

Release Notes **sisKMR**[®]

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GEF Ingenieur AG
Ferdinand-Porsche-Strasse 4a
69181 Leimen



Phone: +49 (6224) 9713 - 90

Fax: +49 (6224) 9713 - 40

Mail: siskmr.support@gef.de

Release Notes **sis**KMR 2017, Version 25.17.0

087/183: Graphic Window 3D-Rotation, Rotation Point

The control of the graphic has got a full 3D spatial component. 3D control is now also possible for zoomed views. Rotation centre is under the cursor and not, as previously, at the centre of the pipe model.

249: Additional Input and Consideration Axial Compensator

The definition of axial compensator has got an additional attribute: friction. With this it is possible to consider different types of axial compensators. This has been invented in order to consider "sleeve compensators".

258: Tee Fittings as separate Objects

Tee fittings or nozzles have recently been designed by the definition of three sections. Since now this has become a separate object to be defined at the tee node. For all the definition there is an own input dialogue. Causal dependence between sections and tee are now considered. The user can only define allowable parameter. The possible point conditions have been reduced to allowable ones.

261: Improvements CAD-Import

Bug fixed: The resulting diameter of branches for small diameters. Solved.

Bug fixed: Newly created import projects will be saved on drive c:\ [root] when pressing save button. Solved: When saving such projects, it opens the project manager in order to define the path by the user by himself.

Bug fixed: The project template activates the wrong calculation standard. It activates AGFW, but should ASME & AD-S2. Solved: Template is now equal to standard template

Modification: Any imported line will appear as DN111. No other diameter allowed. The same is true for cover height, it is defined with 1,11m. With this it is clearly possible to identify imported sections that have not been reworked.

Modification: Pre-definition of the layer names „Layer1“ and „Layer2“. This corresponds with the name convention of AutoCAD for newly created layers.

Modification: The import dialogue box remembers the settings within a session. With this, the user is not forced to define any setting again in case the import failed.

Modification: The setting of log file is default active.

Modification: The graphic setting is now equal to the standard setting of a new project.

262: Multiple Section Attribute Labels

Line sections in the common system have got the option to label them with multiple attributes. This appears either with a concatenation of the attributes or in a stacked rectangle orientation. Any label appears only for such sections that are long enough to display the entire text label.

263: Length Computing of Routing

A new feature allows to compute the xyz length of selected line sections.

Measuring process:

- Selection of the sections
- Evaluation -> Selection Table
- Cursor navigated on the column headline
- Length appears under the cursor as a tooltip

264: Fix Point Symbol in the Graphic for Natural Fix Point

For a better understanding of the start point and end point condition of any common system, the point symbol of natural fix point has changed from a circle to a „x“, as the static consideration is equal to a fix point.

267: Search by Point-ID

The already existing function of section search in the graphic by „right mouse button – go to section“ will open a search box in case of not having found a section. This search box allows now to keying a point ID of the desired section. Recently this dialogue box allowed only searching by a drop-down list of any section.

270: Improved Tee Conditions

Recently illegal user definitions have been possible, potentially destroying projects completely.

- Point name „TT**“ at any section point of main line – former illegal, now impossible
- Last section of main line, point condition „End of line (tee branch)“ – now impossible
- Renaming branch line, 1. point with TT** - now impossible
- Renaming branch line or main line, intermediate points with TT** - now impossible
- Renaming branch line or main line, end- or start point, auf TG** - now impossible

274: New Dongle Driver

A new dongle driver (7.4.1) for Windows 10 is integrated within the setup

275: The feature „2D-system with optimisation of cushion length“ is dropped

The feature „2D-system with optimisation of cushion length“ is dropped without replacement from the list of available modelling features.

281: Only one Result Report File

By now sisKMR created two report files after the calculation process. The compilation of large system reports with section results consumes a lot of time.

As the user has usually no need for the version with section results, the version without section results has now become standard. The creation of two reports at the same time has been dropped. The user has the possibility to define by “Settings -> Common Settings” whether he wants either the creation “Report with section results” or Report without section results”.

The report file name is now „sisKMR report0.pdf“ for either variant.

Instead of two different buttons for opening the reports, there is now only one with the label „Report“. Which kind of report has been created is displayed from a tooltip on the “Report” button.

284 Result Report line break error solved

A bug of line break in case of long project description is solved.

Release Notes **sisKMR 2016, Version 24.9.0**

232: Multilanguage and Unicode

The software has been enabled to include any language. This includes Unicode characters like Chinese, Korean and Cyrillic.

233: Exceedance of allowable axial stress with * included

If the allowable axial stress was exceeded, this was reported with a red headline warning without any further marking of the occurrence. With this version any occurrence is now mentioned with the sign *

234: Coordinate symbol in printout, even as deactivated

The coordinate symbol was printed in the printout of the graphic, even as deactivated in the graphic settings. This is fixed.

235: Hoop stress calculation activated for all calculation standards

The calculation of hoop stress was activated by now only for calculations according to ASME standard. This has changed in the way that this option is activated as standard for any calculation standard.

236: Enhanced report for hoop stress

The output of the hoop stress calculation has been enhanced:

- The Point-ID (Pkt) is now mentioned
- Up to 10 occurring bends are listed under point 2.1.1

238: DWG-Import, layer name with white space

The CAD-Import is now capable to understand layer names that contain white space. In order to define this, such layer names must be set into apostrophe: „Layer Name“

240: Wrong wall thickness printout for extruded thick walled tees

The report stated wrong wall thickness for extruded tees at the chapter „Tee Table“. The wall thickness of the main line was printed with the wall thickness of the branch. This is now fixed.

● **242: Renaming of the point-ID prefix for the first line point**

The automatic renaming of the point-ID prefix did not function for the first point of a section of a line. It remained unchanged. This is now fixed.

● **243: New function: new project with same parameters**

Now there is a new function to create a new, void project with the same basic properties as the actual one.

The properties are: Customer, Order number, Title, Description, Pipe Data, Bedding Data.

● **244: Transmittal of endpoint angle to the second one**

When splitting the utter first section of a line that has defined an angle at its endpoint, the defined angle was assigned to the new first section. This has changed with respect to better handling. The defined angle is now assigned to the second one.

● **245: Dongle driver for setup updated, Windows 10 approval**

The setup contains now the latest dongle driver version 7.32, April 2015. With this measure the release is qualified for Windows 10, 32 and 64 bit.

