

**Aachen, Philips, Germany**

Monitoring of a borehole with the acoustic ABF system (2010);  
 Client: Schützeichel GmbH & Co. KG

**Aare Isle Beznau, Switzerland**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings of the project OPAL (2008);  
 Client: Interoil E&P Switzerland AG

**ABS Aschaffenburg – Gemuenden, Section Hoesbach – Wiesthal, Germany**

Execution and evaluation of flexible dilatometer tests, new railway line Aschaffenburg – Gemuenden, section Hoesbach – Wiesthal (1984);  
 Client: Arge Erkelenzer Bohrgesellschaft mbH, Celler Brunnenbau GmbH

**ABS Hanau – Nantenbach, Detour Schwarzkopf Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, new railway line Hanau – Nantenbach, detour Schwarzkopf tunnel, station Heigenbruecken (1998);  
 Client: Schützeichel GmbH & Co. KG

**ABS Hanau – Nantenbach, Detour Schwarzkopf Tunnel, 3. EKP, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, new railway line Hanau – Nantenbach (2000);  
 Client: Geomechanik Sachsen

**ABS Leipzig – Dresden, Oschatz – Wurzen, Germany**

Execution of borehole jack tests with flexible dilatometer and Ettlinger borehole jack (1994);  
 Client: Terrasond GmbH + Co. KG

**ABS Leipzig – Dresden, boundary drift Riesa lots 1 + 2, Germany**

Execution of borehole jack tests with Ettlinger borehole jack for pre-investigation of the new railway line (1996);  
 Client: ARGE ABS Bornitz - Riesa, Lot 1, Thüringer Bohrgesellschaft mbH

**ABS Leipzig – Dresden, 2<sup>nd</sup> EKP Leipzig – Wurzen, Germany**

Execution of borehole jack tests with Ettlinger borehole jack for pre-investigation of the new railway line (1996);  
 Client: Terrasond GmbH + Co. KG

**ABS Leipzig – Dresden, Altenbach – Wurzen, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack for pre-investigation of the new railway line (1997);  
 Client: BG Roßla

**ABS Nuernberg – Ebersfeld, Burgberg Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2013);  
 Client: BOG GmbH



**ABS Nuernberg – Ebensfeld, Freight Train Line 2. EKP, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2010);  
 Client: Arge Güterzugstrecke (Behringer + Dittmann, BOG)

**ABS Nuernberg – Ebensfeld, VDE 8.1, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2012);  
 Client: BOG GmbH

**ABS Nuernberg – Lichtenfels, Main Section South, Germany**

Execution and evaluation of flexible dilatometer tests for pre-investigation of the new railway line (1993);  
 Client: Bohr-Knecht

**ABS/NBS Karlsruhe – Basel, Tunnel Rastatt, Germany**

Execution of borehole jack tests with Ettliger borehole jack, delivery and installation of pneumatic pore water pressure transducers (2012);  
 Client: Arge Tunnel Rastatt (Terrasond GmbH & Co. KG, drillexpert GmbH)

**ABS/NBS Plochingen – Guenzburg, Germany**

Execution and evaluation of flexible dilatometer tests for pre-investigation of the new railway line (1987);  
 Client: Ivers Brunnenbau GmbH, Erkelenzer Bohrgesellschaft mbH

**ABS/NBS Stuttgart – Augsburg, Alabstieg 3<sup>rd</sup> EKP, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack for pre-investigation of the new railway line (1999);  
 Client: Arge Alabstieg (Terrasond GmbH & Co. KG, Waschek, Menning KG)

**ABS/NBS Stuttgart – Augsburg, Bossler Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer, monitoring of boreholes with the borehole camera (2014-15);  
 Client: Arge Tunnel Alaufstieg

**ABS/NBS Stuttgart – Augsburg, Filstal Bridge, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of boreholes with the borehole camera (2018);  
 Client: BTR Bohrtechnik Roßwag GmbH & Co. KG

**ABS/NBS Stuttgart – Augsburg, Neu-Ulm 21, Lot 2, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack for pre-investigation of the new railway line (1997);  
 Client: Arge Neu-Ulm 21 (Terrasond GmbH + Co. KG, Waschek GmbH)

**ABS/NBS Stuttgart – Augsburg, Spoil Bank Aichelberg, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack (2014);  
 Client: Terrasond GmbH & Co. KG



**ABS/NBS Stuttgart – Augsburg, Variant Hasental, Germany**

Execution and evaluation of flexible dilatometer tests, installation of inclinometer- and Trivec measuring tubes, primary stress measurements according to the hard inclusion method for pre-investigation of the new railway line (1995-96);

*Client: Sax + Klee GmbH*

**ABS/NBS Stuttgart – Augsburg, 1<sup>st</sup> EKP Ulm, Lot 2, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Ettlinger borehole jack for pre-investigation of the new railway line (1995-96);

*Client: Terrasond GmbH + Co. KG*

**ABS/NBS Stuttgart – Augsburg, Optimised Line, Lot 1, Germany**

Execution and evaluation of flexible dilatometer tests with Ettlinger dilatometer for pre-investigation of the new railway line (1998);

*Client: Arge Schwäbische Alb, Los 1 (Menning, Sax + Klee, Celler Brunnenbau)*

**ABS/NBS Stuttgart – Augsburg, PFA 2.1a/b, 1. EKP Lindorf Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack for pre-investigation of the new railway line (2002);

*Client: Arge Stuttgart 21 (Terrasond, Waschek, Menning)*

**ABS/NBS Stuttgart – Augsburg, NBS Wendlingen – Ulm, PFA 2.1, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack for the new railway line (2002-03 and 2009);

*Client: Arge PFA 2.1 Albvorland (Terrasond, Waschek, Menning)*

**ABS/NBS Stuttgart – Augsburg, NBS Wendlingen – Ulm, PFA 2.2, Germany**

Primary stress measurements with the triaxial cell CSIRO in depths up to 150 m for the new railway line (2003);

*Client: Terrasond GmbH & Co. KG*

**ABS/NBS Stuttgart – Augsburg, NBS Wendlingen – Ulm, PFA 2.2, Filstal, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack for the new railway line (2009);

*Client: Arge Bohrungen Filstal (BG Roßla, Terrasond GmbH & Co. KG)*

**ABS/NBS Stuttgart – Augsburg, NBS Wendlingen – Ulm, PFA 2.3, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of drillings with borehole camera and optic scanner system ETIBS<sup>®</sup> for the new railway line (2002-03 and 2009);

*Client: Arge PFA 2.3 (Schützeichel, Roßla, Daldrup, Ivers), Abt GmbH*

**ABS/NBS Stuttgart – Augsburg, NBS Wendlingen – Ulm, PFA 2.4, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack for the new railway line (2002-03 and 2009, 2010);

*Client: Arge PFA 2.4 Alabstieg – Ulm (Terrasond, Menning), Terrasond GmbH & Co. KG*

**Adelsheim, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> for the federal highway B 292 detour Adelsheim (2012);

*Client: RP Karlsruhe*

**Albruck-Dogern, Rhine Power Station, Germany**

Borehole jack tests with Ettliger dilatometer, primary stress measurements with HI-cell CSIRO, monitoring of drillings with the optic scanner system ETIBS<sup>®</sup>, insertion of boreholes with multiple interstitial pressure transducers and electronic data loggers (2004);

*Client: Terrasond GmbH & Co. KG*

**Albstadt, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer for pre-investigation of the Albstadt road tunnel (1996-97);

*Client: Terrasond GmbH + Co. KG*

**Almonaster La Real, Spain**

Primary stress measurements with the borehole slotter in exploratory drillings of the mine Minas De Aguas Tenidas, camera monitoring of the drillings (2008);

*Client: Minas De Aguas Tenidas, SAU*

**Alsenz Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack, stress measurements according to the method of compensation, monitoring of underground drillings with the borehole camera, monitoring of surface exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Alte Burg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer in exploratory drillings in the portal region of the Alte Burg tunnel, highway A71 Erfurt - Schweinfurt (1996);

*Client: Nöring & Preißler*

**Arlberg Tunnel, Austria**

Stress measurements according to the method of compensation in the concrete inner shell of the tunnel (2015);

*Client: Montanuniversität Leoben*

**Arlinger Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2017-18);

*Client: RP Karlsruhe, BOG GmbH*

**Arnsberg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> for the expansion of the Sauerland Museum Arnsberg (2012);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Asbachtal Bridge, Germany**

Monitoring of boreholes with the optic scanner system ETIBS<sup>®</sup> for structure and ground exploration of the Asbachtal bridge at motorway A4 (2008);

*Client: Schützeichel GmbH & Co. KG*

**Asse, Salt Mine, Remlingen, Germany**

Installation of borehole pressure cells type Glötzl and type AWID in a 630 m deep borehole, from the 750 m floor (1985);

*Client: gsf - Gesellschaft für Strahlen- und Umweltforschung mbH, München*

**Asse, Salt Mine, Remlingen, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack and pressiometer according to Ménard to determine the moduli of deformation of fillings (1996);

*Client: gsf - Forschungszentrum für Umwelt und Gesundheit, München*

**Asse, Salt Mine, Remlingen, Germany**

Execution of stress measurements with HI-cell CSIRO in conjunction with the GIF borehole computer (1999-2001);

*Client: GRS - Gesellschaft für Anlagen- und Reaktorsicherheit, Braunschweig*

**Assmannshausen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2019);

*Client: Terrasond GmbH & Co. KG*

**Atdorf Dam, Schluchsee Pump Storage Station, Germany**

Execution of borehole jack tests with Ettliger dilatometer. Monitoring of exploratory drillings with the optic scanner system ETIBS®. Determination of primary stress state with borehole slotter in exploratory drillings in the exploration gallery – cavern area for the Atdorf dam of Schluchsee pump storage station (2011);

*Client: BG Roßla mbH*

**Attendorn, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® in exploratory drillings for the project Fernholte – Eckenbach (2013);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Attendorn, Germany**

Monitoring of a drilling with borehole camera (2019);

*Client: Buchholz + Partner GmbH*

**Au an der Sieg, Germany**

Monitoring of a drilling with borehole camera (2019);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Auberg Tunnel, Federal Highway B 2, Germany**

Borehole jack tests with Ettliger dilatometer EDI 95, monitoring of drillings with the optic scanner system ETIBS® in the course of the pre-investigation for the Auberg tunnel, detour Altenmarkt (2005 and 2010);

*Client: BOG GmbH, Plankel Grund- u. Bohrtechnik Ges. m.b.H.*

**BAB A 1n, Lommersdorf – Adenau, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2015-16 and 2018-19 and 2020);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG, BG Roßla mbH, Handkebrunnenbau*

**BAB A 3 Heidingsfeld – Randersacker, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2011);

*Client: BOG GmbH*

**BAB A 3 Hoechstadt – Erlangen, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® and the acoustic ABF system (2016);

*Client: Fontus Logging Service*

**BAB A 3 Lahn Bridge Limburg, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with the optic scanner system ETIBS® and the acoustic ABF system, gamma-measurements (2007 and 2010);

*Client: Schützeichel GmbH & Co. KG, UniWork GmbH*

**BAB A 3, Regensburg, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2018);

*Client: Eder Brunnenbau GmbH*

**BAB A 4 Eisenach Ost – Waltershausen, VKE 5522, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in the course of pre-investigation (2003);

*Client: Dr. Stadtbäumer GmbH*

**BAB A 4, Exit Schmoelln, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® (2007);

*Client: BG Roßla*

**BAB A 4 Interchange Kirchheim – Junction Wildeck 5.BA, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and caliber measurements with optic 4-arm-caliber (2012);

*Client: BG Roßla mbH*

**BAB A 5, T+R Station Rimberg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2011);

*Client: Wöltjen GmbH*

**BAB A 6 Amberg – Pfreimd, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2001-2002);

*Client: Autobahndirektion Nordbayern*

**BAB A 6 Feuchtwangen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018);

*Client: Arge A6 Feuchtwangen*

**BAB A 7, PWC Site Pilgerzell, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2012);

*Client: Geotechnik Heiligenstadt GmbH*

**BAB A 7, PWC Station Dirlos, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2011);  
 Client: Wöltjen GmbH

**BAB A 7, Roadhouse Utrichshausen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS®, calibre measurement (2013);  
 Client: BGN Bohr- und Geotechnik Nowack GmbH

