Version 0.3.0 | http://www.ing-goebel.com | http://www.ing-goebel.shop

# Calculation 1x DBHD 2.0.0 nuclear repository GDF

## 3x DBHD

Last edit: 28. April 2021 / Dipl.-Ing. Volker Goebel CH, DE / Nuclear Repository Planner ww

**Capacity : 472 HLW Containers / Castor or HI-Star 100, and all country types of containers**

**Repository-Storage-Depth : - 2.200 Meters / water- and air cooled deep shaft building site**

Based on : Draft-Planning from 2014 - 2021 actually in Version **2.0.0 with pictured BOQ**

**download .xlsx file, to be able, to change positions to your country market - your calculation**

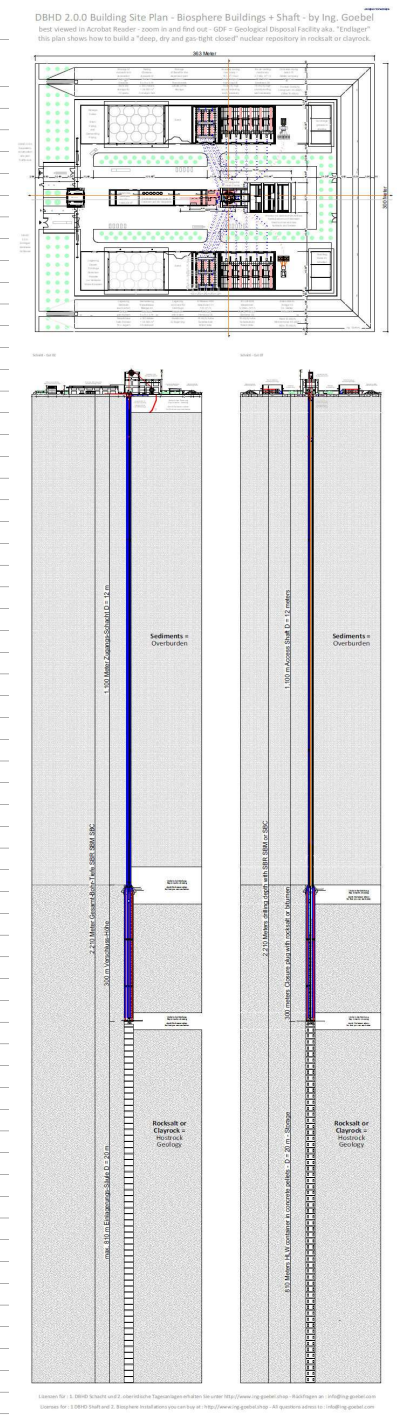
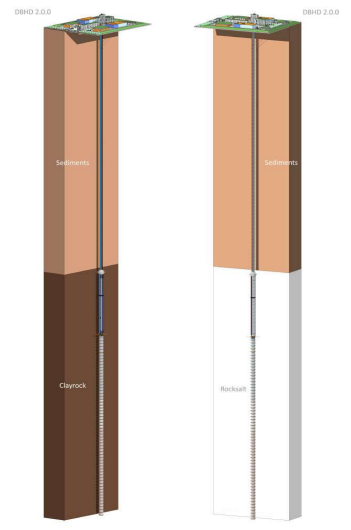
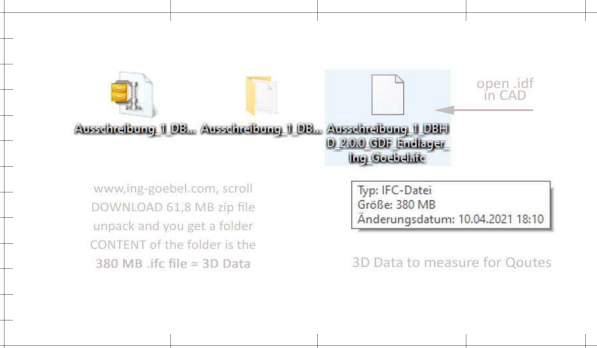
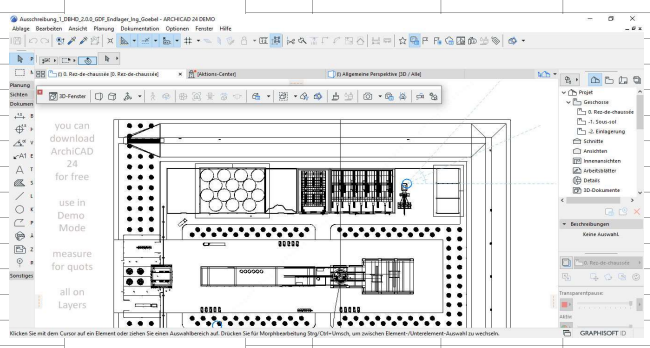
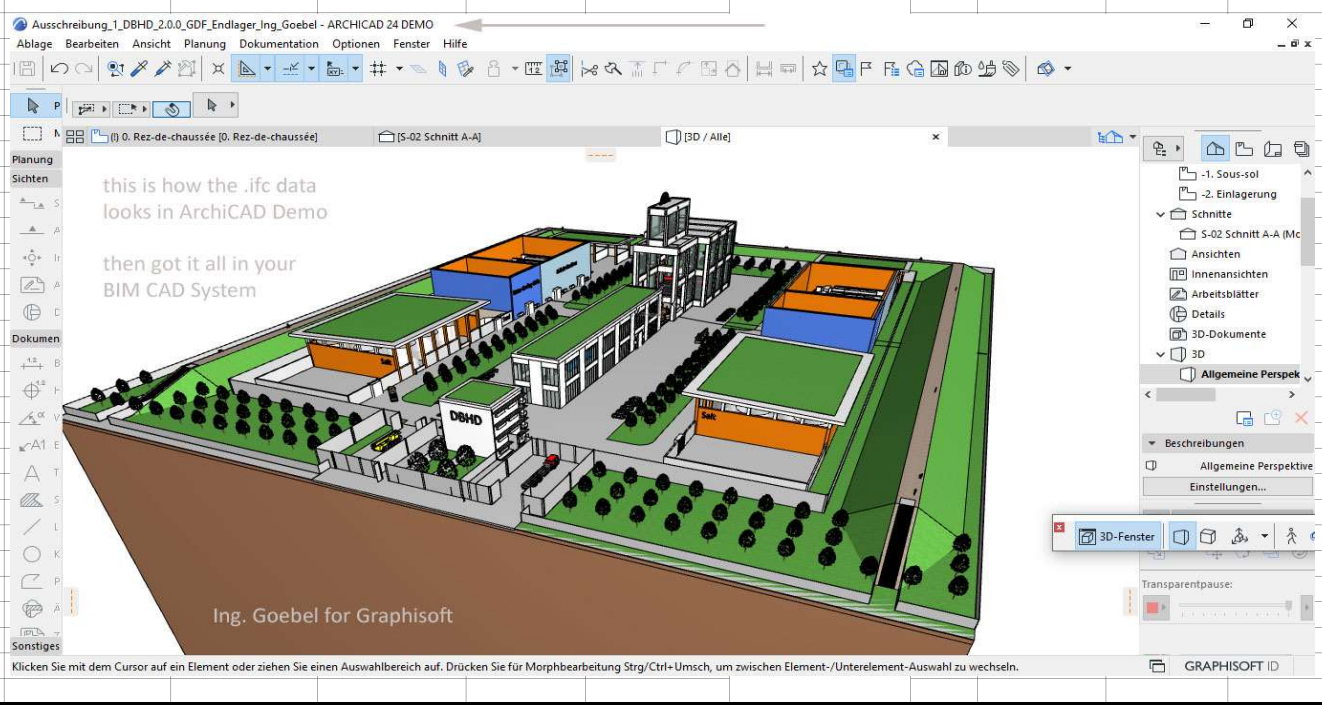
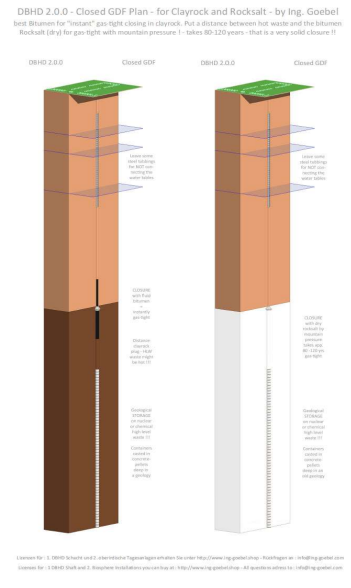
we calculate a net price for 1x DBHD 2.0.0 building site with 1 shaft - but 3 shafts on site are possible

**from only 1 building site +100 m +100 m**

if local hostrock geology is big enough !?