● **246: Dialog boxes too small at 125% display setting**

sisKMR dialog boxes are designed for a display settings of 100%. Those users that adjust their setting to 125% or 150% could not reach some navigation or function buttons of those dialogues that hat fix size. Therefore the remaining fixed size dialogues have changed to dynamic ones, the same as any others already are. Dialog box size and position is stored in the registry.

After the first startup of the new program version the position and size must be manually adjusted.

● **247: Parallel branch downward at standard system causes swopping of FSE and NFP**

Branched standard systems with downward branches caused swopping of FSE (free system end) and NFP (natural fix point). This is now fixed.

● **248: Bedding type 4: Section cover height the same for start and endpoint**

For section definitions with bedding type 4 sisKMR considered a cover height of 0,0m. As cover height is interpolated from the previous section endpoint to the actual endpoint, the friction force was calculated accordingly to the interpolated figures. This is changed. No matter what cover height the previous endpoint is defined, the considered cover height for a section of bedding type 4 is 0,0m.

● **250: Limit of section numbers increased from 300 to 998**

With the version 23, issue 228, the limit of the number of sections per line was defined to 300. This limit is now defined to 998. It is to consider, that the total number of sections for a single project remains anyway at 998.

● **251: Implementation of Chinese and Korean language**

● **253: Country kits for China and Korea**

For the two countries China and Korea, country packs are created and implemented. The activation of these settings is connected with the language definition. After changing the language settings between European and Asian a new start of sisKMR is required.

● **254: Deflection of supported pipes (Bedding type „L“)**

For supported pipes between two pipe supports the deflection due to the self weight was neither displayed in the graphic nor printed in the section results of the report.

This was caused by the fact that the section division was pre-defined with 1. It was impossible to modify this at the dialogue of “additional section data” or elsewhere.

This is now fixed. Newly created sections with definition of so called „air bedding“ (L) get the division of 2. The dialogue “additional section data” allows the user to modify this property according to his own requirements.

● **255: Message box “Extrapolation of material data” as warning, not anymore error message**

● **257: Modified default value for tee type setting, welded on as default**

Tees are now again pre-defined with the type „welded on“ as default setting

● **259: Pipe size DN table „nwFrei.db“ in setup included**

The diameter table „nwFrei.db“ for pipes according to EN10216-2 or EN10217-2 was missing. This is now fixed.

● **260: Error 7 characters Point-ID when dividing sections, despite 6 character limit**

When dividing sections, the automatic point-ID definition did not work properly in case of missing intermediate number.

Example: Dividing section from A0001 to A0002

New intermediate point name: New0001 (7 characters)

The graphic display cut off the last 7th character so that it was invisible. Loading projects already with such points caused error messages “Point name New000” already exists.

This is now fixed. New such points where there is no intermediate number available, the prefix is defined with “NN” followed by 4 numbers (NN0001)

Release Notes **sis**KMR 2015, Version 23.8.0

● **186: Branches downwards in the "standard system"**

It is now also possible, to design branches downwards within the "standard system". This option exist either for parallel branches as for 45° tee branches.

This can be reached by entering a minus sign before the figure of the clearance value.

● **191: Wrong reinforcement plate thickness data in the report**

In the report, section data, the thickness figure of reinforcement plates was printed out with "0". The calculation was anyway correct, the same was true for the description in the section tee fittings. This has been fixed.

● **192: Limited possibility of system selection invented**

Switching the system selection in the appropriate dialogue is now restricted. This is because uncoordinated switching between different options could cause trouble and mistakes.

Once a selection is made and a calculation performed, this setting is saved in the project database table (siskmr.db).

Functionalities:

- System selection, explicitly saving by pressing button (Disk symbol)
- after saving the selection buttons are inactive (pale)
- The option „2D-system with optimization of cushion length“ changes after calculation to "common system"
- Any "Standard pre-insulated bonded pipe system" can be converted to a "common system" with a unique action into a "common system" by selecting the pull down menu "process->convert to 3D-system “.

● **194: Latest Foxit-Reader version included**

The setup includes now a newer version (6.1.3.0321) of the PDF-viewer "Foxit-Reader". The setup includes now a step where some settings of the "Foxit-Reader" are saved to the registry in order to grant an optimized view.

● **195: Program crash with tees of similar DN in the AGFW standard remedied**

By the calculation of tees in accordance with the AGFW standard and similar DN Tee neck/basic line occurred a program crash. This has been fixed.

197: Second point label invented

The point labeling in the "common system" has been enhanced by a second, alternative point labeling attribute.

Functionalities:

- Any point can get a second name with an additional attribute field
- The point name definition is not restricted in any way, excepted the length is limited to 30 signs.
- The graphic window can be adjusted to display point labels in three different options:
 - a: no point name at all
 - b: only point name
 - c: mixed (if point-name empty, then point-ID)
 - d: only point-ID
- The assignment between point-ID and point-name in the result report is only printed in the section data
- Any previous rules and requirements concerning the point-ID remain unchanged

198: Display of cover height at the end point instead of section middle

The display of the cover height in the graphics was in the middle of each section, even this was not quite correct. The cover height is a property of the end point. Now this is displayed after the point name or point-ID in brackets and only if activated. The precision has been reduced to one post decimal position.

199: Modification of foampad calculation according to AGFW

In calculation formular of the bedding reaction of foam pads according to AGFW FW 401-10, chapter 4.4.2.1.6, section 4, was a mistake calculating the average foampad thickness (d_{4,average}) and has been fixed in accordance with the draft "Entwurf Änderung 1, Juni 2014". As a result, the foampad utilisation has increased.

200: Coloured program display faulty

Running sisKMR in the „classic windows“ without visual effects caused ill-favoured display of the application window. This has been fixed.

201: Spelling mistake "Kommission"(German only) fixed

202: Faulty line break in report fixed

● **203: Adoption point conditions**

The modification and adoption of point conditions has been supplemented. Additional functionalities are:

- the rest of the line
- the selected sections

● **205: DWG bzw. DXF-export switches decimal delimiter from comma to point**

Some temporary versions of sisKMR2014 switched the decimal delimiter between comma and point. This has been fixed.

● **206: CAD graphic export including more information**

The CAD graphic export (DWG and DXF) includes now more details, exported in separate layers. Any layer name start with "sisKMR_"

● **207: CAD graphic import (DWG)**

Since now it is possible to import entire pipework geometries from CAD into sisKMR.