**BAB A 7, Niederaula, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2019);  
 Client: BGN Bohr- und Geotechnik Nowack GmbH

**BAB A 8 Hohenstadt – Ulm West, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system in the course of pre-investigation for the six-lane new motorway A8 (2016);  
 Client: BauGrund Süd GmbH

**BAB A 8 Muehlhausen – Hohenstadt, Germany**

Execution of borehole jack tests with Ettlinger dilatometer in the course of pre-investigation for the motorway BAB A8 Alaufstieg (2006);  
 Client: BG Roßla

**BAB A 8 Muehlhausen – Hohenstadt, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, Monitoring of exploratory drillings with the optic scanner system ETIBS®, the acoustic ABF system and the borehole camera, inclinometer measurements (2019-2020);  
 Client: BG Roßla

**BAB A 8 Pforzheim, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, execution of caliber-logs (2015-16);  
 Client: drillexperts GmbH, Eder Brunnenbau GmbH

**BAB A 17 Dresden – Prag, PA III, VKE 391.3, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings (2002);  
 Client: BBA Bohr & Brunnenbau GmbH

**BAB A 30 Bad Oeynhausen, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of boreholes with the optic scanner system ETIBS® and the acoustic ABF system, logging of borehole running. Exploratory drillings for the tunnel Hahnenkamp (2008);  
 Client: BOG GmbH

**BAB A 38 Breitenworbis – Bleicherode, Germany**

Cavity measurement with acoustic log, camera monitoring with the optic scanner system ETIBS®, execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in exploratory drillings (2000-01);  
 Client: BOG GmbH

**BAB A 38 Friedetal Bridge, Germany**

Monitoring of boreholes with the acoustic borehole scanner ABF, caliber measurements, logging of borehole running. Insertion of boreholes to Trivec measuring points, Trivec measurement (2008);  
*Client: BOG GmbH*

**BAB A 38 Heidkopf Tunnel, Germany**

Execution of TV monitoring in exploratory drillings (2007);  
*Client: BOG GmbH*

**BAB A 44 Boyneburg Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and monitoring of drillings with the optic borehole scanner system ETIBS® in the course of pre-investigation for the Boyneburg tunnel (2006);  
*Client: BG Roßla*

**BAB A 44 Boyneburg Tunnel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2020);  
*Client: BOG GmbH*

**BAB A 44, C23, C24, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018-19);  
*Client: Arge A44 Nacherkundung Bauwerke und Strecke, GFL*

**BAB A 44 Kassel – Eisenach, Exit Sontra-Nord – Exit Sontra-Ulfen, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer in exploratory drillings (2000);  
*Client: Baugrunderschließung Grimme*

**BAB A 44 Kassel – Eisenach, Helsa Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, optic and acoustic borehole scans in the course of pre-investigation for the Helsa tunnel (2004);  
*Client: Arge Tunnel Helsa (BG Roßla, BOG)*

**BAB A 44 Kassel – Eisenach, Helsa Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, Gamma and calibre measurements (2013);  
*Client: Arge A44 Bohrungen Tunnel Helsa (BG Roßla, Terrasond)*

**BAB A 44 Kassel – Eisenach, Hirschhagen Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, optic and acoustic borehole scans, Gamma-log and borehole development measurements in the course of pre-investigation for the Hirschhagen tunnel (2004 and 2006);  
*Client: Arge BOG-Roßla BAB A44 VKE 12, Anger's Söhne*

**BAB A 44 Kassel – Eisenach, Kuechen Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for the Kuechen tunnel (1999);  
*Client: Terrasond GmbH & Co. KG*



**BAB A 44 Kassel – Eisenach, Trimberg and Spitzenberg Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, optic and acoustic borehole scans in the course of pre-investigation for the VKE 40.1 (2004);

*Client: Schützeichel GmbH & Co. KG*

**BAB A 44 Kassel – Eisenach, Waldkappel – Hoheneiche, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack for pre-investigation of section Waldkappel - Hoheneiche (1998-99);

*Client: Nöring & Preißler*

**BAB A 44 Ringgau – Sontra West, VKE 221, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2017);

*Client: Bohrgesellschaft Roßla mbH*

**BAB A 44 Sontra North – Sontra-Ulfen, VKE 50, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of drillings with the optic scanner system ETIBS® and the acoustic ABF system. Caliber, gamma, gamma-gamma measurements and logging of borehole running (2006-07);

*Client: Arge BAB A44, VKE 50 (Bohrges. Roßla, BOG, Terrasond)*

**BAB A 44 Sontra West – Viaduct Riedmuehle, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2016-18);

*Client: Geophysikalische Fachberatung Dr. Lux*

**BAB A 44, TB Riedmühle – Wommener Dreieck, VKE C 241, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, execution of Tracer Fluid Logging (TFL)

(2015 and 2016-17);

*Client: Arge A44 TB Riedmühle-Wommener Dreieck/BG Roßla mbH, BOG GmbH)*

**BAB A 44, Velbert – Ratingen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, logging of borehole running and caliber measurements (2008 and 2010);

*Client: Erkelenzer Bohrgesellschaft mbH, Schützeichel GmbH & Co. KG*

**BAB A 44, VKE 20, Hessisch-Lichtenau, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack (2003);

*Client: HYDRO-Geotechnik GmbH*

**BAB A 44, VKE 40.1 and 40.2, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, caliber and gamma-measurements (2010);

*Client: BauGrund Süd GmbH*

**BAB A 44 Waldkappel – Hoheneiche, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS®, 4-branch caliber measurement in the construction sections 1 – 3 (2012 and 2013);

*Client: Arge A44 (BG Roßla mbH, BOG GmbH, Terrasond GmbH & Co. KG*



**BAB A 44 Waldkappel – Hoheneiche – Sontra-Nord, VKE 40.1 and 40.2, Germany**

Execution and evaluation of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack, primary stress measurements with the triaxial cell CSIRO, monitoring of drillings with the optic scanner system ETIBS® in the course of pre-investigation (2002-2003);  
*Client: Arge BAB A44, VKE 40.1/40.2 (J. Schützeichel, Erkelenzer BG)*

**BAB A 44 Waldkappel – Ringgau, VKE C 212, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2015 and 2016);  
*Client: Arge A44 AS Waldkappel-AS Ringgau (BG Roßla mbH, BOG GmbH)*

**BAB A 45 Bueschergrund Viaduct, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018-19);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**BAB A 45 Klangstein Tunnel, Germany**

Execution of borehole jack tests with Ettlenger dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, Gamma measurements and logging of borehole running off (2012, 2013 and 2014);

**BAB A 45 Mainflingen Viaduct, Germany**

Execution of Ménard pressiometer tests in exploratory drillings (2018);  
*Client: Terrasond GmbH & Co. KG*

**BAB A 45 Marbach Viaduct, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2012);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**BAB A 45 Ottfingen Viaduct, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018-19);  
*Client: Deponata GmbH & Co. KG*

**BAB A 45 Roadhouse Sauerland, Germany**

Execution of borehole jack tests with Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® (2013);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**BAB A 45 Roadhouse Sauerland East, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2009);  
*Client: Schützeichel GmbH & Co. KG*

**BAB A 45 Viaduct Eisern, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2017);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**BAB A 45 Viaduct Landeskroner Weiher, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**BAB A 45 Viaduct Rinsdorf and Raelsbach, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, borehole development measurements (2015);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**BAB A 45 Wilnsdorf – Siegen South, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of exploratory drillings with the acoustic ABF system (2017-18);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**BAB A 46 Hemer – Menden, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic system ABF, Gamma-Log and logging of borehole running (2009);

*Client: Arge Baugrunderkundung BAB A46 (Stölben GmbH, BOG GmbH)*

**BAB A 46 Velmede – Nuttlar, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic system ABF. Caliber and borehole loggings (2007-08);

*Client: Schützeichel GmbH & Co. KG, Terrasond GmbH & Co. KG*

**BAB A 49 Kassel – Gemuenden, VKE 30, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2010);

*Client: Eder Brunnenbau in Deutschland GmbH*

**BAB A 49 Kassel – Marburg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> in the section Maulbach – Homberg (Ohm) (2001-2002);

*Client: BLM GmbH*

**BAB A 49 Ohmtal – Stadtallendorf Triangle, Lot 2, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2017);

*Client: Arge A49 (Terrasond GmbH & Co. KG, BOG GmbH)*

**BAB A 49 Ohmtal – Triangle – Exit Fritzlar, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2018-19);

*Client: BOG GmbH*

**BAB A 49 Stadtallendorf Exit – Schwalmstadt Exit, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2017);

*Client: BOG GmbH*

**BAB A 49 Viaduct Jossklein, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2017);

*Client: Terrasond GmbH & Co. KG*

**BAB A 52 Essen, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with the acoustic ABF system (2009);

*Client: Celler Grundbau GmbH*

**BAB A 61, Interchange Rheinboellen – Roadhouse Hunsrueck, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings (2013-14);

*Client: Süd-West-Bohr GmbH*

**BAB A 62 Quirnbach Dam, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, exploration of the drainage of the motorway A 62 (2017);

*Client: Terrasond GmbH & Co. KG*

**BAB A 66 Riederwald Tunnel, Germany**

Monitoring of exploratory drillings with the acoustic ABF system (2018);

*Client: Vormann GmbH & Co. KG*

**BAB A 66, Salzbach Viaduct, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2015);

*Client: Terrasond GmbH & Co. KG*

**BAB A 70 Exit Thurnau East, BW104b, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack (2019);

*Client: Brunnenbau Kern*

**BAB A 71 Schweinfurt – Erfurt, VKE 5344, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in the course of exploratory works in the area of the exit to the B85 and the exit Soemmerda (2002-2003);

*Client: Arge BOG-Terrasond-Roßla*

**BAB A 73 Coburg – Ebersdorf, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® for the Maintal bridge near Lichtenfels (2002);

*Client: Dr. Stadtbäumer GmbH*

**BAB A 73 Suhl – Lichtenfels, Germany**

Execution of borehole jack tests with flexible dilatometer and Ettliger borehole jack, monitoring of drillings with the optic scanner system ETIBS® in exploratory drillings in the region Suhl-Sued - Schleusingen (2001-02);

*Client: ARGE BAB A73, VKE5212 (Terrasond-Roßla-BOG)*

**BAB A 73 Suhl – Lichtenfels, VKE 5213, Germany**

Monitoring of exploratory drillings with the borehole camera and with the optic scanner system ETIBS® (2002-2003);

*Client: Arge BAB A73, VKE 5213 (Terrasond, Roßla, BOG)*

**BAB A 73 Viaduct Bruenn, Germany**

Monitoring of drillings with the optic scanner system ETIBS® and the acoustic ABF system, caliber measurements (2007);

*Client: BOG GmbH*

**BAB A 81 Engelberg Base Tunnel, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack in drillings for the special measuring program Engelberg Base Tunnel. Monitoring of a drilling with borehole camera (2012-13);

*Client: Terrasond GmbH & Co. KG*

**BAB A 94 Simbach, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2018);

*Client: Eder Brunnenbau GmbH*

**BAB A 96 Munich – Lindau, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack in exploratory drillings for closing the gap between Leutkirch – Gebrazhofen and Kisslegg - Duerren (2005);

*Client: Dr. Stadtbäumer GmbH*

**BAB A 98, Murgtal Bridge, Germany**

Monitoring of drillings with the optic scanner system ETIBS® (2005);

*Client: Ingenieurgruppe Geotechnik GbR*

**B2, Oberau Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests for pre-investigation of the Oberau tunnel (1998);

*Client: BLM, München*

**B2, Oberau Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack for pre-investigation of Giessenbachtal (1998);

*Client: Autobahndirektion Südbayern*

**B2, Schellenberg Bridge, Germany**

Execution and evaluation of borehole jack tests with pressiometer according to Ménard, support with installation of supplied Trivec measuring tubes, control measurement using a sliding micrometer (2019)

*Client: Terrasond GmbH & Co. KG*

**B 8, Lichfield Bridge UF Lahn near Limburg, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2019);

*Client: Gerätebau Wiedtal Schützeichel GmbH & CO. KG*

**B9 new, Detour Nierstein, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2017-18);

*Client: Handke Brunnenbau GmbH*

**B10 Gingen East – Geislingen East, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, measurement of the natural gamma radiation (2017);

*Client: Arge B10 (Terrasond GmbH & Co. KG, BOG GmbH, Abt Wasser- und Umwelttechnik GmbH)*

