

# District Heating Pipe Static Software



## sisKMR is a program for the static calculation of underground and above ground pipe systems.

sisKMR is based on a beam-element program with which the sections of 3-dimensional pre-insulated bonded pipe systems with any number of branches can be calculated taking non-linear reactions of the soil and expansion cushions into consideration. In addition sisKMR contains standard modules for the fast calculation of common geometrical pipe routing and compensation.

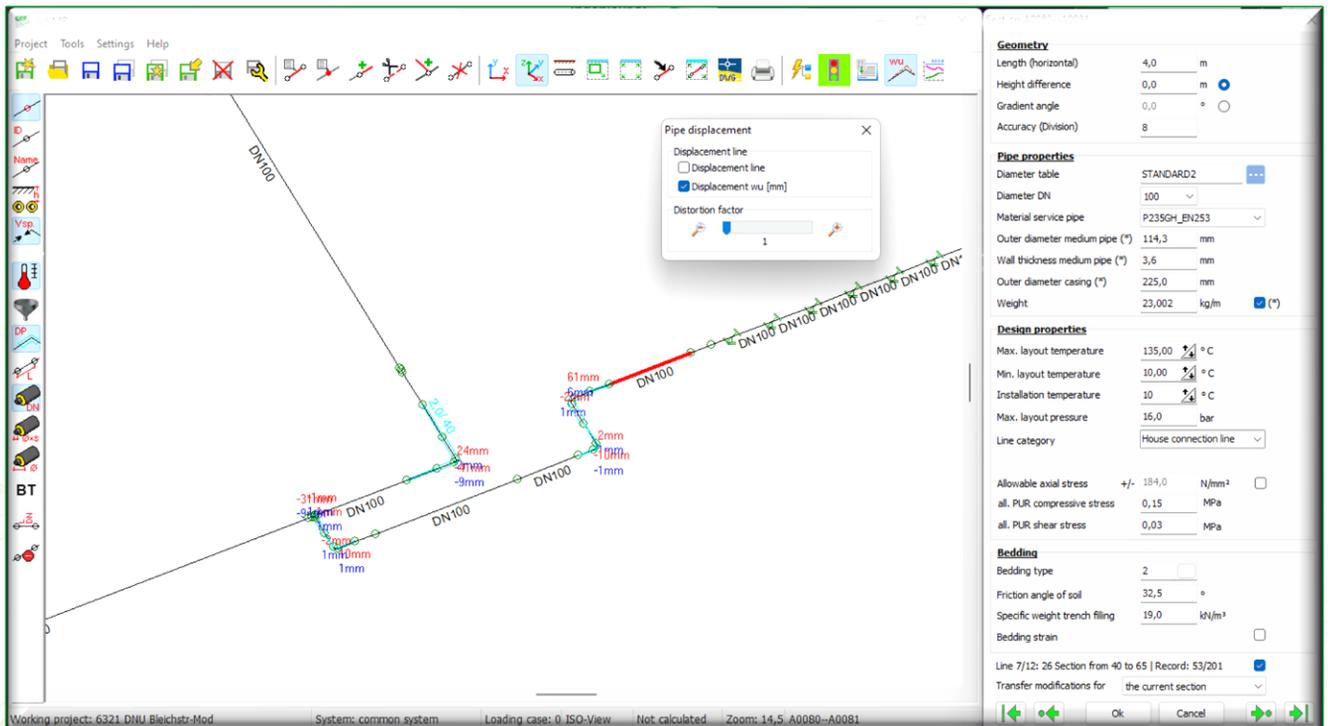
The following modules are available for fast pre-dimensioning:

- Buckling risk during excavation
- One-time compensator (start-up compensator)
- Allowable laying length

Special laying conditions can be considered such as:

- cold installation
- Pre-heating
- One-time compensators
- superimposed installation
- mechanical pre-stressing
- horizontal branch etc.

Complex 3-dimensional pipe systems, also in combination of buried and above ground, ducts, compensators, all this and more can be covered in a pipework model.



### Included Standards:

- EN 13480
- EN 13941
- AGFW FW 401
- ASME & AD-S2
- ASME & AD2000-S2

## ... And all kinds of supported pipework in of district heating and power plant construction

With **sisKMR** all the typical supports implemented in all types of supported pipework system can be taken into account, such as:

- Fixed point and anchors
- Suspension or pendulum support
- Sliding support
- Different kinds of roller supports
- Spring support
- End conditions
- Pre-stressing
- Different friction
- Tolerances