Functionalities and requirements:

- Any import creates a new project
- Concatenated lines and polylines are recognized
- Only dedicated defined layers are recognized
- The geometry has to fulfil the requirements and rules of sisKMR
- Geometrien are considered 3-dimensional
- Deviation angles until 3° are recognized as mitres
- The basic setting consider the longest line chain to be the main line
- Distinguishing the main line and branches is possible by defining different layers
- End point tolerances can be defined

● **208/209: Chinese language pack in Foxit Reader and Unicode activated**

● **210: Correction of graphic display bedding type 4**

Sections defined with "bedding type 4" in the common system have been faulty displayed with "bedding type 2". This has been fixed.

● **211/212/213/214/215: Correction of concepts and words**

211: Renaming "deviation" to "mitre"

212: Renaming "E-Muffe" to "Einmalkompensator" and "E-Sleeve" to "One-time compensator"

213: Single calculations, renaming "weldless" to "seamless"

214: Renaming "reinforcement disk" to "reinforcement plate"

● **216: Stripping off dialogue and function "Nominal width tables"**

The function "Nominal width tables" (Dialogue Tools-> Nominal width tables) was since long without any functionality. Therefore this dialogue has been stripped off.

● **217: Button for point condition at the "common system"**

At the "common system" point conditions can be defined. These are displayed on the right side of the point category. In order to modify such definitions, this definitions have become clickable buttons.

● **219: Single calculations; Error calculating C2-proof (only English)**

Faulty result comparing outer casing diameter vs. steel pipe diameter by function "Global instability: pipe diameter <> casing diameter". This has been fixed.

● **221: Displaying the local pre-stressing at the first section of a line fixed**

The display of a local pre-stressing in the "common System" is basically valid for the end point. Anyway for the utter first section of any line, the pre-stressing figure was displayed at the beginning. This has been fixed.

● **222: Result report, header redesigned**

The result report header has been re-designed and has now a clear structure. Outdated content has been deleted.

● **225: Adjustable analysis and appraisal of allowable axial stress**

The user can now choose with a check box whether or not he wants to accept an exceeding of the young's modulus of pipe material. Depending on how decided, the report will consider the exceedance with a red headline or not. In any case, an exceeding axial stress will cause a black written remark.

Functionalities:

- The previous message box, "Warning, exceeding allowable axial stress!" does not open anymore.
- The setting of exceeding permission will be saved with each project.
- The standard setting of the check box is "not activated"
- The decision whether to allow exceeding axial stress limit or not is in full charge of the user. sisKMR does not perform any further control.

● **226: Diameter table selection redesigned**

The selection and definition of diameter tables has been redesigned. The selection takes place from an overview table. The labelling and display of the selected table names is now in an understandable way. New diameter tables have been included.

● **228: Limited number of sections for branch lines**

The limitation for branch lines was formerly 200. This limitation has been increased to 300. The limit will be monitored by the program. The user will receive a warning when exceeding this number.

● **229: Correction faulty tee wall thickness in standard systems according to EN10253-2**

Under certain combinations DN1 / DN2 it could appear, that the wall thickness of the nozzle was defined with the same wall thickness as the DN1. This has been fixed.

Release Notes **sisKMR 2014, Version 22.4.0**

● **169: Section data adoption for tee sections**

The adoption of modified section data to multiple sections has been blocked to tee sections. This has been changed. Modifications are now accepted for tee sections for such attributes that do not affect steel pipe dimensions. Changing attributes of steel pipe diameter, nominal diameter and wall thickness will anymore not be transferred to tee sections.

● **170: Section mass calculation**

The automatic calculation of the section mass has been overworked. Thereby may the calculated section mass increase slightly.

● **173: Section selection**

As a complete new feature it is now possible to select and process arbitrary sections in the common system. sisKMR will save the selected sections in a separate database table. This table can be exported in the CSV format in order to process it with Excel, e.g. length sum reports. Furthermore it is possible to transfer section modifications to the selected sections.

Selection variants:

- Section selection piece by piece
- Selection of several sections in a row by defining start section and end section
- Selection of all sections of a line
- Selection of all sections of the project
- Deselecting of single sections

● **174: Correction of display and report faults**

In total 15 faults of dialogue display and report file spelling mistakes have been fixed.

● **175: Correction of the allowable hoop stress**

The allowable hoop stress in the result report has changed (decreased). Since now the allowable material stress at the defined calculation temperature is divided by the safety factor of 1.5.

● **176: Renewed dialogue „System description“ for the Common system**

The dialogue „Common System“ and the sub-dialogue „Additional section data“ have been renewed. Some attributes of the main dialogue have been moved to the sub-dialogue other attributes have been added to the main dialogue.

Modifications dialogue „System description“:

- Attribute „Accuracy (Division)“ dropped
- Attribute „Welding seam at the end“ dropped

- Attribute „Installation temperature“ added
- Attribute „Line category“ added
- Attribute group „Nominal width dependent data “ added
- Section number display beside the button „Next section“ dropped
- Buttons „Show section“ und „Show section graphic“ moved to bottom left
- Attribute option „Deviation at the end point“ permanent displayed, pale when inactive

Modifications dialogue „Additional section data“:

- Attribute „Welding seam at the end“ added
- Attribute „Accuracy (division)“ added
- Dialogue colour the same as the main dialogue

177: Angle more than 15° forbidden in the standard system „Deviation without expansion cushion“

For this calculation the mitre angle is limited to a maximum of 15°.

178: Additional attribute displayable „Bedding type“ in the graphic window

The graphic window is now capable to display the bedding type a sections.

179: Automatic point name „new“ extended with numbers

As soon as sisKMR could not generate point numbers according to the syntax, they were named with „new“. These will now get a number extension. Example: New002 – New003...

180: Tee table check while project loading

While loading a project sisKMR checks the consistence of the tee table. This could cause error messages, even if there was nothing wrong. This has been fixed.

181: Renewed structure of the result report

The structure of the result report has been renewed.

Modifications in detail:

Some results, listed in chapter 2, have been moved (2.2 Detailed stress analysis....) and (2.4. Stress analysis for tees). A new main chapter „Component results“ has been added.

The numbering of such components is fix, no matter if these parts are mentioned or not. Components that are not content of the model will not be mentioned.

The order of the new chapter will be:

4. Bend-Table
5. Tee-Table
6. Reducer-Table
7. Support-Table
8. Fix point-Table
9. Compensator-Table

Separate point at the lowest level at the end of the report:

„Detailed stress analysis at the location with the max. composite stress in straights or bends“

182: Faulty modification of the first section while changing projects

Since the version 21.6.3 it could occur that the length of the current section was transferred to the first section of a new opened project

This has been fixed.