**B14 / B19 Weiler Tunnel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018-19);

*Client: BG Roßla mbH*

**B23, Echelsbacher Bridge, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2015);

*Client: BG Roßla mbH*

**B27 Bad Friedrichshall, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2018);

*Client: BauGrund Süd GmbH*

**B38, Detour Moerlenbach, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system in the course of the exploration for the detour Moerlenbach (2017);

*Client: BauGrund Süd GmbH*

**B39, Schemmelsberg Tunnel, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2018);

*Client: Pruy KG*

**B48n Detour Imsweiler, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2017);

*Client: BOG GmbH*

**B 49, New construction replacment of flyover und Taubenstein Bridge Wetzlar, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack, Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system, caliber measurement, borehole development measurements (2019-);

*Client: Stölben GmbH*

**B240, Detour Weenzen North – Marienhagen, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system, Gamma-Ray-Log and loggings of borehole running off for the detour Weenzen – Marienhagen (2011);

*Client: BOG GmbH*

**B240, Ith Tunnel, Germany**

Execution of borehole jack tests with Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2014);

*Client: Keller Grundbau GmbH*

**B247, Muehlhausen, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2018);

*Client: BOG GmbH*

**B260, Wambach Detour, Germany**

Execution of borehole jack tests with Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2018);

*Client: BauGrund Süd GmbH*

**B289, Kauerndorf Detour, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack (2018);

*Client: Arge B289 Kulmbach-Münchberg (BG Roßla, Terrasond)*

**B294, Schiltach, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, the acoustic ABF system and the borehole camera, Kirchberg- und Schlossbergtunnel (2018);

*Client: Terrasond GmbH & Co. KG*

**B 296, Calw, Tunnel, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack, Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system in the course of the exploration for the planned bypass-tunnel (2019-);

*Client: Burkhardt GmbH*

**B517, Kreuztal-Eichen, Germany**

Execution of borehole jack tests with Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2018);

*Client: BG Roßla mbH*

**Bad Bergzabern, Germany**

Execution and evaluation of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack in exploratory drillings for the B427 detour of Bad Bergzabern (2002-03 and 2016);

*Client: Stölben GmbH, Arge B427 (BG Roßla mbH, Terrasond GmbH & Co. KG)*

**Bad Berleburg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> at the bluff of the county road L553 (2006);

*Client: Schützeichel GmbH & Co. KG*

**Bad Camberg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2019);

*Client: Terrasond GmbH & Co. KG*

**Bad Camberg, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack for new railway line Koeln - Rhein/Main of the Deutsche Bahn (1998);

*Client: Schützeichel GmbH & Co. KG*

**Baden-Baden, August-Schriever-Alley, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2007);

*Client: Erkelenzer BG*

**Baden-Baden, Caracalla Thermal Bath, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS<sup>®</sup> (2013);

*Client: Burkhardt GmbH & Co. KG*

**Baden-Baden, Department Store Wagener, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS<sup>®</sup> (2005);

*Client: Hettmannsperger GmbH*

**Baden-Baden, Jardin du Soleil, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® (2019);  
*Client: Hettmannsperger Spezialtiefbau GmbH*

**Baden-Baden, Paedagogium Boarding-School, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2005);  
*Client: Terrasond GmbH & Co. KG*

**Baden-Baden, Reinhard Fieser Bridge, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of boreholes with the borehole camera (2018);  
*Client: augeon GmbH & Co. KG*

**Baden-Baden, SWR radio station, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2013 and 2017);  
*Client: drillexpert GmbH*

**Baden-Baden, SWR radio station, Germany**

Monitoring of boreholes with the borehole camera (2018);  
*Client: GHJ GmbH*

**Bad Duerkheim, Germany**

Monitoring of wells with the optic scanner system ETIBS® and the gamma probe to determine the clay seals and the condition of the filter slots, dump of BASF in Bad Duerkheim (2016);  
*Client: Stölben GmbH*

**Bad Homburg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2019);  
*Client: Terrasond GmbH & Co. KG*

**Bad Honnef, Germany**

Monitoring of boreholes for inclinometers with the optic scanner system ETIBS®, Adenauer House Bad Honnef (2009);  
*Client: Stölben GmbH*

**Bad Kissingen, Germany**

Camera monitoring of drillings in the foundation of the lobby with the optic scanner system ETIBS® (1999);  
*Client: Staatl. Hochbauamt Bad Kissingen*

**Bad Koesen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, logging of borehole running off. Exploration for the Federal Highway B 87n, detour Bad Koesen – Saale bridge (2010);  
*Client: BOG GmbH*

**Bad Lauterberg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2007);  
*Client: Wöltjen GmbH*



**Bad Neuenahr, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the B 266 detour Bad Neuenahr (2008);

*Client: Erkelenzer Bohrgesellschaft mbH*

**Bad Reichenhall, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack for the detour of Bad Reichenhall (2002);

*Client: BOG GmbH*

**Bad Salzungen, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the B 62 detour Bad Salzungen (2012-13);

*Client: BOG GmbH*

**Bad Wimpfen, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in the course of pre-investigation for the detour of Bad Wimpfen (2003);

*Client: Terrasond GmbH & Co. KG*

**Baarenstein / Biela, Germany**

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system. Exploratory drillings for the flood detention basin Baarenstein / Biela (2006 and 2007);

*Client: BOG GmbH*

**Bamberg, Sluice, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack (2004);

*Client: Wilhelm Knappe Bohrunternehmen*

**Bamberg, Tunnel, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2016-17);

*Client: BOG GmbH*

**Barrages Erlabrunn, Harrbach, Steinbach, Freudenberg, Lots 3 + 4, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2014);

*Client: SBI Ingenieurgesellschaft Nieste (Lot 3), Arge Mainwehre – Lot 4  
(Terrasond, BOG)*

**Bataszek Tunnel, Hungary**

Execution of borehole jacking tests in exploratory drillings at the tunnel construction site Bataszek (2008);

*Client: Terrasond GmbH & Co. KG*

**Bebenroth Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack, monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> and with the borehole camera (2002-03);

*Client: Schützeichel GmbH & Co. KG*

**Beihingen, Barrage, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the acoustic ABF system at the Neckar barrage Beihingen (2012);

*Client: BG Roßla mbH*

**Bensberg, Market Gallery, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2014);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Berchtesgaden, Germany**

Execution of borehole jack tests with Ettliger borehole jack in an exploratory drilling for the Rottmayr Gymnasium (2016);

*Client: Eder Brunnenbau GmbH*

**Berghau Tunnel, Germany**

Camera monitoring of drillings in the tunnel in the course of exploratory drillings (2005);

*Client: Schützeichel GmbH & Co. KG*

**Bergisch Gladbach, Germany**

Monitoring of drillings with the optic scanner system ETIBS® in exploratory drillings for the evangelic hospital (2004);

*Client: Knauber GmbH*

**Bernkastel/Lieser; Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack for pre-investigation of flood precautionary measures Lieser (1995);

*Client: Stölben GmbH*

**Bertoldshofen Tunnel (B16), Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, execution of Gamma-logs (2015);

*Client: BauGrund Süd*

**Betzdorf, Tunnel Siegkreisel, Germany**

Execution of borehole jack tests with Ettliger dilatometer, primary stress measurements with HI-cell CSIRO, camera monitoring of drillings with the optic scanner system ETIBS® (1999);

*Client: Erkelenzer Bohrgesellschaft*

**Bibra Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer, installation of electric and pneumatic interstitial pressure transducers with electronic data logger, pre-investigation for the new railway line Erfurt - Halle/Leipzig (1996);

*Client: Terrasond GmbH + Co. KG*

**Bildstock Tunnel, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Ettliger borehole jack for pre-investigation of the new Bildstock tunnel (1995);

*Client: Saarbergwerke AG, Saarbrücken*

**Bitterfeld, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2018);  
*Client: Terrasond GmbH & Co. KG*

**Bitterfeld, Dump BRIFA, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack (2002);  
*Client: Vormann & Partner GmbH*

**Blankenburg, Germany**

Execution of borehole jack tests with Ettlinger borehole jack and Ettlinger dilatometer. Monitoring of boreholes with the optic scanner system ETIBS® and the acoustic ABF system. Exploratory drillings for the Heidberg tunnel, B 81 detour Blankenburg (2008-09);  
*Client: BOG GmbH*

**Blaubeuren, Pumped-Storage Power Station Blautal, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS®, Gamma-Log (2005);  
*Client: Wöltjen GmbH*

**Blaubeuren, Pumped-Storage Power Station Blautal, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, Gamma Log, stress measurements with stress monitoring stations (2012-14);  
*Client: Wöltjen GmbH*

**Bleicherode, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack, pre-investigation for the motorway BAB A38 Goettingen - Halle, lots 3 + 4 (1996);  
*Client: Thüringer Bohrgesellschaft*

**Blessberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack for the new railway line Ebenfeld – Erfurt, BA 3211/3212, additional exploration Blessberg tunnel (2002-03);  
*Client: Arge Terrasond & BOG*

**Blintendorf-Saaletal, Motorway BAB A 9, Germany**

Execution and evaluation of flexible dilatometer tests (1994);  
*Client: Bobac GmbH, Chemnitz*

**Bochum, Suburban Train Bochum - Recklinghausen, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer (1999);  
*Client: Fluhme & Sohn GmbH*

**Bonn, Bundeskanzlerplatz, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2018);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Booser Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of the underground drillings with borehole camera (2017);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Bopfingen, L1070, Recultivating of Construction Facility Area, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2014);

*Client: Geotechnik Aalen*

**Bosruck Tunnel, Austria**

Stress measurements according to the method of compensation in the concrete inner shell of the tunnel (2013);

*Client: Montanuniversität Leoben*

**Bossler Tunnel; Steinbuehl Tunnel, Germany;**

Execution and evaluation of flexible dilatometer tests in boreholes up to the depth of 300 m, new railway line Stuttgart - Ulm (1993-1995);

*Client: Sax + Klee, E + M Bohr GmbH, J. Menning GmbH, Geomechanik GmbH*

**Braemericher Tunnel, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer, monitoring of the underground drillings with borehole camera, stress measurements according to the method of compensation, development measurement of the drillings on the surface (2016-17);

*Client: BG Roßla mbH*

**Brandenstein Tunnel, Germany**

Stress measurements according to the compensation method, assessment of stability and evaluation of reconstruction necessity of the tunnel (1990-91);

*Client: DB Bundesbahndirektion Frankfurt/Main*

**Brandenstein Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system in exploratory drillings for the new Brandenstein tunnel (2005 and 2007-08);

*Client: Terrasond GmbH & Co. KG*

**Brandenstein Tunnel, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of the underground drillings with borehole camera, stress measurements according to the compensation method, monitoring of surface drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2017-18);

*Client: BG Roßla mbH*

**Brandleite Tunnel, Germany**

Borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, stress measurements according to the compensation method, execution of a double plate load test, installation of convergence measuring sections with distometer for pre-investigation and documentation in the area of the planned crossing by the Rennsteig tunnel (1998);

*Client: Schützeichel GmbH & Co. KG*

**Branich Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack and Ettlinger dilatometer. Monitoring of boreholes with the acoustic ABF system. Exploratory drillings for the Branich tunnel L 536, detour Schriesheim (2008.09);

*Client: Schützeichel GmbH & Co. KG*

**Bremer Pond, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in the course of ground exploration (2007);

*Client: Terrasond GmbH & Co. KG*

**Brenner Highway A13 SAB Innsbruck South, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings (2019);

*Client: Bohrgesellschaft Bohrgesellschaft Roßla mbH*

**Brenner Nordzulauf, Scan-Med-Corridor, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack in exploratory drillings (2018);

*Client: Abt Wasser- und Umwelttechnik GmbH*

**Brenner Railway Axis, Austria**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in the course of the ground exploration Kundl/Radfeld – Baumkirchen (2002);

*Client: Solexperts AG*

**Broetzing Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of underground drillings with borehole camera, stress measurements according to the compensation method, monitoring of surface drillings with the optic scanner system ETIBS<sup>®</sup> (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Bruettener Tunnel / Shaft Steig, Switzerland**

Execution of horizontal double plate load tests in the course of pre-investigation for the Bruettener tunnel (1990);