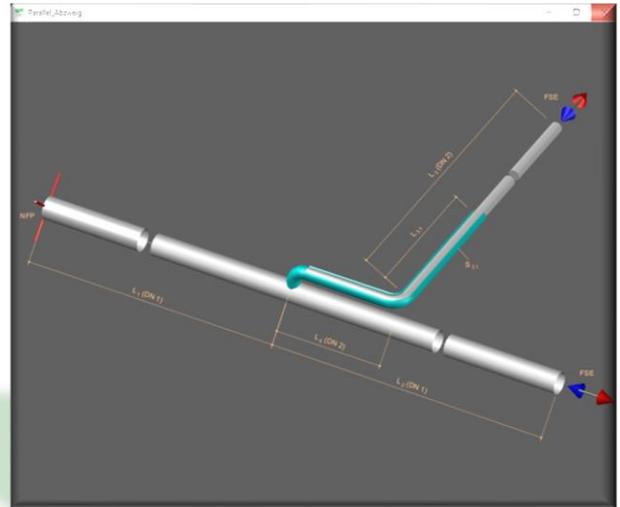
In the calculation of load case, pre-displacements in the bedding and bearing points are taken into account so that friction and bedding reversal effects can be considered and included in the calculation of the load variation ranges (important for the fatigue analysis).

### Pipe Materials:

**sisKMR** features pre-installed material databases and nominal diameter tables which can be edited and extended by the user.

### Graphics features:

- XYZ- / 3D-View, pivoting
- Display of the expanded system with different colours for the load cases (default: case warm: red, case cold: blue)
- Alternatively in steps or direct distortion of expansion cushion thickness and systems expansion
- System geometry can be display while entry of system data
- Clear output of the calculation result with tables and graphics



The most important compensators as the following can be calculated:

- Axial compensator
- Angular compensator
- Lateral compensator
- Strain reduction element (Axial compensator with a limit stop)

The most important calculation results are summarized in special bearing and compensator tables.

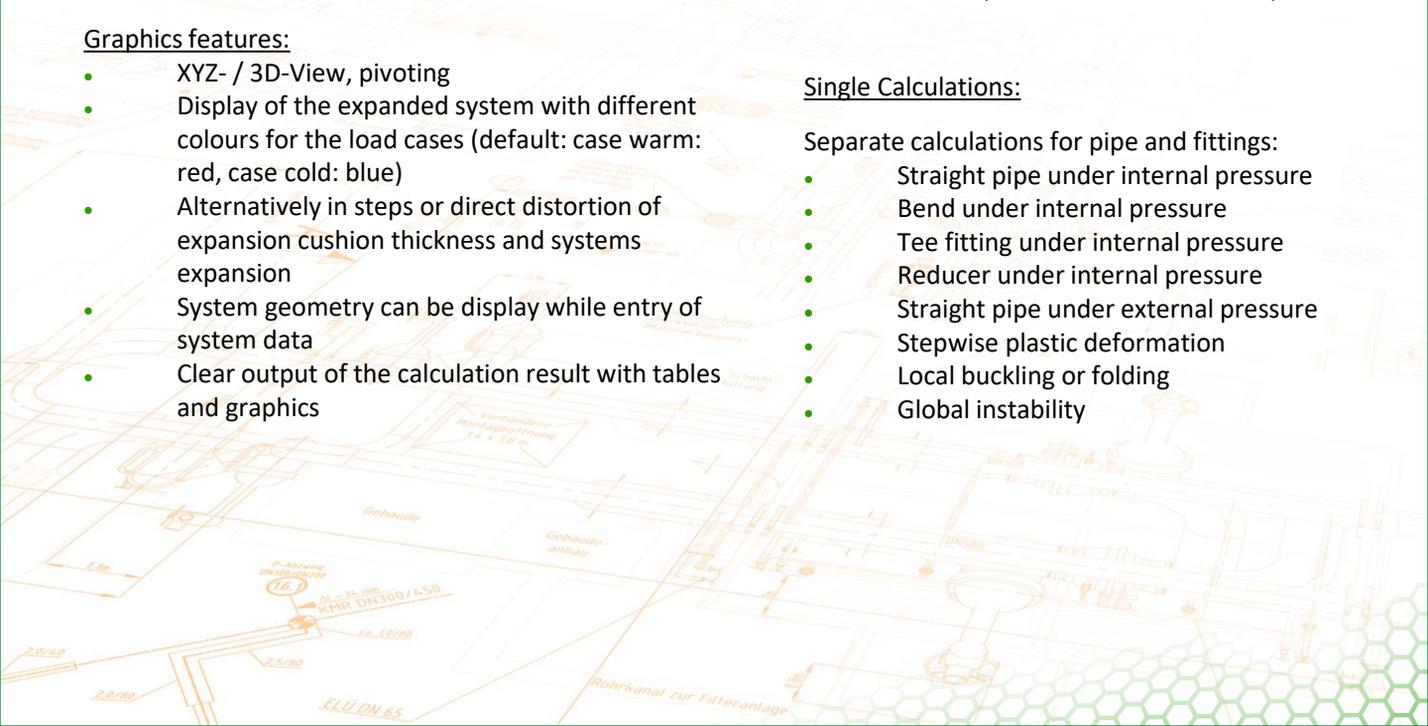
Furthermore it's possible to calculate

- Point mass
  - Single load
  - Additional section loads
- in all directions (like wind and snow loads).

