CASE STUDY

Black Cat succeeds on Qatar project through accuracy and automation

Key facts:

Company: Black Cat Engineering & Construction

Website: www.blackcat.qa

Industry: Chemicals & Petrochemicals

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

Key benefits:

- Produced accurate deliverables by leveraging Octave's design and analysis solutions
- Ensured project timely completion through collaboration and automation
- Completed project without costly shutdowns

Headquartered in Doha, Qatar, Black Cat Engineering & Construction (Black Cat) has been providing engineering, procurement, installation and commissioning for three decades on complex projects in multiple industries and disciplines. Its experience and capabilities extend from oil and gas to industrial facilities and infrastructures, with it multidisciplinary teams providing clients with expertise during the feasibility phases through to the professional execution of the projects.

Identifying goals

Qatar Fertilizer Company (QAFCO) chose Black Cat to design and install a flash tank and knock-out drum for ammonia recovery and flare systems for two plants, the Ammonia 1 and 2 units, providing a three-month schedule to complete the project. Located in Mesaieed, Qatar, the project required the design of 24-inch flare headers, 18-inch and 12-inch blow down headers, a new pipe rack and a safety relief valve (SRV) outlet connection from all the equipment in the two units. Piping length totaled approximately one kilometer with diameters ranging from one inch to 24 inches in schedules 20, 30, 40 and 80. Black Cat's assignment encompassed design, erection, installation, testing, pre-commissioning, commissioning and performance testing, plus overall project management and training.

Overcoming challenges

Because 50% of the piping work was to be done with the plant shut down, full accuracy was a critical priority to ensure precise fit at installation, so that the length of the shut down could be kept to a minimum. The project required accurate engineering deliverables including as-built models and drawings of equipment, pipe racks and piping for the facility's two ammonia units to ensure both sound design and accurate deliverables for the small bore piping. Black Cat was able to leverage the visualization that Forte 3DWorx provides to ensure the accuracy of the model and design.

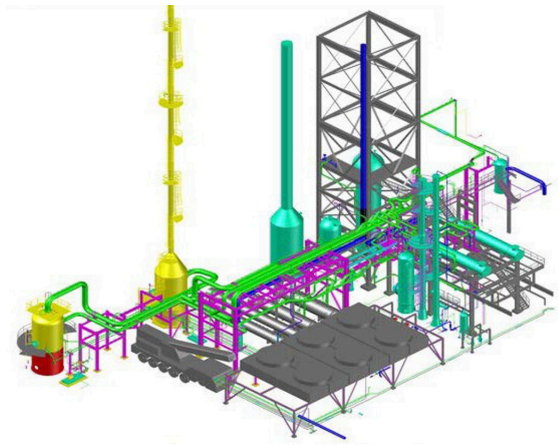
The project's demands for accuracy were compounded by the three-month schedule. Using Forte 3DWorx visualization for the modeling, Black Cat incorporated Aspect Pipe Stress and Aspect Pressure Vessel to analyze stresses on piping and vessels. This collaborative design and engineering approach with the automation of the deliverables, including bills of material, allowed it to meet these combined challenges.

"By using Forte 3DWorx, we guaranteed that the amount of site modification on the piping spools was minimal and that the piping fabrication and erection were executed smoothly."

Ahmad Akila,
Senior piping engineer,
Black Cat

Realizing results

With the capabilities of Forte 3DWorx, Aspect Pipe Stress and Aspect Pressure Vessel, Black Cat engineers saved significant time and finished the piping within a costly shutdown.



Ammonia1-Orthogeonal view

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.

©2026 Octave Intelligence plc and/or affiliates. All rights reserved.