CASE STUDY

Austral corrects erroneous analysis on fast-track project with Octave Aspect Pipe Stress

Key facts:

Company: Austral Diseños Industriales

Website: www.adinsa.com.ar

Industry: Power generation

Country: Algeria

Octave products used: Aspect Pipe Stress *(CAESAR II),* Forte Isogen *(Isogen)*

Key benefits:

- Addressed erroneous analysis
- Demonstrated needed changes
- Completed analysis in just two weeks with Aspect PipeStress automation

Austral Diseños Industriales (Austral) provides engineering for oil & gas companies and to the thermal and power generation sectors, including the design of boilers and furnaces. With clients across Europe and Argentina, projects encompass static equipment and plant design, stress analysis, support design and construction.

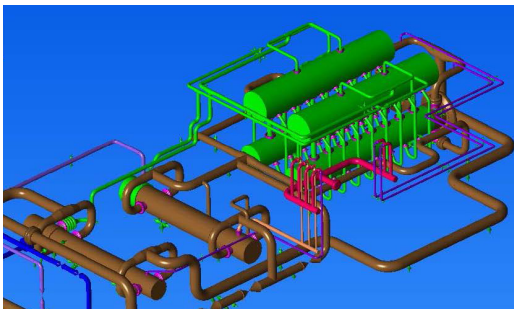
Identifying goals

Austral Diseños Industriales provided the engineering and analysis for an innovative US$441 million project. The integrated solar combined cycle (ISCC) plant in Hassi R'mel, Algeria, is the world's first facility combining solar energy with conventional gas generation. The 170 megawatt (MW) power plant includes 20 MW solar fields added to the 150 MW from gas and steam turbines to produce energy for export to Europe via undersea cables.

The project included the Heat Recovery Steam Generator (HRSG) boilers and air condenser and uses a hot oil fluid (HTF) plant to exchange energy with water to generate steam of 160,000 kg/h at 92 bar pressure at 370°C. The solar field contains 183,000 m2 of mirrors and ASTM A106 Grade B pipe in varying diameters with temperatures of 400°C and 115 bar pressure.

Overcoming challenges

With a tight 33-month project schedule and construction already in process, Austral had few possibilities to change the design. A major challenge came when it discovered the previous stress analysis was erroneous



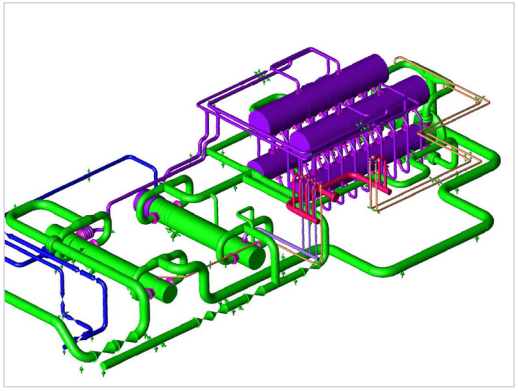
because the system had been analyzed as independent pipes and the connections with the equipment analyzed as anchor points without movement or consideration of the maximum loads over nozzles.

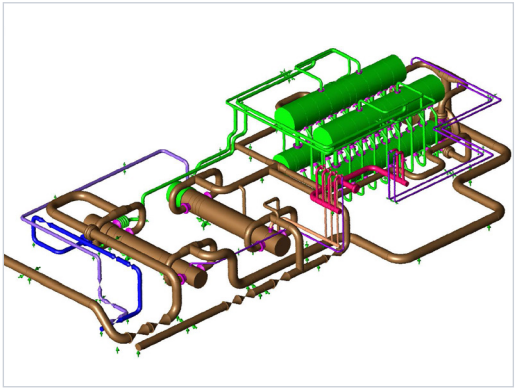
Using Aspect Pipe Stress for stress analysis, Austral was able to show the client the system's complexity and how it all works together. Austral included the initial model's problems and the needed changes, correcting these problems to guarantee a safe startup and operation. The team used the Forte Isogen module built into Aspect Pipe Stress to automatically produce the isometric drawings and then produced the calculation deliverables.

With construction already underway, Austral would not have been able to uncover the previously done erroneous engineering analysis without Aspect Pipe Stress's capabilities, and it could not have met the client's schedule. It would have been too difficult to carry out this project without Aspect Pipe Stress, not only to analyze the stresses, but to define the new type of supports, make pipe changes and visualize how the pipe and equipment work together under different operation conditions.

"It would have been too difficult without Aspect Pipe Stress, not only from the stress point of view but also because of the project's complexities. Without Aspect Pipe Stress, we could not have completed the project on time and still allow the rest of specialties to continue with their work."

Nicolás Duca
Mechanical Engineer & Magister Environmental Engineer, Austral





Realizing results

Aspect Pipe Stress helped Austral save time and improve accuracy, ensuring the client's confidence in Austral as a partner for repeat business.

With Aspect Pipe Stress, the team completed the analysis in only two weeks and avoided costly and dangerous inconsistencies. Austral demonstrated its capabilities on this complex analysis with the most appropriate engineering solutions.

Award-winning project

Austral received the former Aspect Pipe Stress Drivers of Success Runner-Up Award for its use of the software. The Drivers of Success competition recognized innovative applications of Octave products, impressive project results and significant benefits from collaboration among disciplines and the integration of the products.

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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