| | Type of invest | Amount | Offer / Quote | Factor | Total | Comment | dwg | 1 st. hole | + 100 m. 2 nd hole | + 100 m. 3 rd hole |
|---|---|---|---|---|---|---|---|---|---|---|
| | Probe-Drillings | 3 x | by local company | 5.500.000 € | 22.500.000 € | Cores > -2.500 m | yes | 22.500.000 € | 5.500.000 € | 5.500.000 € |
| 32. | Land Purchase | min. 363 x 300 m | from local owners | 120 € / m2 | 13.068.000 € | 108.900 m2 | yes | 13.068.000 € | 3.600.000 € | 3.600.000 € |
| | 1x DBHD License | Above Earth Install | ing-goebel.shop | 452.000 € | 452.000 € | to have a legal plan | yes | 452.000 € | 100.000 € | 100.000 € |
| | 1x DBHD License | Underground Shaft | ing-goebel.shop | 590.000 € | 590.000 € | to have a legal plan | yes | 590.000 € | 590.000 € | 590.000 € |
| | Shaft-Boring-RH | SBR with D 12 m | Herrenknecht AG | 34.000.000 € | 34.000.000 € | 2 yrs. delivery time | yes | 34.000.000 € | 5.000.000 € | 5.000.000 € |
| | External streets | 40 km | make-over | heavy trucks | 12.000.000 € | new / enhance | | 12.000.000 € | 500.000 € | 500.000 € |
| | DB Rail Connection | 1 x | only last kilometers | onto DBHD site | 9.000.000 € | **if possible** | | 9.000.000 € | 400.000 € | 400.000 € |
| 30. | E-powerconnection | 2 x | local supplier | redundant | 2.000.000 € | 10 kV med. voltage | | 2.000.000 € | 100.000 € | 100.000 € |
| 31. | Water-connection | 2 x | incl. water | redundant | 4.000.000 € | 10 bar with DN 200 | | 4.000.000 € | 600.000 € | 600.000 € |
| 1. | Concrete Floors | like in techn. plans | concrete and steel | 24.265 m3 | 6.914.250 € | see pictured BOQ | yes | 6.914.250 € | 1.728.563 € | 1.728.563 € |
| 2. | Concrete Walls | like in techn. plans | concrete and steel | 10.050 m3 | 4.370.250 € | see pictured BOQ | yes | 4.370.250 € | 2.185.125 € | 2.185.125 € |
| 3. | Gates and Windows | like in techn. plans | big size gates - mid price | 16 gates 24 windows | 215.040 € | see pictured BOQ | yes | 215.040 € | 30.000 € | 30.000 € |
| 4. | Concrete Columns | like in techn. plans | concrete and steel | 544 m3 | 337.280 € | see pictured BOQ | yes | 337.280 € | 200.000 € | 200.000 € |
| 5. | Roofs | like in techn. plans | steel and wood | 9.761 m3 | 10.200.500 € | see pictured BOQ | yes | 10.200.500 € | 300.000 € | 300.000 € |
| 6. | Head-Frame Unit | like in techn. plans | steel and glass | 79.414 m3 | 142.945.200 € | see pictured BOQ | yes | 142.945.200 € | 142.945.200 € | 142.945.200 € |
| 7. | Workshop Storage Hall | like in techn. plans | steel and glass | 37.269 m3 | 40.995.801 € | see pictured BOQ | yes | 40.995.801 € | 2.000.000 € | 2.000.000 € |
| 8. | Office-Power-Building | like in techn. plans | steel and glass | 6.624 m3 | 8.610.535 € | see pictured BOQ | yes | 8.610.535 € | 0 € | 0 € |
| 9. | Trees | like in techn. plans | h = 5 m / 16 yrs old | Trees 167 x | 53.440 € | see pictured BOQ | yes | 53.440 € | 15.000 € | 15.000 € |
| 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 | 614.300 € | 63.000 € | 63.000 € |
| 11a. | Water Cooling M. | like in techn. plans | 302 m3/h cold water | includes tanks | 4.631.966 € | see pictured BOQ | yes | 4.631.966 € | 1.543.988 € | 1.543.988 € |
| 11b. | Power for Water Cooling | 4,5 Mio. kWh / Jahr | über 12 Jahre | 54 Mio. KWh | 8.100.000 € | 0,15 ct / kWh | OK | 8.100.000 € | 8.100.000 € | 8.100.000 € |
