

ROHR2

Programmsystem zur statischen und dynamischen Analyse
komplexer Rohrleitungssysteme und allgemeiner Stabtragwerke

Program System ROHR2 - Verification

Certificate

ROHR2 Release 33.0
January 2020

SIGMA Ingenieurgesellschaft mbH

Stress analyses, included in ROHR2 are updated to the following level:

Title	Content, keywords and source	Chapter	Edition
EN 13480 1)	DIN EN 13480-3 Metallic industrial piping - Part 3: Design and calculation; German Version EN 13480-3:2012	11	2017
FDBR	Power Piping Fachverband Dampfkessel-, Behälter-, und Rohrleitungsbau e.V., Essen	21	1/1987
Stoomwezen D1101	Stress Analysis according to Stoomwezen D1101 /78-10	22	7/2003
AGFW	Stress Analysis of District heat Piping AGFW "Richtlinien für die Festigkeitsberechnung von Fernwärmeleitungen"	23	1988
AGFW401	Stress Analysis of District heat Piping AGFW / FVGW Regelwerk Arbeitsblatt FW401 - Teil 10 - Verlegung und Statik von Kunststoffmantelrohren (KMR) für Fernwärmenetze	24	12/2007
EN 13941	Design and installation of preinsulated bonded pipe systems for district heating	25	2019
CODETI	Code de Construction des Tuyauteries Industrielles	26	2014
ASME B31.1	Power Piping ASME Code for Pressure Piping, The American Society of Mechanical Engineers, New York	31	2018
ASME B31.3	Chemical Plant and Petroleum Refinery Piping ASME Code for Pressure Piping The American Society of Mechanical Engineers, New York	32	2018
ASME B31.4	Liquid Transportation Systems Piping ASME Code for Pressure Piping The American Society of Mechanical Engineers, New York	33	2019
ASME B31.5	Refrigeration Piping ASME Code for Pressure Piping The American Society of Mechanical Engineers, New York	34	2016
ASME B31.8	Gas Transmission and Distribution Piping Systems ASME Code for Pressure Piping The American Society of Mechanical Engineers, New York	35	2018

Title	Content, keywords and source	Chapter	Edition
KRV	GRP-pipes Verlegerichtlinien für Rohrleitungen aus textilglasfaserverstärkten Reaktionsformharzen - „Planungs- und Konstruktionshinweise“, Ausgabe Juli 1993 des Kunststoffrohrverbandes e.V., D-53113 Bonn	41	7/1993
WAVI-STRONG	Engineering Guide for Wavistrong glass fiber reinforced pipe systems	42	1994
BS 7159	Stress Analyses for GRP pipes according to British Standard 7159	43	1989
ISO 14692	Stress analysis for GRP pipes acc. to DIN EN ISO 14692-3	44	2017
VGLSP	Stress Analyses for Skeletal steel structures (VGLSP)	51	2010
VGLSR	Stress Analyses for pipes (VGLSR), according to General stress hypothesis von Mises/Tresca	52	---
ASME CL1 ²⁾	NB-3600 "PIPING DESIGN" in ASME-BOILER AND PRESSURE VESSEL CODE SECTION III SUBSECTION NB CLASS 1	71	2019
ASME CL2 ²⁾	NC-3600 "PIPING DESIGN" in ASME-BOILER AND PRESSURE VESSEL CODE SECTION III SUBSECTION NC CLASS 2	72	2019
ASME CL3 ²⁾	ND-3600 "PIPING DESIGN" in ASME-BOILER AND PRESSURE VESSEL CODE SECTION III SUBSECTION ND CLASS 3	73	2019
KTA 3201 ²⁾	Nuclear Safety standards commission (KTA) Komponenten des Primärkreises von Leichtwasserreaktoren Sicherheitstechnische Regel des KTA, Edition 6/96	74	2013
KTA 3211 ²⁾	Nuclear Safety standards commission (KTA) Druck-und aktivitätsführende Komponenten von Systemen außerhalb des Primärkreises Teil 2: Auslegung, Konstruktion und Berechnung Sicherheitstechnische Regel des KTA3211.2, Edition 6/92	75 76	2013
RCC-M CL1 ²⁾	B-3600 "DESIGN" in RCC-M SECTION I SUBSECTION B CLASS 1	77	2002
RCC-M CL2 ²⁾	C-3600 "PIPING DESIGN" in RCC-M SECTION I SUBSECTION C CLASS 2	78	2002
RCC-M CL3 ²⁾	D-3600 "PIPING DESIGN" in RCC-M SECTION I SUBSECTION D CLASS 3	79	2002

¹⁾ EN 13480: stiffening from internal pressure is considered in the calculation of k-factor and i-factor according to EN 13480 DRAFT 2011.

²⁾ Not available in program version ROHR2 Static

The non-regression test has been performed against the test set of:

for ROHR2 810 example systems

Non regression test for Versions r2_33.0, performed on January 15, 2020

for ROHR2win total 117 systems with 1290 R2 runs tested.

Non regression test for r2w_33.0, performed on January 15, 2020

for ROHR2fesu total 33 systems with 423 R2 runs tested.

Non regression test for r2wfesu_33.0, performed on January 15, 2020

January 22. 2020

Date



Signature

January 22. 2020

Approved



SIGMA
Ingenieurgesellschaft mbH
Bertha-von-Suttner-Allee 19
509423 Uthna
Germany