PV Elite®

Product:	PV Elite (PVE)
Number:	SQBY006AA-1900A (purchase); SQBY036AA-1900A (lease)
Version:	2018 (20.00.00.0000)
Date:	27 November 2017
Description:	Intergraph PV Elite analyzes and design pressure vessels and heat exchangers in accordance with U.S. National and International codes and standards, such as ASME, PD 5500, and EN 13445.

Sections:

System Requirements

Important: Beginning with Windows 10, Microsoft will enforce the Internet Host Table Specification RFC 952 which mandates that component hostname labels can contain only alphanumeric characters. Hostnames using underscores ('_') are not allowed. Refer to Microsoft KB 101785.Intergraph PV Elite is compatible with Windows desktop operating systems listed below.

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Note: The operating system compatibility details that follow refer to the latest released version of this software. Previous versions of the software might not work with newer operating systems.

Operating System	Compatibility Information
Windows 7/8/8.1* Professional (32 & 64 bit) Windows 7/8/8.1* Ultimate (32 & 64 bit) Windows 7/8/8.1/10* Enterprise (32 & 64 bit) Windows 10 Pro (32 & 64 bit) Windows Server (all versions)	PV Elite Development tests these operating systems. PV Elite does not support Windows 7/8/8.1/10 Starter, Home Basic, and Home Premium. The software does not support Windows Vista Starter, Home Basic, Home Premium, Enterprise, Business, and Ultimate. *Windows 8/8.1 – Enable .Net 3.5 prior toinstalling PV Elite. Only tested by Intergraph for the installation of network licensing systems (NetHASP License Manager).

Version Compatibility

For up-to-date information on the software compatibility of this product in a standalone or integrated environment, please refer to the Compatibility Matrix on the Hexagon PPM Support Web site at https://smartsupport.intergraph.com/.

Log on and perform the following steps:

1. Click the **View Downloads** tab.
2. Click the **Product Compatibility** link under **Useful Links** on the right side.
3. On the **PPM Compatibility Matrix - Product Report** page, from the Select Product list, select PV Elite.
4. From the **Version** list, select the version of PV Elite.

Special Instructions

PV Elite 2018 Version 20.00.00.0000 is a Windows (7/8/8.1/10)-based program. PV Elite may work under Windows Vista, although this platform has not been tested.

Important:

If you are moving to Version 2018 from a version of PV Elite prior to Version 2008, your existing ESL may require a Firmware update to permit Version 2018 to run. You can find instructions on the program DVD in the Firmware.pdf document.

This version of PV Elite should be started by invoking the program, pve.exe.

For more informaiton on installing PV Elite, refer to the PV Elite Quick Start, located on the program DVD.

Documentation

General

Use the Help menu to access the Help files and Printable Guides for this product. For the latest support information for this product, connect to https://hexagonppm.com/ppm-support. Also, you can submit any documentation comments or suggestions you might have on the Hexagon PPM support site.

Printed documentation is not available for separate purchase.

PDF Files

The documentation is provided as .pdf files. You can use any PDF viewer to view the files.

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New Features in this Version

Code Updates

- Updated PV Elite to include the ASME Section VIII 2017 Edition Code. (RI-TX-19730)

- Updated PV Elite   to include the latest Material Database per ASME VIII 2017 Edition. (RI-TX-21410)

- Updated to support NBC 2015 wind & seismic code. (RI-TX-19849)

- Updated PV Elite to display and analyze Tapered Saddles. (RI-TX-10941)

- Updated to support KBC 2016 wind & seismic code. (RI-TX-20515)

- Updated to support ASCE 7 2016 wind & seismic code. (RI-TX-21076)

- Updated to support Kettle Type Heat Exchangers analysis. (RI-TX-1046)

- Updated to support Indian 2015 seismic code. (CR-TX-20290)

- Updated to support ASME STS-1 2016 code. (CR-TX-22989)

- Updated PV Elite to add Lifting Lugs on heads in the 3D View tab. The software has been updated to have lugs appear on a top head element in the model. (RI-TX-4755)

- Updated PV Elite to perform Design of Penetrations through Jackets as per Appendix 9-6. The software has been updated to apply the rules per Appendix 9-6 for nozzles that penetrate only through the jacket element, thus setting the required thickness calculation to use the internal pressure set as zero. (CR-TX-23019)

