Version 3.06.0.9 (27.02.2024)
BASIC module:

1. The operation of the “Stretch control” option has been corrected;
2. An issue with building of tubular poles has been fixed;

Module “PASSAT-HEAT EXCHANGERS”:

3. Redundant floating head checking has been removed;
4. Bugs in the tubesheet dialog have been fixed;

MATERIALS AND COMPONENTS DATABASE:

5. The problem with selecting minus tolerances from the database has been fixed;

Version 3.06.0.8 (07.02.2024)
BASIC module:

1. Calculation of a vessel on saddle supports with an ASME VIII-2 rating has been optimized;
2. Typos when creating the bibliography have been corrected;
3. The report format for support зщдуы has been corrected;
4. Heat insulation for flat head with radial ribs has been added;

Module “PASSAT-HEAT EXCHANGERS”:

5. In some cases, the model of heat exchangers with the assembly was formed incorrectly, this has been corrected;
6. Input data checks for floating head rings have been added;

Module "PASSAT-TANKS"

7. The T ≤ 260 C° check is implemented in the form of a warning with the possibility of calculation;

Module "PASSAT-SEISMIC"

8. Duplication of some checks has been corrected;

Version 3.06.0.7 (19.12.2023)
Program INTERFACE:

1. Alphabetical sorting of the list of material characteristics Type/Grade has been added;
2. The F2 hotkey for editing general data has been added;

BASIC module:

3. A program crash with a very rare combination of material characteristics has been fixed;
4. The formation of the references list in English has been corrected;
5. The display of detailed information on the flange connection insertion has been added to the report;
6. Test pressure calculations for some nozzle configurations have been corrected;
7. The calculation of the β coefficient for some conical head configurations has been corrected;
8. Several typos and bugs in the calculation of the nozzle and shell according to PNAE have been corrected;
9. The problem with placing platforms on a horizontal shell has been fixed;

Module "PASSAT-COLUMN":

10. In some configurations, the conical transition section of the skirt was built incorrectly; this has been corrected;

Module "PASSAT-TANKS"

11. The calculation of the k factor for wind loads on the wall has been adjusted;
12. In update 3.6.0.6, the ability to set the tank pressure was lost, fixed;

Version 3.06.0.6 (29.11.2023)
BASIC module:

1. The estimation of errors and problems number in the calculation has been corrected (sometimes an incorrect value was shown);

Module "PASSAT-COLUMNS":

2. The problem with the calculation of nozzles and flanges as part of a column has been fixed (appeared in update 3.6.0.4);

Module "PASSAT-TANK":

3. Several checks according to GOST 31385-2023 have been updated;
4. The average January temperature in the calculation of snow loads was added to calculate the Ce coefficient;

Version 3.06.0.5 (15.11.2023)
BASIC module:

1. The calculation of allowable stresses according to EN 13445-3 has been improved (up to 50°C properties are taken as at 20°C);
2. An error in the calculation of lifting lugs with a reinforcement pad has been corrected;

Module "PASSAT-COLUMNS":

3. The problem with the calculation of nozzles and flanges as part of a column has been fixed (appeared in update 3.6.0.4);

Module "PASSAT-TANK":

4. Several checks according to GOST 31385-2023 have been updated;

Version 3.06.0.4 (08.11.2023)
BASIC module:

1. Input data check for flat head thickness has been added;

Module "PASSAT-COLUMNS":

2. The calculation of reactions in the column body fixing has been improved;
3. The calculation of allowable stresses for anchor bolts according to H. Bednar has been improved;
4. The corrosion of the anchor bolts was taken into account twice when calculating according to GOST 34233.9, this has been corrected;
5. The output of dynamic coefficients for design modes and harmonics has been added;

Module "PASSAT-HEAT EXCHANGERS":

6. Checking the floating head input data has been improved;

Module "PASSAT-TANK":

7. The calculation according to GOST 31385 was updated in accordance with the 2023 edition;

Version 3.06.0.3 (13.10.2023)
PROGRAM INTERFACE:

1. Expanding the model tree by double clicking on the root element has been added;
2. The behavior of the “About” window has been improved;
3. Insulation on the 3D model was breaking model clickability, fixed;
4. The generation of the model has been improved - in the “Accurate model rebuild” mode, the holes from the moved nozzles are sealed (but this slows down the model rebuild);
5. The skirt of the column vessel was missing in the insulation group editing window - fixed;

BASIC module:

6. The pressure unit [kPa] has been added to the units management system;
7. The work of the ring support dialog has been fixed (problems with setting the “c” size have been fixed);
8. The algorithm for strength and stability of the conical transition between supports has been improved;
9. Typos in the trunnion report have been corrected;
10. A typo in the derivation of the coefficient β_2 for a torispherical head has been corrected;
11. The calculation of allowable stresses according to EN 13445 has been clarified;

Module "PASSAT-COLUMNS":

12. The modal mass estimation algorithm has been improved;
13. NBC-15 (Canada) wind and seismic load calculations have been added;

Module "PASSAT-SEISMIC":

14. NBC-15 (Canada) load calculations have been added;

Module "PASSAT-TANKS":

15. The operation of the “Data for insulation calculation” option in general data and in the tank wall has been corrected;
16. Control of the dimension units when calculating according to API-650 has been added;

Version 3.06.0.2 (30.08.2023)

PROGRAM INTERFACE:

1. The ability to edit components by double-clicking in the model tree has been added;
2. In the insulation dialog, sorting by clicking on the table header has been added;
3. In the nozzle loads dialog, a sketch for the global coordinate system has been added;

BASIC module:

4. The construction of tubular section profiles (round pipes, square pipes) has been corrected;

Module "PASSAT-COLUMNS":

5. A bug in version 3.06 has been fixed, due to which the “Supporting structure” option could lead to excessive loads;
6. When copying a group of trays, the material of welded parts and mass is not saved, fixed;

Module "PASSAT-HEAT EXCHANGERS":

7. The calculation of the stiffness factor K_f for the heat exchanger chamber has been refined if the flange is with a conical sleeve;
8. The construction of cladding on both sides of the tube sheet according to ASME VIII-1 has been added;

Module "PASSAT-TANKS":

9. The algorithm for calculating allowable stresses at elevated temperatures (more than 100°C) has been refined;

Version 3.06.0.1 (08.16.2023)

BASIC module:

1. The report template contained obsolete tags;
2. The issue with editing a group of stiffening rings has been fixed;
3. The issue with zero loads on the foundation in the second loading case has been corrected;
4. The inaccuracy in the calculation of the test pressure, which occurs with a rare combination of initial data, has been corrected;
5. The issue with nozzle loads editing has been fixed;
6. An issue with adding a rigid link between supports has been fixed;
7. The building of the model of the saddle support, bracket support has been refined;

8. The ability to apply a distributed load over the entire length of the component has been added;
9. An issue with exporting a model without insulation has been fixed;
10. The problem in the general data dialog has been fixed;
11. The “Flange data changed” function has been corrected;

Module "PASSAT-COLUMNS":

12. The wording of the need to calculate for wind resonance has been clarified;

Module "PASSAT-TANKS"

13. A number of misprints in the dimensions of the calculated values have been corrected;
14. With some combinations of initial data, it was not possible to calculate seismic loads, corrected;

MATERIALS AND COMPONENTS DATABASE:

15. The database did not have enough allowable stresses for steel 06ХН28МДТ (sheet), fixed;

Version 3.06.0.0 (14.07.2023)

MAIN innovations:

1. **Wind load calculation has been added:**
   - **for vertical and horizontal vessels: IS-875, ASCE 7-16**
   - **for columns: IS-875, ASCE 7-16**
   - **for vertical tanks: CFE-2020, EN 1991-1-4, ASCE 7-16, IS-875**
2. **Seismic load calculation has been added:**
   - **for vertical and horizontal vessels: CFE-2015, ASCE 7-16**
   - **for column apparatus: CFE-2015, ASCE 7-16**
   - **for vertical tanks: CFE-2015, IS-1893, EN-1998**
3. **The calculation of inertial (transportation) loads for given accelerations has been added;**
4. **Calculation of flat welded heads according to EN-13445 has been added;**
5. **The ability to manually enter natural vibration frequencies of the structure when specifying wind and seismic loads has been added;**
6. **The “Structure” component has been improved, the following features have been added:**
   - **to form an assembly of structures;**
   - **to connect structures to each other;**
   - **to attach links and anchors to endpoints;**
7. **The Link component has been improved: the option to bind to the beginning/end of the source and target component has been added;**
8. **New components has been added:**
   - **spherical unbeaded bulk;**
   - **torispherical bulk;**
9. **Ability to set loads on flanges, nozzles, etc. depending on the design cases has been added;**
10. **The calculation for low-cycle strength, taking into account various loading cases, has been added;**
11. **Torque calculation for anchor bolts has been added;**

PROGRAM INTERFACE:

12. The general data dialog has been redesigned (the “Wind loads”, “Seismic loads” tabs have appeared);
13. For the nozzle, the option “Loads in the global coordinate system” has been added;
14. The ability to attach lifting lugs and trunnions to cylindrical jackets has been added;
15. The “Gravity acceleration” setting has been added to the dimension setting system;
16. The Isometric View setting has been adjusted;

17. During checks, the buttons “Yes for all”, “No for all” were added;
18. The "Regenerate model" command to quickly update the 3D model has been added;
19. The summary dialogue of the nozzles in the vertical tank has been updated;

BASIC module:

20. Checks for the conical transition in the calculation according to PNAE G-7-002-86 have been added and refined;
21. Viewing window glass strength calculation according to ISO 21922-2021 has been added;
22. Calculation of the weakening of the flat head by nozzles, according to ASME VIII-1, EN-13445 has been added;
23. The calculation of tightening torques for flange fasteners according to PNAE G-7-002-86 has been added;
24. Accounting for UG-20(f) ASME VIII-1 has been added when calculating MDMT;
25. Calculation of shells, tubular legs for external loads according to EN 13445-2021 has been added;
26. Calculation of loads for vessels on supporting legs was refined (the beam model gave an overestimated bending moment);
27. Accounting for corrosion of foundation bolts has been added;
28. For the calculation of nozzles for external loads, the option “Without calculation” has been added;
29. An option to take into account saddle mount flexibility has been added;
30. Pressure unit conversion [tf/m^2] ⇔ [psi] has been corrected;

Module "PASSAT-COLUMNS":

31. The algorithm for calculating the natural frequencies of the model with the exclusion of compliant minor sections (piping elements) has been improved;
32. The calculation of seismic loads taking into account higher harmonics according to SP 14.13330.2018 has been added;
33. The possibility of arbitrary setting of the factor K_0 (taking into account Amendment 2 of SP 14.13330.2018) has been added;
34. A maximum shell deflection output (in numeric format) has been added;

Module "PASSAT-TANKS"

