



CASE STUDY

Harder Mechanical Contractors succeeds through over 800 model changes on complex chemical plant project

Key facts:

Company: Harder Mechanical Contractors, Inc. (HMC)

Website:
www.harder.com

Industry: Chemicals & Petrochemicals

Country: United States

Octave products used:
Forte 3DWorx (*CADWorx Plant Professional*), Aspect Pipe Stress (*CAESAR II*)

Harder Mechanical Contractors, Inc. (HMC) completed a \$150M chemical processing plant design project in California for a facility that covered 10 acres and a project that entailed over 800 design changes. In business since 1934 and ranked by ENR as one of the largest specialty mechanical contractor in the United States. HMC specializes in the fabrication and installation of process mechanical/piping systems for commercial, industrial, biopharmaceutical and advanced technologies projects. Famous for its ability to tackle even the most difficult projects, this one presented some exceptional challenges.

Identifying goals

The vast 10-acre site required 100,000 linear feet of pipe ranging from ½ inch to 30 inches in diameter that had to be routed to carry chemicals among 16 functional areas, including process, utility, mechanical piping systems and related equipment. Piping types consisted of fiberglass reinforced pipe (FRP), dual laminate FRP, multiple types of lined steel, carbon steel, stainless steel and polyvinyl chloride. HMC's task was to model the entire project and produce all deliverables while implementing the Forte 3DWorx software in-house for the client and training their users, which meant developing piping standards, specifications and libraries for the client. The size of the project and an aggressive, one-year construction schedule added to the project demands.



Overcoming challenges

The owner's initial 3D model was based on a very early conceptual design, with inaccurate lines and missing most equipment, piping libraries and classes. Fortunately, HMC was asked to take over the model early. A first-of-its-kind facility for the owner, HMC had to manage the changes in the model as the project progressed to reflect the actual equipment, piping specifications and libraries required. In all, there were over 150 unique pieces of equipment modeled and over 800 changes in the design from the base model.

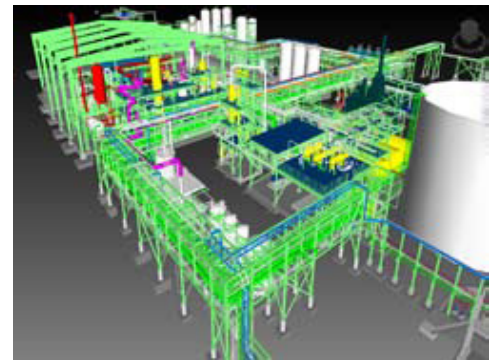
Key benefits:

- Accomplished project objectives within a demanding, one-year construction timeline
- Handled modeling for more than 150 distinct equipment pieces and over 800 design modifications
- Achieved efficient collaboration between the client, engineers, designers, and other related disciplines



Realizing results

With Forte 3DWorx for 3D modeling integrated with Aspect Pipe Stress for pipe stress analysis and Forte Isogen, HMC produced automated bills of material and isometric drawings for fabrication and field installation which involved over 200 pipe fitters on site. Forte 3DWorx allowed the client to realize the benefits of 3D modeling and automated isometric drawing production with Isogen. With Aspect Pipe Stress, HRC leveraged automated bill of materials reporting and integrated pipe stress analysis. The collaborative capabilities of the software also made it easier to coordinate among the client, engineers, designers, detailers, fabricators and field personnel.



"Forte 3DWorx helped us avoid all the project challenges associated with historic construction such as constructability issues, coordination problems, fabrications errors, material purchasing omissions and pipe support stress analysis accuracy."

Harder Mechanical Contractors

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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