

➤ Successful Anniversary Party



35 Years GuD Consult

Fun and conversation between colleagues and business partners. The speech was held by Nikolaus Schneider, Managing Director, GuD (b. r.)

A big summer party with friends, business partners, and employees of GuD Consult GmbH commemorated the 35th anniversary of our company.

The new Berlin office at Darwinstrasse 13 was again the location for a successful party with good vibrations and warm temperatures. A little rain here and there did not bother us at all because the buffet, bar and guests were well sheltered under the roof of our party tents.

The party with over 250 guests commemorated the 35th birthday of our engineering firm. The GuD employees from our offices in Hamburg, Cologne and Leipzig were also present and together we welcomed clients, project partners, and colleagues from Berlin and also far away places. The atmosphere was relaxed and con-

versation did not only revolve around time schedules and engineering solutions, rather encouraged guests to „leave the office“ and interact at a more personal level. A jazz band, a barbecue and buffet as well as nice draft beer, wine, or soft drinks were additional highlights on this day.

GuD Geotechnik und Dynamik Consult GmbH was founded in 1980 and is today one of the leading German engineering companies in the field of geo-engineering and subsoil dynamics. With five office locations in Germany, a subsidiary in Athens, Greece and over eighty employees, our GuD specialists are involved in numerous projects throughout Germany. In addition, we are internationally engaged in projects in Turkey, Poland, Sweden, The Netherlands, Russia, India, and the Philippines.

What chances does sustainable geo-engineering stand?

Engineers are not usually involved in the big discussions which form public opinion and influence large scale development and investment aspirations of our society. Depending upon one's personal understanding of technical issues and creativity this can be either welcomed or regretted. However, engineers do assume a major role in transforming those development aspirations into a reality. One of the current aspirations is to achieve a sustainable economy which is not developed at the cost of future generations. Resources are to be protected and our natural environment protected. One of the climate targets - to limit the global rise in temperature to 2°C - is supposed to be achieved by lowering CO₂ emission in all private and economic sectors. The building industry's answer to this challenge can be summarized by the concept of „Green Building“. The building industry's planning engineers, also in the areas of foundation technology and special civil engineering, are already able to recognize CO₂ requirements of their products and methods - the so called Carbon Footprint - and to offer CO₂ friendly techniques. This is why it is hard to understand that clients, especially in the public-sector, look mostly at the mere building costs without respecting climate change as a criteria to influence the choice of construction method.

It is easy to assume that „sustainability“ as a basis for public investment decisions is only an empty phrase and the „tight budget“ mentality accepts long term costs as a given. In this matter, engineers should publically voice the alternative technical possibilities and experience. Omission of innovative techniques may lead to short term savings, but will burden the environment and, thus, create much higher costs in the future.



Dr.-Ing.
Fabian Kirsch
Managing Partner

GuD Hamburg

The projects of GuD Consult Hamburg have advances nicely in 2015.

In the course of the construction project „Alter Wall“ the diaphragm wall has been completed and an additional soft gel injection as vertical sealing underneath the diaphragm wall has been applied to seal the building pit. We were hired to do the conceptual design of the building pit, to supervise the construction work along with the evaluation, analysis, and assessment of the sealing work. The GuD „Joint Inspector“ surveyor (Fugeninspektor) was successfully applied on more than 40 joints of the 50 m deep diaphragm wall.

Current projects also include the movement of the Wilhelmsburg Reichsstrasse and foundation construction and pile testing for new construction of the Kassenärztliche Vereinigung. In addition, two GuD employess have spent several weeks offshore to supervise the drilling work at the Offshore Windpark Kaskasi. The geotechnical report is currently being drawn up.



Demanding excavation at „Alter Wall“

Anniversaries 2015

We congratulate our colleagues on their work anniversaries and say thank you for many years of commitment and great work!



Petra Schröder
25 years GuD



Manuela Meznarc
20 years GuD



Dipl.-Geol.
Maike Wedewardt
20 years GuD



Dipl.-Ing.
Mario Bobka
20 years GuD

➤ Successfully finished!

This year we were able to successfully finish several important projects in Berlin and to lay the foundation for finalizing the building projects.

New office building at Otto-Suhr-Allee

The building pit for the new Deutsche Bank office building at Ernst-Reuter-Platz was finished on time despite the challenges presented by nearby adjacent buildings and underground heating pipelines. Our job was to assess the subsoil and plan the building pit and foundation, along with supervision and quality management of the special engineering works. The shell construction is underway.

Potsdamer Platz Promenade

The building pit for the residential and commercial building was handed over to the shell construction company at the beginning of September 2015. GuD Consult was involved with the subsoil Investigation report and the foundation concept as well as the planning for the special civil engineering works and construction supervision. The new construction will be built directly above the subway station Mendelssohn-Bartholdy-Platz. We will closely monitor the deformation of the train station and will coordinate necessary measures.

High rises Max und Moritz

GuD Consult developed a combined pile-raft foundation (KPP) using 3D modeling for the two high-rise towers „Max und Moritz“, with 24 and 27 stories respectively, which are located near the Mercedes Benz Arena. Having concluded the work phase which included subsoil and foundation investigations, building pit planning as well as construction supervision and quality assurance, we shift our engagement in the next few years to the monitoring and supervising of settlement of the two high-rise towers.