35. Checking the thickness of the rings in the wall-roof connection has been added;
36. The calculation of allowable stresses for various combinations of temperature, material code, calculation code was finalized and updated;
37. Accounting for the influence of the weight of the pontoon/floating roof on the tank pressure has been added;
38. Reliability factors for loads according to SP 20.13330.2016 have been specified;
39. A user-defined variant of the wall-roof connection has been added;

MATERIALS AND COMPONENTS DATABASE:

40. The dimensions of the blinds according to T-MM-25-01-06 have been corrected;
41. Clarification that for steel grades 09G2S, 16GS according to GOST 19281, strength classes 265 and 295 are meant, was added;
42. The material database has been updated in accordance with ASME II part D **2021**;
43. Misprints in the database of graphite gaskets have been corrected;
44. The database of materials was supplemented with concrete characteristics according to GOST 34233.9, EN 1992-1-1, ACI 318-14, GB 50010;
45. The data of spiral wounded gaskets according to GOST R 52376-2005, taking into account Amendment 1, were updated;

Version 3.05.0.12 (23.06.2023)

BASIC module:

46. In some cases, when calculating the jacket according to ASME, the calculation could not be performed. Corrected;
47. Plotting for some configurations of horizontal vessels has been corrected;
48. A bug when editing a welded partition has been fixed;
49. Gasket material (rubber) stopped responding to the ratio h_n/b_n, fixed;
50. The crash of the program when calculating some configurations of the vessel to the wind according to EN-1991 has been fixed;

"PASSAT- TANKS" module:

51. In version 3.5.0.11, in some tank configurations, when calculating meridional stresses, the weight of the frame roof was no longer taken into account. Fixed;

Version 3.05.0.11 (17.05.2023)

BASIC module:

1. An inaccuracy in the calculation of nozzle reinforcement according to ASME VIII-1 UG-37 has been corrected;
2. When switching the calculation standard to ASME VIII-1, then c_2, c_3 cells disappeared in the jackets dialog. Corrected;
3. Calculation of parameters “A”, “B” according to ASME VIII-1 (shell under external pressure) has been refined;

"PASSAT- TANKS" module:

4. Support for the ability to apply external loads to the roof has been disabled;
5. The weight of the connection assembly is included in the weight of the wall metal structures;

"PASSAT-COLUMNS" module:

6. The heat exchanger in the column gave "NAN" loads, corrected;

"PASSAT-HEAT EXCHANGERS" module:

7. The calculation of the hole pitch t_p when specified using the designer has been refined;

Version 3.05.0.10 (05.04.2023)

BASIC module:

1. The ability to mount a ring support on a U-jacket has been added;
2. The operation of the “Nozzle at the top of the conical head” option has been corrected (redundant calculations have been removed);

"PASSAT- TANKS" module:

3. When calculating according to API-650, the ability to adjust the minimum live load on the roof of the tank has been added;
4. When calculating according to API-650, redundant calculations are excluded if there is no bottom edge;

"PASSAT-COLUMNS" module:

5. An issue with the positioning of the conical skirt has been fixed;

Version 3.05.0.9 (15.03.2023)

BASIC module:

1. For bellows expansion joints, the limitation $n \leq 5$ has been removed;
2. Bugs in the high pressure flange connection dialog have been fixed: auto. temperature assignment, “Insulation” button;
3. Inaccuracies in the calculation of allowable stresses according to EN 13445-2021 have been corrected;

"PASSAT-COLUMNS" module:

4. The calculation of the conical transition section of the skirt support has been corrected;
5. The calculation of the allowable temperature in the joint area of the transitional section according to the ATK was corrected (in terms of determining the allowable stresses);

"PASSAT-HEAT EXCHANGERS" module:

6. When calculating the low-cycle strength of a floating head, the material St3 appears in the report, although it is not in the model. Corrected.
7. The connection of the bellows expansion joint to the floating head has been improved;
8. With some configurations of the air-cooling heat exchanger chamber, the program crashed when building the model. Corrected;

"PASSAT-TANKS" module:

9. The modeling of nozzles on flat roofs has been corrected;
10. Calculation of the wind ring section modulus gave an overestimated value, corrected;

Version 3.05.0.8 (14.02.2023)

BASIC module:

1. A number of typos in the calculation of the high pressure threaded flange have been corrected, a flange thickness check has been added;
2. An error in the calculation of the saddle support according to ASME VIII-2 (eq. 4.15.16) has been corrected;
3. Calculation of a vessel on several saddle supports has been improved (convergence of the solution has been improved, a check of the support load sign has been added);

"PASSAT-COLUMNS" module:

4. Checking the allowable temperature in the junction of the support with the shell has been finalized;
5. Minus sign for foundation load has been added;

Version 3.05.0.7 (11.01.2023)

BASIC module:

1. Crash when calculating MDMT of heads and covers has been fixed;
2. The calculation of temperatures for parts of detachable covers in the “Auto” mode, when the temperatures are negative, has been refined;

PROGRAM INTERFACE:

3. Accounting for installation altitude when displaying elevations has been added;

"PASSAT-COLUMNS" module:

4. The crash in the calculation of wind loads on the site according to EN-1991 has been corrected;

"PASSAT-TANKS" module:

5. The massive metal structure attached to the roof of the tank was not taken into account in the loads on the wall and foundation. Fixed;
6. The calculation of the height factor k has been adjusted;

Version 3.05.0.6 (11.29.2022)

BASIC module:

1. A diagnostic for the case of overturning a horizontal vessel has been added;
2. The problem with the program crashing when adding a bottom with a central hole has been fixed;
3. The problem with the crash of the program when operating with the insulation of the conical transition has been fixed;
4. The calculation of tightening the flange connection in all modes has been finalized;

"PASSAT-TANKS" module:

5. Floating roof tank overturning check has been added;
6. When calculating the “k” value, account was added for Amendment 2 of SP 20.13330.2016;
7. Allowable stress calculation for API-650 wall material has been improved;

Version 3.05.0.5 (21.10.2022)
BASIC module:

1. The algorithm for calculating loads in saddle supports has been improved (in some rare configurations, the calculation lost stability);

"PASSAT-TANKS" module:

2. The algorithm for calculating seismic resistance with a small filling has been improved;

"PASSAT-HEAT EXCHANGERS" module:

3. Finite element model generation for a symmetrical heat exchanger has been improved;

MATERIALS AND COMPONENTS DATABASE:

4. Database collision for SA-193 B8MA fastener material has been fixed;
5. Structural steel properties according to GOST 27772-2015 have been added (within 100°C);

Version 3.05.0.4 (05.10.2022)
BASIC module:

1. For the bellows expansion joint, the option “Manual axial stiffness” has been added;
2. The problem with the material selection of the bellows expansion joint has been corrected;
3. The geocode (RUS) was removed when calculating according to the Russian standard in Russian;
4. Methodology checking of welded poles on the shell has been improved;
5. A typo in the output of the calculation of the coefficient β_T (conical transition) has been corrected;
6. Errors in the bend calculation for external pressure (stress sign) have been corrected;
7. Nozzle collision checking has been improved;
8. Calculation of coefficient β_1 for type B torispherical head has been clarified;

"PASSAT-SEISMIC" module:

9. The coefficients T_C, T_D in the calculation of seismic loads according to EN 1998 have been corrected;

"PASSAT-TANKS" module:

10. The work of the visual frame roof designer has been improved;

MATERIALS AND COMPONENTS DATABASE:

11. The value of allowable stresses for steel 09G2S at 475°C has been corrected;
12. Problems with EN 1.4980 fastener material selection have been corrected;

Version 3.05.0.3 (26.08.2022)
BASIC module:

1. The work of converters has been fixed (STEP, problem with exporting components, IGES, model scale);
2. Inaccuracies in the cylindrical shell calculation with a plating have been corrected;
3. The algorithm for natural frequencies calculation has been refined (accounting for lumped masses);
4. Some typos in the report have been corrected, clarifications have been added;

MATERIALS AND COMPONENTS DATABASE:

5. Misprints in the selection of the flange sealing surfaces dimensions have been corrected;
6. When choosing standard flanges, the names of the values Py, Dy were specified in accordance with the standard;

Version 3.05.0.2 (16.08.2022)
BASIC module:

1. Additional applicability checks for WRC-537 connection calculations have been added;

2. The problem with the long work of exporting a model to the geometric format over a network path has been fixed;

"PASSAT-SEISMIC" module:

3. Checks for manually entered seismicity values have been added;

"PASSAT-HEAT EXCHANGERS" module:

4. The bug that appeared in version 3.05 has been fixed (in some heat exchanger configurations, the shell-side pressure was set to zero when editing);

Version 3.05.0.1 (09.08.2022)

BASIC module:

1. For high-pressure components, a material calculation was not available when the tensile strength (R_m) at elevated temperature was not given. The algorithm has been improved;
2. With some regional settings, the XML converter was inoperable, the problem has been fixed;

"PASSAT-TANKS" module:

3. Only sheet material was available for tank roof frame, corrected;

"PASSAT-SEISMIC" module:

4. Reporting saddles on the “worst” seismic action has been improved;

MATERIALS AND COMPONENTS DATABASE:

5. The stud database according to STO 00220227-008-2010 has been corrected;

Version 3.05 (30.06.2022)

MAIN innovations:

1. Components of a non-circular section (rectangular, oval, rounded, with partitions) according to ASME VIII-1 App.13 has been added;
2. Supported roofs of vertical tanks has been added:
   - visual designer of the beam frame was developed;
   - algorithm for automatic generation of a beam-shell finite element model was developed, including a roof frame, shell, supporting columns, a wall with stiffening rings;
   - algorithm for automatic loading of a finite element tank model was developed (with loads due to dead weight of structures, snow, wind, equipment, external and internal pressure, static head, in accordance with the recommendations of STO-CA-03-002-09 or API-650 at the user's choice);
   - module for exporting a finite element tank model to the Ansys program using the APDL format was developed;
3. Calculation of bellows expansion joint according to EN 13445-3, EN 14917 has been added;
4. Flange connection calculation according to EN 13445-3 has been added;
5. Circular head with a large central hole (calculated according to ASME VIII-1) has been added;
6. Export/import to open format (XML converter) has been redesigned and updated;

Program interface:

7. “Expand All” option for the model hierarchy panel has been added;

BASIC module:

8. Analysis of residual fiber elongation according to ASME VIII-1 has been improved;
9. Calculation of test pressure according to ASME VIII-1 UG-100$^{(35)}$ has been improved, an option to take into account static head has been added;
10. Additional checks for the for lifting lugs code applicability has been added;
11. The formation of the references list has been improved;

"PASSAT-COLUMNS" module :

12. Design of load graphs for column vessels has been improved;

13. Calculation of seismic and wind loads for some non-standard column configurations has been refined;

"PASSAT-HEAT EXCHANGERS" module:

14. In flange-type tube sheets, the options “Integral”, “Conical hub” has been added;

"PASSAT-TANKS" module:

