested in learning more about Octaves analysis solutions or how they integrate with other products?

Get in touch with our team here.

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property and assets – for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency, and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.

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