KPP foundation for „Max und Moritz“

➤ GuD in Oranienburg

Over the last two decades GuD has supported approximately 90 projects in the Oranienburg area.

Undetonated WW II bombs located in the area of Oranienburg remain an important topic to this day. Apart from ongoing bomb detection measures, securing as well as monitoring, the problems do not stop here. After a bomb has been extracted the subsoil is usually loose and requires subsoil improvement. Due to our long history of project involvement with Oranienburg we feel very close to this area and supporte community and social aspects which reach beyond our professional engagement. GuD has been a sponsor of the Oranienburg HC Handball Club for over a year. The OHC is one of the largest clubs in the Brandenburg area and

cooperates with strong youth development programs. As such, the club is right in line with GuD's philosophy for „working together in a social and fair manner“.



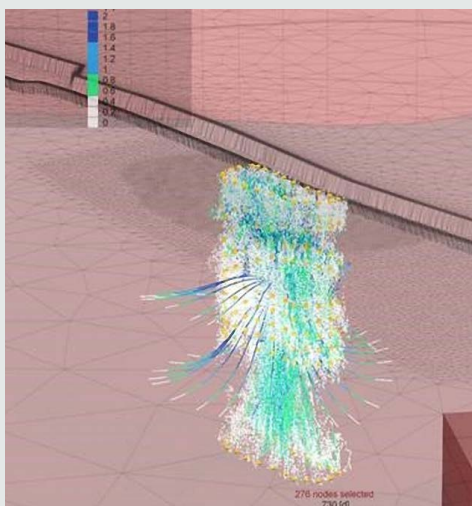
As sponsors of popular the Oranienburg HC we also support the city of Oranienburg in athletic ways

➤ Remediation for challenging new constructions

Two new construction developments in Berlin require extensive soil and water refurbishments. In both cases, high concentrations of pollutants are brought under control by applying mainly the same techniques.

The art campus at Heidestrasse in Berlin-Mitte is a new development in a very central location right at the Berlin-Spandau canal. extensive soil and groundwater contamination with volatile chlorinated hydrocarbons (LCKW) had to be refurbished before commencement of construction.

Contamination in the ground of up to a max. of 19,000 mg/kg reached an area of approx. 520 m² despite a „buffering“ 5 m dense peat layer down to depths of over 20 m. The LCKW concentrations of a max. of 180 mg/l measured in the groundwater had already been transported over a length exceeding 100 m. The polluted soil material was excavated in the first half of 2015 by using honeycomb structures implemented in up to 9 m depth and a 20 m deep large hole drilling in the center. They were stored in an air-tight hall with an exhaust and drain water storage and cleaning system for dewatering. Therefore a reduction in contaminant levels could be reached and the material could be disposed of in soil washing plants. Just a small amount had to go into thermic treatment due to a high level of peat. The groundwater, strongly contaminated by LCKW and ammonium, had already been extracted during soil refurbishment and will continue to be extracted via well system for at least two more years. The processing is managed through a complex groundwater cleaning system (i.e. two-level stripping plants with back-end air activated carbon and katox levels, two water active carbon absorbers and a zeolith filter).



Pollutant transport and groundwater streaming model with FEFLOW at the art campus project

GuD Consult carried out detail and refurbishment investigations, defined with a pollution transport and groundwater streaming model with FEFLOW and finally planned refurbishment of the damage. The technical support of the refurbishment measures was also carried out by GuD specialists.

The second new development in Berlin is the project „Bahnlinse“ located in Berlin-Moabit. GuD planned the soil exchange with groundwater extraction and cleaning by implementation of a processing plant.

A long history of commercial use at that location has left behind high concentrations of PAK (polycyclic aromatic hydrocarbons), BTEX (benzene, toluene, ethyl benzene, xylol) and MKW (mineral hydrocarbons). During refurbishment of the soil and groundwater damage in depths of up to 6 m, the soil is being exchanged by honeycomb method and the groundwater is refurbished by implementation of a groundwater cleaning plant (active hydrocarbons).

GuD Leipzig

Apart from current projects in the Leipzig area, GuD engineers are regularly supporting scientific and professional-political endeavors - like GuD Geotechnik und Umwelttechnologie GmbH in Leipzig.

Within the scope of a research project sponsored by DIN, GuD Leipzig managers Almuth Große and Prof. Dr. Kurt-Michael Borchert have developed a concept of homogeneous areas to standardize the classification of soil and rock in section C of the VOB.

Since publication of the additional volume in 2015 of VOB 2012, the homogeneous areas now substitute the soil and rock classifications in the relevant ATV norms of section C. The homogeneous characteristic values and properties, which are important for determining the performance of the individual craft, are predetermined. These data are now available for a complete site investigation according to DIN EN 1997-2.

Even before publication of the additional VOB volume, Frau Große and Prof. Dr. Borchert had already implemented several training measures on this topic or had lectured on this topic.

