



# PROBAD

Code-based Strength calculations of Pressure parts

2024-1

New Features and Improvements

SIGMA Ingenieurgesellschaft mbH

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

<b>PROBAD Module / Standard</b>	<b>Description of Standard</b>	<b>Edition</b>	<b>PROBAD Release</b>
EN 12952	Water-tube Boilers	2023	2024-1
EN 13445	Unfired Pressure Vessels	2021	2024-1
EN 13480	Metallic industrial Piping	2023	2024-1
EN 1591	Circular Flange Connections	2013/2023	2024-1
EN Rohrreihen	Serial Piping Calculations	2023	5.00
AD 2000	Pressure Vessels	2024	7.11
TRD	Steam Boilers	1997	8.12
WRC 107 / WRC 537	External Nozzle Loads	1979/2010	8.12
WRC 297	External Nozzle Loads	1985	5.12
FEZEN	Werkstoff-Informationssystem		2024-1/ 5.01
ASME I	Rules for construction of power boilers	2023	2024-1
ASME VIII/1	Rules for construction of pressure vessels	2023	2024-1
ASME B31.1	Power Piping	2022	2024-1
ASME B31.3	Process Piping	2022	2024-1
ASME-Rohrreihen	Serial Piping Calculations	2023	2.00

## Software Development, Sales and Support



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## Material database

### FEZEN Additions / corrections:

With the last release FEZEN 5.00, the databases of ROHR2 and PROBAD were merged. This change makes it possible to access the same range of functions with the FEZEN 5.01 or PROBAD 2024-1 release. These are the following in particular:

- Extensive changes to material data
- Creation of user-defined materials
- The material data sheet can be documented via FEZINFO, including permissible stresses.

### ASME Additions / corrections:

material data in accordance with ASME II-D has been updated and expanded.

## PROBAD-Modeler

### Additions / corrections:

A 'PROBAD-Modeler' is now available. This new PROBAD component allows the graphical modelling of vessels or boilers and the determination of the belonging loads. The data, collected in that way, can be exported to the different PROBAD modules for the purpose of calculation in the following. The range of functions of the PROBAD modeler has been extended by the following components:

- Brackets
- Skirts
- Vessel Supporting-Ring
- Lifting Lug
- Reinforcement ring
- Flat head
- Component nozzle/branch

## EN 13445: Unfired Pressure Vessels

### User Interface

The EN 13445 module is now also available in the modern user interface.

The classic user interface will be maintained until the next release in 2025, after which calculations in accordance with EN 13445 will only be possible with the new user interface.

A complete change log for the new user interface, release 2024-1 can be found at the end of this document.

## EN 13480: Metallic industrial Piping

### Additions / corrections:

- external pressure:  
The analysis of buckling for external pressure is carried out in accordance with EN 13480-3: draft 2023.

## EN 1591: Circular Flange Connections

### User Interface

The scope of calculation has been extended as follows:

- Orientation of Flanges „inwards“ has been added
- PrEN 1591:2023 has been integrated
- Gasket database has been updated and expanded.
- Loads from ROHR2 import can be updated.

### Additions / corrections:

- Calculation of flange connections with blind holes can be defined. The verification of the blind holes is carried out according to Dose.

## AD 2000: Pressure Vessel

### Additions / corrections:

- B9 03-2023: Editorial changes
- B5 03-2023: Editorial changes
- B5 01-2024: The calculation of flat heads on heat exchangers has been extended to include the calculation of the flange edge.

## DIN/EN- Serial Piping Calculations

### Documentation of results:

The interface and documentation have been expanded as follows:

- Comments can be added
- Revision management has been integrated
- Export data format for ROHR2 has been changed from \*.xml to \*.pcex

## ASME VIII/1: Rules for construction of pressure vessels

### User Interface

The ASME VIII/1 module is now also available in the modern user interface.

A complete change log for the new user interface, Release 2024-1, can be found at the end of this document.

### Additions / corrections:

The heat exchanger trays have been completely removed from ASME VIII/1: 2023. There is only a reference to ASME VIII/2. The verification of heat exchanger bottoms is still possible in the ASME VIII/1 module, this is now carried out in accordance with ASME VIII/2.

## ASME- Serial Piping Calculations

### Documentation of results:

The interface and documentation have been expanded as follows:

- Comments can be added
- Revision management has been integrated
- Export data format for ROHR2 has been changed from \*.xml to \*.pcex

## User Interface

### Function

- The import of models created in ROHR2 has been extended.
- EN 13445 has been implemented in the modern user interface.
- ASME VIII/1 has been implemented in the modern user interface.
- Reference pipes can be created and used across regulations.
- Components of a drawing can be listed.
- Data of several components can be changed simultaneously using the list function.
- The FEZEN dialog has been integrated into the modern user interface.
- The project tree on the left-hand side can be sorted individually.
- The order of the project tree is now used for calculation and documentation.
- Documentation:
  - The length restriction of various text fields has been removed.
  - Reports for calculations according to EN1591 can now also be provided with docx templates.

### corrections:

- Surveillance of creep exhaustion can also be activated for Y-pieces.