15. Calculation of the wind load on the tank wall has been corrected;

MATERIALS AND COMPONENTS DATABASE:

16. Octagonal gasket selection algorithm for large diameter flanges has been fixed;
17. Database of bellows expansion joints has been improved;
18. Gasket properties as per GOST 28759.5-2022 has been added;
19. Gaskets and flanges dimensions as per GOST 28759.2-2022 … GOST 28759.11-2022 has been added;
20. ASME B1.1 thread dimensions have been clarified;
21. Density values for ASME materials have been clarified;

Version 3.04.0.10 (28.04.2022)

BASIC module:

1. In some bend configurations, the total allowance in thickness was calculated incorrectly; it was fixed;
2. Program crash with some types of the conical transition reinforcement was fixed;
3. In some cases, the report on child componentsd was not displayed; it was fixed;
4. When opening a dialogue with the data of the bracket lugs, the calculation results were reset; it was fixed;

"PASSAT-COLUMNS" module :

5. A bug that occurred in version 3.03 was fixed - the effect of lumped mass offset from the axis on foundation loads was not taken into account;

"PASSAT-HEAT EXCHANGERS" module:

6. In the summary table of compnnents, the incorrect value of the pressure in the floating head was displayed; it was fixed;

"PASSAT-TANKS" module:

7. In some cases, the wind pressure change factor “k” was considered incorrect, corrected; it was fixed;

MATERIALS AND COMPONENTS DATABASE:

8. For skirt supports, information about the hole diameter for anchor bolts has been added;
9. Database operation when selecting a flat cover with a flange has been fixed;
10. The algorithm for processing custom materials in the model has been improved - now the program asks for the introduction of a custom material with different properties only once;
11. Database operation when selecting small diameter saddles has been fixed;

Version 3.04.0.9 (04.04.2022)

BASIC module:

1. The calculation did not take into account the weight of the vertical poles, corrected;
2. The calculation of loads on the foundation for vertical poles has been improved;

"PASSAT-COLUMNS" module :

3. The algorithm for determining the worst wind direction has been improved;

"PASSAT-TANKS" module:

4. The calculation of edge thickness according to API 650 has been improved, typos have been corrected;

MATERIALS AND COMPONENTS DATABASE:

5. For custom gasket materials, all available size standards are displayed;

6. Some typos in the database of vertical tanks materials have been corrected;

Version 3.04.0.8 (21.03.2022)
BASIC module:

1. In some configurations, the report of child components was not displayed (the problem appeared in version 3.4.0.7); corrected;
2. The problem with the conical heads crash in some configurations has been fixed;

Version 3.04.0.7 (15.03.2022)
BASIC module:

1. In some configurations, the calculation of rectangular attachements for loads was not performed, corrected;
2. Supporting legs dialog was resetting calculation results, fixed;
3. The algorithm for calculating allowable stresses according to EN 13335 has been corrected;
4. In some configurations, pinning to attachment caused the program to crash, fixed;
5. The problem with the “Swap sealing surfaces” option has been fixed;

"PASSAT-HEAT EXCHANGERS" module:

6. Expansion box calculation for forces and moments has been added;

"PASSAT-COLUMNS" module:

7. The algorithm for determining the worst wind direction has been improved;

Version 3.04.0.6 (15.02.2022)
BASIC module:

1. The estimation of the wind loads direction has been improved;
2. When building the model, the height of the nuts was increased;
3. The “Custom equipment” component has been improved if the bodies in it are packed into assemblies;
4. An error in the calculation of the detachable elliptical cover has been fixed (in some configurations, the thickness of the convex part was taken incorrectly);
5. The algorithm for rounding material properties in ASME calculations has been improved;

"PASSAT-HEAT EXCHANGERS" module:

6. Comments for T_{f1}, T_{f2} values in the tubesheet dialog have been added;

"PASSAT-SEISMIC" module:

7. The output of the report for the saddle support in seismic conditions has been improved;

"PASSAT-TANKS" module

8. The maximum rafter spacing calculation as per API 650 has been added;
9. Anchor bolt corrosion as per API 650 has been added;

MATERIALS AND COMPONENTS DATABASE:

10. ASME BPVC.II.D material classification has been refined;

Version 3.04.0.5 (02.02.2022)
BASIC module:

1. The problem with editing some source data was fixed, the changes were not saved (the problem appeared in version 3.04);
2. The calculation of fiber elongation ε_f for a hemispherical head according to ASME VIII-1 has been corrected;
3. The calculation of flat and convex heads according to ASME VIII-1 has been finalized taking into account the revision of 2021;
4. The problem with the export of elements to the NozzleFEM (program crash), if the names contain invalid characters, has been fixed;

5. The estimation of the allowable pressure of the parent shell p_E was corrected when calculating the nozzle (the problem appeared in version 3.04);
6. For a hemispherical head, the limitation $s/D \geq 0.002$ was removed;
7. When building the solid model, the size of the nuts was clarified;
8. The material attribute was incorrectly taken into account for a cylindrical jacket in the bill of materials, corrected;

"PASSAT-SEISMIC" module:

9. An error in the calculation of the horizontal vessel liquid convective period according to GOST R 55722-2013 has been corrected;

Version 3.04.0.4 (25.01.2022)

BASIC module:

1. The problem with the calculation of the material properties of the stiffening ring by the temperature of the shell has been corrected;
2. The calculation of loads on the foundation for poles has been improved (individual loads are given for the poles);
3. The output of foundation loads for supports has been improved taking into account the signs;
4. The algorithm for rounding material properties in ASME calculations has been improved;
5. A crash in some vessel configurations when calculating MDMT has been fixed;
6. The calculation of fiber elongation ε_f for an elliptical head according to ASME VIII-1 has been corrected;
7. Warnings that the fiber elongation ε_f exceeds 5% have been removed (the estimate of this parameter is more difficult and needs to be improved);
8. Problems with entering values in tables for some variants of regional settings have been fixed;

"PASSAT-COLUMNS" module:

9. In the conditions of assembling, the weight of the welded elements (trays, packings) was not taken into account, corrected;

"PASSAT-SEISMIC" module:

10. The calculation in seismic conditions for a number of secondary elements have been added (links, connecting flanges, attachment sites);

MATERIALS AND COMPONENTS DATABASE:

11. The problem with the selection of a bellows expansion joint has been fixed (the fix is available when installing via **setup.exe**);
12. Some typos in the database of flange connections has been fixed (the fix is available when installing via **setup.exe**);

Version 3.04.0.3 (14.01.2022)

1. Typos in the nozzle sketches in the report have been corrected;
2. Typos in the temperature of the stiffening ring have been corrected;

"PASSAT-HEAT EXCHANGERS" module:

3. In some configurations of floating head heat exchangers, tube and shell pressure were equal (problem appeared in version 3.04), fixed;
4. Some floating head material problems have been fixed;
5. Floating head calculation for low-cycle fatigue has been added;

MATERIALS AND COMPONENTS DATABASE:

6. The problem with selecting a flat cover has been fixed;

Version 3.04.0.2 (30.12.2021)

1. Typos in the calculation of the bend, the skirt support assembly have been corrected;
2. The algorithm for calculating the coefficient “k” for stiffening rings has been corrected;

"PASSAT-HEAT EXCHANGERS" module:

3. The problem with the tube sheet designer in English mode has been fixed;
4. The calculation of the expansion box flexibility has been corrected;

"PASSAT-COLUMNS" module:

5. The problem with the packings modeling has been fixed;
6. In version 3.04 seismic loads were calculated overestimated, fixed;

Version 3.04.0.1 (21.12.2021)

BASIC module:

1. The problem with the crash of the program when calculating stiffening rings has been fixed;
2. The problem with the drawing of the lifting lugs has been fixed;

"PASSAT-TANKS" module:

3. A bug in the interface has been fixed (it is impossible to set the angle of inclination of the tank roof);

"PASSAT-HEAT EXCHANGERS" module:

4. A bug in the report (for AVO fittings, the wrong thickness of the parent element is displayed) has been fixed;

Version 3.04 (15.12.2021)

MAIN innovations:

1. **Calculation of vertical tanks according to API-650 has been added (module "PASSAT-TANKS"):**
   - **calculation of tanks with a steel wall;**
   - **calculation for wind, snow, seismic loads;**
   - **calculation of stiffening rings;**
   - **calculation of nozzles;**
   - **calculation of the junction of the wall and roof, wall and bottom;**
   - **calculation of self-supporting shell roofs;**
2. **Calculation of wind loads according to CFE 2020 (Mexico) has been added;**
3. **Calculations of elements according to PNAE G-7-002 has been added:**
   - **cylindrical and conical shells;**
   - **elliptical, hemispherical, torispherical heads;**
   - **flat heads;**
   - **nozzles;**
4. **New components has been added:**
   - **high pressure flange joint according to RD RTM 26-01-44-78;**
   - **high pressure bend according to RD RTM 26-01-44-78;**
   - **custom equipment (with the ability to load an arbitrary 3D model);**
5. **Calculation of a cylindrical high-pressure component according to RD RTM 26-01-44-78 has been added;**
6. **The ability to set fractional seismicity rates (Seismic, Columns, Tanks modules) has been added;**
7. **The ability to set the group of the operating environment according to TR TS 032/2013 individually by volumes has been added;**

Program interface:

8. Switching of the names of materials when changing the interface language has been added;
9. Functionality of copying the material has been improved (in 1 click);
10. Attaching a cylindrical shell to the flat part of the conical head has been added;

11. A number of minor warnings in reports are marked with a single style so that if necessary, they can be removed with one command;
12. The names of the nozzle types have been clarified;

BASIC module:

13. For tilted nozzles, a warning has been added about the need to carry out FEM calculations;
14. The check of materials for the R_e/R_m ratio has been added;
15. For lumped mass, material option has been added;
16. For nozzle, the option “Inward forming” has been added;
17. For the “Vessel fixing” component, the local coordinate system has been added;
18. The converter of elements to NozzleFEM program has been improved;
19. Custom material for high pressure cap flat gasket has been added;
20. Drawing of lifting lugs has been improved;

"PASSAT-HEAT EXCHANGERS" module:

21. Baffles for air coolers has been added;
22. Elements of metal structures for air coolers has been added;
23. Automatic fastening of the for air coolers for calculating loads in the elements of the model has been added;
24. Calculation of the tightening torque of the air coolers bolts in accordance with GOST 34233.4 Appendix J has been added;
25. Added the option to place pipes in concentric circles in the tube bundle constructor;
26. Immersion Heater option to U-type heat exchangers calculated per ASME VIII-1 App.41 has been added;

"PASSAT-COLUMNS" module:

27. The option of material has been added to the packings and trays blocks, as well as the independent setting of the material and weight of removable and welded elements;

"PASSAT-TANKS" module:

28. “Tumbstone” option for wall nozzles has been added;

"PASSAT-SEISMIC" module:

29. Fractional seismic rates has been added;

MATERIALS AND COMPONENTS DATABASE:

30. Expansion bellows has been added as per:
    - GOST 27036-86;
    - GOST R 50671-94;
    - GOST R 55019-2012;
    - GOST 22388-90;
31. Torispherical heads has been added as per:
    - DIN28013;
    - DIN28011;
32. Full girth saddle supports has been added as per ATK 24.202.09-2004;
33. Names of standard rolled profiles was clarified;
34. Gaskets has been added as per:
    - GOST 34655-2020;
    - GOST R 53561-2009 (some bugs has been fixed);

Version 3.03.0.12 (30.12.2021)

BASIC module:

1. The calculation of the weight load of the conical transition has been corrected;
2. Conical bottom insulation building has been improved;

"PASSAT-COLUMNS" module:

3. The wind resonance estimate has been revised - if h / D <10, a warning is displayed, but the calculation continues;

"PASSAT-HEAT EXCHANGERS" module:

4. Calculation of the axial stiffness of the expander with bellowed ends was performed incorrectly, corrected;

Version 3.03.0.11 (26.11.2021)

BASIC module:

1. A problem with calculating the weight of the U-jacket has been fixed;
2. Saddle support fixing the U-jacket has been fixed;
3. The algorithm of the option “Pressure effect is included in Fr” for the flange connection has been improved;

"PASSAT-SEISMIC" module:

4. The problem with plotting vertical vessels on supporting legs has been fixed;

"PASSAT-HEAT EXCHANGERS" module:

5. The calculation of allowable stresses for the tube-side space baffle, taking into account the corrosive environment, has been corrected;
6. When editing data, the test pressure of the elements connected to the floating head nozzle is lost. Fixed;
7. Confusion in the interface and in the report when using the "Swap side for tube bundle" option has been fixed;

Version 3.03.0.10 (26.10.2021)

BASIC module:

1. Foundation loads for the horizontal vessel were corrected for the weight of the support;
2. When calculating the bellows expansion joint as a separate element, it was not possible to manually set the deformations. This has been fixed;
3. When forming the table of flanges, in some cases, incorrect designations of fasteners were issued. This has been fixed;

"PASSAT-HEAT EXCHANGERS" module:

4. The “Separetion wall” option in the floating head heat exchanger has been corrected;
5. The "More" option for floating head seal has been corrected;

"PASSAT-TANKS" module:

6. The typo has been corrected (under test conditions, the density of the product, not water, was displayed in the report);

MATERIALS AND COMPONENTS DATABASE:

7. The algorithm for calculating the allowable stresses for some configurations of materials according to ASME div.2 has been improved;
8. A bug in the properties calculation for SB-338 material has been fixed;

Version 3.03.0.9 (28.09.2021)

BASIC module:

1. The program crash in some configurations when calculating the nozzle was fixed (the problem appeared in release 3.3.0.8);
2. Operation of the “F_R includes pressure load” option has been clarified;
3. Bugs in the display of the high pressure nozzle have been corrected;

Version 3.03.0.8 (21.09.2021)

BASIC module:

4. Some typos in the support poles dialog in English have been corrected;
5. The work of the oval nozzle dialog in English has been fixed;
6. The algorithm for calculating the nozzle reinforcement with a toroidal insertion was improved;

7. The limitation on an open vessel on saddle supports was excluded;
8. In rare cases, the calculation of the components masses gives a negative value, corrected;
9. Bugs in the operating of the high pressure nozzle dialog have been corrected;

"PASSAT-HEAT EXCHANGERS" module:

10. In some configurations, the temperature of the floating head bolts was taken incorrectly, corrected;
11. The calculation of loads on flange connections of tube sheets has been added;

Version 3.03.0.7 (29.06.2021)

BASIC module:

1. The support material when calculating the supporting poles was taken incorrectly, corrected;
2. Some configurations of the nozzle gave the message “File error” during the calculation, corrected;

"PASSAT-HEAT EXCHANGERS" module:

3. The calculation of the bellows expansion joint deformations as part of the heat exchanger has been updated;
4. In the U-tube heat exchanger, the option “Combined flanges” has been added;
5. An error in calculating the strength of pipe binding in one of the configurations has been fixed;

Version 3.03.0.6 (15.06.2021)

BASIC module:

1. For tilted nozzles at external pressure or at external loads, a message about the need for additional calculation has been added to the “Errors and Warnings” section;
2. A flat head when docked with a heat exchanger led to a change in the thickness of the flange sleeve, fixed;
3. Check according to GOST 34347-2017 p. 3.2.9 has been corrected;
4. The support material when calculating the supporting lugs was taken incorrectly, corrected;
5. Typos in the calculation of vertical vessel supports have been corrected;
6. The calculation of the shear load on the anchor bolts of the vertical vessel supports has been corrected;
7. The “h_2” value (rib height) in the saddle support dialog had the wrong dimension, fixed;
8. The additional axial nozzle load “F_R” did not take into account the allowance to the nozzle wall thickness, corrected;
9. In some cases, after the calculation, an empty section “Errors and warnings” appeared, corrected;
10. Typos and errors in the report of the saddle support calculation (type 7) have been corrected;

MATERIALS AND COMPONENTS DATABASE:

11. Typo in the flange database (flange 1200-2.5 in accordance with GOST 28759.3-90) has been corrected;

Version 3.03.0.5 (30.05.2021)

BASIC module:

1. Crashes on Chinese operating systems have been fixed;
2. The sketch offset relative to the load diagrams has been corrected;
3. Excessive D_R value was displayed in the high pressure cap report, has been corrected;
4. For cylindrical jackets, the redundant check $r_0 / s_2 > 4$ was removed;

"PASSAT-COLUMNS" module:

5. The calculation of loads in the conditions of vortex resonance was corrected (in some cases, the wind loads turned out to be overestimated);

"PASSAT-HEAT EXCHANGERS" module:

6. Calculation of elements between saddle supports gave an incorrect message “The condition of operability is not fulfilled”, corrected;
7. In the interface, the ability to set the design of tube sheets with oval gaskets was lost, fixed;

MATERIALS AND COMPONENTS DATABASE:

8. For steel P460 according to EN 10028-3, the value of the tensile strength was selected as the maximum (730 MPa), corrected to the minimum;
9. Fixed typos in the blankets database per ASME 16.48;

Version 3.03.0.4 (17.05.2021)

"PASSAT-HEAT EXCHANGERS" module:

1. In some cases, the material of the floating head after the calculation was reset to default, fixed;

Version 3.03.0.3 (11.05.2021)

BASIC module:

1. The ability to attach a flanged boss to a spherical head has been added;
2. Redundant calculation of the bolts for the supporting ring has been eliminated;

"PASSAT-HEAT EXCHANGERS" module:

3. The crash of the program was eliminated when calculating the floating head in some configurations;
4. The bearing of baffles on the casing has been improved (the effect of thermal expansion of tubes has been eliminated);

MATERIALS AND COMPONENTS DATABASE:

5. High pressure studs selection was restored (available by updating via setup.exe);
6. ASME B16.47 8-sided gaskets have been added (available via setup.exe upgrade);
7. The gasket selection dialog has been improved (the cell size has been increased);

Version 3.03.0.2 (26.04.2021)

BASIC module:

1. The problem with the saddle support parameters dialog (in English mode) has been fixed;
2. The “Quick material selection” option for bolting has been fixed;

"PASSAT-HEAT EXCHANGERS" module:

3. The placement of baffles in the shell-side space has been adjusted;
4. The calculation of the air cooler tubes flexibility has been corrected;
5. The option to place supporting legs on the heat exchanger casing has been added;

MATERIALS AND COMPONENTS DATABASE:

6. The selection of EN gaskets has been corrected;

Version 3.03.0.1 (15.04.2021)

BASIC module:

1. The option to control the temperature loads consideration has been added ($\alpha \cdot \Delta T$);
2. The problem with the calculation of the rectangular attachement has been fixed;
3. The export to the NozzleFEM program was restored;
4. Some bugs in the virtual partition report have been corrected;
5. The handling of the changes attribute (standard detachable cover) has been corrected;

"PASSAT-HEAT EXCHANGERS" module:

6. Sketches for floating head heat exchangers have been revised;

7. Redundant check of the floating head A_p> OG has been removed;

Version 3.03 (07.04.2021)
Main innovations:

1. Consideration of higher harmonics when calculating pulsating wind loads has been added;
2. Consideration of thermal loads (thermal elongation) has been added;
3. Flanges summary table has been added;
4. Calculation of stud tightening according to PNAE G-7-002-86 in high pressure covers has been added;
5. ASME VIII-1 UG-79 fiber elongation calculation has been added;
6. ASME VIII-1 UG-16 thickness rating has been added;

Program interface:

7. A quick selection panel has been added to the material selection window;

BASIC module:

8. The option “Inclusion of static head in the design pressure” has been added to the calculation of test pressure;
9. The reporting system has been improved (now pictures and templates are stored in the archive, which speeds up some operations);
10. The ability to set sequential numbering of tables and figures in reports using Word has been added, picture captions have been added;
11. The ability to set the material of legs at the lug support has been added;
12. A flag of choice from the database has been added for a flange connection, as well as a sign of modification of standard sizes;
13. Additional saddle supports designs (with additional ribs) have been added;
14. Material Impact Toughness Testing requirement has been added to warnings;
15. The calculation of MDMT has been improved - the calculated thickness at a decrease in MDMT can be determined based on the calculated pressure (p) or the maximum allowable (MAWP);
16. MDMT calculation by modes (load cases) has been added;
17. When checking the applicability of the WRC-537 methodology, a decoding of the calculated parameters γ, β_1, β_2
18. A sketch of an expansion joint with fillets has been added to the report;
19. For sliding saddle supports, a displacement output has been added (for evaluating the compensating ability);
20. In detachable covers, the thickness of the washers has been added to the calculated length of the studs L_{b0};

"PASSAT-HEAT EXCHANGERS" module:

21. Tube sheet counter flange configurations for U-tube and floating head heat exchangers has been added;
22. Floating head configuration with external seal per ASME VIII-1 UHX has been added;

"PASSAT-SEISMIC" module:

23. Calculation of the natural vibration period for horizontal and vertical vessels has been added (when calculating loads according to EN 1998)

MATERIALS AND COMPONENTS DATABASE:

24. Bellows were added according to codes:
    - OST 34-10-570
    - OST 34-10-571
    - OST 26-01-1506-76
    - OST 26-01-1507-76
25. Standard profiles were added according to codes:
    - GOST 2590-2006 (Round hot-rolled steel bars)

- EN 10056-1:2017(Structural steel equal and unequal leg angles)
- EN 10059:2003 (Hot rolled square steel bars for general purposes)
- EN 10060:2003 (Hot rolled round steel bars for general purposes)
- EN 10210-2:2019 (Hot finished steel structural hollow sections: circular, square, rectangular)
- EN 10058:2018 (Hot rolled flat steel bars and steel wide flats for general purposes)
- EN 10216-1:2002 (Seamless steel tubes for pressure purposes)
- EN 10055:1995 (Hot rolled steel equal flange tees)

26. Data on rupture and creep of materials according to PNAE G-7-002-86 have been added;
27. Metric threads per ASME B1.13M-2001 have been added;
28. ASME gaskets for loose ring flanges have been added;
29. Gaskets according to EN 1514-2-2014 have been added;
30. Bends acccording to ASME B16.9-2018 have been added;

Version 3.02.0.10 (11.02.2021)
BASIC module:

1. When checking flange connections, an incorrect message was displayed, corrected;
2. The help system calling (F1) was fixed.

