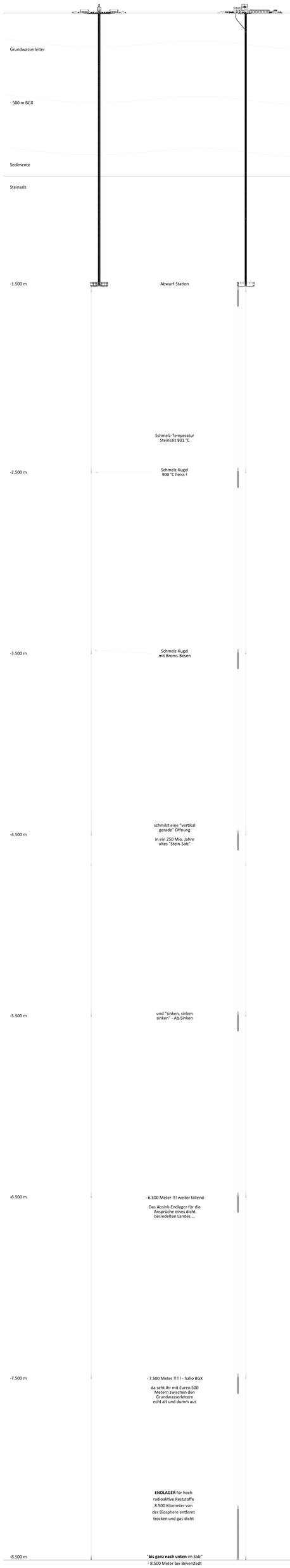
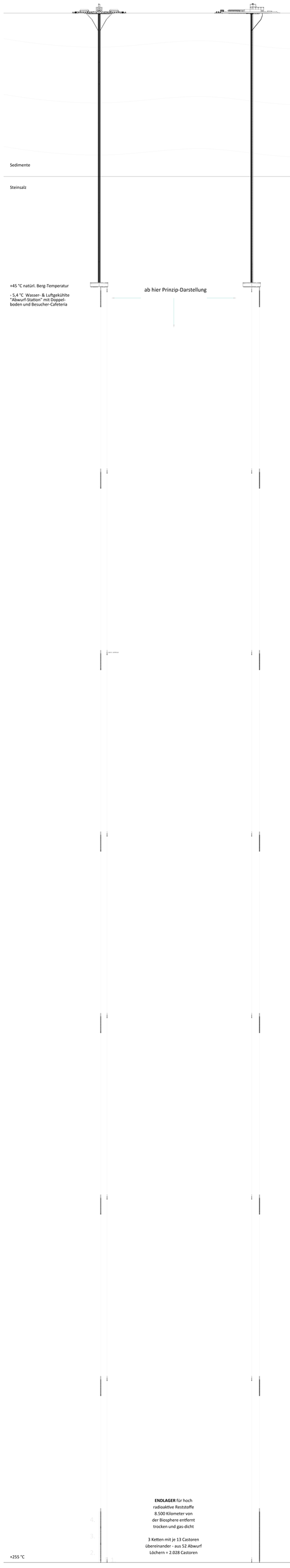
# Blei-Castor Endlager Plan