| 12. | Steel Structure W. | like in techn. plans | steel and paint | 12.328 m3 | 1.602.640 € | see pictured BOQ | yes | 1.602.640 € | 1.602.640 € | 1.602.640 € |
| 13. | Move-able-platforms | like in techn. plans | 2 x 200 tons steel | 400 tons | 600.000 € | see pictured BOQ | yes | 600.000 € | 600.000 € | 600.000 € |
| 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 | 21.000.000 € | 7.000.000 € | 7.000.000 € |
| 14b. | Steel Structure A. | like in techn. plans | steel and paint | 35.598 m3 | 4.237.746 € | see pictured BOQ | yes | 4.237.746 € | 4.237.746 € | 4.237.746 € |
| 14c. | Power for Air Cooling | 10 Mio. kWh / Jahr | über 12 Jahre | 120 Mio. KWh | 18.000.000 € | 0,15 ct / kWh | ! | 18.000.000 € | 18.000.000 € | 18.000.000 € |
| 15. | Piping Air Supply | 628 m / DN 800 | 4 Meters deep | air tight, flanges | 301.440 € | see pictured BOQ | yes | 301.440 € | 301.440 € | 301.440 € |
| 16. | Tubing Water Supply | 2.512 m / DN 125 | 2,5 and 3 m deep | water tight, flanges | 314.000 € | see pictured BOQ | yes | 314.000 € | 314.000 € | 314.000 € |
| 17. | Earth wall building | 124.000 m3 + Mat. | 2 man - 2 years job | diggers on site | 306.000 € | see pictured BOQ | yes | 306.000 € | 306.000 € | 306.000 € |
| 18. | Steel Tubbings D12 | 4.400 Casted Tubbings | 3.369 kg / Tubbing | 16.280 tons | 83.764.000 € | see pictured BOQ | yes | 83.764.000 € | 3.000.000 € | 3.000.000 € |
| 19. | Guide rail beams | like in techn. plans | Steel HEB 240 | 2.562 tons | 3.843.840 € | see pictured BOQ | yes | 3.843.840 € | 3.843.840 € | 3.843.840 € |
| 20. | Elevator Plattforms | like in techn. plans | **includes F & E** | 16 units | 3.680.000 € | see pictured BOQ | yes | 3.680.000 € | 3.680.000 € | 3.680.000 € |
| 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 | 1.324.000 € | 1.324.000 € | 1.324.000 € |
| 23. | Install 45 ° Tubes for C. | like in techn. plans | max. 97 m deep | 408 m DN 400 | 520.000 € | see pictured BOQ | yes | 520.000 € | 520.000 € | 520.000 € |
| 24. | Cone & Flange | like in techn. plans | concrete and steel | 1.859 m3 | 942.900 € | see pictured BOQ | yes | 942.900 € | 942.900 € | 942.900 € |
| 25. | Middle Wall Beams | like in techn. plans | Steel HEA 600 | 5.651 m | 2.169.984 € | see pictured BOQ | yes | 2.169.984 € | 180.832 € | 180.832 € |
| 26. | Pouring Plattform | like in techn. plans | Steel HEA 1000 | 2x 160 t | 1.600.000 € | see pictured BOQ | yes | 1.600.000 € | 0 € | 0 € |
| 28. | Steel Tubbings D20 | 6.600 Casted Tubbings | 4.717 kg / Tubbing | 31.132 tons | 156.156.000 € | see pictured BOQ | yes | 156.156.000 € | 300.000 € | 300.000 € |
| 29. | Air Tubes Sheet M. | 8.800 m (2,1 m2) | sheet metal, rivets | 215 EUR / m | 1.892.000 € | see pictured BOQ | yes | 1.892.000 € | 1.892.000 € | 1.892.000 € |
| 33. | Trucks - Kipper / 20x | MB Actros 3345 AK | 33 T. Kipper Strasse | 577.760 tons Salt | 3.040.000 € | 251.200 x 2,3 = tons | | 3.040.000 € | 2.000.000 € | 2.000.000 € |
| | Salz-Verkauf | 17.508 tours 300 km | **that is rail transport !** | Fuel for Trucks | 2.605.172 € | 2.100.945 L. Diesel | | 2.605.172 € | 2.605.172 € | 2.605.172 € |
| 34. | Radlader - Digger | 4x L509 Tele Liebherr | 4x CAT 313 GC | 156.000 m3 and 124.000 m3 | 720.000 € | see pictured BOQ | | 720.000 € | 200.000 € | 200.000 € |
