Program System ROHR2
Interfaces - Overview and Details

SIGMA Ingenieurgesellschaft mbH
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1 ROHR2 interfaces

A comprehensive number of interface modules is part of the ROHR2 standard package. Optional interfaces are available to integrate ROHR2 into your workflow.

This document shows an overview on the interfaces, available with ROHR2 and their application. Please contact us concerning the optimization of your workflow with ROHR2. Our support team would be pleased to provide you with detailed parameter listings and the integration of third party products.

The integration of ROHR2 is supported by third-party interface products. In case of questions or information requests, please contact the manufacturer. We will be pleased to advise you regarding the data import and export to ROHR2. For updated information and links to software companies please refer to www.rohr2.com.

Please note: the integration of external interfaces may require an upgrade of the program system ROHR2: the ROHR2 Neutral Interface is the main program module for the integration of CAD-programs.
### 1.1 ROHR2 Interfaces overview

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</table>
Interfaces in the ROHR2 standard package
The interfaces are part of the ROHR2 standard package.

Optional Interfaces
Optional interfaces are not part of the ROHR2 standard configuration.

1.2 Licenses and system requirements

Program version, network license
The interfaces are included or optional available modules in the program system ROHR2. They can be part of the ROHR2 single user license and ROHR2 network license. In the ROHR2 network license the number of the users of an interface module is always similar to the number of ROHR2 network seats. The system requirements are similar to those of the ROHR2 program (see ROHR2 Specification). Interfaces are part of the ROHR2 user interface.
2 Interfaces to CAD-Systems

The data for generating a pipe model in ROHR2 is done by importing files from 3D Plant engineering systems by integrated interfaces (some of them optionally available).

The import process is not working on the basis of simple graphic data but on integrated component databases or database reports. This enables to get more information than a simple piping structure, like assignment of materials, dimensions or support positions, required for the modeling in the ROHR2 pipe stress calculation ROHR2.

The ROHR2 Neutral Interface is the main program module for the integration of CAD-programs. The import is made by two steps:
- transfer into the neutral file format
- conversion into the ROHR2 input format.

The neutral interface is part of the current ROHR2 standard package or available as an upgrade.

Use the command FILE|OPEN to select one or more files of the same type. A project is generated containing the imported data of all selected files.

Scope of transferred data

Automatic generation of the ROHR2 input data from CAD-systems, in detail (if available):
- Geometry data
- Diameter, Wall thickness
- Materials
- Support points and support conditions
- Tees
- Instruments, flanges
- Expansion joints
- Reducers
- Design data, operation data

The conversion volume depends on the quantity and quality of the imported data. The quantity and quality of the imported data depends on the capability of the exporting CAD/CAE software. In many times there are opportunities to configure the export capabilities at the source.
2.1 Neutral CAD Interface ROHR2

To simplify the data interchange with CAD systems, the format of the neutral interface was defined. Being based on the listing of all elements in the system (pipe, bend, instruments, supports, ...) it can be created e.g. by a report from a database.

For each element parameters required by ROHR2 have to be indicated. Only a part of the parameters must be entered by the user, not indicated parameters are filled with standard values or calculated from other parameters. The elements are written into an ASCII file as data sets with defined record label and corresponding parameters.

These CAD-Systems are creating data in the format of the Neutral interface enabling the direct data import into ROHR2:

- AVEVA E3D/PDMS
- CADISON NEILSOFT (ITF)
- RC-Planet (Planet GmbH),
- MPDS4 (CAD Schroer),
- HICAD (ISD GmbH), ea.

The ROHR2 standard package includes the import of data in NTR format from AVEVA PDMS/E3D using the ROHR2 neutral interface.

On the part of the CAD/CAE system optional modules may be required for the generation of an export file in Neutral file format.
2.2 Alternative Data formats

Interfaces listed here are part of the ROHR2 CAD Interface package. All interfaces mentioned here use the data transfer into the Neutral file Format (see 2.1) as a first step. The ROHR2 neutral interface is required part of the process and included in the current standard program configuration ROHR2.

The integration of ROHR2 is supported by third-party interface products.

2.2.1 Interfaces to CAD-Systems

**ROHR2 CAD interface package**

ROHR2 CAD interfaces are available in an optional CAD package which contains the modules:

- PCF - ROHR2
- Intergraph PDS - ROHR2
- AUTOPLANT PXF - ROHR2
- PASCE - ROHR2
- SDNF – ROHR2 (structural steel)

PCF – ROHR2 Import via Neutral Interface
The PCF format is used by several CAD-systems to create isometrics like AUTODESK Plant3D, Intergraph SMARTPLANT or Pro/ENGINEER.

The PCF interface is used to convert data from various CAD systems into ROHR2 and to export ROHR2 system data in *.pcf format (export see 4.2.2).

The interfaces can be adapted individually to the imported data using configuration files.

The PCF Configurator can be used to create and manage configurations for translating PCF files. For translation the PCF attributes are assigned to the appropriate ROHR2 attributes.
2.2.2 Interfaces for the conversion of piping structures

The creation of a piping model by means of graphics data information (e. g. AUTOCAD *.dwg) allows to
generate a geometry model in best case. ROHR2 does not support this working method, because
modeling in ROHR2win is the more efficient way to get a piping model.
These interfaces are included in the ROHR2 standard package.

