



Engineering Design Service

Our team of experienced piping and vessel engineers, who provide user support to all PVE5 licensees, offers a design and analysis consultancy service for pipework, plant and ancillary equipment to the petrochemical, power, offshore and manufacturing industries. They will also be happy to give you a competitive quotation if your own team of engineers is struggling to cope with peak workloads.

Services covered include:

- Site investigations
- Preliminary analysis of pipe routes
- Pipe stress analysis
- Pressure systems regulations
- Surge analysis
- Stress isometrics
- Constraint and anchor loadings
- Site installation checks
- Support design, specification and scheduling
- Third party verification work
- Engineering reports and recommendations
- Pressure vessel design
- Heat exchanger design
- Flange design
- Structural calculations for vessel attachments
- Design of vessel supports.

Photographs are provided by kind permission of Radley Engineering Ltd of Dungarvan, Ireland, the vessel fabricator.



Whessoe Computing Systems
Whessoe Technology Centre
Morton Palms
Darlington
County Durham
DL1 4WB
United Kingdom

T +44 1325 390000
F +44 1325 390008
E sales@wcompsys.co.uk
W www.wcompsys.co.uk



PVE5 - Pressure Vessel & Heat Exchanger Software

For the Petrochemical, Power, Offshore and Manufacturing Industries



Whessoe Computing Systems – PVE5

Overview

Pressure vessel design and code compliance checking is a complex and time-consuming task. The PVE5 software package from Whessoe Computing Systems helps you complete such calculations more quickly and more accurately than ever. Running on a standard PC, the following capabilities are available to the engineer:

- PD5500 vessel design
- ASME VIII Div. 1 vessel design
- BS EN 13445 vessel design
- Comprehensive database of material stresses
- Design and layout of tube sheets for sheet and tube heat exchangers to TEMA
- Design of flanges
- Analysis of safe working pressures for out of round vessels.

To ensure that PVE5 keeps pace with design codes and technological changes, Whessoe employs a dedicated team of software and piping engineers to provide first class support to users.

Whessoe has a 200 year history, a century of experience in designing and fabricating pressure vessels and heat exchangers, and with PVE5, a track record of 40 years with plant owners, contractors, piping fabricators, design consultants and engineering insurance/inspection authorities.

Overall, PVE5 provides a powerful yet affordable means of performing pressure vessel design calculations. Accurate and easy to use, it is a clear first choice for every designer.

Technical Features

Design of Barrels, Dished Ends and Cones for Internal and External Pressure:

PVE5 calculates the thickness required for dished ends, barrels and cones to withstand internal and external pressure to PD5500, ASME VIII Div. 1 or BS EN 13445. Internal or external stiffening rings are designed if required, and test pressures evaluated.

Reinforcement of Opening/Nozzle Compensation:

With PVE5, you can easily check the reinforcement requirements of appropriate standards. Single and multiple openings are checked, and can be flush, protruding, set-on or set-through.

Flange Design:

PVE5 provides unconstrained design calculations for hub, ring, lap and split-lap flanges. Additional facilities provide a range of constrained design options, from an open design to the calculation of maximum allowable working pressure.

Stresses due to Local Load on Shells:

In accordance with PD5500, WRC107 or BS EN 13445, PVE5 calculates the stresses in cylindrical or spherical shells due to external loading.

Stresses Induced by Saddle or Ring Supports on Horizontal Vessels:

Stresses induced by either saddles or ring supports are calculated in accordance with PD5500 Annex G, or the method defined by L P Zick.

Out of Roundness of Cylindrical Shells:

A module is available for determining whether the code limit of 'out of circularity' (as specified in PD5500) has been exceeded. The software calculates the safe external working pressure for cylindrical sections outside this limit.

Wind and Earthquake Loadings on Vertical Vessels:

The software is also able to calculate the stresses due to wind and earthquake loading on vertical vessels, in accordance with most wind and earthquakes Codes of Practice.

Tube Sheet Design and Layout:

PVE5 is also able to design Tube sheets to PD5500, TEMA R, B and C or UHX. As a result, heat exchanger engineers can easily produce an accurate optimised design - bringing significant savings in time and materials.

The software performs functions which assist the thermal design engineer and draughtsman, calculating the maximum number of tubes for a given shell diameter, or the minimum shell diameter required for a given number of tubes. Tube distribution is optimised to achieve the best possible balance between tube passes and an engineering drawing of the tube layout is produced.

Quality Assurance

The assurance of both quality and accuracy are very important to Whessoe Computing Systems. PVE5 has been fully validated by comparing the answers obtained with hand calculations, other software, published results, analytical solutions and previously validated releases.

Whessoe Computing Systems operates a QA programme designed to meet the requirements of ISO9001 and the ASME Boiler and Pressure Vessel Code Section III. This quality system has been subject to third party audit by accredited certification bodies and Whessoe Computing Systems has been registered as a certificated organisation.