*Client: Solexperts AG*

**Buehl, Sand Brook, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2005);

*Client: Dr. Ing. Orth GmbH*

**Bure, France**

Execution of stress measurements according to the compensation method, extension of the test points for repeated measurements to record the changes of stress in the gallery of the Andra test site Bure (2010-17);

*Client: Solexperts AG*

**Burgberg Tunnel, Pilot Tunnel, Germany**

Execution of anchor tensile tests according to DIN 4125, new railway line Mannheim - Stuttgart (1985);

*Client: PrGr M/S der Bahnbauzentrale, Bundesbahndirektion Karlsruhe*

**Busch Tunnel, Germany**

Stress measurements according to the compensation method for evaluation of the reconstruction necessity of the tunnel (1996);

*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*

**Busch Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack for an investigation programme of a „new“ Busch tunnel (1996-97);

*Client: Terrasond GmbH + Co. KG*

**Calw, Germany**

Execution of borehole jack tests with Ettlinger dilatometer, monitoring of drillings with optic scanner system ETIBS® and acoustic ABF system, Gamma-Log, exploratory drillings for the tunnel Calw (2009);

*Client: RP Karlsruhe, Sachgebiet Straßenbau und Geotechnik*

**CERN, Switzerland**

Execution and evaluation of flexible dilatometer tests and primary stress measurements with the triaxial cell CSIRO, exploratory drilling (1995);

*Client: Waschek GmbH*

**Charlottenfels Tunnel, Germany**

Stress measurements according to the compensation method to estimate the stability of the tunnel (2009);

*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*

**Chemnitz, Dump Weisser Weg, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings (2001);

*Client: Kling Bohrtechnik*

**Chile, Mina El Teniente, Chile**

Stress measurements according to the method of compensation and delivery of a complete sawing and test equipment up to 1000 bars (2015);

*Client: Glötzl GmbH*

**Cirata, Cavern, Indonesia**

In situ triaxial tests; entrance tunnel of the Cirata cavern (1985);

*Client: PP-TC-MC Joint Operation, Jakarta, Indonesia*

**Comarapa, Bolivia**

Execution and evaluation of flexible dilatometer tests for pre-investigation of a barrage (1998);

*Client: CES - Consulting Engineers Salzgitter GmbH*

**Cornberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack and Ettlinger dilatometer, stress measurements according to the compensation method for evaluation of the reconstruction necessity of the tunnel (1997);

*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*

**Cornberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, primary stress measurements with the triaxial cell CSIRO in the course of the exploration programme for new construction and renewing of the Cornberg tunnel of the Deutsche Bahn (2002-03);

*Client: Bohrgesellschaft Finowfurt*

**Cornberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2015);

*Client: BOG GmbH*

**Cotapata, Bolivia**

Execution and evaluation of flexible dilatometer tests for pre-investigation of a road tunnel for the Cotapata - Santa Barbara Road (1998);

*Client: Lahmeyer International*

**Cramberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, stress measurements according to the method of compensation, monitoring of exploratory drillings with borehole camera (2015);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Cronheim, Waste Dump, Germany**

Execution and evaluation of flexible dilatometer tests (1989);

*Client: Osel Bohr GmbH, Bamberg*

**Dagash, Sudan**

Execution of flexible dilatometer tests in exploratory drillings for the hydraulic power station Dagash. Monitoring of drillings with the optic scanner system ETIBS® (2008);

*Client: DIU, Dams Implementation Unit*

**Dal, Sudan**

Monitoring of exploratory drillings for the hydraulic power station Dal with the optic scanner system ETIBS® (2008);

*Client: DIU, Dams Implementation Unit*

**Dam Complex of Upper Atbara Project, Sudan**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack (2010);

*Client: DIU, Dams Implementation Unit*

**Darmsheim, Germany**

Execution of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer. Monitoring of drillings with the optic scanner system ETIBS® and the acoustic scanner ABF, logging of borehole running and Gamma Ray measurements, exploratory drillings for the tunnel Darmsheim L1182 northern detour Darmsheim (2008);

*Client: Stölben GmbH*

**Darmstadt Wixhausen, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the GSI-project FAIR (2007);

*Client: Terrasond GmbH & Co. KG*

**Deining, Germany**

Execution of borehole jack tests with Ettliger borehole jack in the area of the retaining structure km 52.6 – 52.7 Regensburg – Nuernberg, monitoring of horizontal drillings with borehole camera (2017-18);

*Client: BOG GmbH*

**Denkendorf, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> in the graveyard wall of Denkendorf (2015);

*Client: Bewer Ingenieure*

**Deschlberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup>. Exploratory drillings for the detour Furth im Wald (2006);

*Client: Behringer + Dittmann GmbH*

**Dettingen Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and borehole jack, installation of electrical interstitial pressure transducers with electronic data logger. Investigation programme of the Deutsche Bahn new railway line Stuttgart - Augsburg PFA2.16, 1. EKP (1997-98);

*Client: Arge Tunnel Dettingen (geo-Bohrtechnik, Kling)*

**Diemelsee, Germany**

Monitoring of exploratory drillings at the district waste disposal site with the optic scanner system ETIBS<sup>®</sup> (2008);

*Client: Schützeichel GmbH & Co. KG*

**Dietershan Tunnel, Pilot Tunnel, Germany**

Installation of measuring cross sections and execution of rock mechanical tests, joint venture with Interfels, Bad Bentheim (1982);

*Client: PrGr H/W Mitte der Bahnbauzentrale, Bundesbahndirektion Frankfurt/M.*

**Diez, Detour, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> (2006-07);

*Client: Schützeichel GmbH & Co. KG*

**Diez, Volksbank, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, ground exploration for the enlargement of the Volksbank (2007);

*Client: Schützeichel GmbH & Co. KG*

**Donau Restoration Straubing – Vilshofen, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2012);

*Client: Terrasond GmbH & Co. KG*

**Donaueschingen, Jaegerweg 4, Germany**

Monitoring of a drilling for geothermic probes with Gamma-Ray (2005);

*Client: Moräne Bohrgesellschaft*

**Dorsten, Sluice, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack, monitoring of drillings in the concrete of the chamber walls with camera system (2000);

*Client: Schützeichel GmbH & Co. KG, BAW Karlsruhe*



**Dortmund, Germany**

Execution and evaluation of flexible dilatometer tests to pre-investigate the tunnel B 236n (1997);  
 Client: *Fluhme & Sohn GmbH*

**Drachenfels, Germany**

Monitoring of exploratory and anchor drillings with the optic scanner system ETIBS® (2017);  
 Client: *Gerätebau Wiedtal Schützeichel GmbH & Co. KG, Sidla & Schönberger GmbH*

**Dresden, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the CUB superstructure C4 Bump at AMD Dresden (2000);  
 Client: *BAUGEO GmbH*

**Dresden, Airport Terminal 2000, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings (1999);  
 Client: *Terrasond GmbH & Co. KG*

**Dresden, Enso, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings (2019);  
 Client: *JOANNIKLING GmbH*

**Duisburg, Schul Street, Germany**

Monitoring of two wells with borehole camera before and after the well regeneration (2015);  
 Client: *Stölben GmbH*

**Durlach, Steinlesweg, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® (2004);  
 Client: *Hettmannsperger GmbH*

**Durlach, Parkschoessle Nursing Home, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2005);  
 Client: *Hettmannsperger GmbH*

**Ebertsberg Tunnel, Germany**

Stress measurements according to the compensation method, assessment of stability and evaluation of reconstruction necessity of the tunnel (1990-93);  
 Client: *DB Bundesbahndirektion Frankfurt/Main*

**Ebertsberg Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of underground drillings with borehole camera, stress measurements according to the method of compensation, monitoring of exploratory drillings on the surface with the optic scanner system ETIBS® and the acoustic ABF system (2016-17);  
 Client: *BG Roßla mbH*

**Edertal Dam, Germany**

Execution of flexible dilatometer tests in the concrete wall and in the foundation for reconstruction works (1985);  
 Client: *GKN Keller, Niederlassung Bremen*

**Effolderbacher Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of drillings with a borehole camera and with the optic scanner system ETIBS®. Stress measurements according to the compensation method (2010);

*Client: Schützeichel GmbH & Co. KG, Erkelenzer Bohrges. mbH*

**Egge Tunnel, Germany**

Execution of stress measurements according to the compensation method in the shotcrete shell of Egge tunnel, new railway line Kassel - Paderborn (1998 and 2000);

*Client: gbm - Ges. für Baugeologie und -messtechnik mbH*

**Ehningen, Germany**

Execution of borehole jack tests with Ettliger borehole jack in two exploratory drillings (2012);

*Client: Terrasond GmbH & Co. KG*

**Ehrenbreitstein, Fortress, Germany**

Monitoring of exploratory drillings with a borehole camera and the optic scanner system ETIBS® (2010, 2013-15, 2017, 2018);

*Client: Schützeichel GmbH & Co. KG, Pressbau Erfurt GmbH*

**Eichen-Dieckenscheid Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack; new railway line Koeln - Rhein/Main (1998);

*Client: gbm - Ges. für Baugeologie und -messtechnik mbH, Limburg*

**Eichstaett Lueften, Germany**

Execution of borehole jack tests with Ettliger borehole jack, ground exploration for a wind energy plant (2011);

*Client: Terrasond GmbH & Co. KG*

**Eierberge Tunnel, Germany**

Stress measurements according to the compensation method in the shotcrete of the outer lining of the tunnel Eierberge (2010);

*Client: Arge NBS Eierberge (PORR, Hinteregger, Östu-Stettin, Jäger)*

**Eisgrub Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the tunnel Eisgrub of the new highway B 15 (2007);

*Client: Ivers*

**Elbbach Viaduct, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in the zone of the abutment of the planned bridge (1998);

*Client: Hochtief AG, Frankfurt*

**Elleringhauser Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, inspection of drillings in the tunnel with borehole camera, stress measurements according to the method of compensation, DB-section 2550 (2013 and 2016);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Emscher Sewer, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the Emscher sewer, lot 1 (2005-09);

*Client: Arge AK Emscher Los 1 (Schützeichel GmbH & Co. KG, Terrasond GmbH & Co. KG)*

**Engelberg Tunnel, Germany**

Execution of stress release measurements according to the compensation method in shotcrete for advance works of the new Engelberg tunnel (1996);

*Client: Glötzl GmbH*

**Engelberg Tunnel, Germany**

Monitoring of injection drillings with the borehole endoscope system GIF (1997);

*Client: Arge Engelbergtunnel*

**Engelberg Tunnel, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of non-modified boreholes and boreholes modified to measuring points, stress measurements according to the compensation method and with the borehole slotter in the concrete lining of the tunnel (2012-13 and 2014);

*Client: Terrasond GmbH & Co. KG, RP Stuttgart*

**Ennepetal, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system for the pipe drive Rahlenbecke (2016);

*Client: BauGrund Süd GmbH*

**Ennericher Tunnel, Germany**

Execution of stress measurements according to the compensation method for evaluation of the reconstruction necessity of the tunnel (1997 and 1998);

*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*

**Eppstein, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® in the course of a rock hillside support (2015);

*Client: Stölben GmbH*

**Eppstein Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer, monitoring of drillings with the optic scanner system ETIBS® for the reconstruction of the Eppstein tunnel (2003);

*Client: Schützeichel GmbH & Co. KG*

**Eppstein and Buedesheim Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, stress measurements according to the compensation method, investigation to evaluate the reconstruction necessity of the tunnel (1998);

*Client: Schützeichel GmbH & Co. KG, gbm – Ges. für Baugeologie und -messtechnik mbH*

**Erdinger Ringschluss, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the improvement of the rail link of the airport Munich (2007-08);

*Client: Arge Erdinger Ringschluss Paket B (Terrasond, Behringer-Dittmann, Abt)*

**Erlangen and Kriegenbrunn, Sluices, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack (2010 and 2013);

*Client: Terrasond GmbH & Co. KG, Behringer + Dittmann GmbH*

**Erwitte, Cement Plant, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2011);

*Client: Schützeichel GmbH & Co. KG*

**Erzhausen, Germany**

Execution of borehole jack tests with Ettlenger borehole jack in exploratory drillings for the pump storage station Statkraft Erzhausen (2013);

*Client: U+B Wöltjen GmbH*

**Essen, Frohnhauser Street, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS®, borehole deviation measurements (2012);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Essen, University Hospital, Germany**

Monitoring of an exploratory drilling with the acoustic ABF system (2010);