- Updated PV Elite to the latest ASME VIII-2, paragraph 4.7.5. Floating Head design calculation with the alternative analysis for type D floating heads in Part 4 based on Soehrn's paper, so that it matches the equations shown correctly in PTB–3 2013. (CR-TX-23249)

Configuration

- Updated PV Elite to let the software to determine automatically which graphics video drivers to use based upon my system or store the video driver information in a version-specific product registry at a program (PV Elite) version-specific level. The software has been updated to intelligently select video drivers/store in version-specific product registry. (CR-TX-18115)

- Updated PV Elite to include the ability to switch between different ASME VIII Code Editions. The software has been updated to allow users to select the ASME code Edition through the Configuration dialog. (CR-TX-24298)

- Updated PV Elite to add user configurable options for MDMT handling of -155F for stress ratios of 0.35 and less. and UCS-68(c) MDMT interpretation. The software has been updated to allow users to use the MDMT options in the Configuration Dialog. (CR-TX-24301)

Input Processor & Analysis

- Updated PV Elite to determine Retirement Thicknesses based on iterating corrosion allowances, so that days of calculations can be saved. The software will determine the thickness of these components to determine their retirement limit. (RI-TX-19373)

- Updated PV Elite to generate a pressure temperature curve known as an MSOT (Maximum Safe Operating Temperature) curve and display in Output Processor application so that the analysis can process a temperature and pressure plot to check for unsafe conditions. (CR-TX-24297)

- Updated PV Elite to show element/detail information as a Tooltip in the 3D model. Tooltip should only show up by keeping the <CTRL> keyboard button pressed while the mouse cursor is in the 3D View tab. (RI-TX-17713)

- Updated PV Elite to allow flange loads to be specified at the end of the nozzle projection/flange. The Nozzle Calculation report reflects these loads in the report. (CR-TX-23355)

- Updated PV Elite to add Circumferential Bolt Spacing quick result to the Basering Dialog. This implementation will show the calculation result in status bar in the Basering Dialog. (CR-TX-23356)

- Updated PV Elite to add a Warning in the Basering Dialog & Flange Dialog if the ASME Material Class selection matches with the Bolt Size selected. The Warning will show up in the basering & flange output report if the material selected doesn't match the bolt size. (CR-TX-23411)

- Updated PV Elite to model a Saddle with only one center rib, so that it satisfies a small vessel design. The software has been updated to model one rib in the Saddle 3D model and also reflect the saddle analysis with one rib in the output Horizontal Vessel Analysis report. (CR-TX-23463)

- Updated PV Elite to support more than 4 Saddles in the input file analysis. This implementation will also insure horizontal models with more than 4 supports don't analyze while using Response Spectrum seismic Method. (CR-TX-15493)

- Updated PV Elite to include the Mexican Steel Profiles Library into the Structural database. The software has been updated to include the Mexican Steel properties option in the Leg Dialog drop down list. (CR-TX-9533)

- Updated PV Elite to consider nozzle loading on nozzle flanges (std) in the Nozzle Flange MAWP analysis report. The software has been updated with an option to include Flange Nozzle Loading for each individual Nozzle. (CR-TX-21592)

- Updated PV Elite to retain a new property value without hitting Enter key when you run the analysis. The software has been updated to retain the input provided in the design data tab after pressing the Run the Analysis button. (CR-TX-10164)

- Updated PV Elite to include a selection pull down evaluation method for ANSI flanges . The software has been updated to allow the selection of several methods to de-rate the flange MAWP based on external loads in the Load Cases grid tab and display the analysis calculation in the Nozzle Flange MAWP report. (CR-TX-22962)

Output Processor & Reports

- Updated PV Elite to perform percent elongation calculations for non-ferrous materials. The software has been updated to perform % Elongation per Table UG-79-1 calculations on the Internal Pressure Calculations report. (CR-TX-19410)

- Updated PV Elite to perform the calculation for the Stress Computations at the Edge of the Reinforcing Pad when WRC 297 is the local stress calculation method used. The software

has been updated to reflect the calculation results when using WRC 297 in the Nozzle Calculation report. (CR-TX-23358)

- Updated PV Elite to display in the Input Echo output report, if the selection of "weld is pre-heated' information is selected. The software has been updated to reflect in the output report if the information about 'weld is pre-heated' is checked. (CR-TX-10064)

- Updated PV Elite to add images in the output reports, so that it adds value to the software output reports and displays detail element plots to add information to the calculation reports. The software has been updated to show the output reports that need a detailed element image that can be customized and the images are stored in the System folder directory. (CR-TX-19740)