184: Project closing without saving

So far it was not made sure that the user was unfailing asked whether to save the project or not. This has been fixed

187: Revised angular compensator input dialogue

The input of some figures for angular compensators required additional calculations of the user. This is now automatically done by the dialogue considering the input data Ca, Cr and CP as well as the internal pressure of the section.

Distinguishing the two types KAG1 and KAG2 has changed to only one type, KAG. The angle entry is now only in degree, the variant “Rad” does not anymore exist.

188: Dongle update Export/Import from the help menu

The function to export or import the dongle update file has been integrated into the help menu.

189: Project template updated

The project templates have been updated for some details. The „common system“ has a modified bend wall thickness for the default diameter DN150, 4.0mm instead of 4.5mm. The default bedding type has changed from „0“ to „3“.

Casing pipe temperature calculation data: Heat conductivity of soil from 1.0 to 1.2 W/mK
Clearance between supply and return pipe changed from 0.2m to 0.25m

Release Notes **sisKMR 2013, Version 21.6.3**

● **155: Fixed or dynamic scaling of the result diagram**

Result diagrams allow now to being adjusted by the Y-axis. As a standard setting remains a fixed Y-scale.

How to handle the graphic navigation is now mentioned in a line at the lower part of the graphic window.

● **164: Point numbering in the template**

The project template has been adjusted to the new point numbering with four digits.

● **165: Faulty attribute saving when switching sections by the graphic window**

Attribute modifications of sections in the „common system“ have not been taken over if the user switched to another section by using the graphic window and its function „go to section“. This is now fixed.

● **166: Project manager deletes project title and project name**

Saving a project under a different name and changing the folder in the dialogue of the project manager caused erasing this two information. This is now fixed.

● **167: Additional consistency check between section table and tee table**

While opening existing projects sisKMR performs now an automatic consistence check between the attributes of the section table and the tee table. In case of differences, the values of the section table are written into the tee table.

● **171: Wrong TauPUR-figures in section data at EN13941 und AGFW**

The newly invented section attribute “Allowable PUR shear stress” has been defined wrong by calculations according to EN13941 or AGFW:

EN13941: 0.3 instead of 0.0266

AGFW: 0.3 instead of 0.4

Modifications of this attribute in the dialogue „additional section data“ could not be transferred to other sections. This is now fixed.

● **172: Wrong tee data in the section data of the result report**

In the result report at the section of the tees it could occur, that the dimension attributes were printed out wrong. This is now fixed.

Release Notes **sisKMR 2013, Version 21.5.0**

● **111 Tee DB table expanded**

The tee database table "t-stueck.db" has been modified to ensure the full integrity at any time, even if deleting branches. All tee attributes are now being updated at any time. This allows since now to delete branches without any workaround. Due to the re-structuring it is not anymore possible, to open projects of version 21 with older **sisKMR** program versions.

● **112 New button for „New Branch“**

The existing method to create a new branch line in the common system has been replaced by a single button. Hence the dialogue "system description" hasn't anymore to be directed to the utter first section to create a new branch.

● **114 Attribute takeover in the „Common System“ again with single mouse click**

The takeover of modified section attributes takes now again immediately effect by a single click onto one of the buttons „Previous Section“ or "Next Section".

An exception of this rule is the takeover of modified expansion cushion thickness: This requires pressing the enter key.

● **115 PUR Shear load section wise definable, reduced TauPUR for EN13941**

The allowable PUR foam shear load in the „Common System“ can now be defined section wise. Also the calculation and the result figures are now section wise reported in the result file.

For projects, calculated according to EN13941, the allowable shear load has been reduced to the figure of 0,027N/mm². This measure adopts the requirements of EN 13941. Anyhow the user can define individual sections with different allowable figures (e.g. 0,04N/mm²) in accordance with the standard. For details please refer to EN13941 and EN253:

- EN13941: 6.4.4.2 Limit state for shear stress
- EN253: 4.5.5.2 Shear strength

● **116 Reporting of exceeding axial load at reducers**

The report of exceeding axial loads at reducers has been improved. Concerned reducers are now marked with a „*“ and the point name is also reported.

● 117 Handling and adjustment of the graphic window modified and improved

The handling and adjustment of the graphic window has largely been redesigned. Attribute display works now with buttons, arranged left and top of the window. The context menu (right mouse button) contains anymore three functions as there are „Zoom Window“, „Fit View“ and „Go to Section“

The adjustment of previous and new functions works with buttons, designed with self-explaining symbols and „pop-up texts“:

- Display Points
- Display Point Names
- Display expansion cushion
- Display bending line
- Display Wu-values
- Display pre-stressing
- Display pre-heating
- Display coordinate cross

Additional Section Attributes:

- Section length [m]
- Nominal Diameter DN
- Diameter and wall thickness (carrier pipe)
- Diameter casing pipe
- Cover height
- No Section attributes

● 118 Extended control of project names for not allowed signs

When saving projects, sisKMR performs an extended control of the project name if there are not allowed signs in it. If there are not allowed signs in the project name, the program revokes saving and displays a message box. Not allowed signs are: „ \ / : * “ < > | .

● 119, 120 Enhanced graphic plot, coloured highlighting of sections

The coloured highlighting of sections has been improved. This concerns displaying single, selected sections as well as displaying pre-heated sections.

● 122 Double printout of diagrams solved

Diagrams have been printed twice in general. This has been fixed.

● 123 Verification of pipe material

Selected pipe materials are now verified if they are in accordance with the selected calculation standard. In case of failed verification, the user gets an appropriate message.

● **126 Transfer of modified section attributes to all sections „to the beginning of the line“**

The previous possibilities to transfer modified attributes to other sections have been extended with the new function „to the beginning of the line“. With this modifications can be transferred to all sections within a line that are in a row before the actual one.

● **127 Report and listing of locations with exceeding allowable axial load**

The report and listing of sections with exceeding allowable axial loads in the result report has been improved. The previous, cryptic definition of the location has been changed in naming section from “point name” to “point name”.

Example old:

< 1 1 0
1 1 17>

Example new:

A020 - A030
C060 - C070 etc.

● **128 „Show section“ as standard setting**

The already invented coloured highlighting of the actual section in the „Common System“ has now become a standard setting.

