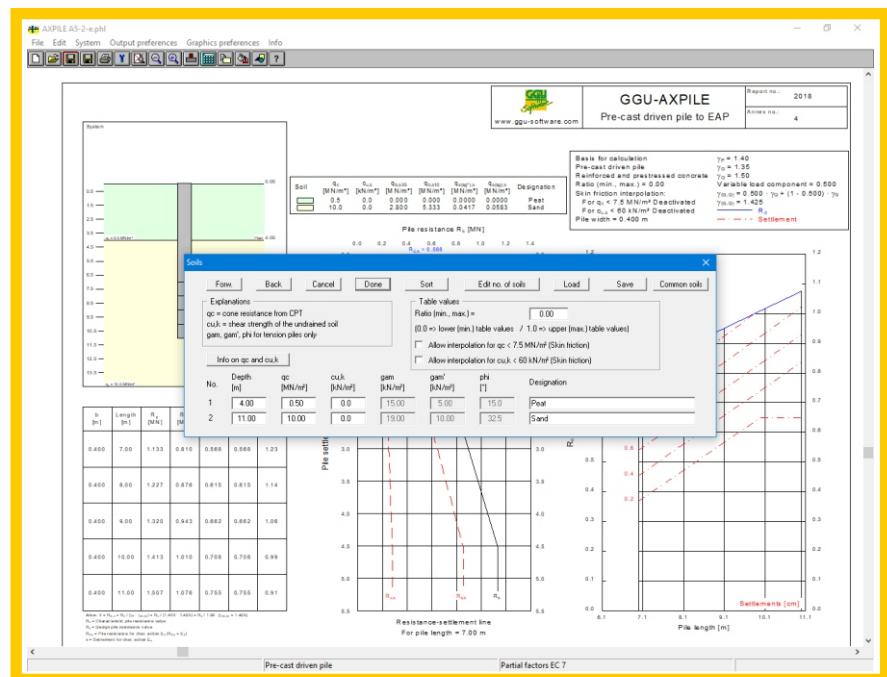
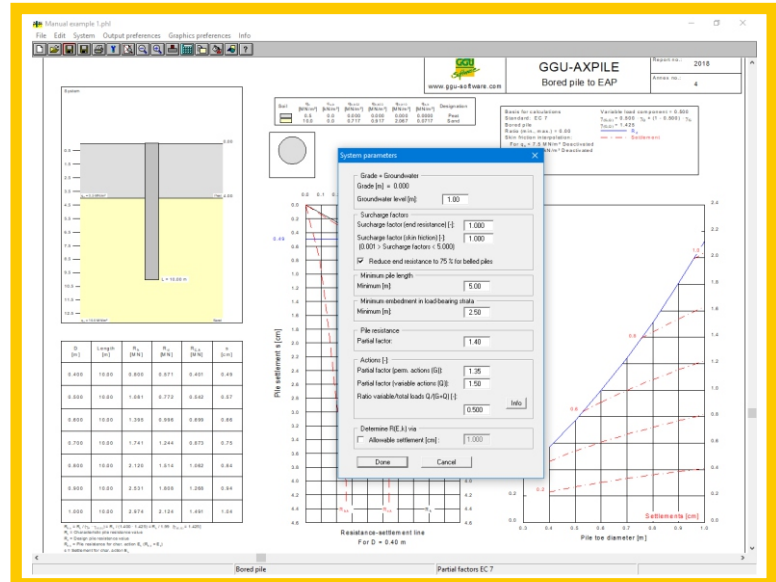


Description

GGU-AXPILE – Calculation and graphical presentation of piles to DIN 4014, DIN 1054, EC 7, EAP or after Franke.