- Updated PV Elite to omit the bolt area calculations for basering in the Basering Calculations output report, when we select 'Neutral axis shift method' for 'Analyse' basering design option, since the method of calculation is different when compared to "Simplified" method. The software has been updated since the bolt area calculations should be removed when we select 'Neutral axis shifted' method for 'Analyse' design option. (CR-TX-19606)

- Updated PV Elite to account for Lining/Cladding Weight in the Fabricated Weight only if the material density is greater than 0.1 lb/in3, the material will be treated as cladding type material. The output Element and Detail Weights report will reflect the additional fabricated weight of lining/cladding weight. (CR-TX-23357)

- Updated PV Elite to add Nozzle Flange MDMT calculations inline within the Nozzle Calculation report. The software has been updated to have the Nozzle flange MDMT calculations inline within the nozzle report. (CR-TX-10108)

Fixes

User Interface/Graphics

- Fixed an issue in PV Elite in which the software generated an out of memory error when attempting to add liquid to a conical element. Previously, the software generated an out of memory error and deleted some of the vessel elements when adding liquid to a conical element. (TR-TX-20980)

- Fixed an issue in PV Elite in which the software did not consider an intermediate support when calculating the saddle load. Previously, if a vessel contained two saddles and you entered a value in Number of Intermediate Supports to be used during the hydrotest on the Equipment Installation and Miscellaneous Options dialog, the software did not consider the intermediate supports in the saddle calculations. (TR-TX-20918)

- Fixed an issue in PV Elite in which the software unexpectedly quit when trying to create a flat head element with a large opening. Previously, when you selected Large Central Opening in Head on the General Input tab for the Welded Flat Head, the software unexpectedly quit. (TR-TX-21470)

- Fixed an issue in PV Elite in which the software was not obtaining the flange dimensions for Standard Flange Class 400. The software has been updated to automatically populate the dimensions for that standard flange class. (TR-TX-22597)

- Fixed an issue in PV Elite in which the nozzle to shell weld data in the Nozzle Dialog is modified after saving and reopening a file from 8 mm to 8.00001 mm. The software has been updated and now the value remains the same even after reopening the file. (TR-TX-22868)

- Modified an issue in PV Elite in which the kilogram unit label for mass was inconsistent in the units file "kgf_cm2.fil". The software has been updated and now for unit labels like density, the unit label kg no longer says kgm. (TR-TX-22966)

- Fixed an issue in PV Elite in which the Configuration Dialog would prompt an input error message but allow the user to exit the dialog. The software has been updated to verify the entered allowable deflection value and remove the message pop-up. (TR-TX-22680)

- Fixed an issue in PV Elite to complete the analysis for standard Conical pressure vessel if the 'Select Rings' box is set to Yes. The software has been updated to complete the analysis and display the output reports in the Output Processor application. (TR-TX-23489)

Output Reports

- Fixed an issue in PV Elite by changing the wording of a certain stress description on the EN TS Calc report. Previously, the software displayed Axial Membrane Shell Stress as a stress description in the stress/force summary section of each load case on the EN TS Calc report. The software has been updated to replace Axial Membrane Shell Stress with Maximum Equivalent Stress. (TR-TX-20869)

- Fixed an issue in PV Elite in which the software calculated incorrect stress values for certain nozzles. Previously, when you analyzed certain nozzles according to WRC 297, the software encountered an issue when performing curve calculations, resulting in incorrect stress values in the Nozzle Stress Summation at Vessel-Nozzle Junction section of the Nozzle Calcs report. (TR-TX-20959)

- Fixed an issue in PV Elite in which the metric material database did not retrieve the correct yield values for selected materials. Previously, when you selected a material the software did not always populate the Yield Stress, Operating or Yield Stress, Design field with the correct yield stress value for the material and temperature. The software has been updated to retrieve the correct yield stress values for material from the ASME Section II-Materials-Part D-Properties (Metric) database. (TR-TX-20294)

- Fixed an issue in PV Elite in which the software calculated an incorrect flange rating for certain standard flanges with PN40 as the Class. The software has been updated to calculate the correct flange rating for flanges of all classes. (TR-TX-20961)

- Fixed an issue in PV Elite in which an incorrect inequality sign in certain API 579 calculations caused a flaw to pass an assessment when it should have failed. Previously, when you performed a Level 1 assessment for a flaw according to API 579, Part 5 (Local Thinning Area), the software included an incorrect inequality sign related to Figure 5.6 during the assessment causing the flaw to incorrectly pass the assessment. The issue is now resolved and the software correctly completes the assessment. (TR-TX-21430)