*Client: Schützeichel GmbH & Co. KG*

**Essleben, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack in an embankment for the new railway line Erfurt - Halle/Leipzig (1996);

*Client: Terrasond GmbH + Co. KG*

**Ettlingen, Germany**

Monitoring of a measuring point with the optic scanner system ETIBS® during the soil rehab of the former Rheinland barracks (2012);

*Client: Heilit Umwelttechnik GmbH*

**Euerwang Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack in the course of the tunnelling, new railway line Nuernberg - Ingolstadt of the Deutsche Bahn (2000);

*Client: Arge Tunnel Los Mitte (Hochtief, Universale)*

**Fachinger Tunnel, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, stress measurements according to the method of compensation, monitoring of underground drillings with borehole camera. Monitoring of surface drillings with the optic scanner system ETIBS® (2017)

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG, Vormann Bohrgesellschaft mbH & Co. KG*

**Fankel, Sluice, Germany**

Monitoring of exploratory drillings with the optic borehole scanner (2001);

*Client: Conrad Brunnenbau GmbH*

**Farchant, B2, Farchant Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests for pre-investigation of the Farchant tunnel (1993);

*Client: Terrasond GmbH + Co. KG, Süd-Bohr Grundbauges. mbH*

**Fasanenhof Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack out of the tunnel in rocks of the Lias  $\alpha 1$  (2008);

*Client: Institute for geotechnics of the University of Stuttgart*

**Fehmarn Belt Crossing, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2016);

*Client: Ivers Brunnenbau GmbH*

**Feudenheim, Sluice, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2019);

*Client: Gerätebau Wiedtal Schützeichel GmbH & CO. KG*

**Fernpassscheitel Tunnel, Austria**

Execution of borehole jack tests with Ettlinger borehole jack (2019);

*Client: Felbermayr Bau GmbH & Co KG*

**Fieni, Romania**

Execution of borehole jack tests with Ettlinger borehole jack in an exploratory drilling for the Clincker Silo 4 of Carpat-Cement Fieni (2007);

*Client: Terrasond S.R.L. Timisoara*

**Finne Tunnel, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and pressuremeter according to Ménard, installation of electrical interstitial pressure transducers with electronic data loggers (1992-93);

*Client: Sax + Klee GmbH, Terrasond GmbH + Co. KG*

**Flaschenhals Tunnel, Koblenz, Germany**

Execution and evaluation of borehole jack tests with the borehole jack. Installation of Trivec measuring tubes for soil investigations at the Federal Highway B42 Ben-dorf - Lahnstein (1993-1994);

*Client: Günther Eder GmbH, Hebertsfelden*

**Flieden-Gemuenden, Railway line, Germany**

Monitoring with the borehole camera (2019);

*Client: deponata GmbH & Co. KG*

**Fohren-Linden, Wind Farm, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the wind farm Fohren-Linden (2016);

*Client: GICON-Großmann Ingenieur Consult GmbH*

**Forbach, Pump Storage Station, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system, gamma ray, flowmeter, primary stress measurements with the triaxial cell CSIRO, installation of electric pore water pressure transducers with electric data loggers in the course of exploratory drillings for the extension of the EnBW pump storage station Forbach (2010-11, 2018-19);

*Client: Arge PSW Forbach (drillexpert, Terrasond, Roßla, E+M resp. Abt)*

**Frankenhain Tunnel, Germany**

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> in the course of the investigation for the motorway BAB A49 Frankenhain tunnel (2003);

*Client: Wöltjen GmbH*

**Frankfurt Hahn, Airport, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, ground exploration for the ATC-Tower (2011);

*Client: Schützeichel GmbH & Co. KG*

**Frankenwald Bridge, Lichtenberg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2019);

*Client: BOG GmbH*

**Frankfurt 21, 1st Exploratory Step, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, installation of multiple interstitial pressure transducers and borehole pressure cells in the course of pre-investigation for the project Frankfurt 21 of the Deutsche Bahn (2000);

*Client: Versuchsanstalt für Geotechnik, TU Darmstadt*

**Frankfurt/Main, Brewery Radeberger, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> to control the injection success (2012);

*Client: Stump Spezialtiefbau GmbH*

**Frankfurt/Main, East Harbour, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> to explore the quay wall (2010);

*Client: Schützeichel GmbH & Co. KG*

**Frankfurt/Main, East Harbour, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and loggings of borehole running off to control the injection success in the quay wall (2011, 2012, 2014, 2015, and 2017);

*Client: Stump Spezialtiefbau GmbH, Himmel und Papesch*

**Frankfurt/Main, European Quarter City Railway, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2015);

*Client: BOG GmbH*

**Frankfurt/Main, Fraport, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in the course of exploratory drillings for the baggage tunnel (2016);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Frankfurt/Main, Gateway Gardens, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings (2012);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Frankfurt/Main, Hafenspark Quartier, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack (2019);

*Client: Stölben GmbH*

**Frankfurt/Main, Nizza Shipyard, Germany**

Monitoring of exploratory drillings in the quay wall with borehole camera (2018);  
*Client: Dr. Hug Geoconsult GmbH*

**Frankfurt/Main, Skyscraper City West, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in an exploration drilling for the skyscraper City West (1999);  
*Client: IBO Tech GmbH*

**Frankfurt/Main, Holzmann Skyscraper, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack and pressiometer according to Ménard (2000);  
*Client: Versuchsanstalt für Geotechnik, TU Darmstadt*

**Frankfurt/Main, Suburban Train Nordmainische, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for the suburban train Nordmainische (2008);  
*Client: Arge NM-S-Bahn (Schützeichel KG + Terrasond GmbH & Co. KG)*

**Frankfurt/Main, UEC-Center, Germany**

Execution of borehole jack tests with pressiometer according to Ménard (2000);  
*Client: Versuchsanstalt für Geotechnik, TU Darmstadt*

**Frankfurt/Main, Deep Foundation of a Skyscraper, Germany**

Measurement of pile butt and pile foot forces, pile extension, extensometer and incline measurements, delivery and installation of measuring instruments (1983);  
*Client: Ing.-Büro Prof. Sommer, Darmstadt*

**Frankfurt/Oder, Germany**

Camera monitoring in boreholes of pillars and in the abutment of the Oder bridge with the GIF borehole endoscope (1997);  
*Client: Schützeichel GmbH & Co. KG*

**Frauenberger and Kupferheck Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer. Recording of exploratory drillings with a borehole camera (2008);  
*Client: Schützeichel GmbH & Co. KG*

**Freienohler Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack, inspection of drillings in the tunnel with borehole camera, stress measurements according to the method of compensation, DB-section 2550 (2013 and 2016);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Freising, West Tangent Road, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2012);  
*Client: Eder Brunnenbau in Deutschland GmbH*

**Freudenberg, Germany**

Execution of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer, monitoring of drillings with the optic scanner system ETIBS® and the acoustic scanner ABF. Exploratory drillings for the L2310 detour Freudenberg (2008);  
*Client: Terrasond GmbH & Co. KG*

**Freudenstadt, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer in exploratory drillings for the tunnel Freudenstadt (2016);

*Client: Burkhardt GmbH & Co. KG*

**Freudenstein Tunnel, Germany**

Execution of double plate load tests in the crown of the section west and middle, new railway line Mannheim - Stuttgart (1988);

*Client: PrGr M/S der Bahnbauzentrale, Bundesbahndirektion Karlsruhe*

**Freudenstein Tunnel, Germany**

Engineering geological consulting, execution of rock and soil mechanic investigations and geotechnical measurements, new railway line M/S (1985-90);

*Client: PrGr M/S der Bahnbauzentrale, Bundesbahndirektion Karlsruhe*

**Fuerth, Underground Railway, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in boreholes for foundation investigation of BA 3.1.1 (1998);

*Client: Behringer GmbH*

**Gaggenau, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, B 462 Gaggenau – Bad Rotenfels, Rotherma link road (2006);

*Client: Dr. Ing. Orth GmbH*

**Gargellen Mountain Railways, Austria**

Execution of borehole jack tests with Ettliger borehole jack for the project water reservoir Schafbergsee II (2017);

*Client: Reisinger GesmbH*

**Geesthacht, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> in the course of the condition investigation of the armored concrete barrage Geesthacht (2016);

*Client: Sieberns & Stephanowicz GmbH*

**Geisberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in exploratory drillings for the Geisberg tunnel, new railway line Nuernberg - Ingolstadt of the Deutsche Bahn (1999);

*Client: Schützeichel GmbH & Co. KG*

**Gelbingen, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in exploratory drillings for the western bypass road B19 (1999);

*Client: Andreas Goller Bohrtechnik*

**Gernsbach, Tunnel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2012-13);

*Client: GHJ Ingenieures. für Geo- u. Umwelttechnik mbH & Co. KG*

**Gevelsberg, New Building Bridge Eichholtzstreet, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*



**Giswil, Switzerland**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack in an exploratory drilling at the tunnel Kaiserstuhl (2016);

*Client: Polymetra GmbH*

**Glauchau, Motorway BAB A 4 Chemnitz - Glauchau, Lots 1-3, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack, inclinometer measurements (1993);

*Client: Terrasond GmbH + Co. KG, Geomechanik Sachsen GmbH*

**Gleen Viaduct, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in exploratory drillings for the motorway BAB A49 (2002);

*Client: Schützeichel GmbH & Co. KG*

**Gleinalm Tunnel, Austria**

Stress measurements according to the method of compensation in the concrete inner shell of the tunnel (2014);

*Client: Montanuniversität Leoben*

**Gloesinger Tunnel, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, inspection of drillings in the tunnel with borehole camera, stress measurements according to the method of compensation, DB-section 2550 (2013);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Goeggelsbuch, Pilot Shaft, Germany**

Execution of a double plate load test until 4 MPa, installation of multiple extensometers, new railway line Nuernberg - Ingolstadt (1995-96);

*Client: Bilfinger + Berger AG*

**Goerzhausen, Germany**

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup>, exploratory drillings for Novartis Behring, building project Goerzhausen II (2008);

*Client: Schützeichel GmbH & Co. KG*

**Goesgen, Switzerland**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings of site investigations for KKG & ATEL (2008);

*Client: Interoil E&P Switzerland AG*

**Gondelsheim, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system for the noise protection wall B35 Gondelsheim (2017);

*Client: Baustoff- und Bodenprüfstelle RP Karlsruhe*

**Gotthard Base Tunnel, Switzerland**

Stress measurements according to the compensation method in the course of the excavation in the tunnel section Bodio (2005 and 2006);

*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*

**Grafenwoehr, Military Training Ground, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system in exploratory drillings for the program Contamination Clean Up #621 Phase 9 (2011, 2014, 2015, 2016 and 2019);

*Client: Wayss & Freytag Ingenieurbau AG, LGA Institut für Umweltgeologie und Altlasten GmbH*

**Grauer Stein Tunnel, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Ettliger borehole jack, stress measurements according to the compensation method and with the triaxial cell CSIRO, TV monitoring of drillings, investigation to evaluate the reconstruction necessity of the tunnel (1995);

*Client: Schützeichel GmbH & Co. KG*

**Grauer Stein Tunnel, Germany**

Camera monitoring of drillings in the tunnel in the course of repair works (1999);

*Client: Arge Tunnel Grauer Stein (Hochtief, Universale)*

**Grimsel, Test Site, Switzerland**

Execution of primary stress measurements and monitoring of stress variations (1983);

*Client: NAGRA, Nationale Genossenschaft für die Lagerung radioaktiver Abfälle, Baden/Switzerland*

**Grimsel, Test Site, Switzerland**

Installation of a stress monitoring equipment in a borehole of a thermic simulation test (1984);

*Client: gsf - Gesellschaft für Strahlen- und Umweltforschung mbH, München*

**Grimsel, Test Site, Switzerland**

Camera monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> (1999-2000);

*Client: BGR, Bundesanstalt für Geowissenschaften und Rohstoffe; NAGRA, Nationale Genossenschaft für die Lagerung radioaktiver Abfälle, Baden/Switzerland*

**Großkrotzenburg, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings at the site of the Eon power station Staudinger (2008);

*Client: Terrasond GmbH & Co. KG*

**Gruenwettersbach, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2019);

*Client: Hettmannsperger Bohrgesellschaft mbH*

**Guggenberg Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests in exploratory drillings for the detour of Peissenberg Federal Highway B472 Schongau - Biehl (2001);