3D DXF data import

Generate a ROHR2 model from 3D isometrics in DXF format (*.dxf)
All types of lines ("LINE", "POYLINE", "LWPOLYLINE") are used to generate ROHR2 segments.
Select the layers which need to be considered.

CSV import interface – Reading geometry data from text files

The interface CSV is used to convert data in text format (*.csv - comma separated value) into a format
readable by ROHR2.
This way piping structures can be generated to get a ROHR2 project piping model. Parameters, relevant
for the calculation need to be added in the ROHR2 project.
3 CAE Interfaces

3.1 Pipe stress analysis software interfaces

3.1.1 ROHR2 Import

CAESAR II Interface
Import of data from Neutral File Format (*.cii).
from Caesar II (Intergraph Corporation)

CAEPIPE Interface
Import of data from model batch files (*.mbf) from
CAEPIPE (SST Systems INC.)

PIPESTRESS Interface
Import of data from model batch files (*.fre).
from PIPESTRESS (DST Computer Services S.A.).

KWUROHR Interface
Import of data in format *.kwu data from KWUROHR
(SIEMENS)

The interface is used for the data import from pipe stress analysis software.
Part of the imported data are the piping model as well as load case parameters.
The range of the imported data is documented comprehensively in the interface manuals.

3.1.2 ROHR2 Export

CAESAR II Export interface
Export of data into the Caesar II Neutral File Format to be
used in Caesar II (Intergraph Corporation)

The interfaces are used for the data export to Caesar II. Part of the imported data is the piping model as
well as load case parameters.
For details please refer to the separate manual, which is part of the interface software.

3.2 Fluid dynamics interfaces

3.2.1 Pressure loss

SINETZ Interface
Export of calculation models into SINETZ
(Product of SIGMA Ingenieuriesellschaft mbH)

The SINETZ program includes a neutral interface to import data from CAD/CAE programs. It enables to
import geometry data, dimensions, insulation, components like bends, instruments, pumps, reducers and
orifices as well as boundary conditions (pressure, temperature and quantities).
### 3.2.2 Fluid dynamics

#### General Fluid dynamic data exchange

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<td>For the conversion of load-time functions from various fluid dynamic software ROHR2 provides an import capability. ROHR2 converts *.frc and *.csv-files or ASCII files into a proprietary ROHR2 binary format.</td>
</tr>
</tbody>
</table>

The interface is used for the data transfer from software products like
- PIPENET Transient
- Flownex
- DRAKO
- INROS
- FLOWMASTER
- AFT Impulse

Additional program systems upon request

#### Fluid dynamic systems PIPENET TRANSIENT and FLOWNEX

**File transfer and calculation process**

- The entire ROHR2 model is converted into the format of the fluid dynamic system.
- At deflections, branches and reductions in the ROHR2 model force vectors will be generated, assigned and exported.
- The calculation of the time-dependent forces is carried out in the fluid hammer software.
- Load-time functions (dynamic fluid hammer forces) can be transferred to ROHR2 and assigned automatically
- The fluid hammer analysis of the piping framework can be carried out nearly without additional manual inputs, because the fluid hammer forces have been created by the fluid analysis programs.

The data exchange uses the file formats:
- *.sdf for PIPENET Transient
- *.nts for FLOWNEX
4 ROHR2 Results Export

ROHR2 offers various data formats for the export of calculation results. The number of generated results contains general data as well as particular parameters to be transferred by manufacturer software tools.

4.1 Support data

4.1.1 Export of general support data

Data of all supports may be exported for further treatment. The export file is a fixed-format text file including calculated results. The file extension is *.sup.

The interface CSV is used to convert data in text format (*.csv) by ROHR2.

4.1.2 Manufacturer specific software formats

ROHR2 generates individually adapted export files to be used in the CAE systems:

- LICAD (LISEGA GmbH)
- CASCADE und FLEXPERTE (Witzenmann GmbH)

For details of the data conversion please refer to the software documentation.
4.2 CAD Export

4.2.1 Export to E3D/ PDMS

PDMS Interface ROHR2

In addition to the import of E3D/ PDMS data (see 2.1, Neutral interface) ROHR2 results can be exported into PDMS/E3D.

The data export from ROHR2 to PDMS/E3D includes load case dependent support results and deformations. Deformed structures may be represented in E3D/PDMS this way. Beyond that, in E3D/PDMS calculation results are stored for further treatment, e.g. LiCAD hanger design software.

4.2.2 NTR and PCF-Export

Export of ROHR2 models in various data formats.

**NTR Data export**

ROHR2 includes the export of Neutral File data. The export of NTR files (*.ntr) is carried out by the ROHR2 command by *File* | *Export* | *Neutral interface*.

**PCF Data export**

The PCF - ROHR2 interface includes the export of ROHR2 system data in PCF format. The export of data in PCF format (*.pcf) is done in ROHR2win by the function *File* | *Export* | *PCF*.
4.3 Export of graphics

Export from ROHR2

ROHR2 drawings can be exported into the file formats:
- Metafile (*.emf)
- JPG
- DXF

The export into dxf format e.g. can be used for processing in AUTOCAD. The generated data is of 2D dxf drawing type with restricted modification capability.