Version 3.02.0.9 (8.02.2021)
BASIC module:

1. Express evaluation of values in various operating modes for convex heads has been added;
2. Fixed a number of typos in the calculations of cylindrical shells according to ASME VIII-2;
3. Fixed typos in the ring support dialog according to EN 13335;
4. The reference temperature for the selection of the material of the detachable flat cover was taken incorrectly, fixed;
5. When calculating the nozzle, the material properties for the bearing element were calculated by the total thickness, but it is necessary by the base layer, corrected;
6. When calculating the nozzle according to ASME VIII-2, the angle θ was determined incorrectly, corrected;
7. When calculating a Loose-type flange with a cone sleeve, the stiffness coefficients were determined incorrectly, corrected;
8. Crash when displaying a flared cone in OpenGL mode was fixed;
9. Calculation of hillside nozzle in accordance with ASME VIII-2 was fixed;

"PASSAT-HEAT EXCHANGERS" module:

10. The coefficients K_{y3}, Kyp were added to the calculation of the allovable stresses for the air-cooling heat exchangers studs;
11. The algorithm for checking the nozzles in the welded chambers of the air-cooling heat exchangers has been improved (now it allows nozzles of a larger diameter);
12. A picture of an expansion joint with bellows sidewalls has been added to the report;
13. The calculation of the effective pressure Pe in the floating heads of some configurations was performed incorrectly, corrected;

Version 3.02.0.8 (13.01.2021)
BASIC module:

1. There was a problem with some cases of anchor bolt calculation (message about non-existent file), fixed;

2. The calculation of the bolt load P_b^p in the design of the detachable flat cover has been updated;
3. The calculation of the bearing wall thickness for the trunnion, in the case of plating, has been updated;

"PASSAT-COLUMNS" module:

4. There were errors and misprints in the calculation of the skirt support according to EN, fixed;

"PASSAT-HEAT EXCHANGERS" module:

5. In some cases, the stiffening elements of the heat exchanger casing were not displayed in the table, fixed;

"PASSAT-TANKS" module:

6. The material of the tank anchor chairs is reset when exiting the dialog, fixed;
7. Anchor bolt material when opening an old file was imported as "sheet", fixed;
8. With some files of previous versions, the nozzles are moved to the center of the roof, fixed;
9. The operation of the button "Total allowance to the tank nozzle thickness" was fixed;

Version 3.02.0.7 (28.12.2020)

MATERIALS AND COMPONENTS DATABASE:

1. There was a problem with the material properties of anchor bolts at elevated temperatures, corrected;

Version 3.02.0.6 (25.12.2020)

BASIC module:

1. Check when placing a large number of nozzles in the shell was optimized and accelerated;
2. There was an extra parameter H_2 in the saddle support data dialog, fixed;
3. The fastener tightening torque has been added to the short report;
4. The calculation of the saddle support according to ASME has been corrected (the calculation length was incorrectly determined for the composite shell);
5. When opening the dialog of vertical legs, the report was reset, fixed;
6. The calculation of characteristic B for low-cycle strength was improved;
7. Extra positions appeared in the list of references, corrected;
8. Sketches and 3D modeling of nozzles was corrected in accordance with GOST 34233.3 (parameter l_1 in the presence of reinforcement pads);
9. The formula for checking the nozzle calculation length under the action of loads has been corrected;
10. Rigid connection was incorrectly taken into account in the calculation of test pressure, corrected;

"PASSAT-COLUMNS" module:

11. Some bugs in the calculation of the skirt support assemble by D.Moss, Bednar was fixed;
12. The calculation of higher vibration frequencies has been optimized and accelerated many times over;

"PASSAT-HEAT EXCHANGERS" module:

13. Crash in some cases when placing a nozzle on a floating head was fixed;
14. 3D modeling of an expansion box with a sidewall-bellows was fixed;

"PASSAT-SEISMIC" module:

15. The calculation of vertical legs and their anchor bolts in seismic conditions was improved;

MATERIALS AND COMPONENTS DATABASE:

16. The center distance of the line blanks according to TMM-25-01-06 was incorrect in the database, corrected;

17. The flange plate thickness t according to ASME (male-female) was taken incorrectly from the database according to GOST 33259, corrected;

Version 3.02.0.5 (02.12.2020)
BASIC module:

1. When exporting models to solid geometry formats, the names of the bodies were transferred in an incomprehensible encoding, fixed;
2. Fixed crash of the program when the offset of the upper platform was incorrect;
3. When calculating according to ASME, the account of the allowances c_1, c_2, c_3 has been adjusted when calculating the outer and inner diameters;

"PASSAT-COLUMNS" module:

4. The calculation of higher vibration modes with period estimation according to table 1 of GOST 34283-2017 was added;

"PASSAT-HEAT EXCHANGERS" module:

5. In some cases, the “The same tightening” option for tubesheets did not work correctly, fixed;
6. When modeling stacked heat exchangers in some configurations, loads were not transferred correctly to the foundation. Fixed;

MATERIALS AND COMPONENTS DATABASE:

7. Changes in the standards for some gaskets were not taken into account; Fixed;
8. Collision handling when importing material from a file was

Version 3.02.0.4 (17.11.2020)
BASIC module:

1. Duplicate reports in some cases found, fixed;
2. Notification in case of external bending moment for two bracket supports was added;
3. Handling of negative bolt load case for flanges was added;

"PASSAT-COLUMNS" module:

4. Export of support skirts to xml was fixed, which allows opening them in the NozzleEM;

"PASSAT-HEAT EXCHANGERS" module:

5. Calculation of the floating head spherical cover was improved (in some cases, an excessive message about the strength violation was displayed);
6. In some cases, the “The same tightening” option for tubesheets did not work correctly, fixed;

MATERIALS AND COMPONENTS DATABASE:

7. In version 3.02, changes in the standards for some gaskets were not taken into account; Fixed;

Version 3.02.0.3 (27.10.2020)
BASIC module:

1. The drawing of reversal flanges was fixed (in some cases there was no gasket);
2. Material attributes for loose flanges was fixed;
3. When changing the design temperature of the cover with several loading cases in the "Group data editing" window, the temperature value does not change, corrected;
4. Selection of fasteners in the interface of detachable covers was fixed;
5. Density in general data and temperature in load case tables have always been rounded to 3 digits, regardless of user setting, fixed;

6. Calculation of rectangular connections according to WRC-107 (537) for hemispherical heads was added;
7. In some cases, the “The same tightening” option for detachable covers did not work correctly, fixed;

"PASSAT-COLUMNS" module:

8. The drawing of trays was fixed (in some configurations the trays were displayed upside down);
9. In the results of calculating the skirt with several loading cases for the second and subsequent modes, the design temperature T = 0˚C was displayed, corrected;
10. The calculation of a joint with a support according to ATK 24-200-04-90 has been improved (so that the calculation is not interrupted if it is impossible to calculate the materials properties);

"PASSAT-HEAT EXCHANGERS" module:

11. In some cases, U-tube heat exchanger lacked shell design under test conditions, corrected;
12. Removed redundant checks as per 5.5.4 of GOST 34233.7;
13. The U-tube heat exchanger lacked the “Tube bundle” section, fixed;
14. The calculation of the bellows on the expansion box was not displayed, fixed;
15. The picture of the flange plate on the tubesheet with ring gaskets was fixed;
16. When the "accept as first" button was pressed, the flange connection did not copy the temperatures, the algorithm was improved;

"PASSAT-TANKS" module:

17. The misprint in the output of the formula for the load on the foundation Qmax was fixed;

MATERIALS AND COMPONENTS DATABASE:

18. In some cases it was not possible to match the cover together with the flange, fixed;
19. Creep and rupture strength for some materials according to EN 10213-2 was not displayed in the table, corrected;
20. Work continued on bringing the ASME materials database in line with the 2019 edition;

Version 3.02.0.2 (02.10.2020)

BASIC module:

1. The problem with negative support forces in assemblies was fixed;
2. The option “do not export insulation and lining” has been restored;
3. The problem of the converter to 3D-formats was fixed (the model was not rebuilt before export);
4. In the English version, the headers of low-cycle data for flanges have been corrected;
5. When calculating a flange connection as part of the model, the "equal tightening" option in some cases ignored external loads, fixed;
6. Stiffening rings were not taken into account in children of assemblies, fixed;
7. The problem that appeared in version 3.02 with the transfer of pressure in the bulks was fixed;
8. Modeling of the U-shaped jacket was fixed;
9. Improved checking of the “closedness” of the vessel when using flanged blinds and bulks;
10. The operating with the load cases table was optimized (added synchronization with component data, enabled multiple selection);

"PASSAT-COLUMNS" module:

11. Some typos in the supporting assembly report was fixed;

"PASSAT-HEAT EXCHANGERS" module:

12. The broken link to the tube bundle in the floating head heat exchanger report was fixed;
13. Temperatures of tube sheet flange parts were reset, fixed;

14. Transfer of loads to the casing of the heat exchanger with floating head and U-pipes has been restored;
15. In the dialog of the floating head, it was not possible to set the c_p allowance, fixed;
16. The material designation was not fully displayed in the tube sheets, corrected;
17. The check of tubesheet thickness in the heat exchanger dialog was added;

"PASSAT-TANKS" module:

18. Some configurations of fittings led to the disappearance of the model on the screen, fixed;

MATERIALS AND COMPONENTS DATABASE:

19. The database was missing some properties for SB-166, fixed;
20. Operating of the database when the joint selection of a flat cover and flange was fixed;
21. Some typos in the flange database was fixed (flange 800-2.5-01-1-B GOST 33259-2015, flange 1-900-2.5 and 1-900-4.0 GOST 28759.3-9)
22. The properties of the material SA-387 Gr.11 Cl.2 have changed in the 2019 edition, the database was updated;
23. I-beams and channels according to EN 10365:2017 have been added to the profile library;

Version 3.02.0.1 (07.09.2020)

BASIC module:

24. Solution stability problem of some models when determining the loads in the elements was fixed (appeared in version 3.02);
25. Problem with the temperature of the stiffening ring was fixed (appeared in version 3.02);
26. During the calculation, the model was not rebuilt automatically in the maximum accuracy mode (appeared in version 3.02). Fixed;
27. The calculated loads on the anchor bolts of the saddle supports have been updated;
28. Nozzles summary table was fixed (one column was missing in the English version);
29. Lifting lugs modeling was fixed;
30. The limitation on automatic flange connection temperatures calculation (in the presence of insertion) has been removed;
31. The option to individually set flange connection parts temperatures according to design modes was added;
32. Allowance is excluded from the calculation of the governing thickness tg for MDMT;

"PASSAT-HEAT EXCHANGERS" module:

33. Shell-side volume calculation was refined for a heat exchanger with a floating head, U-pipes;
34. Calculation of the tightening torque for floating head studs (configuration with semi-rings) was added;
35. Unexpected crash when calculating a heat exchanger as part of a column was fixed;

"PASSAT-SEISMIC" module:

36. Optional anchor bolts calculation as per MDS 31-4.2000 is disabled;
37. Anchor bolts calculation was fixed (not all design cases were checked correctly);
38. Redundant table of anchor bolt loads was removed;

MATERIALS AND COMPONENTS DATABASE:

39. For 09G2S material, creep was taken into account starting from 375 degrees. Fixed;

Version 3.02 (24.07.2020)

Main innovations:

1. The calculation of the model in several loading cases is implemented, with the possibility to change the operating fluid, its density, pressure, temperature;
2. The calculation of the minimum design material temperature (MDMT) according to ASME VIII-1 is implemented;

3. The calculation of seismic loads according to EN 1998, wind loads according to EN 1991 is implemented;
4. We have added new components:
    - Ring support of the vertical vessel according to EN 13445-3;
    - Flat head with radial ribs, version 3 (bolted head);
    - Full girth saddle support;
5. We have added a number of new calculations:
    - Nozzle reinforcement according to ASME VIII-2;
    - Skirt support according to ASME VIII-1, ASME VIII-2, EN 13445-3;
    - Supporting assembly of skirt according to Bednar, D.Moss, EN-13445-3;
    - Spherical bolted head according to ASME VIII-2;

Program interface:

6. We have added the possibility to attach several groups of supports to a vertical vessel;
7. We have added new features for saddle supports:
    - flip the saddle supports upside down to simulate the bearing on the vessel;
    - attaching the saddle supports to the child components;
    - connecting the saddle supports to each other using a rigid connection to form the full girth supports;
    - the option “without calculation”, when it is necessary to draw in detail the saddle support, but calculation is not required;
    - the possibility to flip asymmetrical supports from left to right;
8. We have added the possibility to input convex heads by the outer diameter;
9. The "Systems of Units" buttons have been added to the units dialog;
10. We have added a clearer explanation of the solver errors;
11. We have added translation of standard workpiece in the material designation to the current interface language;
12. We have added the classification of changes when editing a model, so as not to rebuild the whole model (only those elements that are affected by the changes are rebuilt).
13. The functionality of the group editing temperature dialog has been improved, now it allows you to edit other data (thickness, negative tolerances, corrosion allowances);

BASIC module:

14. We have added the plating accounting according to ASME VIII-1, ASME VIII-2;
15. For the heads with radial ribs, we have added the possibility to transfer the axial load as an external one;
16. For the element "Rigid link" we have added options for the stiffness calculating: Absolute; By cross-section; Manually;
17. For the “Vessel fixing" component, we have added the possibility to specify a flexible fixing by degrees of freedom;
18. Positioning options are added for the "Assembly" component: In the model coordinate system; At the beginning of the parent component; At the end of the parent component;
19. For flat high pressure head we have added the possibility to calculate according to GOST 25215-82;
20. In the report, the picture with the design diagram of the horizontal vessel platform has been corrected;
21. For all nozzle configurations, we have added the possibility to specify the corrosion allowance cs1;
22. When determining the category according to TR CU 032 with a vessel under external pressure, negative "p" and negative product V * p were taken, corrected;

"PASSAT-COLUMNS" module:

23. We have added the temperature estimation of the skirt support components:
    - on the recommendations of ATK 24.200.04-90;

- based on the solution of the one-dimensional heat conduction equation;

"PASSAT-HEAT EXCHANGERS" module:

24. We have added the floating head configuration with external seal (type D);
25. We have added the option to set expander with bellows sidewalls, taking into account their pliant with the equations for the bellows;
26. We have added the possibility to define a bellows with a cylindrical segment on the outer diameter;
27. We have added the option to set the casing by the outer diameter;
28. For the tube bundles specified in the “Constructor”, the link between the placement parameters t_x, t_y and the pipe pitch t_p has been added;
29. For floating heads, the possibility to select standard elliptical head has been added;
30. Calculation of the shell-side volume, taking into account the displacement of the product by the parts of the heat exchanger, was refined;

"PASSAT-TANKS" module:

31. We have fixed bug in calculating of the maximal summary load on the tank foundation (Q_{max}^{*})

MATERIALS AND COMPONENTS DATABASE:

32. The operating with the database of standard shells, pipes has been greatly accelerated;
33. A database of gasket materials has been created;
34. We have added the gasket materials according to standards (in addition to those already available):
    - ASME VIII-1.2
    - EN 13445-3
35. A database of threads has been created, standards have been added:
    - GOST 24705-2004
    - ASME B1.1-2003
    - ISO 68-1: 1998
    - GOST 34233.4
    - OST 26-2040-96
36. Anchor bolt thread database is unified with fasteners;
37. For materials according to GOST 34233.1, an assessment of creep along the horizontal line has been added;
38. We have added the calculation of properties for Chinese materials (according to their tables of allowable stresses);
39. We have added pipes in accordance with GOST 33229 (Pipes for boiler and heat exchange equipment);
40. The database of bellows expansion joints was modified according to OST 26-01-1505-76;
41. We have added line blanks according to ATK 26-18-5-93, T-MM-25-01-06, ASME B16.48-2015;

Version 3.01.0.14 (22.06.2020)

BASIC module:

1. The collision check of the fitting and the flange boss has been fixed;;
2. When calculating the flange boss on the head, checking the value of H_3 is redundant, fixed;
3. The calculation of the nozzle reinforcement with beading is fixed for a small knuckle radius;

"PASSAT-COLUMNS" module:

4. In some rare cases, the program “did not see” the load applied to the column nozzles, fixed;
5. The behavior of the skirt dialog is fixed for conical transition;

"PASSAT-HEAT EXCHANGERS" module:

6. In some configurations of heat exchangers with a floating head, the mass of the tube bundle was incorrectly taken into account, fixed;

MATERIALS AND COMPONENTS DATABASE:

7. The problem when opening the tank model containing user defined material was fixed;
8. For tank, the copy-paste function of the material did not work, fixed;

Version 3.01.0.13 (09.03.2020)

BASIC module:

1. The drawing and checking of stiffening rings on the cone, was fixed;
2. Flanged boss did not respond to position angle during rendering, we fixed it;
3. The drawing problems with supporting brackets on the conical transition was fixed;
4. The small algorithm mistake for calculating the allowable pressure for the conical bottom was fixed;
5. The problem with the calculation of permissible stresses for the nozzle when calculating according to ASME VIII-2 was fixed;
6. The small bug in the calculation of the mean convex head radius at the nozzle insertion point was fixed;
7. In detachable flat covers the option "swap surfaces" did not work correctly, fixed;
8. For a flat ribbed head, the irrelevant design thickness was displayed in the summary table, fixed;
9. When changing temperatures, the list did not display a sign of file modification;
10. Nozzle calculation as per EN 13445-3 was not performed when external pressure, fixed;

"PASSAT-COLUMNS" module:

11. When calculating the wind resonance, the Vimax / Vicrit colors are confused;;

"PASSAT-HEAT EXCHANGERS" module:

12. A number of problems with the calculation of the floating head nozzle was fixed;
13. The calculation of allowable stresses for heat exchanger elements in the presence of two media with different corrosion activity was improved;;

MATERIALS AND COMPONENTS DATABASE:

14. The stress table did not always respond to the High Stress option, fixed;
15. The density of 44Fe-25Ni-21Cr-Mo material was not indicated in the material database, fixed;

Version 3.01.0.12 (03.02.2020)

BASIC module:

1. The problem with displaying the “High Stress” option in the material selection dialog has been fixed;
2. When calculating the nozzle in the column, its worst loading case evaluation was corrected;
3. The calculation of the shell stpossibility criterion between saddle supports according to ASME was corrected;
4. The type of workpiece has been added to the material denotation;

"PASSAT-COLUMNS" module:

5. The output of the calculated seismic moment to the total loads table was fixed;

"PASSAT-HEAT EXCHANGERS" module:

6. The button “Accept the chamber flange as a shell flange” did not copy the flange data according to ASME, fixed;

Version 3.01.0.11 (15.01.2020)

BASIC module:

1. The safety factor when calculating titanium alloys under test conditions was fixed;
2. Fixed typos in the high pressure cover calculation;

3. The update number of the current version has been added to the report;
4. Fixed typos in the service platform report;
5. Links to canceled GOST in the flanges calculation was fixed;

"PASSAT-TANKS" module:

6. Information about the foundation material (concrete) has been removed from the report;

"PASSAT-COLUMNS" module:

7. Technological recommendations for the thickness int the supporting assembly are issued in the form of notifications;

"PASSAT-HEAT EXCHANGERS" module:

8. In the calculation of detachable floating heads, the default material properties was fixed;

Version 3.01.0.10 (23.12.2019)

BASIC module:

9. The calculation of allowable stresses for elements attached to the inside of the nozzle was fixed;
10. The calculation of allowable stresses for austenitic steels in the presence of a corrosive medium was fixed (was carried out as for carbon steel);
11. For the combined flange connection (“Flat” - “Ring”), the pliant calculation was fixed;
12. When calculating a spherical head in combination with a conical transition, the wall inclination was added;
13. When calculating the spherical head, the adjacent component allowances was added;
14. The weld stresses calculation for the nozzle according to ASME div.2 was fixed;
15. The rotation of the supportind legs plate was added;
16. The program crash when input an equal bore tee was fixed;

"PASSAT-HEAT EXCHANGERS" module:

17. In devices with U-pipes or a floating head, verification of pipe strength was added;
18. The insulation and lining option for the expansion box was added;
19. When calculating tube sheets according to ASME div.1, excessive calculations were removed at $P_s = P_t = 0$;

"PASSAT-COLUMNS" module:

20. Fixed typos in the skirt report;

MATERIALS AND COMPONENTS DATABASE:

21. The value of the yield strength for steel 09G2S KP245 at 20 ° C was fixed;

Version 3.01.0.9 (02.12.2019)

BASIC module:

1. The strength check of flanges with a straight sleeve was fixed;
2. The calculation of elements according to WRC-107/537 (inset, connection areas) was improved. The creep accounting was added. Permissible stresses are taken in accordance with the code of the parent component;
3. In the torospherical bottoms, a conversion of the beading radius r_1 from inside to outside was added;
4. The check of the torospherical head straight flange was fixed;
5. The automatic calculation of d_4, l, α_2 values in the supporting lugs was added;
6. The lining modeling in the flanges was fixed;
7. The accounting of the distributed loads on the heads was fixed;
8. The RTF report bugs was fixed;
9. The allowable stresses are fixed taking into account the H_2S medium at $T > t_{pr}$;
10. The pressure in the components of the child assembly did not automatically extend to the parent component, fixed;

"PASSAT-HEAT EXCHANGERS" module:

11. The behavior of stiffening rings on the expander is fixed (problems with 3D modeling);
12. The calculation of the tube sheet thickness in the perforation zone was fixed for heat exchangers with a floating head, without a separating wall;

Version 3.01.0.8 (05.11.2019)

BASIC module:

1. The RTF converter bugs was fixed, when working on Windows 7;

"PASSAT-TANKS" module:

2. Components of a standard vessel (shells, heads) were added to the tank model;
3. When checking the nozzles into the tank, the thickness of the wall is displayed with an error (the calculation was correct). Fixed.