*Client: GEO-Bohrtechnik GmbH*

**Gumping, Quarry, Germany**

Befahrung der Erkundungsbohrungen mit dem optischen Bohrlochscanner ETIBS<sup>®</sup> (2019);

*Client: BauGrund Süd GmbH*

**Hagen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2013);  
*Client: Stölben GmbH*

**Hahnstaetten, Schaefer Kalk, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer (2018);  
*Client: Schäfer Kalk GmbH & Co. KG*

**Hallein, EMCO Private Clinic, Austria**

Execution of borehole jack tests with Ettlinger borehole jack (2016);  
*Client: Eder Brunnenbau GmbH*

**Hamburg, DESY, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the project PETRA III (2005);  
*Client: Nortmann GmbH*

**Hannoversche Klippen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2009);  
*Client: Geopartner S.à.r.l.*

**Hasselborn Tunnel, Germany**

Monitoring of boreholes with borehole camera (2018);  
*Client: Baresel GmbH*

**Heidelberg, Building Project Neunheimer Landstr. 48, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2016);  
*Client: HIC Holzhäuser Ingenieur Consult GmbH*

**Heidelberg, Gaisberg Tunnel, Germany**

Stress measurements according to the method of compensation (2019);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Heilbronn, Laepple, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2014);  
*Client: Goller Bohrtechnik GmbH & Co. KG*

**Heilbronn, Power Station, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in exploratory drillings for district heating Campina (1998);  
*Client: Terrasond GmbH + Co. KG*

**Heilbronn, Underground Waste Dump, Germany**

Execution of plate load tests until 4.5 MPa (1993);  
*Client: Südwestdeutsche Salzwerte AG, Heilbronn*

**Heilbronn, Waste Dump Vogelsang, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack (1996);  
*Client: Entsorgungsbetriebe der Stadt Heilbronn*

**Heimbach, Catchment Basin, Germany**

Execution and evaluation of flexible dilatometer tests (1997);  
*Client: Schützeichel GmbH & Co. KG*

**Heimbach, Pump Storage Station, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack in the course of exploratory works for the pump storage station Heimbach (2016);

*Client: Daldrup & Söhne AG*

**Heimhausen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® for the country road L 1025 in Heimhausen (2012);

*Client: Henke und Partner GmbH*

**Heldrungen, Germany**

Monitoring of drillings with the acoustic and optic scanner system in the course of pre-investigation for the motorway BAB A71 VKE 5343 (2004 and 2005-06);

*Client: BOG GmbH, BG Roßla*

**Hermann Hesse Railroad, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system and borehole camera (2014-15);

*Client: Heinz Burkhardt GmbH & Co. KG, Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Hermisdorfer Kreuz/Triptis, Motorway BAB A 9, Germany**

Execution and evaluation of flexible dilatometer tests (1993);

*Client: Terrasond GmbH + Co. KG*

**Hessigheim, Germany**

Borehole explorations in anchor boreholes near the rock gardens of Hessigheim (2002);

*Client: Ing.-Büro Menzel*

**Hinterzarten, Germany**

Borehole investigation with the Eastman TV camera for soil investigation of the planned Hotel Tannenhain (1994);

*Client: H. Christian Welle*

**Hippach, Zillertal, Austria**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the artificial snow machine Penken – Reservoir (2011);

*Client: BG Roßla mbH*

**Hirschau, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in the course of pre-investigation for the transport gallery Hirschau of the Amberg kaolin factory (2005);

*Client: Terrasond GmbH & Co. KG*

**HKM, Krupp Mannesmann Smelting Works, Germany**

Borehole jack tests in exploratory drillings for the new building of the coking plant of the HKM in Duisburg (2005);

*Client: Schützeichel GmbH & Co. KG*

**Hoellental Train, Germany**

Inspection of drillings with the borehole endoscope in the tunnels Doegging, Finsterbuehl, Hoernle, Kapf and Setze (2012);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Hoenebach Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack in exploratory drillings (2015);  
*Client: BOG GmbH*

**Hoenebach Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2018);  
*Client: BOG GmbH*

**Hoeseler Tunnel, Germany**

Monitoring of the drillings with borehole camera and with the optic scanner system ETIBS<sup>®</sup>, stress measurements according to the method of compensation (2019);  
*Client: Schützeichel GmbH & Co. KG*

**Hof, Saalequerung (river crossing), Germany**

Execution of borehole jack tests with Ettliger dilatometer (2019);  
*Client: Terrasond GmbH & Co. KG*

**Hohenwarte, Information center, Barrier wall, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2019);  
*Client: Geotechnik Dr. Nottrodt Weimar GmbH*

**Hollrich Tunnel, Germany**

Execution of stress measurements according to the compensation method, borehole jack tests with Ettliger borehole jack, camera monitoring of drillings in the Hollrich tunnel, railway section Wetzlar – Niederlahn-stein of the Deutsche Bahn (2003 and 2006);  
*Client: gbm – Ges. für Baugeologie und -messtechnik mbH, Schützeichel GmbH & Co. KG*

**Homericher and Enzweiler Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, stress measurements according to the compensation method (2012);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG, gbm – Ges. für Baugeologie und -messtechnik mbH*

**Hongkong**

Stress measurements with the triaxial cell CSIRO in exploratory drillings for the extension of the sewage system of Hongkong (2016);  
*Client: Gammon Construction Ltd.*

**Horb, Viaduct, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2018);  
*Client: Hettmannsperger GmbH*

**Horchheimer Tunnel, Germany**

Inspection of exploratory drillings in the tunnel with borehole endoscope and from the surface with the optic scanner system ETIBS<sup>®</sup>, execution of borehole jack tests with Ettliger flexible dilatometer (2012-13);  
*Client: BOG GmbH*

**Horkheim, Barrage, Germany**

Monitoring of drillings with the optic scanner system ETIBS® in piers of the barrage Horkheim (2003);

*Client: Winkler und Partner GmbH*

**Horkheim, Barrage, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2013, 2014, 2017 and 2018);

*Client: Pruy KG, Terrasond GmbH & Co. KG, Sieberns & Stepanowicz GmbH*

**Hoyerswerda, Germany**

Execution of borehole jack tests with Ettliger borehole jack in loosely filled dump material (2011);

*Client: TU Bergakademie Freiberg*

**Ibbenbueren, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® in exploratory drillings at the area of the power station Ibbenbueren (2011);

*Client: Schützeichel GmbH & Co. KG*

**Ibbenbüren, Pit water channel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, borehole development measurement (2019);

*Client: BOG Bohr- und Umwelttechnik GmbH*

**Idar-Oberstein, Klotzberg Barracks, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and monitoring of boreholes and wall openings with a borehole camera (2011 and 2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Immendingen, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the Daimler test ground (2013 and 2014);

*Client: Terrasond GmbH & Co. KG*

**Ingolstadt, College, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2011);

*Client: Terrasond GmbH & Co. KG*

**Inntal Tunnel, Austria**

Stress measurements according to the method of compensation (2016);

*Client: Montanuniversität Leoben*

**Irlahuell Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack to explore the strength of carst cavity fillings. Monitoring of drillings and carst cavities with the borehole endoscope (2001 and 2003);

*Client: Arge Tunnel Irlahüll (Terrasond GmbH & Co. KG, Schützeichel GmbH & Co. KG),  
Arge Tunnel Los Mitte (Hochtief, Alpine Bau)*

**Irlahuell Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack for the Irlahuell tunnel, new railway line Nuernberg – Ingolstadt of the Deutsche Bahn (2002);

*Client: Arge Tunnel Los Mitte (Hochtief, Alpine Bau Deutschland)*

**Iserlohn, Parking Hall, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2016);  
 Client: *Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Isola Dam, Switzerland**

Stress measurements according to the method of compensation to judge the stress conditions of the dam (2013 and 2014);  
 Client: *Axpo Power AG*

**Istanbul, Marmaray Project BC1, Turkey**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for the Marmaray Project BC1 (2008);  
 Client: *Taisei Corperation, Turkey-Istanbul Branch*

**Itter 1 + 2 Tunnels, Germany**

Stress measurements according to the compensation method in the masonry of the old railway tunnels, camera monitoring of exploratory drillings from the tunnel direction (2005);  
 Client: *gbm – Ges. für Baugeologie und -messtechnik mbH*

**Izmit Bridge, Turkey**

Execution of borehole jack tests with Ettliger dilatometer in an exploratory drilling for the construction of Izmit Bridge (2010);  
 Client: *FUGRO Consult GmbH*

**Jaehroder- and Mausenmuehlen Tunnel, Germany**

Stress measurements according to the compensation method in the masonry of the old railway tunnels, flexible dilatometer tests in drillings from the tunnel direction, camera monitoring of the drillings (2005);  
 Client: *gbm – Ges. für Baugeologie und -messtechnik mbH*

**Jagdberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with the optic scanner system ETIBS® in exploratory drillings for the motorway BAB A4 Eisenach – Goerlich (2002-03 and 2006);  
 Client: *BOG GmbH*

**Jochenstein Power Station, Energy Store Riedl, Germany**

Execution of borehole jack tests with Ettliger dilatometer in exploratory drillings (2010);  
 Client: *Eder Brunnenbau in Deutschland GmbH*

**Kachlet, Barrage, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2018);  
 Client: *SBI Ingenieurgesellschaft Nieste*

**Kachlet, Sluice, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2010)  
 Client: *Wöltjen GmbH*

**Kaiser Wilhelm Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, primary stress measurements with the triaxial cell CSIRO, hole deviation measurements, camera monitoring with borehole endoscope and with the optic scanner system ETIBS® in the course of the exploration for the reconstruction and general redevelopment of the Kaiser Wilhelm



tunnel (2001-02 and 2007);

*Client: Arge Kaiser Wilhelm Tunnel (Schützeichel, Terrasond GmbH & Co. KG)*

#### **Kaiserslautern, Waste Dump Kapiteltal, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2010);

*Client: Erkelenzer Bohrges. mbH*

#### **Kajbar, Sudan**

Execution of flexible dilatometer tests in exploratory drillings for the hydraulic power station Kajbar.

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> (2008);

*Client: DIU, Dams Implementation Unit*

#### **Kakanj, Bosnia**

Execution of borehole jack tests with Ettlenger borehole jack in exploratory drillings for the Clinker Silo 3 of the cement plant Tvornica cementa Kakanj (2009);

*Client: Tvornica cementa Kakanj*

#### **Kalkofen Tunnel, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, stress measurements according to the method of compensation, monitoring of underground drillings with borehole camera (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

#### **Kalmut and Talberg Tunnel, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of the boreholes with borehole TV camera, stress measurements according to the method of compensation (2014);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

#### **Kammereck-, Bett-, Bank Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests, stress measurements according to the compensation method, TV monitoring of the boreholes, investigation to evaluate the reconstruction necessity of the tunnel (1996);

*Client: Deutsche Bahn AG Frankfurt*

#### **Kammereck-, Bett-, Bank Tunnel, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2014);

*Client: Terrasond GmbH & Co. KG*

#### **Kammereck, Retaining Structure K128, Germany**

Monitoring of drillings with borehole camera (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

#### **Kammquering (Ridge Crossing), Motorway BAB A 81, Germany**

Execution of borehole jack tests with flexible dilatometer and Ettlenger borehole jack, primary stress measurements with the triaxial cell CSIRO (1994);

*Client: Schützeichel GmbH & Co. KG*

#### **Karlsruhe, City Railway Tunnel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> to check the success of injections measurements, execution of a borehole jack test with Ettlenger borehole jack (2011 and 2012);

*Client: Stölben GmbH, Grund- und Sonderbau GmbH*



**Karlsruhe Groetzingen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> for Au-gustenburg Street (2015);

*Client: drillexperts GmbH*

**Karlstadt, Old Main Bridge, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system in exploratory drillings at the old Main bridge (2011);

*Client: Terrasond GmbH & Co. KG*

**Karun 3, Barrage, Iran**

Double plate load test until 10 MPa with an 800 t equipment in the exploration gallery G2 (1992);

*Client: Geotehnika, Zagreb, Croatia*

**Katterbach, Germany**

Monitoring of exploratory drillings on the airfield Ansbach with the optic scanner system ETIBS<sup>®</sup> (2015);

*Client: Fontus Logging Service*

**Katzenberg Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests for pre-investigation of the Katzenberg tunnel variant, new railway line Karlsruhe - Basel (K/B) (1987);