New publications

This is a sample of important lectures by GuD specialists in 2015. The complete list is found at www.gudconsult.de.

Lüneburg lock construction pit

A numerical study on the impact on the adjacent lift lock

by Peng Hao, Sascha Henke, Fabian Kirsch, Ulf Matthiessen, Roland Rother

11. Hans Lorenz Symposium, 24.9.2015, Technische Universität Berlin/Germany

Earthquake engineering

Post-Liquefaction Settlements of Structures by Winfried Schepers, Stavros A. Savidis, Norbert J. Krutzik
SMiRT23 – 23rd Conference on Structural Mechanics in Reactor Technology, 10.–14.8.2015, Manchester/UK

Diaphragm walls

Avoid of damage through the use of appropriate quality assurance systems

by Knut Ewald, Nikolaus Schneider
6. RuhrGeo Tag 2015, 19.3.2015, Dortmund/Germany

Vibration control

Mitigation of rail transit vibrations by way of an innovative geocomposite

by Silke Appel, Sascha Henke
9. Geokunststoff-Kolloquium, 12.–13.2.2015, Montabaur/Germany

➤ Vibration protection for scientific research buildings

Increasingly higher demands are made for vibration free environments in scientific research buildings. Silke Appel, our GuD specialist in this field, has supervised many projects for scientific buildings.

Which criteria have to be met for scientific research buildings?

Vibration criteria for highly sensible laboratory interiors like those housing electron microscopes are considerably higher those targeted towards the sensitivity level of humans. These criteria are so high that they can often not be met in buildings with supporting structures that feature regular static requirements.

Which are the main vibration loads?

Vibration loads occur especially in city centers close to streets and trains, or also with direct delivery traffic. Internal vibrations are also induced by people walking through rooms and hallways, by the use of technical facilities and elevators, as well as machines and appliances in work places.

What role does traffic play?

Traffic's role is usually a major one due to deep frequency stimulation around 10 Hz. This is shown in the investigations in the current projects DESY (Deutsches Elektronensynchrotron) in Hamburg and IRIS in Berlin-Adlershof. At the DESY location GuD supports the planning of several new buildings with high requirements for acceptable vibration emission. In Berlin-Adlershof a new building is also in the planning which will house extremely vibration sensitive electron microscopes. Both construction sites are vastly influenced by highly frequented traffic on several adjacent major roads.

How are vibrations measured?

The measurements of vibration effects from micro seismology - this includes the influence of traffic - are generated by long term measurements in the subsoil. With these statistically relevant data, a prognosis about the resulting building vibrations can be made by using a model calculation. The main issue with respect to vibrations is the realistic consideration of the soil-building interaction and therefore knowledge about the dynamic soil parameters. This is usually not part of a geotechnical investigation but has to be generated by additional seismological measurements.

Which measures can reduce vibrations?

If constructive measures like stiffening of the supporting structure are not adequate, special constructions have to be developed to reduce vibrations. For Berlin-Adlershof we have planned to reduce the vibration effects to an acceptable degree by massive, air suspended special foundations.



Dr. Silke Appel, Simulation of structural vibrations by means of 3D numerical models

➤ Award for outstanding performance

The proximity to teaching and research is an important topic for GuD Consult. Therefore, we are very happy about the scientific success and awards of our employees.

In 2015 **Dr.-Ing. Winfried Schepers** was awarded with the DGEB award 2014 at the D-A-CH-Tagung in Zürich for his dissertation „Berechnungsverfahren für praxisnahe Boden-Bauwerks-Interaktionsprobleme im Frequenzbereich“ - „Calculation methods for soil-building-interaction problems in frequency areas“.

For his dissertation in the field of „Structural Health Monitoring“, **Dr. tech. Alexander Tributsch** was awarded with the „VCE-Innovationspreis für Exzellenzforschung im Ingenieurbau“ - „VCE innovation award for excellent research in engineering construction“. The award ceremony took place at the University for Soil Culture in Vienna in the course of an academic festivity in May of 2015.

Robert Will was awarded 3rd place at the 2015 „Preis der Baukammer Berlin 2014“ award ceremony for his bachelor degree thesis „Berechnung von Flächengründungen“ - „Calculation of area foundations“.

GuD Cologne

Construction supervision of the underground stop Heumarkt, supervision at Gleiswechselbauwerk and supervision of the building pit Heumarkt are still major projects of GuD Consult Cologne. We were also able to enhance our work profile with several projects in the area of statics and dynamics.

In close vicinity to the Deutzer Rheinbrücke bridge a historic shore wall needs to be statically examined and overhauled at a later point. In the context of a feasibility study we drew up different refurbishment options and recommended further examination methods.

34. Subsoil Conference

We will again be present at the 34. Baugrundtagung - Subsoil Conference from 14 - 17 September, 2016 in Bielefeld. We will present our current projects and technologies and will shape the technical part of the conference with interesting lectures. We look forward to many visitors at our booth and interesting conversations at expert round table discussions.

New co-workers

Welcome to GuD Consult! These colleagues have started working for us in Berlin in 2015. We are looking forward to many successful projects together!



M.Sc.
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Dipl.-Geol.
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Impressum

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