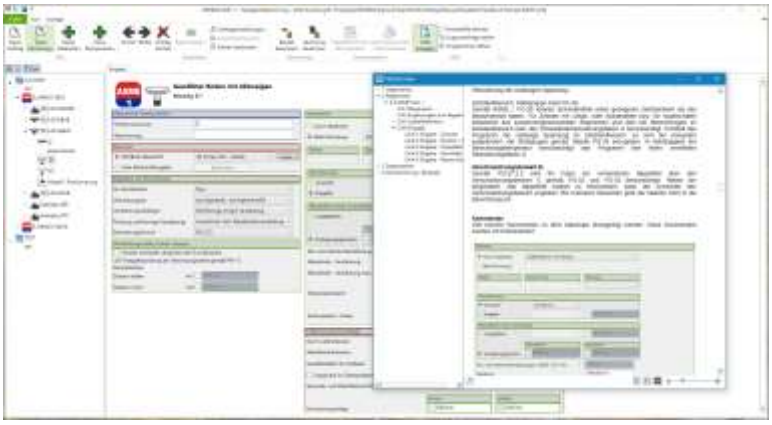
PROBAD

Code-based Strength calculations of Pressure parts



PROBAD 2021-1
New Features and Improvements

The program system PROBAD is checked and modified continuously within the scope of the maintenance agreement.

List of innovations, improvements and corrections of the new PROBAD-Releases

ASME I,	Edition 2019,	Release 5.02
ASME VIII/1,	Edition 2019,	Release 8.00
ASME B31.1,	Edition 2020,	Release 4.03
ASME B31.3,	Edition 2018,	Release 2.03
ASME-Piping series		Release 1.11

Software Development, Sales and Support

SIGMA Ingenieurgesellschaft mbH

SIGMA Ingenieurgesellschaft mbH
Bertha-von-Suttner-Allee 19
59423 Unna

www.rohr2.de / www.rohr2.com

Sales
Tel.: +49 (0)2303 332 33-0
Fax: +49 (0)2303 332 33-50

sales.probad@rohr2.de

Support
Tel.: +49 (0)2303 332 33-45
Fax: +49 (0)2303 332 33-50

support.probad@rohr2.de

Materials according to ASME II-D, Edition 2019:
Materials according to ASME B31.1, Appendix A, Edition 2020:
Materials according to ASME B31.3, Appendix A bzw. Appendix K, Edition 2018:

A detailed documentation of all available ASME materials can be found on the PROBAD start interface in folder ‚Information' under the name ‚ASME PROBAD Material numbers'.
In this document for all matreials the corresponding sources and page references from ASME II-D, ASME B31.1, Appendix A and/or ASME B31.3, Appendix A or K are listed.

Source ASME II-D: The following new materials were added:

PROBAD Number	Nominal Composition	Product Form	Specific. No.	Type/Grade Class
No. 493/494	16Cr-12Ni-2Mo	Bar	SA-479	316L
No. 342/343	18Cr-10Ni-Ti	Seamless pipe	SA-312	TP321
No. 495/496	25Cr-20Ni-Cb-N	Seamless tube	SA-213	TP310HCb

Source Code Case 2199-8: The following new materials were added:

PROBAD Number	Nominal Composition	Product Form	Specific. No.	Type/Grade Class
No. 601	2.25Cr-1.6W-V-Cb	Seamless tube	SA-213	T23

Source ASME B31 The following new materials were added:

PROBAD Number	Nominal Composition	Product Form	Specific. No.	Type/Grade Class
No. 123	Carbon steel	Pipe&Tube	A671	CC65
No. 493/494	16Cr-12Ni-2Mo	Bar	A479	316L
No. 124	18Cr-8Ni	welded Pipe	A358	304
No. 574	33Ni-42Fe-21Cr-Al…	Pipe&Tube	B407	N08810
No. 571	33Ni-42Fe-21Cr-Al…	Pipe&Tube	B407	N08811
No. 582	58Ni-29Cr-9Fe	Pipe&Tube	B167	N06690

Dimensions standards:

The dimensions database has been updated due to the following new editions:

ASME B16.9 Edition 2018: Wrought buttwelding fittings

ASME I, Edition 2019, Release 5.02
ASME B31.1, Edition 2020, Rel. 4.03
ASME B31.3, Edition 2018, Rel. 2.03

Result documentation:

- For the modules ASME I, ASME B31.1 and ASME B31.3 the results can now be requested in a short or in a detailed documentation.