Version 3.01.0.7 (30.10.2019)

BASIC module:

1. The RTF converter was improved;
2. The service platforms on the U-jackets were shown upside down. Corrected;
3. The trunnion material was added to the report;
4. The accounting for cladding in ASME calculations has been corrected;
5. When calculating the saddle support according to GOST 34233.5 its corrosion was not taken into account, fixed;
6. When calculating according to GOST 34233.4-2017, the flange + flat cover connection with a zero wall thickness of the adjacent element, the cover was not calculated. Corrected;
7. The option "Swap sealing surfaces" for the flat cover was added;

"PASSAT-COLUMNS" module:

8. Fixed typos in the output of support sections;
9. A notification was added according to GOST 34233.9 in the presence of a displacement of neutral surfaces in the connection of the skirt with the shell;

"PASSAT-HEAT EXCHANGERS" module:

10. In the air-cooling heat exchanger tube bundles designer was added the pipes statistics;
11. The accounting of the corrosive medium in divided volumes was corrected
12. When trying to put a saddle support on the transition shell of the heat exchanger, the program crashed. Corrected;

MATERIALS AND COMPONENTS DATABASE:

13. Typos were corrected when calculating the properties of materials;

Version 3.01.0.6 (16.10.2019)

BASIC module:

14. Excluded elements attached to the inside of the nozzle, when evaluating the test pressure;
15. When calculating the vessel on saddle supports with several volumes, there were problems with the transmission of information about the presence of a corrosive medium in the elements. Corrected;

"PASSAT-COLUMNS" module:

16. Sometimes, external loads were not transferred to the components and the foundation. Corrected;
17. Fixed typos in the general data;

MATERIALS AND COMPONENTS DATABASE:

18. The tube-sheet flange dimensions selection has been modified;

19. Problems when choosing bolt materials according to EN standards fixed;

Setup program:

20. When launched on foreign operating systems, a dialog for selecting languages was displayed in Russian. Corrected;

Version 3.01.0.5 (07.10.2019)

BASIC module:

1. For ASME materials, the accounting of hydrogen sulfide medium is correct;

"PASSAT-HEAT EXCHANGERS" module:

2. Incorrect radius calculation of some types of floating heads (spherical) was fixed;

MATERIALS AND COMPONENTS DATABASE:

3. The selection of the flanged tubesheet dimensions has been improved (the tubesheet flange is interpreted as a butt-welded flange);

Version 3.01.0.4 (26.09.2019)

BASIC module:

1. Fixed calculation of nozzles with weld-in ring (the ring is considered as the wall thickening);
2. Added output of information about spacers to flange reports;
3. Checkout of “e” parameter for nozzles in torispherical heads has been changed from error to warning;
4. In some cases, when opening old files, an element material was reset to default. Fixed.

"PASSAT-HEAT EXCHANGERS" module:

5. Fixed insignificant misprints in floating head calculation;
6. In some cases, when calculating air-cooling tube bundles, the program crashed. Fixed.
7. Added allowance for the number of start-stop cycles in calculation of air-cooling tube bundles;

"PASSAT-COLUMNS" module:

8. With allowance for seismic conditions, the moment was transferred to the elements without factor 1.25. Fixed.

"PASSAT-TANKS" module:

9. Fixed calculation of allowable stresses for standard materials of the tank wall;

Version 3.01.0.3 (16.09.2019)

BASIC module:

1. Added option to attach fixing to the attachement  ;
2. Attached structure generated a blank report; fixed;
3. Fixed a problem with calculation of filling at hydrotests, that appeared in version 3.1.0.1;
4. Fixed a misprint in flange temperature stress estimation (100°C instead of 120°C);
5. Fixed a problem with remote access to the dongle from other time zones (for program demo version);

"PASSAT-HEAT EXCHANGERS" module:

6. Fixed calculation of tube sheet in some configurations as per ASME (diameter A=0 was taken);
7. Fixed error in checking of floating heads;

"PASSAT-SEISMIC" module:

8. Fixed checking of landing pads number as per EN;

"PASSAT-TANKS" module:

9. Added checking of the head thickness depending on the tank volume, as per i. 6.1.3.3 of GOST 31385-2016;

MATERIALS AND COMPONENTS DATABASE:

10. Fixed recalculation of inside/outside diameters in the nozzle dialog, when selecting from database;
11. Fixed database behaviour, when selecting flanges of tube sheets in some combinations;

Version 3.01.0.2 (29.08.2019)

BASIC module:

1. Data verification has been improved of the swivel cap (moved to the dialog);
2. Data verification has been added: adjacent elements must be cylindrical shells when calculating the cone according to EN;
3. The calculation of the effective diameter of the conical shell by the formula (108) of GOST 34233.2 is refined;
4. The error with the applying of pressure to adjacent elements behind the elliptical plate has been fixed;
5. The strength criterion has been corrected in the calculation of the expansion bellows, now 2[σ] instead of 2,5[σ];
6. The check of application range has been improved for conical bottoms with GOST 34347 p. 3.2.9.

"PASSAT-HEAT EXCHANGERS" module:

7. The error has been fixed when thickness allowances c_2, c_3 in the transition shell of the heat exchanger reset to 0 after calculation;
8. The algorithm for calculating the plug of the convex cover of the floating head has been changed (for the butt-welding flange, for the bottom with a short bevel);

"PASSAT-SEISMIC" module:

9. The error has been fixed for calculating the vertical vessels when the support loads were determined excessively;
10. The error has been fixed when the graph names are not visible on the diagrams in the seismic of vertical vessels;

MATERIALS AND COMPONENTS DATABASE:

11. The negative tolerance was added in calculations according ASME SA480, ASME BPVC.II.A [unavailable for automatic updates];
12. The error has been fixed when the choice of standard flanges for tube sheets did not work in calculating heat exchangers according to ASME;

and other minor fixes and improvements.

Version 3.01.0.1 (14.08.2019)

BASIC module:

1. Fixed calculation of ring support gussets (My);
2. Improved calculation of supporting lugs on the shell: Output of obtained loads is performed even in case of violation of the procedure limits.
3. Fixed a problem with program failure, while attempting to calculate bolts at high temperature;
4. Fixed a problem with excessive calculation of spectacle blinds;
5. Rendering of conical head without stiffening failed in mode OpenGL. Fixed.

6. When checking the edge zone of the detachable head (s3), there is no need to take into account the allowance. Fixed;
7. In some cases, when saving a model, material of washers and dividers was lost. Fixed.
8. Fixed model rebuilding, when switching group of rings "Inside>Outside".
9. Fixed check for i. 3.2.9 , GOST -34347-2017;

"PASSAT-HEAT EXCHANGERS" module:

10. Improved check of placement of dividers in the shell-side;
11. Improved checking algorithm of input data for some floating heads;
12. In some cases, option "Equal tightening" was not displayed in tube sheet parameters. Fixed;
13. Fixed an error in determining of the worst combination of pressures in new types of floating heads;

"PASSAT-TANKS" module:

14. Fixed calculation of hydrostatic pressure in test mode;

"PASSAT-COLUMNS" module:

15. In general data window, seismicity cell was hidden. Fixed.

MATERIALS AND COMPONENTS DATABASE:

16. In standard materials database, properties of some steels were not found. Fixed;
17. In flanges with a slope of 1:2.5 there was no cylindrical section in the database. Added [not available during automatic update];
18. Fixed an error in selection of necks as per GOST 13716-2017 [not available during automatic update];

Version 3.01 (24.07.2019)

1. Option "Swivel blind" in the flange joint is added with the calculation of the clamped flat head;
2. Calculation of rigid connection for strength/stpossibility due to axial load is added;
3. New components are added:
   - Bellows expansion joint;
   - Bracket supports for horizontal vessels;
   - Rigid structure;
   - Nozzle in the floating head of the heat exchanger;
   - Service platforms for horizontal vessels;
   - Virtual bulk;
   - The calculation of shells due to saddles and bracket supports as per EN 13445-3;

User INTERFACE:

4. Undo/Redo commands are designed as a drop-down list with explanations;
5. Option "No model rebuild" is added;
6. Button to display of service platforms is added;
7. Possibility to select several components in the list for deletion at once is added;
8. Program behavior when viewing material properties without changing it, is fixed;
9. Option to specify the outside diameter for some components (cylindrical shell, fitting) is added;

BASIC module:

10. Asymmetrical saddle support configurations with 4 and 5 stiffening ribs is added;
11. Option to specify saddles with inclined ribs is added;
12. For flat conical head, the option "No reinforcement" configuration is added;
13. Option "Subtract static head" in calculating test pressure is added;
14. Option "Offset" for the nozzle in conical transition is added;
15. Calculation of surface areas of components is added;
16. Possibility to convert a file from PASSAT format to XML format in silent mode is added.