ERSTELLT TOP-VERSION

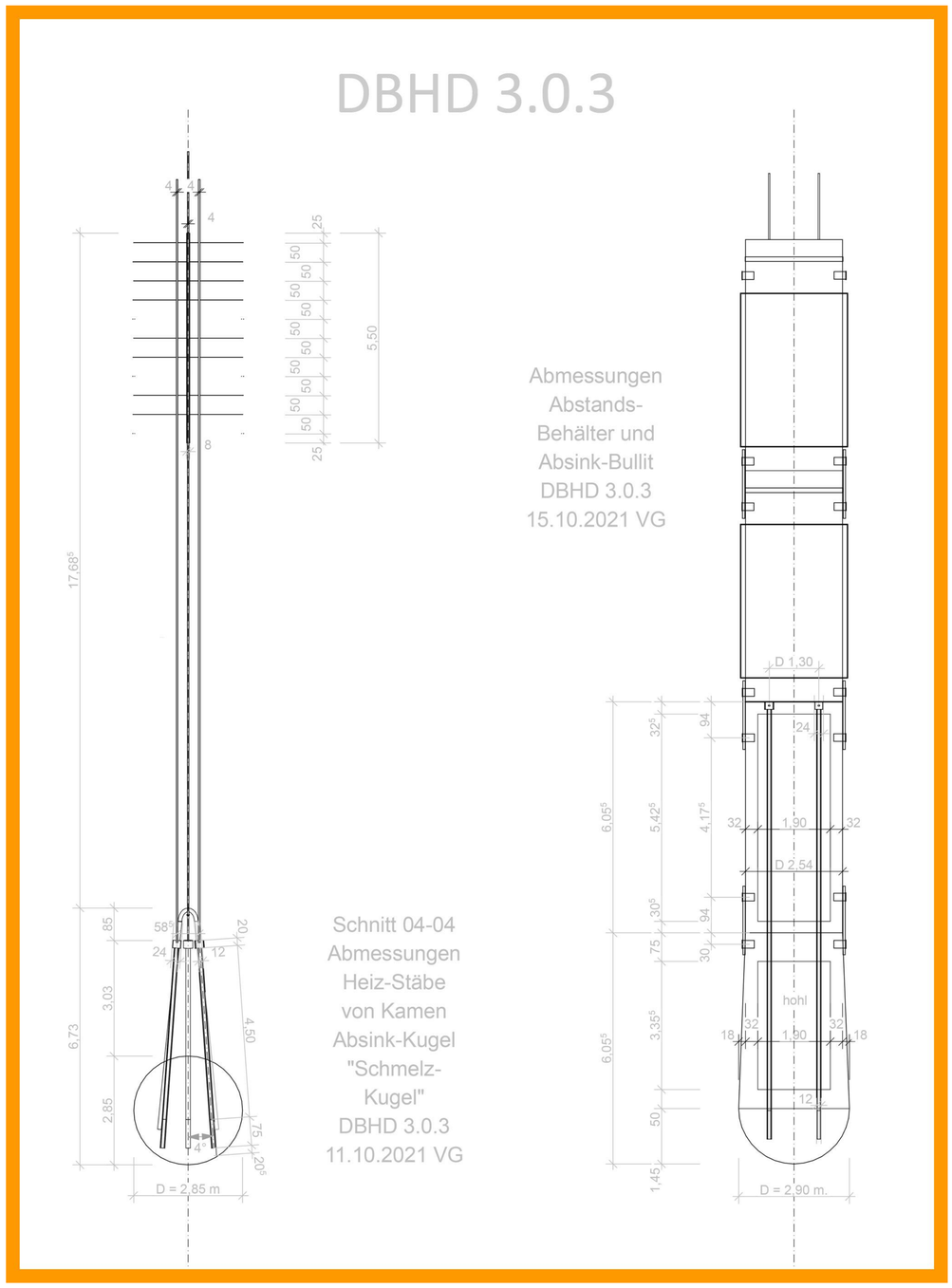


# HLW GDF in deep rocksalt

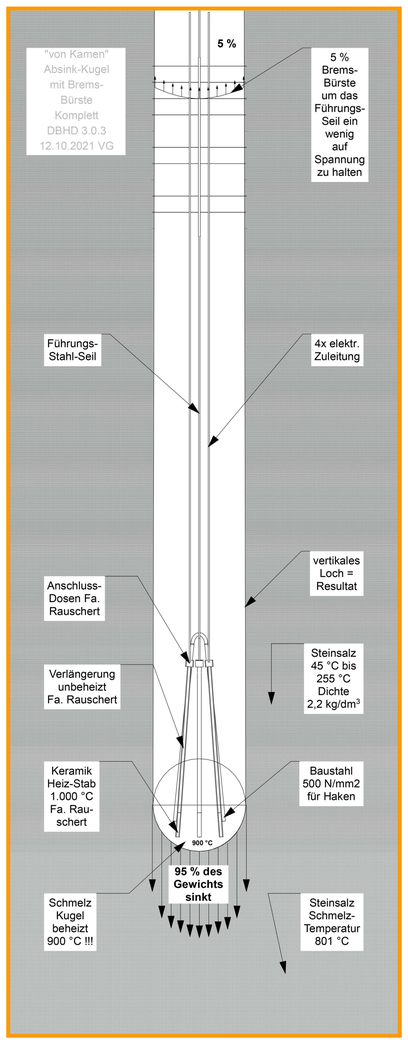
ARCHIVE OF TOP-VIEWERS

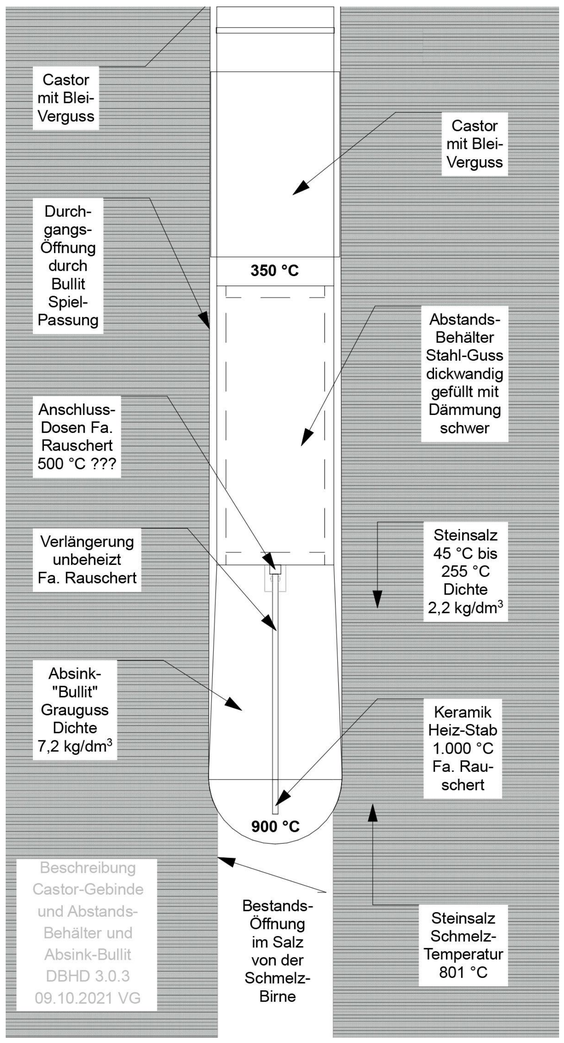


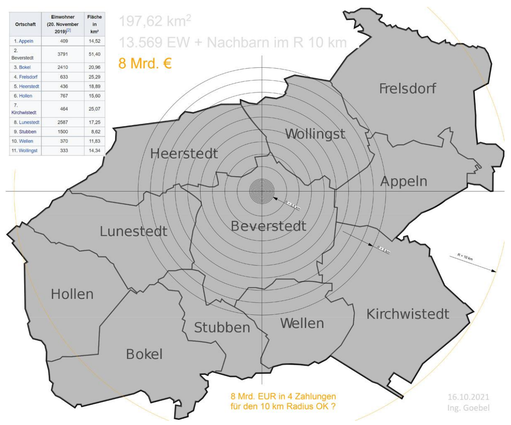
ARCHICAD TEST-VERSION



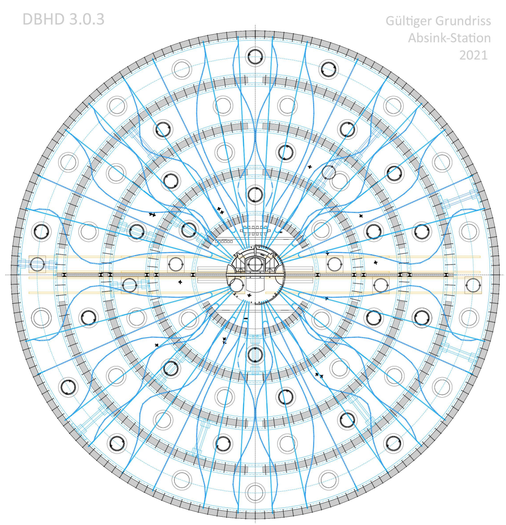

| **BGX wie Gorleben, Konrad, Asse** | **DBHD 3.0.3 Verfasser Ing. Goebel** |
|---|---|
| 500 bis 1.000 Meter Einlager-Tiefe | 8.500 Meter Einlager-Tiefe |
| nass - wie immer - Grundwasserleiter | trocken - weil sehr tief im Salz |
| nicht gas-dicht verschliesbar | gas-dichter Verschluss |
| Baukosten ca. 37 Mrd. EUR | Baukosten 2,9 Mrd. EUR |
| Kompensationen Keine - Geld ist weg | Kompensationen mind. 8 Mrd. EUR |
| Standort unbekannt | Standort **Beverstedt**, Börger, Bleckede |
| 20 - 50 Jahre Bauzeit | 12 Jahre Bauzeit |
| 500 Jahre Offenhaltezeit kostet | 12 Jahre Offenhaltezeit |