Capabilities:

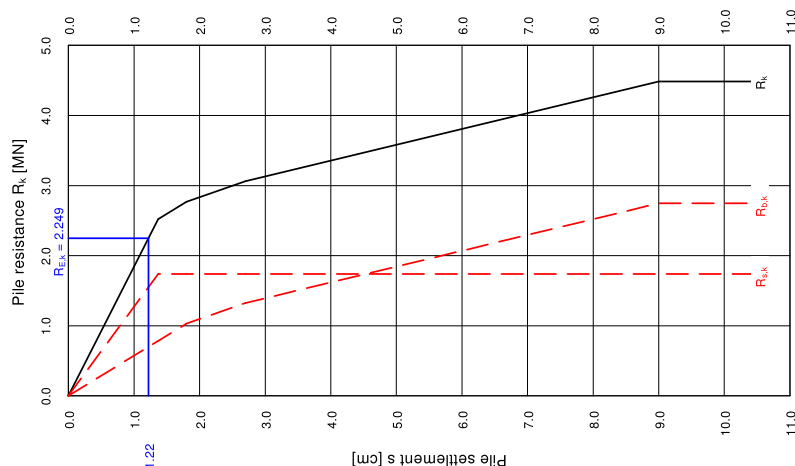
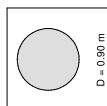
- Choice of analysis using either partial safety factors to DIN 1054:2005 or EC 7 or global safety factors (DIN 1054 old)
- Pile analysis compliant with EAP (Recommendations of the Working Group on "Piles" - EA-Pfähle = EAP)
- Bored pile analysis compliant with DIN 4014
- Driven pile analysis compliant with Tables C.1 and C.2 of DIN 1054:2005 or Franke
- Analysis as compression or tension piles for circular or square piles
- Analysis of allowable pile load as a function of soil properties
- Variation of pile (side) length or pile diameter
- System input using absolute heights
- Soil properties can be selected from an expandable database of common soils
- Input of several pile diameters/pile widths with user-defined values
- Limitation of pull-out radius for tension pile analysis
- Visualisation of allowable load as a function of diameter or length
- Resistance-settlement curves for selected pile lengths
- Visualisation of adopted pile in pile cross-section legend
- Adopted standard, program name and version can be included in the General legend
- Freely definable positioning and sizing of graphical elements and legends
- Print or copy screen sections, e.g. for transfer to a word processor
- Integrated Mini-CAD system for additional annotation of graphics



| | | | | |
|---|-------------------|--|------------|------|
|  www.ggu-software.com | GGU-AXPILE | | Report no. | 2018 |
| | Bored pile to EAP | | Annex no.: | 2 |

| Soil | Depth [m] | q_c [MN/m ²] | $c_{u,k}$ [kN/m ²] | $q_{b,k02}$ [MN/m ²] | $q_{b,k03}$ [MN/m ²] | $q_{b,k10}$ [MN/m ²] | $q_{s,k}$ [MN/m ²] | Designation |
|------|-----------|----------------------------|--------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|-------------|
| | 2.20 | 0.0 | 0.0 | 0.000 | 0.000 | 0.000 | 0.0000 | Fill |
| | 5.20 | 0.0 | 100.0 | 0.450 | 0.550 | 1.000 | 0.0511 | Clay |
| | 7.70 | 7.0 | 0.0 | 0.000 | 0.000 | 0.000 | 0.0747 | Sand |
| | 10.10 | 11.0 | 0.0 | 1.080 | 1.400 | 3.093 | 0.1080 | Sand |
| | >10.10 | 19.3 | 0.0 | 1.787 | 2.295 | 4.559 | 0.1529 | Sand |

Standard: EC 7
Bored pile
Ratio (min., max.) = 1.00
Skin friction interpolation:
For $q_c < 7.5$ MN/m² Activated
For $c_{u,k} < 60$ kN/m² Activated
Pile length = 10.20 m
 $\gamma_p = 1.40$
 $\gamma_G = 1.35$
 $\gamma_Q = 1.50$