- Fixed an issue in PV Elite in which the software used an incorrect allowable stress value in certain stiffening ring calculations. Previously, when you added a stiffening ring to a vessel, the software used the allowable stress for the cylinder on which the stiffening ring was attached instead of the allowable stress of the stiffening ring in the Stress Ratio for Stiffening Ring Materials calculations on the Internal Pressure Calculations report. (TR-TX-21509)

- Fixed an issue in PV Elite in which the software truncated the material name for tubesheet elements on the TEMA TS Calc report. The software has been updated to display the full material name on the report. (TR-TX-21492)

- Fixed an issue in PV Elite in which the Weld Designation from the Nozzle Dialog did not match the value that displayed on the Quick Calculation report or Nozzle Calc report. Previously, when you selected UW-16.2 (c-h) as the Weld Designation for a nozzle, the software displayed the weld designation as UW-16.2 (B-H) on output reports. (TR-TX-21491)

- Fixed an issue in PV Elite in which the software was not correctly showing the ground type with respect to the ground type selected in the seismic input. The software has been updated and the soil type shown in the Input Echo and Earthquake Load Calculation reports match with the ground type selected in the seismic input. (TR-TX-22243)

- Fixed an issue in PV Elite in which the software used the wrong sign in the equation substitution formula for a Division 2 Cone-To-Shell junction primary stress calculation in the Cone Analysis report. The software has been updated and the equation substitution formula now uses the correct sign in the equation. (TR-TX-22227)

- Fixed an issue in PV Elite in which the software misprinted the normal force in the Tensile Stress at the Base of the Lug formula substitution in the Lifting Lug Calcs report. The software has been updated and the equation substitution formula now uses the correct value in the equation. (TR-TX-23015)

- Fixed an issue in PV Elite in which the software has a maximum stress ratio value of 10, while it may be rare for these ratios to exceed 10, it is important to allow the software for it to happen, typically in high temperature situations. The software has been updated to display Stress Ratio for Nozzle upper limit value of 10 on the Internal Pressure Calculations report. (TR-TX-23269)

- Fixed an issue in PV Elite in which the software was obtaining an incorrect Y Coordinate for the last element in the "XY coordinate Calculations" Output Report. The software has been updated to consider the correct element vertical coordinate value reported. (TR-TX-23287)

- Fixed an issue in PV Elite in which the MDMT Summary output report would show the warmest computed minimum design metal temperature value even if the "Use the MAWP to compute the MDMT" option is unchecked in the Configuration Dialog. The software has been updated to not show the warmest computed minimum design metal temperature. (TR-TX-22357)

- Fixed an issue in PV Elite in which the Internal Pressure Calculations report has an Incorrect substitution for knuckle radius in appendix 1-4(f) calculations with metric units. The software has been updated and the formula substitution now shows the correct metric value in the substitution formula. (TR-TX-22809)

- Fixed an issue in PV Elite in which the Nozzle Calculation report was showing a strange character value for design temperature in the WRC 107 section while using the Korean Windows OS. The software has been updated and now only shows the design temperature unit value instead of the strange character. (TR-TX-22647)

- Fixed an issue in PV Elite within the API 579 analysis calculation in Step 9.2, where the MAWPr was reported as 0.0. The software has been updated to show the correct value whenever this value is shown in the formula substitution. (TR-TX-23351)

- Fixed an issue in PV Elite within the API 579 analysis calculation in Step 9.1, where the printed "less than" symbol is incorrect. The software has been updated to show the correct symbol in the formula substitution. (TR-TX-23350)

- Fixed an issue in CodeCalc in which the ASME Tubesheet Output report reference a misleading ASME chapter reference in the warning message. The software has been updated to refer to the note in UHX-4 of ASME code. (TR-TX-23257)

- Fixed an issue in PV Elite in which an incorrect formula 'min' description is used in the Wind Load Calculation output report for "Velocity Pressure evaluated at height z, Imperial Units [qz]" when using ASCE-2010 wind design code. The software has been updated to show 'max' in the formula and substitution. The final value formula solution has been correct. (TR-TX-23187)

- Fixed a misspelling in the Output Report in a warning message for the Leg Check report. The software has been updated to fix the misspelling in the Leg Check output report. (TR-TX-23898)

Open Problems

None

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