| Rückholbar und deshalb nass | Nicht Rückholbar und deshalb trocken |
| Gefahr durch glaziale Rillen | für Eiszeiten unerreichbar tief |
| Gefahr durch Erdbeben - Wasserzutritt | durch Erdbeben nicht veränderbar |
| Bauweise 19 Jahrhundert horizontal | Bauweise 21 Jahrhundert vertikal |
| Sehr ungenügende Bewetterung | Sehr gute Bewetterung |
| Planung bisher nur unmassstäblich | Massstäbliche Planung vorhanden |
| Langzeitnachweisberechnung unmöglich | Langzeitnachweisberechnung offen |
| Pollux Behälter ohne Nachweis Unter-K. | Mit Blei-vergossene Castoren = Unter-K. |
| Planung Umpack-Halle nicht existent | Planung-Verguss-Halle existent in V. 3 |
| Gesamt-Urteil : weniger als ungenügend | Gesamt-Urteil : Langzeit-Sicherheit |




| Ortschaft | Einwohner (20. November 2019) | Fläche in km² |
|---|---|---|
| 1. Appeln | 409 | 14,52 |
| 2. Beverstedt | 3791 | 51,40 |
| 3. Bokel | 2410 | 20,36 |
| 4. Frelsdorf | 633 | 25,29 |
| 5. Heerstedt | 436 | 18,89 |
| 6. Hollen | 767 | 15,60 |
| 7. Kirchwistedt | 484 | 25,07 |
| 8. Lunestedt | 2587 | 17,25 |
| 9. Stubben | 1500 | 8,62 |
| 10. Wellen | 370 | 11,83 |
| 11. Wollingst | 333 | 14,34 |




Version 0.3.6 https://www.ing-goebel.de/

**Kalkulation DBHD 3.0.3 Endlager nuclear repository GDF**

Last edit: 15. October 2021 / Dipl.-Ing. Volker Goebel CH, DE / Nuclear Repository Planner ww
**Capacity : 2.047 HLW Containers / Castors (the complete German HLW in one GDF)**
**Repository-Storage-Depth : - 8.500 Meters /// water- and air cooled deep shaft building site - 1.500 m**
Based on : Draft-Planning from 2014 - 2021 actually in Version **3.0.3 based on industry offers**
**download .xlsx file, to be able, to change positions to your country market - your calculation**

