



## FACTS AT A GLANCE

**Company:** WorleyParsons Resources & Energy, Abu Dhabi

**Website:** [www.worleyparsons.com](http://www.worleyparsons.com)

**Description:** A multinational company with more than 35,000 employees and 157 offices in 46 countries, WorleyParsons provides expertise in engineering, procurement and construction services for clients. Client projects span hydrocarbons, mineral, metals, chemicals and infrastructure sectors.

**Industry:** Oil & Gas

**Country:** UAE

## PRODUCTS USED

- PV Elite®

## KEY BENEFITS

- Addressed complex pressure vessel deliverables.
- Optimized equipment weights and costs.
- Saved about 30 percent in material costs thanks to hydrostatic analysis.
- Eliminated design inefficiencies.
- Saved time by using custom pressure vessel design solution.

## WORLEYPARSONS USES PV ELITE® FOR COMPLEX PRESSURE VESSEL DESIGN

### IDENTIFYING GOALS

WorleyParsons Resources & Energy, Abu Dhabi provided detailed engineering of the first CO2 injection project of its kind in the Middle East. With significantly less experience in this industry compared to hydrocarbons, the project presented a number of issues that needed to be adequately understood and the associated risks effectively managed.

The design of static equipment is becoming more and more complex and challenging due to development in latest codes and standards, safety requirements, industry feedback, and customer requirements.

“In such a scenario, an engineering tool like PV Elite helps us in executing a complex project,” said Mitulkumar Patel, static equipment engineer for WorleyParsons.

The firm has used Intergraph PV Elite extensively, and knew the software offered the latest pressure vessel codes and standards such as ASME Sec. VIII Div.1 and Div.2, PD5500, and EN 13445. Plus, PV Elite could produce deliverables on time with the highest accuracy.

### OVERCOMING CHALLENGES

“PV Elite is very user-friendly compared to other pressure vessel design software,” Patel said, “and it helped us make important decisions in optimizing the cost and weight of equipment.”

WorleyParsons performed complex and iterative design calculations for girth flange; MDMT, MAWP, and MAP; nozzle reinforcement; and external pressure. PV Elite provided accurate wind and seismic code calculations; foundation loading data; lifting and rigging analysis; center of gravity calculations; saddle support; and local load analysis using WRC Bulletins 537 and 297.

With PV Elite, WorleyParsons eliminated the design errors and inefficiencies that occur when there are multiple tools and platforms. WorleyParsons also avoided any concerns about codes being out of date because the software is always kept current with the latest standards. This avoided errors due to out-of-date codes and the chance of human errors due to manual calculations. PV Elite also prevented wasted costs due to incorrect calculations on equipment. The hydrostatic analysis alone saved about 30 percent in material costs.

## REALIZING RESULTS

In this project, PV Elite provided an unconventional mechanical design solution.

“Data entry is simple and straightforward, and we can easily change the default settings and customize the databases or use PV Elite’s built-in design methods for pressure vessel design,” said Patel.

For example, the design pressure of 450 barG (gauge pressure) was outside the limit per the ASME B16.5 code. Piping flanges attached to the equipment were API 6A Class 10000 which cannot be used here because API 6A is not listed as acceptable standard in Table 1.1 of Div.2.

WorleyParsons designed custom design nozzle flanges with PV Elite as per ASME Sec.VIII Div.2 Part-4 to resolve this design challenge. PV Elite saved the company man-hours with its automated tools, sharing of information, and pre-defined data for design, plus it performed quick calculations of FEA.

## AWARD-WINNING PROJECT

WorleyParsons received the 2015 PV Elite Drivers of Success Runner-Up Award for its use of the software. The annual Drivers of Success competition recognizes innovative applications of Intergraph® products, impressive project results, and significant benefits from collaboration among disciplines and the integration of the products.

## ABOUT INTERGRAPH CADWORX & ANALYSIS SOLUTIONS

Intergraph CADWorx & Analysis Solutions is part of Intergraph Process, Power & Marine. It develops and supports the following products: CADWorx®, for plant design; CAESAR II®, for pipe stress analysis; PV Elite® and Visual Vessel Design, for pressure vessel analysis; TANK™, for storage tank analysis; and GT STRUDL®, for structural analysis.

Soon to be known as Hexagon Process, Power & Marine, Intergraph Process, Power & Marine is the leading global provider of engineering software for the design, construction and operation of plants, ships, and offshore facilities.

Hexagon Process, Power & Marine is part of Hexagon (Nasdaq Stockholm: HEXA B; hexagon.com), a leading global provider of information technologies that drive quality and productivity across geospatial and industrial enterprise applications.