### Single Calculations:

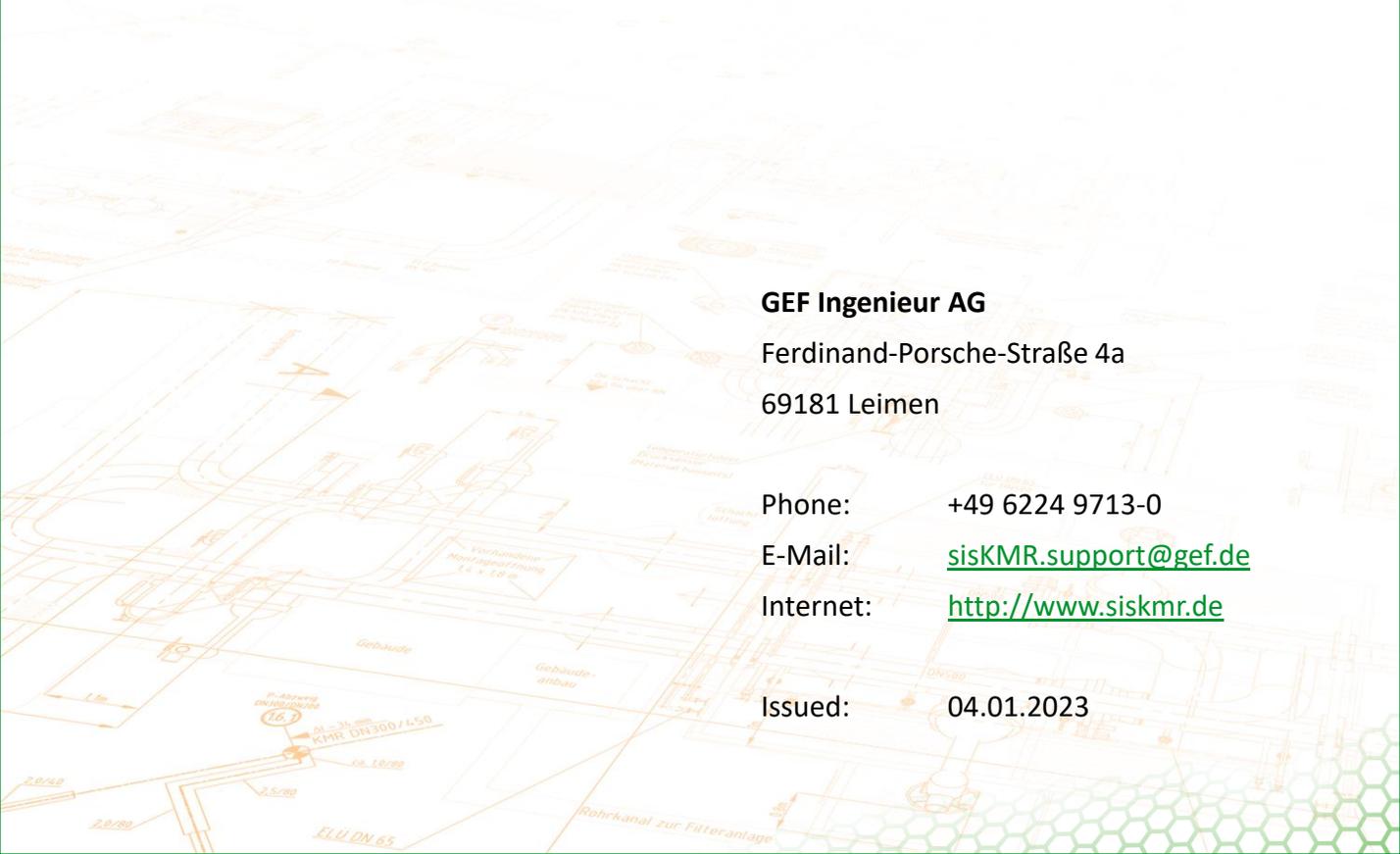
Separate calculations for pipe and fittings:

- Straight pipe under internal pressure
- Bend under internal pressure
- Tee fitting under internal pressure
- Reducer under internal pressure
- Straight pipe under external pressure
- Stepwise plastic deformation
- Local buckling or folding
- Global instability



# sisKMR at a glance

- Leading pipe stress analysis software in the district heating industry
- Static calculation of underground and above ground pipe systems
- User friendly interface
- Fast and pipework model setup with CAD import (DWG and DXF)
- Simple to use, quick data input, exact results
- Any support condition calculable
- Calculation capabilities of branched, topological piping systems
- CAD export (DWG and DXF)
- Comfortable calculation of loading case
- Graphic result is visible while entering the pipe geometry
- Clearly layout of the results, either in a simple or comprehensive report

A faint, light-colored technical drawing of a piping system is visible in the background. It shows various pipes, valves, and structural elements with labels in German. Some labels include 'Gebäude', 'Rohrkanal zur Filteranlage', and 'KMR DN 300/450'. The drawing is overlaid on a light green grid pattern.

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