● **129 Automatic calculation and definition of allowable axial load**

The allowable axial load is now automatically calculated. By now this was standard pre-defined with a figure of 190N/mm². Now this is done automatically in dependence of pipe material, calculation standard and maximum operation temperature. By changing one of the determining attributes this figure is re-calculated and newly adjusted. Anyway, if necessary, the user can define this figure manually by himself. By doing this, the automatism gets disabled.

● **130 DXF Export of the geometric model**

The entire geometric model can be exported to a DXF file. The exported objects are provided with all attribute data. For more details please refer to the documentation

● **131 Maximum number of sections, message**

The maximum number of sections is limited to 998 pcs. By reaching or exceeding this limit the user gets now an appropriate message.

● **132 Result report standard system, bended pipe, wrong unit**

In the result report of standard systems with bended pipe was the deflection angle defined with meter [m] instead of degree [°]. This is now fixed.

● **133 and 134: Deviation at the end point, result report fixed**

In the result report were sections with „deviation at the end point“ reported as if they were bends. This is now fixed.

● **135 Updated DB-tables and templates**

All Company diameter tables have been either confirmed or updated. Project templates have been updated. Actual information about the company diameter tables are listed in the diameter information table.

● **136 Revised list of pipe materials, indexing**

Any not FE pipe materials have been deleted from the list of available materials. To guarantee the compatibility with older projects, the deleted materials are shipped in an archive file and can be re-installed on the users own risk.

Material definitions with the index number from 1 to 100 are now exclusive reserved for **sisKMR** system materials. User defined materials shall have index numbers above 100.

● **138 Disabled graphic function „go to section“ in Standard Systems**

The function „go to section“ in the graphic window is now disabled as long as the system definition is a „Standard System“. Using this function could cause program instability.

● **140 Project manager with enlarged dialogue field for project path**

The project manager dialogue for entry or selection of the file system path has been enlarged to enable reading and selecting long filing structures.

● **143: Tee variant „Welded on FEM“**

A new tee variant, „Welded on FEM“ calculation has been invented. This calculation variant isn't based anymore on the old calculation method, defined by equations and formulas of the standards but based on results of a set of FEM calculations.

By selecting this tee type calculation the wall thickness of the main line as well as nozzle become pre-defined and cannot be modified. For further details please refer to the manual.

● **145: Program crash with additional, multiple loading cases fixed**

Calculations with additional, multiple loading cases could cause program crash. This is fixed.

● **147: Bend radius DN150, project template updated**

The bend radius for new projects has been modified to the correct figure

● **148: Material P235GH, definition according to the selected standard**

The material P235GH is twice available in different variants that distinguish between the calculation standard or bedding type:

Mat50 = P235GH_EN253 Underground soil, EN13941, AGFW FW 401, ASME&AD-S2
Mat70 = P235GH_EN10217 Supported, EN13480

● **149: Project compatibility between version 21 and lower**

With the program version 21, several modifications of the project data structure have taken effect. These modifications don't allow anymore project compatibility to older program versions.

Opening and working with older projects with the actual version is still possible without any problem. Any modification of such projects updates them to the data structure of version 21 what makes them incompatible for older **sisKMR** versions.

The modification of the data structure concern graphic settings, user defined and system material definitions and the administration of tees/branches.

● **150: Single calculation, error message at tee calculation internal pressure**

At tee calculations for internal pressure sometimes program error messages could occur. This is now fixed.

● **151: Single calculations: Calculations according to EN 13941, 25 bar allowed**

For the proof of internal pressure according to EN13941 25 bar is now allowed.

Testing condition old: $p < 25\text{bar}$

Testing condition new: $p \leq 25\text{bar}$

Release Notes **sis**KMR 2012, Version 20.3.2

(Patch)

Missing diameter tables were added:

- nwFinpolS1.db
- nwFinpolS2.db
- nwFinpolW1.db
- nwFinpolW2.db
- nwinpal1.db
- nwinpal2.db
- nwinpal3.db

Function „divide section“ modifies entire length

Dividing sections into two automatically determines the length of the other second section. This was only correct if either the cursor in the other section of the dialog box was clicked or the dialogue was closed by pressing the OK button. If the box was closed only by entering a value and immediately closed by pressing the enter key, the length of the other section was not correctly identified and applied. This could change the overall length of the geometry. This is now fixed. The confirmation must explicitly done by pressing the OK button with the mouse cursor.

Modification of tee type changes wall thickness

Modifications of the tee type set the wall thickness of sections back to the default wall thickness according to the appropriate diameter table. This is now fixed. The according sections will not anymore getting modified. The only exception from this rule is the selection of the „thick walled extruded tee“ – this selection defines at any time special wall thicknesses.

Description text line break in the result file

Longer descriptions have not been wrapped. This is now fixed. The automatic wrapping doesn't consider syllables or words. The user is able to define own line breaks by entering the enter key.

Release Notes **sis**KMR 2012, Version 20.2.0

PDF result file

The file size of the result file has been reduced by 40%. The PDF document attributes have partial been changed (old)/new:

Edit document:	(not allowed)/allowed
Document structure:	(not allowed)/not allowed
Copy content:	(not allowed)/allowed
Access to content:	(not allowed)/allowed
Extract pages:	(not allowed)/not allowed
Create comments:	(not allowed)/allowed
Complete forms:	(not allowed)/allowed
Digital signing:	(not allowed)/allowed
Create new pages:	(not allowed)/not allowed

Graphic settings, default settings

New projects have now default setting. This is done with the file (siskmr_graphic.setts) in the template folder.

Graphic settings, wu-value and bending line separate adjustable

Either graphic attributes, wu-value and bending line, can be set independent from each other.

The option „display wu-value“ activates also automatically the display of bending line. The activation/deactivation of the “wu-values” works now with a single user action. Formerly the bending line had to be activated separately and in advance.

As a basic principle remains that the calculation has to take place first.

The context menu „display wu-value“ remain grey if not available.

Graphic settings, section length and diameter

As a new feature added is the possibility to display the section length attribute. This is optional possible, but only one attribute can be displayed: Either line length or diameter.

The display of the diameter has been improved. Now this attribute is to be found at each section. When printing the attributes they remain where they are displayed.

Graphic function „go to section“ improved

The function of the context menu “go to section” recognizes line sections under the cursor easily. Any recognized line section gets highlight color and becomes displayed in the main dialogue „System description“.

● **New graphic function “show section” and “show section graphic” (common system)**

With the new option box in the dialogue “System description”, the actual line section can be highlighted permanently in red color. Sections outside the actual view are not displayed. There is no automatic modification of the zoom factor or the view range.