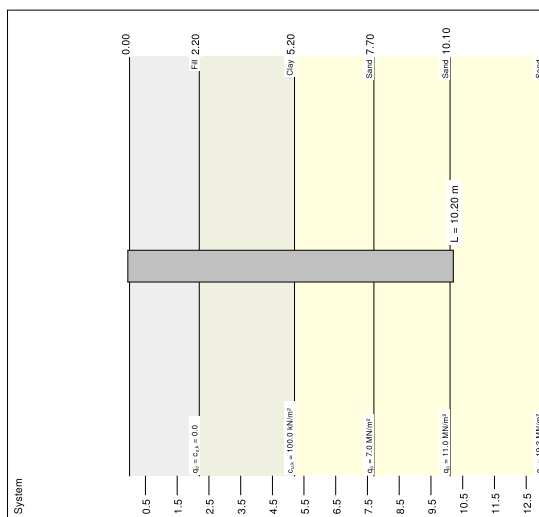
Resistance-settlement line
For pile length = 10.20 m

Results
 $s_{030} = 2.700$ cm:
 $R_{s,k(s)} = 1.738$ MN
 $R_{b,k(s)} = 1.325$ MN
 $R_{k(s)} = 3.063$ MN
 $s_{\gamma p} = 9.000$ cm:
 $R_{s,k(s)} = 1.738$ MN
 $R_{b,k(s)} = 2.748$ MN
 $R_{k(s)} = 4.486$ MN

 $R_k = 4.486$ MN
 $R_d = R_k / \gamma_p = 3.204$ MN
 $R_{E,k} = R_k / (\gamma_p \cdot \gamma_{(e.o)})$
 $R_{E,k} = R_k / (1.400 \cdot 1.425)$
 $R_{E,k} = R_k / 1.99 = 2.249$ MN
Settlement $s = 1.22$ cm

Results
Pile diameter = 0.900 m
Pile length = 10.20 m
Pile end resistance:
 $q_{cm} = 17.458$ MN/m²
Averaged from 9.30 to 12.90 m
 $\sigma_{02} = 1.621$ MN/m²
 $\sigma_{03} = 2.083$ MN/m²
 $\sigma_{10} = 4.320$ MN/m²
Area $A_b = 0.636$ m²
Mantelfläche $A_s = 2.827$ m²/m

 $s_{030} = 1.369$ cm:
 $R_{s,k(s)} = 1.738$ MN
 $R_{b,k(s)} = 0.784$ MN
 $R_{k(s)} = 2.522$ MN
 $s_{020} = 1.800$ cm:
 $R_{s,k(s)} = 1.738$ MN
 $R_{b,k(s)} = 1.031$ MN
 $R_{k(s)} = 2.769$ MN



| Empirical data for: Bored pile | | | | |
|--|--|-----------------------------------|-----------------------------------|------------------------------|
| s/D _s | Pile end resistance $q_{b,k}$ [MN/m ²] | | | |
| | $q_c = 7.5$ MN/m ² | $q_c = 15$ MN/m ² | $q_c = 25$ MN/m ² | $q_c = 25$ MN/m ² |
| 0.02 | 0.550 - 0.800 | 1.050 - 1.400 | 1.750 - 2.300 | |
| 0.03 | 0.700 - 1.050 | 1.350 - 1.800 | 2.250 - 2.950 | |
| 0.10 | 1.600 - 2.300 | 3.000 - 4.000 | 4.000 - 5.300 | |
| | $c_{u,k} = 100$ kN/m ² | $c_{u,k} = 150$ kN/m ² | $c_{u,k} = 250$ kN/m ² | |
| 0.02 | 0.350 - 0.450 | 0.600 - 0.750 | 0.950 - 1.200 | |
| 0.03 | 0.450 - 0.550 | 0.700 - 0.900 | 1.200 - 1.450 | |
| 0.10 | 0.800 - 1.000 | 1.200 - 1.500 | 1.600 - 2.000 | |
| Skin friction $q_{s,k}$ [MN/m ²] | | | | |
| $q_c = 7.5$ MN/m ² | $q_c = 15$ MN/m ² | | | |
| 0.055 - 0.080 | 0.105 - 0.140 | | | |
| $c_{u,k} = 60$ kN/m ² | $c_{u,k} = 150$ kN/m ² | | | |
| 0.030 - 0.040 | 0.050 - 0.065 | | | |
| | 0.065 - 0.085 | | | |