*Client: Arge Sax + Klee, Waschek GmbH, Terrasond GmbH + Co. KG*

**Katzenberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Ettlinger borehole jack, installation of combined sliding deformer - / inclinometer measuring casings and multiple extensometers in the course of the exploration for the reconstruction of Katzenberg tunnel, new railway line Karlsruhe - Basel (2001-2003);

*Client: Menning KG*

**Katzengraben, Canal Bridge, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> at the Main-Donau-Canal in Erlangen Huettendorf (2013)

*Client: Pruy KG*

**Kauerndorf Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of drillings with the optic scanner ETIBS<sup>®</sup>; exploratory drillings for the tunnel Kauerndorf, B 289 Kulmbach - Münchberg (2006);

*Client: BOG GmbH*

**Kauner Valley, Austria**

Execution of borehole jack tests with Ettlinger flexible dilatometer in the exploratory drilling Runserau (2013);

*Client: GLS Bau & Montage GmbH*

**Kauner Valley, Austria**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack in exploratory drillings for the extension of the power station Kauner Valley, the extension Prutz-Imst and the Inn dam Imst-Haiming (2014-15);

*Client: BG Roßla mbH*

**Kehrenbach Bridge, Germany**

Static load tests of concrete piles, execution of measurements, delivery and installation of measuring instruments and devices (load measurement, strain measurements with wire resistance strain gauges, pile foot forces, pile incline measurement), new railway line H/W Middle, joint venture with Glötzl Baumesstechnik Company (1983);  
*Client: Grund- und Pfahlbau GmbH, Frankfurt/Main*

**Keyal Khwar HPP, Pakistan**

Execution of borehole jack tests with Ettliger flexible dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, stress measurements with the borehole slotter, exploration for the hydroelectric power plant Keyal Khwar (2014);  
*Client: Lahmeyer International*

**Kiel, Sluice Holtenau, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2017);  
*Client: Sieberns & Stepanowicz GmbH*

**Kiel, Viaduct Levensau, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2015);  
*Client: Dipl.-Ing. Peter Neumann Baugrunduntersuchung GmbH & Co. KG*

**Kirchheimer Motorway Interchange, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2007);  
*Client: Schützeichel GmbH & Co. KG*

**Kirchholz Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system. Exploratory drillings for the Federal Highway B 21 detour Bad Reichenhall (2010);  
*Client: BOG GmbH*

**Kirschhofener Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, stress measurements according to the method of compensation, monitoring of underground drillings with borehole camera, monitoring of underground drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2017-18);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG, Vormann Bohrgesellschaft mbH & Co. KG*

**Klingenberg, Barrage, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer, primary stress measurements with the triaxial cell CSIRO in exploration drillings (1997);  
*Client: ARGE Pruy, Thüringer Bohrgesellschaft*

**Knorren, Reservoir, Austria**

Execution of borehole jack tests with Ettliger borehole jack (2013);  
*Client: GLS Bau & Montage GmbH*

**Koblenz, Germany**

Borehole jack tests with Ettliger borehole jack to prove the success of injection when redeveloping the pump shaft of the waste dump Eiterkoepfe (2004);  
*Client: Bilfinger Berger Umwelt GmbH*

**Koblenz, Flood Protection, Germany**

Execution of borehole jack tests with Ettlenger borehole jack in exploratory drillings for the flood protection Koblenz (2007);

*Client: Schützeichel GmbH & Co. KG*

**Koblenz, Flood Protection, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® (2006);

*Client: Schützeichel GmbH & Co. KG*

**Koblenz, Fortress Kaiser Franz, Germany**

Execution of borehole jack tests with Ettlenger borehole jack in exploratory drillings (2007);

*Client: Schützeichel GmbH & Co. KG*

**Koblenz, Mosel Bridge, Germany**

Camera monitoring of an exploratory drilling in the bridge pier (2000);

*Client: WPW Geoconsult*

**Koblenz, Pfaffendorf Bridge, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2014);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Koblenz, Rittersturz, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2013);

*Client: BOG GmbH*

**Koblenz, Ship Sluice, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS®, execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack (2010 and 2012);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Kochav Hayarden Pumped Hydro-Energy Storage, Israel**

Execution of borehole jack tests with Ettlenger dilatometer in an exploratory drilling for the pump storage station. Test depth until 518 m (2013);

*Client: FUGRO Austria GmbH*

**Kochendorf and Lauffen, Sluices, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2010-2011);

*Client: Arge Terrasond-Eder*

**Kochendorf, Sluice, Germany**

Monitoring of exploratory drillings with the acoustic ABF system for the FAA Kochendorf (2015);

*Client: BOG GmbH*

**Kockelsberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Stuttgarter borehole jack, new railway line Leipzig - Dresden (1992);

*Client: Thüringer Bohrgesellschaft mbH, Rudolstadt*

**Koeln, Germany**

Execution of borehole jack tests with Ettlenger borehole jack in exploratory drillings for the restoration of the Linde wall (2015);

*Client: Erdbohr und Handel-GmbH*

**Koenigstein, Germany**

Monitoring of drillings with the optic scanner system ETIBS® in the course of pre-investigation for the new building of the Konrad-Adenauer underground car park in Koenigstein (2005);

*Client: Franke-Meißner und Partner GmbH*

**Koepruebaşi HEPP, Turkey**

Primary stress measurements with the borehole slotter in exploratory drillings in the access gallery to the machine cavern of the water power project Koepruebaşi, camera monitoring of drillings (2009);

*Client: Yüksel Enerji Elektrik Üretim ve Ticaret A.S.*

**Kohlberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system. Exploratory drillings for the Federal Highway B 172 detour Pirna, Kohlberg tunnel (2010);

*Client: Bohrgesellschaft Roßla*

**Konrad, Shaft, Germany**

Monitoring of drillings with the optic scanner system ETIBS® and the TV borehole camera. Shaft station 2<sup>nd</sup> bottom -763 mNN (2010);

*Client: Pruy KG*

**Kramer Tunnel, Germany**

Borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for the B23 detour Garmisch-Partenkirchen (2005 and 2006-07);

*Client: Terrasond GmbH & Co. KG*

**Kramer Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for the B 23 detour Garmisch-Partenkirchen (2012);

*Client: Terrasond GmbH & Co. KG*

**Krefeld, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings at the area of Bayer Krefeld (2009);

*Client: Schützeichel GmbH & Co. KG*

**KTB Continental Deep Drilling Programme, Germany**

Feasibility study for the installation of the "Deep-Earth-Observatory" in the test drilling of the continental deep drilling project (depth about 5000 m); prototype development of a primary stress and hydraulic monitoring station. Long-term measurements of interstitial pressure, temperature, electrical conductivity (1988-90);

*Client: Projektleitung der Kontinentalen Tiefbohrung der BRD, im Auftrag des Bundesministerium für Forschung und Technologie, BMFT*

**Kuckucksly Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, stress measurements according to the method of compensation to judge the stability of the tunnel, monitoring of the boreholes with borehole camera and optic borehole scanner ETIBS® (2013);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG, gbm – Ges. für Baugologie und -messtechnik mbH*

**Kulmbach, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack in exploratory drillings for the B 289 viaduct Schorgast (2012);

*Client: Ing. Büro Jung Geotechnik GmbH*

**L 338 Unterreichenbach – Engelsbrand/Grunbach, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2008);

*Client: Dr. Ing. Orth GmbH*

**L 512 Ihnetal bridge, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018);

*Client: Deponata GmbH & Co. KG*

**L 776 Detour Schmalleberg / Bad Fredeburg, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018);

*Client: BOG GmbH*

**Laemmerbuckel Tunnel, Germany**

Execution of borehole jack tests with Ettlenger dilatometer, monitoring of the boreholes with the optic scanner system ETIBS® and the acoustic system ABF, Gamma-measurement (2009-10);

*Client: Stölben GmbH*

**Lago Bianco, Pumped Storage Station, Switzerland**

Execution of borehole jack tests with Ettlenger dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS®, Gamma- and loggings of borehole running off, hydro tests and hydrofrac, stress measurements with the borehole slotter. Exploratory drillings for the cavern out of a exploratory gallery (2012);

*Client: Lagobianco SA*

**Lahr, Bruennle Area, Germany**

Recording with borehole camera of drilled cellar rooms of a former brewery (2008);

*Client: Terrasond GmbH & Co. KG*

**Landeck, Austria**

Execution of borehole jack tests with Ettlenger borehole jack in exploratory drillings for the power plant Sanna (2014);

*Client: Plankel Bohrungen GmbH*

**Landruecken Tunnel, Entrance Gallery, Germany**

Double plate load tests, new railway line H/W south (1982);

*Client: IGI, Ingenieur-Geologisches Institut, Dipl.-Ing. S. Niedermeyer, Westheim*

**Lange Issel Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack in exploratory drillings of the new railway line Koeln - Rhein/Main of the Deutsche Bahn (1999);

*Client: Schützeichel GmbH & Co. KG*

**Langsur, Germany**

Monitoring of exploratory drillings for the flood protection in Langsur with the optic scanner system ETIBS® (2009);

*Client: Geopartner S.à.r.l.*

**Lauffen, Sluice, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2014 and 2016);

*Client: Stölben GmbH, ELE Beratende Ingenieure GmbH*

**Lautertal, County Coburg, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic system ABF. Exploratory drillings for the project Lauter bridge (2007-08);

*Client: BOG GmbH*

**Lechbruck am See, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS® (2015);

*Client: BOG GmbH*

**Lehmen, Sluice, Germany**

Execution of borehole jack tests with Ettliger dilatometer, monitoring of drillings with optic scanner system ETIBS®, installation of pore water pressure transducers with el. data loggers (2009);

*Client: Erkelenzer BG*

**Lehmen, Sluice, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF (2019);

*Client: Stölben GmbH*

**Leipzig, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack for pre-investigation of suburban train Leipzig (1997);

*Client: Sächsischer Brunnen- und Spezialtiefbau GmbH*

**Leutenbach Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests in exploratory drillings for the Leutenbach tunnel B 14 (2001);

*Client: Abt GmbH, Gräfelting*

**Limburg, Lahntal Bridge, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for the Lahntal Bridge, new railway line Koeln - Rhein/Main of the Deutsche Bahn (1999);

*Client: Schützeichel GmbH & Co. KG*

**Lisdorf, Weir, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2019);

*Client: Sieberns & Stepanowicz GmbH*

**Lohberg Tunnel, Germany**

Execution of flexible dilatometer tests, new railway line H/W middle (1983);

*Client: Ingenieurbüro Dr. F. Hug, Kronberg*

**Lohmeberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer for the new railway line Ebensfeld – Erfurt, additional exploration BA 3220 (2002);

*Client: BOG GmbH*

**Loreley Tunnel, Rossstein Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests with Ettliger dilatometer, TV monitoring of the boreholes, investigation to evaluate the reconstruction necessity of the tunnels (1996);

*Client: Schützeichel GmbH & Co. KG*

**Lower Songwe Dam, Malawi / Tansania**

Execution of borehole jack tests with Ettliger flexible dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2014-15);

*Client: Kimani Minerals Ltd., Lahmeyer International*

**Ludwigsburg, Police Department, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2015);

*Client: Terrasond GmbH & Co. KG*

**Ludwigshafen, BASF, Pile Load Test, Germany**

Design and planning of the load equipment for a static load test of concrete piles with stress/strain cyclic load of 5000 or 2000 kN. Execution of load tests (1989);

*Client: Friedel Bohrunternehmen GmbH, Mannheim*

**Ludwigsstadt, Retaining Wall, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Ettliger borehole jack (1994);

*Client: Geomechanik, Woringen*

**Lueg Bridge, Austria**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the new building of the Lueg bridge, Brenner motorway A13 (2017);

*Client: Plankel Bohrungen GmbH, Felbermayr Bau GmbH & Co. KG, Framak Bohrtechnik GmbH*

**Magdeburg, Elb Bridges, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2014);

*Client: Landsberger Bohr- und Brunnenbau GmbH*

**Mainz, Custom Harbour, Germany**

Monitoring of exploratory drillings with an optic borehole camera (2011);

*Client: Stölben GmbH*

**Mainz – Laubenheim, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings in the quarry of Heidelberger Zement (2011);