Clicking the new button „show graphic“ fits the actual section into the graphic window. This function helps „finding“ specific sections in larger geometries.

● **Default setting „Update section mass“**

In the common system, dialogue section data, submenu additional section data can be defined if modifications of diameter data shall update the section mass or not. The former pop-up has been dropped.

● **Diameter tables, servicing, update and storage**

The provided diameter tables have been updated and the number of them has been reduced. From now on and in future only those diameter tables will be in the default set, which last update is not longer ago than one year. Vendor specific diameter tables will exclusively maintained by the companies themselves. Nearby the diameter select box is now an info button arranged. Clicking this opens a table that gives detailed information about any standard diameter table.

All diameter tables that aren't up to date are being delivered in a separate sub-folder named „unsupported“. They are not accessible in the dialogues with the standard setting. If the user wants to use them anyway, he has to copy or move those from the “unsupported” folder into the “nwtab” folder.

The confirmed, actual diameter tables are located in:
`\programme\gef\sisKMR\data_sisKMR\NWTAB\nw*.db`

The outdated diameter tables are located in:
`\programme\gef\sisKMR\data_sisKMR\NWTAB\unsupported\nw*.db`

The diameter tables being used for a project are now saved additionally in the project folder. To guarantee the compatibility to earlier versions, sisKMR checks project while loading and provides them with the correct diameter table.

● **Project template**

Project templates consist out of several files newly stored in a separate folder, located here:

`\program files\gef\sisKMR\data_sisKMR\template\system\`

Any setting or modification done by the user will be used for any new generated project. Any modification made in the templates will be overwritten with a new installation, setup or update.

New help functions

The drop down menu „Help“ provides now the following new functions:

- Manual: opens the manual PDF file
- Release Notes: opens the actual release notes of the version
- License Condition: opens the actual license conditions of the version

Bug fixing: Changing diameter table in the common system, dialogue „Pipe data“

Changing the diameter table in the above mentioned dialogue hasn't been recognized for modifications of the nominal diameter. This works now properly. The content of alternative defined diameter tables takes only effect until line sections' diameter has changed.

Gradient [%] replaced by Angle [°] in the System description of Common system

Vertical sections could formerly be defined either with the definition of „Height difference“ or with its „Gradient[%]“. The definition of the gradient hasn't proven practicable and has therefore been replaced by the definition of the vertical angle [°].

Standard working directory

sisKMR setup defines the standard working directory at {userappdata}\GEF\sisKMR.

(Formerly: {Program Files}\GEF\sisKMR\Bin angeboten.)

This takes effect in that way that the project manager dialogue offers this location as standard project folder.

New calculation method for reinforced extruded tees

A new calculation method has been invented for special sort of reinforced tees that comply with definitions of wall thickness and shape. This calculation method doesn't use the formulas coming from the standards but are based on the result of many FEM calculations.

Selecting this calculation method for one or more tees disables modifications of the pre-defined wall thickness. Further details are to be found in the manual.

Single calculations, fittings according to EN10253-2

The selection of fittings such like bends, tees and reducers is now defined according to the current EN10253-2.

Release Notes **sisKMR 2011**, Version 19.2.0

● **Splitting perpendicular line section**

Splitting of perpendicular line sections in the common system worked so far only for such sections, running upwards into calculation direction. Now this works also for such sections, running downwards.

● **Drop-down list „Bedding type“ enlarged**

The drop-down list „Bedding type“ of the common system, tab „system description“ was enlarged up to 9 entries. With this are now all contained entries easily selectable without using the scroll bar. (Especially the so far hidden entry „Bedding type 0“)

● **PDF output as secured document**

All result reports and graphic output are coming now as secured PDF files what guaranties them to be genuine.

● **Greek text font in graphic output adjusted**

The graphic output by external PDF printers and with German language setting created Greek text characters. This is fixed now.

● **Database editor**

In the drop-down menu „Tools“ entry „Edit table...“ can be started a editor to open, read or modify arbitrary **sisKMR** tables of the file type *.db and *.dbf.

● **Automatic accuracy (division) at function „divide section“**

The automatic calculation of the accuracy of line sections being splitted works now properly. Formerly splitted sections took over the division value of the unsplit section. That caused sometimes extreme high division values on short sections.

● **Graphic module: News and Modification**

- a. Scrolling view (pan): pressing left mouse button: Cursor changes to hand symbol and scrolls the graphic. (default action)
- b. Zoom In/Out with mouse wheel: scrolling inwards -> zoom in; scrolling outwards-> zoom out.
- c. Zoom rectangle area: This function is now accessible in the context menu, first entry. After selecting pressing left mouse button and dragging the desired area while keeping left mouse button pressed. Releasing the button effects view update. The action is a ‚one shot‘ action. That means, after execution the default pan function is again active.

- d. The maximum possible zoom scale has increased from 50 to 200. With this it is easier to view large geometries.

Menu/Button Bar :

- a. Zoom shifter removed, only the zoom factor is displayed as text
- b. Distortion factor/Turning angle shifter with their switches new assorted.
- c. New switch „Save settings“: By pressing this button all the graphic popup settings are saved in a file „*siskmr_graphic.setts*“, in the folder „*\$UserTempDir\siskmr*“. All 9 settings, beginning from „Display points“, to „Display coordinate plane“ are saved. By saving the entire project to disk, the SETTS file is being copied to the project folder and will be read and used by opening the project the next time. As long as the project isn't saved, the SETTS file remains only in the folder „*\$UserTempDir\siskmr*“, and will be overwritten by opening the next project.

File/Project manager

- a. **Alteration of the title „File...“ to „Project...“** As any **sisKMR** calculation is represented by a folder and not a single file, all dialogues that open or save calculations have been modified from „File...“ to „Project...“.
- b. **Selection working directory:** In the drop down list „working directory“ remain now the last 10 used working directories and can be selected. This may avoid long searching for frequently used directories. During a session all used working directories will be added to the list (if not already contained). The entries are saved in the file „*siskmr_dirlist.xml*“ directory „*\$UserTempDir\siskmr*“. This guaranties that the entries are memorized for later sessions. The number of entries is limited to 10. New entries are added at the end of the list. Old entries are deleted at index number 2. The first entry is reserved for the working directory..
- c. **Project manager focus:** By opening the project manager out of a loaded project the focus points to the actual project. All projects are sorted by the first column by default.
- d. **Date sorting** (last column) sorts now considering date values and not anymore number values.

