

## **References / Consulting activities**

### **Prof. Dr. habil. Heinz Konietzky (Germany)**

- **Consulting, Stability and Deformation Analysis, Comparative Studies, Feasibility Studies, Support Dimensioning for Tunnels and Drifts in Germany and Switzerland**  
e. g. Gotthard-Base-Tunnel, 4th Tube Elbe-Tunnel Hamburg, Tunnel Olpe, Tunnel Lichtenfels, Tunnel Lütgendortmund, Tunnel Berghofen, DB Tunnels for Connection Stuttgart-Augsburg, Waste Water Tunnel Winterhäuser Quelle, Fernthaltunnel of NBS Köln-Rhein/Main, Tunnel for highspeed train route Dresden-Prague
- **Dimensioning, Consulting, Stability- and Deformation Analysis, Feasibility Studies, Support Dimensioning for Underground and Surface Mines as well as underground storage excavations in Germany, Austria, Spain, Kasakhstan and Czech Republic**  
e. g. Seeling walls, Dewatering drifts and slope stability for lignite open pits in the Lausitz-Area, CSM-Coal-Projekt Ostrava, Room-Pillar excavation scheme for coal mining in Ostrava, Schist mines in NRW and Rheinland-Pfalz, Gypsum and limestone mines in Thuringia, Baden-Württemberg and Saxony, Old mining in Thuringia, Saxony and Bavaria, Uranium Mine Königstein, Limestone cavern "Bad Segeberg", Gas storage caverns in salt, Shaft dimensioning for ore mines, Settlement and uplift prediction for the coal mine region Oelsnitz, Limestone mines in Saxony, Salt and potash mines in Germany, Anhydrite and gypsum mines in Germany, Slate mines in Germany, Scheelit mine in Austria, Copper mine in Kazakhstan, Dimensioning of underground room-and-pillar mining for hard rock mine Grosssteinberg
- **Hydrofrac Stress Measurements and Hydraulic Bohrhole Measurements for different Geotechnical Projects in Germany, in Great Britain and Switzerland**  
e. g. Deep Continental Drilling Project Windisch-Eschenbach (Germany), Geothermal Projekt Soultz (France), Bridge- and Tunnel Projects in Hong-Kong, Mining Projects for British Coal, Tunnel Projects in Germany, Lötschberg-Base-Tunnel (Switzerland), Mine 'Reiche Zeche'
- **Extensive Consulting for the Government of Lower Saxonia in Relation to Geotechnical, Geological, Geohydraulic, Safety, Seismological and Mining Aspects of the Potential Radioactive Waste Project "Konrad"**
- **Consulting, Stability- and Deformation Analysis, Basic Research, Hydro-Thermo-Mechanical Coupled Safety Analysis, 3D Stress Field Calculations for several Potential Radioactive Waste Projects in Germany, Switzerland, Czech Republic, Japan as well as in the framework of EU-Projekts**  
e. g. Waste Disposal Projects Wellenberg (Switzerland) , Benken (Switzerland), Mont Terri (Switzerland), Konrad (Germany), Morsleben (Germany), Asse (Germany), Site de Meuse/Haute-Marne (France), Rock Mechanical Laboratory Grimsel (Switzerland)
- **Foundation Consulting and Dimensioning for Structures considering the Soil-Structure Interaction taking into account Hydro-Mechanical Coupling for Projects in Germany, Switzerland and Czech Republic**  
e. g. Transrapid-Project Hamburg - Berlin (Germany), Underground Car Park Ostrava (Czech Republic), TV-3COM-Center Zürich (Switzerland), Nuclear Power Plant Neckar-Westheim (Germany), Bridge Foundation Filstal (Germany), Quayside Antwerpen (Belgium), Watergate Lüneburg (Germany), Harbour Wilhelmshaven, Off-shore foundation for wind turbines, Water dam Leibis-Lichte, Water reservoir Schoenbrunn, Power line route SuedLink
- **Stability and Deformation Prediction for Slopes, Waste Dumps and Earth Dams**  
e. g. Creeping slope at water reservoir Schönbrunn, Waste disposals Mettmann, Birkenwerder, and Gehlberg, Railway slopes for NBS Köln - Rhein/Main, Natural theater Rathen, Dam Seebachtal, Dumpsite Neue Sorge Rositz, Open air theater Bad Segeberg, Rock complexes Wehlturm and Bastei, Hydro-mechanical coupled slope failure, Analysis of groundfalls, Analysis and monitoring of rockfall and landslides in Georgia, Uranium tailing Culmitsch, Underground MgO-based dam

- **Simulation and Analysis of Effect of Detonations and Explosions as well as Earthquake excitations**  
nuclear explosions of Semipalatinsk test area, blast simulation during shaft sinking for the Site de Meuse/Haute-Marne (France), earthquake impact on nuclear power plant foundations, earthquake excitation of a stadium in Agadir (Maroc), Vibration prediction of selected sites
- **Dimensioning and Basic Research for Geogrids**  
Multilayer geogrids for NBS Erfurt - Leipzig/Halle, Fundamental research for behaviour of geogrids under static and dynamic load, Interaction between several geosynthetics, Dimensioning of geotextiles for big waste dumps
- **Seismic / seismoacoustic monitoring and data interpretation**  
Seismic monitoring of mining region Aue (SDAG Wismut), Seismic monitoring during flooding of mining region Aue, Seismic monitoring of geothermal project in Zwickau, Long-term study of urban seismicity in Dresden, Concept for seismic monitoring of deep geothermal exploration well, Seismic monitoring of mine Mittersill (Austria), Urban seismicity of city Dresden
- **Development, Implementation and Verification of Geomechanical Constitutive Laws into Explicit Numerical Codes**  
e. g. Elasto-plastic and visco-elasto-plastic laws for Salt, HM-coupled elasto-plastic laws for overconsolidated claystones, Hypo-elastic laws for soils, Creep laws for salt, Elasto-plastic compaction laws for crushed salt, Hydration laws for concrete and backfill, Swelling law, Anisotropic elasto-plastic constitutive law for crystalline rocks
- **Numerical Simulations in Process Engineering and for Chemical Industry**  
e. g. Elevators for mills, Filling of chemical reactors with catalysts, Flow in silos, Filling process of nappies, Pill pressing, Backfilling of underground excavations, Asphalt simulations and lab testing
- **Fracture and damage mechanical simulations in material sciences incl. rocks**  
Fatigue and damage of airplane wings, micro-damage of concrete slabs, strength of nano materials, friction and abrasion of break systems, lifetime prediction of rocks under loading, cyclic loading of concrete and rocks, thermal induced crack growth in rocks, SSiC-canisters for radioactive waste
- **Geothermal Energy Research**  
Rockmechanical, Hydraulic and Thermal Reservoir and Frac Simulations, Site Characterization, Induced Seismicity, Underground Heat Storage
- **Restauration of historical buildings and monuments**  
Sculptures in Eusebius Cathedral Arnheim (NL), Basement vaults and shafts in Castle Colditz, Restauration of baroque sandstone tomb in Dresden, Risk-assessment of the vacuum conservation technique, Small size monuments in Saxony and both sides along the borderline to the Czech Republic incl. restauration, Thermal damage of monuments

----- **education + expert training** -----

- **Training courses and guest lectures in several countries worldwide**  
Germany, Poland, Austria, Kenya, Switzerland, France, China, Vietnam, Czech Republic
- **Supervision of PhD-Students / Post-doc students / Humboldt scholars**  
Germany, Great Britain, Austria, Spain, Canada, Norway, Belgium, China, India, Kenya, Vietnam, Egypt, Australia, Sri Lanka