| | Type of invest | Amount | Offer / Quote | Factor | Total | Comment | dwg |
|---|---|---|---|---|---|---|---|
| | Probe-Drillings | 1 x | by local company | 160.500.000 € | 160.500.000 € | Cores > -9.000 m | yes |
| 32. | Land Purchase | min. 363 x 300 m | from local owners | 500 € / m2 | 54.450.000 € | 108.900 m2 | yes |
| | 1x DBHD License | Above Earth Install | ing-goebel.shop | 5.867.120 € | 5.867.120 € | to have a legal plan | yes |
| | 1x DBHD License | Underground Shaft | ing-goebel.shop | 69.000.000 € | 69.000.000 € | to have a legal plan | yes |
| | Shaft-Boring-RH | SBR with D 12 m | Herrenknecht AG | 41.000.000 € | 41.000.000 € | 2 yrs. delivery time | yes |
| | External streets | 40 km | make-over | heavy trucks | 12.000.000 € | new / enhance | |
| | DB Rail Connection | 1 x | only last kilometers | onto DBHD site | 20.000.000 € | **if possible** | |
| 30. | E-powerconnection | 2 x | local supplier | redundant | 2.000.000 € | 10 kV med. voltage | |
| 31. | Water-connection | 2 x | incl. water | redundant | 4.000.000 € | 10 bar with DN 200 | |
| 1. | Concrete Floors | like in techn. plans | concrete and steel | 24.265 m3 | 6.914.250 € | see pictured BOQ | yes |
| 2. | Concrete Walls | like in techn. plans | concrete and steel | 10.050 m3 | 4.370.250 € | see pictured BOQ | yes |
| 3. | Gates and Windows | like in techn. plans | big size gates - mid price | 16 gates 24 windows | 215.040 € | see pictured BOQ | yes |
| 4. | Concrete Columns | like in techn. plans | concrete and steel | 544 m3 | 337.280 € | see pictured BOQ | yes |
| 5. | Roofs | like in techn. plans | steel and wood | 9.761 m3 | 10.200.500 € | see pictured BOQ | yes |
| 6. | Head-Frame Unit | like in techn. plans | steel and glass | 79.414 m3 | 142.945.200 € | see pictured BOQ | yes |
| 7. | Workshop Storage Hall | like in techn. plans | steel and glass | 37.269 m3 | 40.995.801 € | see pictured BOQ | yes |
| 8. | Office-Power-Building | like in techn. plans | steel and glass | 6.624 m3 | 8.610.535 € | see pictured BOQ | yes |
| 9. | Trees | like in techn. plans | h = 5 m / 16 yrs old | Trees 167 x | 53.440 € | see pictured BOQ | yes |
| 10. | Fences & Gates | like in techn. plans | 1.364 m in 3 m high | 1.148 m 6 m high | 614.300 € | see pictured BOQ | yes |
| 11a. | Water Cooling M. | like in techn. plans | 302 m3/h cold water | includes tanks | 4.631.966 € | see pictured BOQ | yes |
| 11b. | Power for Water Cooling | 4,5 Mio. kWh / Jahr | über 12 Jahre | 54 Mio. KWh | 8.100.000 € | 0,15 ct / kWh | OK |
| 12. | Steel Structure W. | like in techn. plans | steel and paint | 12.328 m3 | 1.602.640 € | see pictured BOQ | yes |
| 13. | Move-able-platforms | like in techn. plans | 2 x 200 tons steel | 400 tons | 600.000 € | see pictured BOQ | yes |
| 14a. | Air cooling machines | like in techn. plans | 4,4 Mio. m3 / hour | 2 x 12 MW sets | 21.000.000 € | see pictured BOQ | yes |
| 14b. | Steel Structure A. | like in techn. plans | steel and paint | 35.598 m3 | 4.237.746 € | see pictured BOQ | yes |
| 14c. | Power for Air Cooling | 10 Mio. kWh / Jahr | über 12 Jahre | 120 Mio. KWh | 18.000.000 € | 0,15 ct / kWh | ! |
| 15. | Piping Air Supply | 628 m / DN 800 | 4 Meters deep | air tight, flanges | 301.440 € | see pictured BOQ | yes |
| 16. | Tubing Water Supply | 2.512 m / DN 125 | 2,5 and 3 m deep | water tight, flanges | 314.000 € | see pictured BOQ | yes |
| 17. | Earth wall building | 124.000 m3 + Mat. | 2 man - 2 years job | diggers on site | 306.000 € | see pictured BOQ | yes |
| 18. | Steel Tubbings D12 | 4.400 Casted Tubbings | 3.369 kg / Tubbing | 16.280 tons | 83.764.000 € | see pictured BOQ | yes |
| 19. | Guide rail beams | like in techn. plans | Steel HEB 240 | 2.562 tons | 3.843.840 € | see pictured BOQ | yes |
| 20. | Elevator Plattforms | like in techn. plans | **includes F & E** | 16 units | 3.680.000 € | see pictured BOQ | yes |
| 22. | Tubes for Concrete & P. | like in techn. plans | D = 219 x 8 mm | 2 x 8.800 m | 1.324.000 € | see pictured BOQ | yes |
| 23. | Install 45 " Tubes for C. | like in techn. plans | max. 97 m deep | 408 m DN 400 | 520.000 € | see pictured BOQ | yes |