Result file/protocol: PUR foam and casing

Each result line of this section has got a separate headline that identifies each pipe section with its line and section number as well as start point and end point. With this it's much easier to find and identify pipe sections.

Diameter tables:

- a. Modified dimension tables for Brugg company
- b. Dimension tables added KWH Pipe: *nwkwh1.db*, *nwkwh2.db*, *nwkwh3.db*

Material data of the EN 13941:2010-12

Since December 2010 the EN 13941:2010-12 is in effect. The new sisKMR release 2011 covers the modifications of the EN 13941:2010-12 and considers the modified minimum

yield strength for single calculations. To fulfill these requirements in sisKMR, a new material data set has been invented. This one is based on the material P 235 GH (P 235 TR-1 and P 235 TR-2) with modified data according to the new standard. The major difference of the EN 13941:2010-12 is the increasing of the allowable minimum yield strength R_e of P 235 GH, P 235 TR-1 and P 235 TR-2 within the temperature range $50\text{ °C} \leq T \leq 140\text{ °C}$. These modifications have already been announced with the EN 253:2009-07 (section 4.2).

There is no influence to the fatigue stress analysis at the low cycle fatigue (Limit state B1), as the therefore defined maximum stress range is being calculated according to proved fatigue test figures (SN-curve) and not by the material properties of the steel.

Effects take place for the calculations of internal pressure prove of piping components (limit state A1) and for the stepwise plastic deformation (limit state A2). In these cases the modified material properties have even positive effect in relation to the required wall thickness.

Database update

All database tables of the type "db " are classified Paradox Level 7 now.

Project path length

The string length of the complete storage path for sisKMR projects is limited to 70 characters until Version 18*. * (2010).

From version 19.2. * (2011) the project path length for new created projects is unlimited. However, older projects will not display the project information in the project manager.

Release Notes **sisKMR 2010**, Version 18.2.5

● **Compatibility of calculation projects**

Until further notice all **sisKMR** calculation projects remain compatible from **sisKMR 2003** to **sisKMR 2010**.

● **New calculation module “Single calculations”**

With this version **sisKMR** comes with a new separate module allows calculating single proves. This proves are independent from grid geometry. With the first release this includes:

Dimensioning Limit State A1:

- Straight pipe under internal over pressure
- Pipe bend under internal over pressure
- Tee fitting under internal over pressure
- Reducer under internal over pressure
- Straight pipe under external over pressure

Dimensioning Limit State A2:

- Stepwise plastic deformation in fixed area

Dimensioning Limit State C1:

- Local buckling or folding

Dimensioning Limit State C2:

- Global instability (flexural buckling and loss of equilibrium)

Pre-dimensioning of distance between support points:

- Pre-dimensioning of pipe supporter distance based on different requirements

● **New hardware lock (dongle) for licensing**

After more than 18 years the hardware lock has reached the end of its lifetime and the vendor support is announced to end in near future.

With the **sisKMR** version 18.*.* it operates only by using the new dongle variant type HASP HLMAX. These dongles are only available as USB type, either workstation or network license. Operating higher main versions requires a dongle update with a license file. (starting with version 19.*.*) Intermediate Versions within a main version can be run without any action. The dongle exchange for subscribers is **free of charge**.

For protection purposes of proprietorship each dongle contains in future the name of the licensee. This is visible in the settings dialogue *settings-> common settings* as well as in all result documents.

- **Pipe fitting tables according to EN10253-2**

For selecting tee pieces of branched systems in the **sisKMR** main module the underlying tables are now modified according to EN10253-2. If there is the need to calculate tees according to DIN2615, it is possible to overwrite the wall thickness figures in the dialogue.

- **Tee calculation method branched systems, type “reinforced” according to EN13941 and AGFW FW401**

For selected the calculation methods EN13941 and AGFW FW401 are reinforced tees considered.

As the publication of the new EN13941 was late, the calculation of this reinforced tees is in the meantime done with the stress intensification factors of AGFW FW401.

- **Casing pipe temperature**

The adjusted allowable casing pipe temperature is now considered for all sections of calculation and the results are compared against the set value.

- **Diameter tables**

New diameter tables were included from ZPUM (Poland) and Ecoline (Italy). Diameter tables of Isoplus were updated.

Release Notes **sisKMR 2008**, Version 17.2.4

● **sisKMR hang-ups in network operation**

Under certain conditions occurred hang-ups of **sisKMR** after a calculation and the call of Foxit Reader. This problem is solved.

● **Order of calculations in „File-open“ dialogue**

Order of calculations in the dialogue „File Open“ column „Project Directory“ is now „case insensitive“. That means the sorting is done independent of small or capital letters.

● **Date in „File-open“ dialogue**

Network stored calculations were likely to overwrite date simple by opening the „File Open“ dialogue what made search inconvenient. This bug is fixed.

● **Re-opening a calculation**

If a project is being re-opened that was already calculated now the three result buttons are activated.

● **Section mass calculation**

The old section mass calculation resulted little too high values. The new calculation approach considers a PUF specific gravity of 60kg/m^3 according to EN 253. This means, that some calculated weights are lighter than the figures delivered by pipe manufactures.

● **New Diameter Tables**

The diameter tables of German Pipe Company have been updated.

Release Notes sisKMR 2006

● sisKMR common

The internal structure of sisKMR program is completely modernised to make in future planned developments possible.

● sisKMR project description

The sisKMR calculation can be described in the register sheet „Task and calculation type“ with a text of max. 1000 characters. This text-description is appearing on the first page of the result report.

● sisKMR common system – System description

- a. Automatic point naming available (settings in configuration).
- b. With input of point names (max. 6 characters) now capital letters and small letters can be used. sisKMR takes these as two different characters.
- c. The „accuracy (division)“, necessary for the calculation of underground systems, is available as an automatic generation depending to section-length/bedding-type (settings in configuration. Experienced users can deactivate this setting in configuration).
- d. New button „divide section“. With this button is possible to divide the actual section in two parts. Section length of one new part is calculated automatically after the input of the section length of other part.

● sisKMR pre-insulated bonded pipe system (pbp) - calculation

In register sheet „pipe data“ can be set whether the system is pbp or not. This activates or deactivates the calculation of the PUR-foam stresses.

● sisKMR result report

- a. sisKMR works together with Acrobat Reader since version 6 to version 7 (actual version).
- b. There is a hint (with large red letters) on first page of result report when there are occurring any exceeded stress limits.
- c. The result report is available as interactive pdf-file. With using the contents structure of the Acrobat Reader the user is able to view directly the desired chapter of results.
- d. In the table of the stress proof for fatigue the next point names are listed.
- e. In the table for compensator results the angles of rotation are given in degrees.
- f. The result report from the detailed stress analysis is available as pdf-file.