| 35. | Car Cranes | 2x 250 T. Liebherr | LTM 1250-5.1 | 1.300.000 € | 2.600.000 € | see pictured BOQ | | 2.600.000 € | 0 € | 1.300.000 € |
| | Conveyor Belts | 6 x | sand, salt storage | 8 m, 16 m, 30 m | 18.000.000 € | diverse types | | 18.000.000 € | 3.000.000 € | 3.000.000 € |
| | Compensationes | 20.000 Shares DE | direct local people | 10.000 € | 200.000.000 € | payment not bribe | | 200.000.000 € | 100.000.000 € | 100.000.000 € |
| | Planning Offices | Scientific expertise | many disciplines | all disciplines | 60.000.000 € | over 12 years | | 60.000.000 € | 15.000.000 € | 15.000.000 € |
| | Approval Fees | questions and stamps | many agencies | town, country, state | 35.000.000 € | to Gov. Agencies | | 35.000.000 € | 6.000.000 € | 6.000.000 € |
| | Startfound. SBM | 1 x | Drill Company | 300.000 € | 300.000 € | temp. Structures | yes | 300.000 € | 300.000 € | 300.000 € |
| | Shaft Drill D=12 m | 1 x | Drill Company | 18.300.000 € | 18.300.000 € | 2.200 m Drill | yes | 18.300.000 € | 18.300.000 € | 18.300.000 € |
| | Shaft completition | 1 x | Drill Company | 7.000.000 € | 7.000.000 € | see floorplan | yes | 7.000.000 € | 7.000.000 € | 7.000.000 € |
| 21. | Watercooling tubes | 2 Sets **DN 125** PN 340 | Steelbuilders | 8.000.000 € | 16.000.000 € | 16.000 Elements | yes | 16.000.000 € | 1.600.000 € | 1.600.000 € |
| | Dyneema Ropes | 3 x | Gleistein DE | 3.900.000 | 11.700.000 € | D=80 mm 2.250 m | | 11.700.000 € | 11.700.000 € | 11.700.000 € |
| | Hole-opening | 1 x | to Diam. = 20 m. | 10.000.000 € | 10.000.000 € | with chain-saws | yes | 10.000.000 € | 10.000.000 € | 10.000.000 € |
| 36. | Staff 12 years | 50 Man & Woman | 4 hour shifts in shaft | 120.000 € / year | 72.000.000 € | Work & Safety | | 72.000.000 € | 80.000.000 € | 90.000.000 € |
| | Rocksalt-Salt-Sale | 1 x 251.200 m3 | rough quality Streusalz | 250 €/m3 | -62.800.000 € | Städte / und BGE | | -62.800.000 € | -62.800.000 € | -62.800.000 € |
| 27. | Concrete-Pellets | 59 Pellets | 2.590 m3 x 59 | 70 €/m3 | 12.183.500 € | Quality-Concrete | yes | 12.183.500 € | 12.183.500 € | 12.183.500 € |
| | Sand/fine gravel | 60 Layers t = 1,5 m | 471 m3 x 60 | 50 €/m3 | 1.413.000 € | D = max. 3 mm | yes | 1.413.000 € | 1.413.000 € | 1.413.000 € |
| | Magnetit powder | 59 Portions | 70 m3 x 59 | 680 €/m3 | 2.808.400 € | Rio Tinto, Billiton | yes | 2.808.400 € | 2.808.400 € | 2.808.400 € |
| | building back | 1 x | shaft install out | a guess | 11.000.000 € | shaft install out | | 11.000.000 € | 2.000.000 € | 2.000.000 € |
| | Closure works | 1 x | own Salt grain | a guess | 500.000 € | Salt + M. Pressure | yes | 500.000 € | 500.000 € | 500.000 € |
| | add closure works | 1 x | other plugs | a guess | 2.500.000 € | Sed. Bitum. Sed. | yes | 2.500.000 € | 2.500.000 € | 2.500.000 € |
| | Unforseeables | 3% | use or not use | experience | 31.581.696 € | it is all calculated | | 31.581.696 € | 31.581.696 € | 31.581.696 € |
| | **Total** | **April 2021** | **Version 30** | | **1.084.304.880 €** | | | **1.084.304.880 €** | **471.438.041 €** | **482.738.041 €** |

plus HLW containers, plus rail-transports, plus law-cases — **1,1 Mrd. EUR**

| 1 st. hole | 2 nd hole | 3 rd hole |
|---|---|---|
| 1,1 Mrd. EUR | 0,48 Mrd. EUR | 0,49 Mrd. EUR |

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