| 25. | Middle Wall Beams | like in techn. plans | Steel HEA 600 | 5.651 m | 2.169.984 € | see pictured BOQ | yes |
| 29. | Air Tubes Sheet M. | 8.800 m (2,1 m2) | sheet metal, rivets | 215 EUR / m | 1.892.000 € | see pictured BOQ | yes |
| 34. | Radlader - Digger | 4x L509 Tele Liebherr | 4x CAT 313 GC | 156.000 m3 and 124.000 m3 | 720.000 € | see pictured BOQ | |
| 35. | Car Cranes | 2x 250 T. Liebherr | LTM 1250-5.1 | 1.300.000 € | 2.600.000 € | see pictured BOQ | |
| | Conveyor Belts | 6 x | sand, salt storage | 8 m, 16 m, 30 m | 18.000.000 € | diverse types | |
| | Compensationes | 20.000 Shares DE | direct local people | 10.000 € | 200.000.000 € | payment not bribe | |
| | Planning Offices | Scientific expertise | many disciplines | all disciplines | 40.000.000 € | over 12 years | |
| | Approval Fees | questions and stamps | many agencies | town, country, state | 35.000.000 € | to Gov. Agencies | |
| | Startfound. SBM | 1 x | Drill Company | 300.000 € | 300.000 € | temp. Structures | yes |
| | Shaft Drill D=12 m | 1 x | Drill Company | 18.300.000 € | 18.300.000 € | 2.200 m Drill | yes |
| | Shaft completition | 1 x | Drill Company | 7.000.000 € | 7.000.000 € | see floorplan | yes |
| 21. | Watercooling tubes | DN 150 PN 340 | Steelbuilders | 16.000.000 € | 16.000.000 € | 18.000 Elements | yes |
| | Dyneema Ropes | 3 x | Gleistein DE | 3.900.000 | 11.700.000 € | D=80 mm 1.500 m | |
| | Excavation works | D=104 m / H=29 m | Mining Company | 246.226 m3 x 85€ | 21.000.000 € | bring it to surface | yes |
| | Concrete works | D=98 m / H=26 m | Mining Company | 196.018 m3 x210 | 41.163.780 € | install it at -1.500 m | yes |
| | Cranes 250 tons | KTA licensed cranes | KRAFOTEC | 14 Cranes,Service | 47.000.000 € | with 5 year guarantee | yes |
| | Round crane runways | 8 diameters | Steel workers | steel, painted blue | 13.000.000 € | bring it down, fix it | yes |
| | Casted Steel Cones | 364 x (D2,8x0,4) | height 6,05 m | 364 x 37 = 13.468 | 21.548.800 € | cast it , bring on site | yes |
| | Lead for Castors | 2.047 Castors | 30 tons lead / each | 61.410 tons !!! | 184.230.000 € | from old lead accus | yes |
| | Absink-Schmelz-Kugeln | 54 Stück à 85 tons | Fa. W. Meskendahl | 4.590 T. Grauguss | 17.281.350 € | Angebot liegt vor | yes |
| | Absink-Schmelz-Bullits | 158 Stück à 170 tons | Fa. W. Meskendahl | 26.860 T Grauguss | 107.440.000 € | noch kein Angebot | yes |
| | Brems-Besen | 52 Stück staubarm | kratzen d. Wand nicht | Bau & Federstahl | 780.000 € | noch kein Angebot | yes |
| | Heizstäbe für 900 °C | 52 x 4 + 156 x 2 | Fa. Kanthal & Co. | für Temp. 900 °C | 2.000.000 € | noch kein Angebot | yes |
| | Tests mit Schmelz-Kugel | Pauschal | Fa. Kali und Salz | in 1 Bergwerk | 3.000.000 € | Danke | |
| | Stromverbrauch Kugel | 52 x 4 x 100 kW | 20.800 kW x | 14.000 Stunden | 43.680.000 € | 0,15 ct / kWh | |
| | Stromverbrauch Bullit | 156 x 2 x 100 kW | 31.200 KW x | 3 x 3.500 Stunden | 49.140.000 € | 0,15 ct / kWh | |
| | Abstands-Behälter | 158 Stk x 12 tons | Stahl-Guss mit Deckel | mit Wärme-Dämm. | 9.480.000 € | noch kein Angebot | yes |
| | Schwer-Transporte | 208 Fahrten | 2x 433 km pro Tour | Neuenr. z >< Bev. | 900.640 € | noch kein Angebot | |
| | Elektrische Kabel | 52 x 4 x 7.000 m | 156 x 2 x 7.000 m | 3.640 km | 71.800.000 € | noch kein Angebot | |
| | Kabel-Entroll-Technik | 52 Vorrichtungen | Synchron Abrollen | zum Absinken | 1.560.000 € | noch kein Angebot | no |
| 36. | Staff 12 years | 50 Man & Woman | 4 hour shifts in shaft | 120.000 € / year | 72.000.000 € | Work & Safety | |
| | building back | 1 x | shaft install out | a guess | 11.000.000 € | shaft install out | |
| | Closure works | 1 x | own Salt grain | a guess | 500.000 € | Salt + M. Pressure | yes |
| | add closure works | 1 x | other plugs | a guess | 2.500.000 € | Sed. Bitum. Sed. | yes |
| | Unforseeables | 3% | use or not use | experience | 54.347.577 € | it is all calculated | |
| | **Total** | **October 2021** | **Version 36** | | **1.865.933.479 €** | | |
| | plus HLW containers, plus DB rail-transports, plus law-cases | | | | **1,9 Mrd. EUR** | | |