- Now the entered designations of the single components are documented with up to 28 characters in the results.

- Now the Type / Grade / UNS No. of the materials is documented with up to 20 characters in the results.
- The report output has been revised according to user feedback.
- The project structure can now be exported as CSV and as plain text.

ASME I:

- If the opening in a bolted flat plate with extra moment was reinforced via increased design factor 2C, possibly a too high pressure reserve and a too small usage ratio was determined.
  This has been corrected.

ASME B31.1

- ASME B31.1: Calculation according to ASME B31.1 Ed. 2020 is now possible.
- ASME B31.1: Calculation according to ASME B31.1 Ed. 2016 is now no longer possible. (Still possible in PORBAD 2020-1).

User Interface

- The layout of the input masks has been standardized.
- Recurring and related input blocks have been grouped in the layout.
- The input of component standards/sheet standards/roundings has been greatly simplified and standardized.
- The nozzle positioning control has been moved to the menu bar.
- The list of available nozzles and the list of positioned nozzles now have context menus.

ASME VIII/1, Edition 2019, Release 8.00

Cylindrical shells:

- For external pressure calculations the proof of the stiffening rings can now be requested via a corresponding switch.

- As in the other PROBAD modules now also in ASME VIII in addition to the customary profile tables also the rectangular stiffenings rounded in mm-steps or 1/16 inch-steps are available.

- Height and/or width of the stiffening can now be entered explicitely.

Conical shells:

The design of the cone now can be defined seperately for the large and small end end as follows:

- Corner joint with connecting cylinder:
  The respective end of the reducer is calculated according to Appendix 1-5 or Appendix 1-8 including the connecting cylindrical shells.
- Cone segment without connecting cylinder:
  A cone section is calculated without proving the connecting cylinder according to UG-32(f).
- Knuckle (without connecting cylinder):
  For a cone designed with knuckle, the knuckle radius has to be entered corresponding to the diameter.

As in the other PROBAD modules now also in ASME VIII in addition to the customary profile tables also the rectangular stiffenings rounded in mm-steps or 1/16 inch-steps are available.

Ergänzungen / Korrekturen:

- If the opening in a bolted flat plate with extra moment was reinforced via increased design factor 2C, possibly a too high pressure reserve and a too small usage ratio was determined.
  This has been corrected.

- For loose flange rings according to Fig. 2-4 (1) and missing input of g0, g0 is set equal to g1 internally.

- For external pressure calculations the External Pressure Chart NFN-12 is now available.

ASME-Piping Series, Release 1.11

Branches:

In the new release for each diameter combination of branches an individuel type of branch can now be defined. festgelegt werden. Possible types of branch:

Not reinforced:	The wall thicknesses of the corresponding straight pipes enter into the reinforcement calculation.
Main run reinforced:	The increased wall thickness e3 in the main run at the nozzle can be selected or entered explicitely.
Nozzle reinforced:	The increased wall thickness e4 of the nozzle can be selected or entered explicitely.
Reinforcement by pad:	The thickness eP and / or the width wP of the pad can be entered explicitely.
T-Fitting / Weldolet:	No reinforcement calculation is done. These components are only documented in the results in the short nozzle pattern. T-fittings may be checked in the corresponding component of the piping calculation.

After the calculation the determined dimensions and types of the branch connections may be loaded into the input screens via the button ‚Result Import' and may be modified individually.

An increased wall thickness of the main run and/or the branch can be placed to the inside, to the outside or to both sides for each diameter combination individually.

Individual selection:

On all panels for the individual selection of components it is possible now, to mark several components and to ‚Delete' or ‚Copy' them via the corresponding button.

Export of results:

The results of the piping calculation can now be exported as XML-file into a freely selectable directory. The corresponding XML-scheme and further descriptions can be found under: https://github.com/sigmaIngUn/PipeClassTransfer.

Additions / corrections:

- Problems with renaming input files have been solved.