17. Stiffness calculation of the combined flange joint is fixed;
18. Calculation of the flange joint elements temperature in the “Auto” mode is corrected;
19. Multiple openings calculation as per EN 13445-3 is added;
20. Bugs and misprints are fixed in the calculation of conical transition connection as per ASME div.II;
21. Solid model generation of conical transition to a small diameter is improved;
22. Check of $r < s_p$ when calculating the nozzle is added;
23. Calculation of loads on the vertical vessel foundation is added;
24. Groove depth (s2’) in detachable flat covers is added;
25. Additional checks according to GOST 34347-2017 are added;

"PASSAT-COLUMNS" module:

26. Calculation engine of the column vessels is improved: it is now possible to plot the joint diagrams “Load + Wind”, “Load + Seismic” in two planes, taking into account the signs, as well as determine the reactions of fixings in different design cases;
27. Option “Conical transitional skirt section” is added;
28. Calculation of wind and seismic loads according to GOST 24756-81 is added;

"PASSAT-HEAT EXCHANGERS" module:

29. Various options for floating head configurations are added:
    - Welded (with elliptical / torus head);
    - Flanged (integral weld neck/slip on) and detachable (elliptical, spherical);
    - Clamped flanged (integral weld neck/slip on);
30. Air-cooled heat exchanger tubesheet designer is added;
31. Check of the baffles as per GOST 31842 table 2 is added;
32. Option “Tubesheet calculation pressure” is added;
33. Calculation of the floating tubesheet thickness is added;
34. Option “Plugs presence” in air-cooled heat exchanger chamber is added;
35. The note in accordance with GOST 34233.7 p. 6.3.6 is added;
36. Modelling of the tube-side separation walls is added;
37. Possibility to apply loads to the heat exchanger casing is added;
38. Possibility to connect the support to the U-tube heat exchanger transition shell is added;

"PASSAT-TANK" module:

39. Materials database is merged with a common library on the basis of sheet workpiece;

MATERIALS AND COMPONENTS DATABASE:

40. Calculation of allowable stresses for materials according to GOST, ASME div. I, ASME div. II, EN is significantly modified:
    - Option “High stress“ for stress evaluation by ASME is added;
    - Option Class I/ Class II (ASME) is added;
    - Calculation of the allowable stresses is made differently depending on the calculation code and the material code (material according to GOST / ASME div.I / ASME div.II / EN / User defined; calculation according to GOST / ASME div.I / ASME div.II / EN);
    - Accounting for creep in different ways in different design codes is implemented;
41. Option to customize the location of a network database with user materials is added, including synchronization and access control;
42. Materials as per EN 10095, EN 10302 are added;
43. Flanges as per ГОСТ 33259 with a slope of 1:2.5 are added;
44. Materials as per EN 10253-2-2007 are added;
45. Bends as per large number of codes are added;
46. Bolt groove diameter selection, on the outside thread diameter with different pitch, according to GOST 24705, is added ;
47. Text descriptions of standard sections in database are replaced with symbols;
48. Thermally expanded graphite gasket database is updated;

49. Bellows expansion joints according to OST 26-01-1505-76 are added;

Version 3.00.0.17 (17.07.2019)

BASIC module:

1. When calculating the beaded nozzle when r <s_p, an error occurred. Fixed;
2. Checking of the nozzle located on the conical head in Cartesian coordinates is corrected;
3. In the dialog of the U-jacket, the spiral pitch cell (t_s) was not visible. Fixed;

"PASSAT-HEAT EXCHANGERS" module:

4. Effective gasket width (Air Cooler) for the old code (RTM, when b_p> 15mm) was calculated incorrect. Corrected;
5. Calculation of Air Cooler with a very large tubes number (> 7000) crashed. Fixed;

Version 3.00.0.16 (15.04.2019)

BASIC module:

1. Output of the nozzle diameter d_0 in the nozzles table is fixed;
2. Material properties of the saddle support were taken at 20 ° C, it is more correct to take at the calculation temperature. Fixed;
3. Calculation of the high-pressure nozzle (medium input with continuous penetration) is corrected;
4. Calculation of the nozzle strength from external loads according to GOST 34233.3 is not applicable with external pressure. Check was added;

"PASSAT-TANK" module:

5. Filling calculation of the vertical tank nozzles is fixed;

Version 3.00.0.15 (15.03.2019)

BASIC module:

1. Calculation of the reverse flanges gasket parameters is improved;
2. Tubular supports-legs were not considered for stpossibility under the test conditions. Fixed;
3. Algorithm for calculating the load in the detachable covers was modified;
4. Problem with the calculation of allowable stresses for nickel alloys (in some cases there was a division by zero) is fixed;
5. Problem with displaying a blank page of problem components is fixed;
6. A number of typos and inaccuracies in the calculations of the heads as per ASME are fixed;

"PASSAT-HEAT EXCHANGERS" module:

7. Problem with the crash when creating a heat exchanger as per ASME is fixed;

"PASSAT-COLUMNS" module:

8. Calculation for wind resonance under testing was removed, under assembling it was added;
9. Algorithm for calculation of critical wind speed in resonance conditions is improved;

Version 3.00.0.14 (26.02.2018)

BASIC module:

1. Problem due to which in some cases it was not possible to specify nozzle on a conical head in the polar coordinate system, is fixed;
2. The name of the parameter d_0 in the nozzle is aligned with GOST;
3. The parameter d_0 in the nozzle at the external pressure was considered incorrect, fixed;

"PASSAT-HEAT EXCHANGERS" module:

4. Graphical artifacts fixed when drawing some types of floating heads;
5. Some typos fixed in the calculation of fixed tubesheets;

DB of materials and standard components:

6. Database crash fixed when trying to select a combined flange (ring + weld neck)

Version 3.00.0.13 (06.02.2019)

BASIC module:

1. GOST for wind loads was not included in the list of references. Fixed;
2. In calculation per ASME div.II, the calculation of allowable stresses during testing was fixed (0.95·Sy or 0.8·Sy);
3. Error of release 3.0.0.11 in determining of calculation thickness of the nozzle's wall (double allowance) is fixed;
4. Misprints in calculation of detachable flat cover with holes are corrected;
5. A bug in creation of the table of cavities, connected with the helical coil, is fixed;

"PASSAT-HEAT EXCHANGERS" module:

6. In sheets, during automatic placement of tubes in cells of 60°, the angle was not maintained accurately. Fixed.
7. Algorithm for creation of separating walls with a very large number of tubes (earlier it could lead to a program failure due to shortage of memory) is improved;
8. Problem with assigning of ACU tube bundles is fixed;

"PASSAT-COLUMNS" module:

9. Algorithm for calculation of critical wind speed in resonance conditions is improved;
10. In some cases, not maximum loads were transferred to the calculation of the support skirt and to the foundation. Fixed.

"PASSAT-SEISMIC" module:

11. In some cases, loads on vertical vessel supports in seismic conditions have been applied to the operating conditions. Fixed.

Version 3.00.0.12 (31.01.2019)

PASSAT-HEAT EXCHANGERS" module:

1. Problem with assigning of ACU tube bundles is fixed.

Version 3.00.0.11 (24.01.2019)

BASIC module:

2. An element "Fixation" generated for seismic conditions a message "File not found". Fixed;
3. Allowance for external loads in detachable covers is added;
4. In calculation results, the calculation thickness of nozzles is indicated without allowance, while the one is displayed in the table. Fixed;
5. Calculation of filling elements connected to the inside part of set-through nozzle is fixed;

"PASSAT-SEISMIC (SEISMIKA)" module:

6. Problem concerning seismic calculation error in some models, that appeared in version 3.0.0.10, is fixed;

"PASSAT-COLUMNS" module:

7. Problem concerning application of wing loads placed below ground level (#IND in the report) is fixed;

"PASSAT-HEAT EXCHANGERS" module:

8. Thickness check for tube sheet hp-cps-cpp>0 is added.

Version 3.00.0.10 (31.12.2018)

BASIC module:

1. Calculation of nozzles as per EN 13445-3 is added;
2. Rendering of saddle support as per ASME is corrected;
3. Calculation of some parameters of the hole reinforcement as per ASME-1 (UG-37) is improved;
4. Control of thickness for adjacent shell for flange, adjacent conical transition, is added;
5. Output of rigid connection loads in any case, even if the rod is not calculated, is added;
6. Pictures of landing pads in the report are corrected;

"PASSAT-HEAT EXCHANGERS" module:

7. Misprints in the dialogue of ACU tube bundle are now corrected;

"PASSAT-SEISMIC (SEISMIKA)" module:

8. Seismic calculation of heat exchanger with empty tube section was performed incorrectly. Fixed.

Standard element and material database:

9. In English version of standard element database, some Russian texts remained. Fixed.

Version 3.00.0.9 (17.12.2018)

BASIC module:

1. A bug due of which some English PCs displayed a message “Unable to save the file”, is fixed;
2. For lining, option "Presents in assembling conditions” has been added;
3. Calculation of shells as per ASME VIII-2, taking into consideration all changes in version of 2017, is debugged;
4. Algorithm for calculation of nozzles according to ASME VIII-1 is improved;

"PASSAT-COLUMNS" module:

5. In the skirt support dialog, a cell with calculated distance from the head edge is added;

"PASSAT-HEAT EXCHANGERS" module:

6. When calculation ACU split chamber, thickness s6 was taken with allowances c1+c2+c3. Fixed.
7. A number of misprints in the reports for heat exchanger are fixed;
8. Limitation for thickness of separating wall of the shell and tube heat exchanger is changed: now it can be more than groove width;
9. Excessive calculation of separating wall in test conditions is deleted;
10. Automatic calculation of test pressure, when calculating plugs, is added;

Material database:

11. Problem with limit of long-term strength of user materials of bolts is fixed;

Version 3.00.0.8 (04.12.2018)

BASIC module:

1. Problem with displaying of some nozzles on the conical head is fixed;
2. Problems with the dialog of welds of high pressure elements are fixed;
3. Variants of connection of conical transition as per GOST 34233.2, fig. 29 are added;
4. Check as per i. 6.2.1.3, GOST 34233.3 has been added;
5. Check of foundry radius for high pressure tie-ins is reworked;
6. Buttons for selection of negative allowances for flat and conical heads, conical transitions, are added;

7. Now it is possible to specify material of skid board for saddle supports;
8. Restriction on export of beaded tie-ins to Nozzle-FEM is eliminated;
9. With some combinations of data, «File not found” message has been displayed. Fixed;
10. Insignificant error in calculation of B_2 coefficient for conical transitions is fixed;
11. Allowance for the axial force in a strength criterion for cylindrical and conical shells is reworked;
12. Problem with U-jacket, which in some cases led to the loss of solution stpossibility, is fixed;
13. A number of errors and misprints in the calculation of elements as per ASME I, II are fixed;
14. At calculation of allowable membrane, bending and total stresses for flanges, an allowance for a possibility of creep is added;
15. Gravity centers of flange fittings were defined incorrectly. Fixed.
16. Misprints in RTF report (blanks were missed) are fixed;

"PASSAT-COLUMNS" module:

17. Problems with rendering of nozzles on the supporting shell are fixed;
18. Anchor bolt corrosion has been added;

"PASSAT-HEAT EXCHANGERS" module:

19. For service platforms, check $Ga \geq Gs$ has been added;
20. Check of welds in tie-ins of the chambers is fixed;
21. Errors in calculation of cut-ins into ACU cylindrical chambers are fixed;

Standard material database:

22. Nonferrous alloy gradation (copper/aluminum) is added;
23. Allowance for safety factor n_T=1.3 for austenitic steels as per ASME is added;
24. Tables of allowable stresses as per the Russian and foreign documents are shared; now the stress table is used only when calculating based on the appropriate code. For foreign documents, major priority is given to a value from the table; for the Russian documents — value obtained from the mechanical data;
25. Calculation of allowable stresses as per GOST is debugged — table value is of a higher priority now;
26. Materials as per RD-26-01-28-86 (in test mode) are added;