● sisKMR graphic

- a. In the **sisKMR** graphic the reducers of medium pipe are displayed with symbol of triangle.
- b. Axial displacements of T-piece main pipe or free system ends are displayed.

 **sisKMR manual**

Extension of the manual and the online help with the new improvements and developments of **sisKMR**.

 **sisKMR online help**

The **sisKMR** online help is developed to a modern HTML-help.

Release Notes **sisKMR 2004**

● **sisKMR stress analysis with ASME and AD-S2**

ASME + AD-S2 until **sisKMR 2003:**

Until last years version 2003 the choice of line category respectively full load cycles was not possible with using ASME + AD-S2. With standard branch systems the full load cycle value was set fix to 2500, with all other systems also common systems this value was 200. Even there were different factors, that were fixed with a conservative value. Because there were plausible results looking back with today's experience in using the standard combination ASME + AD-S2 and other standard results are unsatisfied still, GEF decided to carry on and develop further the ASME + AD-S2 proof. This decision also necessary working with the new pipe materials of the European standardization.

ASME + AD-S2 from **sisKMR 2004 on:**

Now dependence of the allowable stress range from the value of load cycles (new possibility of selection of line category, well known from AGFW FW 401 and EN 13941) and also dependence from the material values tensile strength and minimum upper yield strength (more see manual chap. "principles of static calculation). Also all former fixed factors now are being calculated with AD-S2 exactly. GEF recommends in using the ASME + AD-S2 to set the following default values of load cycles depending on the line category:

- major pipeline - 100 full load cycles
- main pipeline - 250 full load cycles
- house service connection - 2500 full load cycles

For the user to get an overview of results from the different stress proofs, GEF Ingenieur AG executed some example calculations. Please find enclosed the table named "**sisKMR** -test – comparison of utilization in per cent". This table shows the utilization of different calculated standard situations. If desired, GEF will send the **sisKMR** calculation free of charge via e-mail.

● **New sisKMR stress analysis with ASME and AD2000-S2**

Brand new stress analysis in dependence of the allowable stress range from the value of load cycles (new possibility of selection of line category) and also dependence from the material value tensile strength (more see manual chap. "principles of static calculation).

● **sisKMR extension of the stress analysis and new point type „welding seam“**

Automatic proof of fatigue of neighboured welding seams to bend, T-piece, segment cut, diameter changes, wall thickness changes etc.. Additional to this the user is able to choose the new point type "welding seam" for manual check of welding seams.

● **sisKMR material data tables**

- a. Extension with many new materials for medium pipe from new European standards EN 10216-2 and EN 10217-2.
- b. The steel types St 37.0 and St 52.0, which were mostly designed in district heating so far are not existing any more in the new European standard for higher temperatures.
- c. The steel St 35.8 is still existing with new name (new name: P235GH) and could substitute the St 37.0 (new name: P235TR1), because both materials have the same thermal dependence of material values. The former technical conditions of delivery are retired by the DIN. The DIN 1626 was valid until 02/2004, the DIN 1629 until 07/2003.
- d. So the new **sisKMR** 2004 default material is for all standards P235GH (former name: St 35.8). For seamless steel pipes the materials could be chosen from EN 10216-2, for welded pipes from EN 10217-2.
- a. According information of the AGFW their standard AGFW FW 401, which is only valid for the steel types St 37.0 and St 52.0, is being renewed at the moment and will be finished in the end of 2004. The improvements of this standard will be taken after appearance in **sisKMR** 2005 immediately.

sisKMR calculation of casing temperature

The calculation of the casing temperature is renewed completely. Many values are editable and could be changed by the user.

Attention:

With the new calculation of the casing temperature the result could be higher temperatures than in older **sisKMR** version. This is caused e.g. by the influence of the second pipe (return pipe). The default values for this calculation are explained in the manual and should not be changed carelessly!

sisKMR result printout

The result printout is available in **sisKMR** 2004 as txt-file and pdf-file (selection in menu settings/output options). From **sisKMR** Version 2005 on only the pdf-file will be developed.

sisKMR graphic

The values of the axial displacement at the bends are displayable in the **sisKMR** graphic. Also the values of length and thickness of the expansion cushions could be displayed in the graphic. The **sisKMR** graphic could be saved as pdf-file directly.

sisKMR diagraph

Also the **sisKMR** could be saved as pdf-file directly.

sisKMR manual

Extension of the manual and the online help with the new improvements and developments of **sisKMR**.

Release Notes **sisKMR 2003**

● **European standard EN 13941 (March 2003)**

Taking up the new European standard EN 13941 „design and installation of pre-insulated bonded pipe systems for district heating“ in **sisKMR**.

● **European standard EN 13480 (May 2002)**

Taking up the new European standard EN 13480 „metallic industrial piping“ in **sisKMR**. This proof for above ground pipe systems is corresponding in most parts with the FDBR-guideline former used in **sisKMR**.

● **Combined systems (combined under and above ground systems)**

With common systems there is now the possibility of choice between different standards separate for under and above ground sections.

● **sisKMR standard system „Reduction“**

New calculation from free system beginning (FSA) to free system end (FSE), whereby the position of the natural fix point NFP automatically will be determined. If the reducer is set in area of high axial stresses, the user will be warned by a message and also with a hint in the results report.

● **Pre-dimensioning system “One-time compensator”**

New possibility of choice between the standards:

- EN 13941
- AGFW FW 410
- ASME + AD-S2

● **Pre-dimensioning system “Admissible laying length”**

New possibility of choice between the standards:

- EN 13941
- AGFW FW 410
- ASME + AD-S2

● **Extension of point names**

In common systems there is now the possibility to take 6 characters.

● **Point category - dialogue**

Possibility to take on changes of one point category (analogous to “further section data”) for

- point category of the actual section
- all point categories of the rest of the line
- all point categories of the whole line
- all point categories of the whole system

● **sisKMR result printout**

- load case number on each page of result printout
- showing longer file names (up to 13 characters)

● **sisKMR graphic**

The xyz coordinate system will rotate together with the view (in 3-dimensional view).

● **sisKMR material databases**

Extension with many new material databases.

● **sisKMR nominal width tables**

Complete revision of existing and extension with many new nominal width tables.

● **File save**

With saving the file manually or automatically the bending lines in the graphic are not disappearing any more.