*Client: Stölben GmbH*

**Mainz, Old Mainzer Tunnel, Germany**

Execution and Evaluation of borehole jack tests with Ettliger borehole jack (2003);

*Client: GEOEC GmbH*

**Mainzer Circle, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack, soil investigation for the reconstruction of the motorway BAB A60 (1993-94);

*Client: Schützeichel GmbH & Co. KG, Neustadt*

**Mainzer Tunnel, New Railway Line Mannheim - Koeln, Germany**

Execution and evaluation of borehole jack tests with Stuttgarter borehole jack for pre-investigation of the new Mainzer tunnel (1992);

*Client: Erkelenzer Bohrgesellschaft mbH, Schützeichel GmbH & Co. KG*

**Mainzer Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2015);

*Client: BOG GmbH*

**Manching, Germany**

Monitoring of boreholes in a retaining wall with the borehole TV camera (2014);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Marbach, Sluices Poppenweiler and Untertuerkheim, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in exploratory drillings, monitoring of drillings with the borehole camera (2015 and 2019);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Markusberg, Tunnel, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack (2019);

*Client: Stölben GmbH*

**Marl, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings at the stockpile Brinkfortsheide (2013);

*Client: Daldrup & Söhne AG*

**Martinstein, Detour, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, pre-investigation for the B 41 detour Martinstein (2007-08);

*Client: Erkelenzer BG*

**Masjed Soleiman, Iran**

Execution and evaluation of stress measurements according to the method of compensation in the ventilation gallery of the hydropower station Masjed Solei-man (2005-06);

*Client: Payab Zamzam Co., Teheran*

**Meiningen, Germany**

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> in the course of pre-investigation for the B19 detour Meiningen (2005);

*Client: BOG GmbH*

**Meisa Tunnel, Meissen, Germany**

Execution of borehole jack tests with flexible dilatometer for pre-investigation of the Meisa tunnel B 101 (1995);

*Client: Geomechanik Sachsen GmbH, Stump Bohr-GmbH*



**Meistern Tunnel, Bad Wildbad, Germany**

Stress measurements according to the method of compensation in the concrete inner lining of the tunnel (2012);

*Client: Montanuniversität Leoben*

**Misov, Czech Republic**

Execution of borehole jack tests with Ettliger dilatometer in exploratory drillings for the project EMR 15% Design of the US Army (2008);

*Client: GEO-Bohrtechnik GmbH*

**Mograt, Sudan**

Execution of flexible dilatometer tests in exploratory drillings for the hydraulic power station Mograt. Monitoring of drillings with the optic scanner system ETIBS® (2008);

*Client: DIU, Dams Implementation Unit*

**Moembris, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system in the course of a channel project (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Moerlenbach, Germany**

Borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with the optic scanner system ETIBS® in the course of pre-investigation for the detour Moerlenbach (2005-2006);

*Client: Schützeichel GmbH & Co. KG*

**Montabaur, Germany**

Monitoring of boreholes with the optic scanner system ETIBS® at the castle of Montabaur (2008);

*Client: Schützeichel GmbH & Co. KG*

**Morsleben, Germany**

Execution of stress measurements with the triaxial cell CSIRO in connection with the GIF borehole computer near the shafts of ERAM and in the zone of the cross section sealing test (1997-99);

*Client: DBE, Peine*

**Morsleben, Germany**

Measurement of partially packed underground cavities with laser scanner to determine the morphology and the residual volume. Presentation as a 3d-model (2001);

*Client: DBE, Peine*

**Morsleben, Germany**

Stress measurements according to the method of compensation in the lining of the shaft Bartensleben. Support of the test points for permanent measurement and connection to data acquisition system (2007, 2013, and 2018);

*Client: DBE, Peine*

**Mosel Bridge, Uerzig – Zeltingen, Germany**

Execution of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer. Insertion of two drillings to inclinometer measuring points with special steel tubes (2007);

*Client: Erkelenzer BG*

**Mt. Terri, Test Site, Switzerland**

Camera monitoring of drillings with the optic scanner system ETIBS® (1999);

*Client: NAGRA, Nationale Genossenschaft für die Lagerung radioaktiver Abfälle, Baden/Switzerland*

**Muehlacker, Herrenwaag Bridge, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2014);

*Client: Dr. Ing. Orth GmbH*

**Muehlberg, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the new Elbe bridge Muehlberg (2004);

*Client: BLZ Geotechnik GmbH*

**Muellheim, New Construction of Day Nursery, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2012);

*Client: Terrasond GmbH & Co. KG*

**Muenchholzhausen, Viaduct, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2016);

*Client: Terra Control GmbH*

**Muenchingen, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the detour of Muenchingen (2000);

*Client: Terrasond GmbH & Co. KG*

**Mulda, Flood Control Basin, Germany**

Execution of borehole jack tests with Ettlinger dilatometer, monitoring of drillings with optic scanner system ETIBS® and acoustic ABF system, caliber measurement and borehole camera in exploratory drillings for the flood control basin Mulda (2009);

*Client: IFB Eigenschenk, BG Roßla, BOG GmbH*

**Mulda, Diversion Tunnel, Germany**

Monitoring of boreholes with the optic scanner system ETIBS®, exploratory drillings for the diversion tunnel Mulda (2008-09);

*Client: Geomechanik Sachsen GmbH*

**Mulda, Diversion Tunnel, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system in exploratory drillings, caliber measurements and borehole camera for the diversion tunnel Mulda (2009 and 2011);

*Client: BOG GmbH*

**Muldenberg Barrage, Germany**

Execution and evaluation of in situ shear tests at the quarrystone work of the barrage Muldenberg for stability control (1999);

*Client: Kubens Ingenieurgesellschaft mbH*

**Munich, Garden Tower, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in the course of foundation exploration for the Garden Tower at Georg-Braeuchle-Ring (1998);

*Client: Ing.-Büro Dr. G. Hafner, Stuttgart*

**Munich, Konzerthaus, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2019-2020);

*Client: Terrasond GmbH & Co. KG*

**Munich, Daimler/Chrysler, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack (1999);

*Client: Ost-West Bohr*

**Munich, Magnetic Speed Railway, Lots 1 – 3, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in exploratory drillings for the magnetic speed railway (2004-05);

*Client: Arge MSB München Los 1, Arge MSB München Los 2, Arge MSB München Los 3*

**Munich, 2<sup>nd</sup> Regular Line of Suburban Train, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the section Munich – Laim – Station East (2004-05);

*Client: Ivers Brunnenbau GmbH, Terrasond GmbH & Co. KG*

**Munich, 2<sup>nd</sup> Regular Line of Suburban Train, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings of the 4<sup>th</sup> investigation program (2008 and 2009);

*Client: Terrasond GmbH & Co. KG*

**Munich, 2<sup>nd</sup> Regular Line of Suburban Train, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2018-19);

*Client: Arge 2. S-Bahn Stammstrecke (Terrasond, Eder, Abt, BG Roßla)*

**Munich, Publishers "Sueddeutscher Verlag", Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in exploratory drillings (2005);

*Client: Terrasond GmbH & Co. KG*

**Munich, Underground Railway Station Sendlinger Tor, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2014);

*Client: Abt Wasser- und Umwelttechnik GmbH*

**Munich, Underground Railway Line U5, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2017);

*Client: BauGrund Süd GmbH*

**Munich, Underground Railway Line U5, Pasing-Freiham, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack (2019-2020);

*Client: BauGrund Süd GmbH*

**Mutschelbach, Germany**

Monitoring of exploratory drillings for the Grün-Bridge Mutschelbach with the optic scanner system



ETIBS® (2009);  
 Client: RP Karlsruhe, Sachgebiet Straßenbau und Geotechnik

**Muzizi Hydropower Project, Uganda**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2017);  
 Client: ILF GmbH

**Nagold Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack to explore the railway fly-over Herrenberg Street (2007);  
 Client: Hettmannsperger

**Nagold, Germany**

Execution of borehole jack tests with Ettlenger borehole jack in exploratory drillings for the Jet gas station in Nagold (2009);  
 Client: Andreas Goller Bohrtechnik

**Nagold Barrage, Ore Mine, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack (2004);  
 Client: Schützeichel GmbH & Co. KG

**Neckar Bank Tunnel Heidelberg, Germany**

Execution of borehole jack tests with Ettlenger borehole jack and Ettlenger dilatometer. Insertion of boreholes to groundwater and pore water pressure measuring points with electrical data loggers (2008-09);  
 Client: Arge Neckarufertunnel (Eder GmbH, J. Menning KG)

**Neckargemünd, Barrage, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2014);  
 Client: SBI Ingenieurgesellschaft Nieste

**Neckarsulm, Germany**

Execution of borehole jack tests with Ettlenger dilatometer, monitoring of exploratory drillings with the acoustic ABF system, caliber measurement, tracer-fluid-logging (2011);  
 Client: BG Roßla mbH

**Neckarzimmern, Underground Dump, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack in exploratory drillings, monitoring of exploratory drillings with the optic scanner system ETIBS® (2007-08, 2010, 2013, 2017, and 2019);  
 Client: Schützeichel GmbH & Co. KG, BOG GmbH

**Neuberg Tunnel, Germany**

Execution of flexible dilatometer measurements, new railway line H/W south (1983);  
 Client: Osel Bohr GmbH, Bamberg

**Neuenbuerg, Germany**

Borehole monitoring with the optic scanner system ETIBS® in exploratory drillings for a retaining wall (2002);  
 Client: Terrasond GmbH & Co. KG

**Neuenrade, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> in the course of pre-investigation for the detour of Neuenrade (2002);

*Client: Schützeichel GmbH & Co. KG*

**Neumuehle – Lehnammuehle, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2010);

*Client: BOG GmbH*

**Neustadt Hohenacker, Waste Dump, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (1998);

*Client: Geotechnik Hundhausen*

**New Railway Line Ebensfeld – Erfurt, BA 3122 Roedental, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack (2002);

*Client: Kling Bohrtechnik GmbH*

**New Railway Line Ebensfeld – Erfurt, Valley Bridge Froschgrundsee, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2007);

*Client: Stoelben GmbH*

**New Railway Line Erfurt - Halle/Leipzig, Section 3, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Stuttgarter borehole jack and pressuremeter according to Ménard. Instrumentation of boreholes with electrical interstitial pressure transducers and delivery of electronic data loggers, (1993);

*Client: Erkelenzer Bohrgesellschaft mbH*

**New Railway Line Erfurt - Halle/Leipzig, Saale-Elster Bridge, Germany**

Execution of borehole jack tests with Ettlenger borehole jack (2013);

*Client: BOG GmbH*

**New Railway Line Hannover - Wuerzburg, Lot PA 14, Germany**

Plate load tests in test pit (1982);

*Client: Arge Los PA 14*

**New Railway Line Koeln – Rhein/Main, Lot PA 3, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Stuttgarter borehole jack and Ettlenger borehole jack; new railway line Koeln – Rhein/Main (1993-95);

*Client: Waschek GmbH*

**New Railway Line Koeln – Rhein/Main, Lots PA 2, PA 4, PA 5, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Stuttgarter borehole jack and Ettlenger borehole jack; new railway line Koeln – Rhein/Main (1993-95);

*Client: Schützeichel GmbH & Co. KG*



**New Railway Line Koeln – Rhein/Main, Lot PA 6, Germany**

Execution of primary stress measurements with the triaxial cell CSIRO. Camera monitoring with the borehole scanner system CORE BSS. Execution and evaluation of borehole jack tests with flexible dilatometer, Stuttgarter borehole jack and Ettlinger borehole jack; new railway line Koeln – Rhein/Main (1993-95);

*Client: Erkelenzer Bohrgesellschaft mbH*

**New Railway Line Koeln – Rhein/Main, Lot PA 7, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Stuttgarter borehole jack and Ettlinger borehole jack; new railway line Koeln – Rhein/Main (1993-95);

*Client: Waschek GmbH*

**New Railway Line Koeln – Rhein/Main, Lot PA 31, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Stuttgarter borehole jack and Ettlinger borehole jack; new railway line Koeln – Rhein/Main (1993-96);

*Client: Erkelenzer Bohrgesellschaft mbH*

**New Railway Line Koeln – Rhein/Main, Lot PA 32, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Stuttgarter borehole jack and Ettlinger borehole jack, new railway line Koeln – Rhein/Main (1992-1993);

*Client: Waschek GmbH*

**New Railway Line Lichtenfels - Erfurt, 3rd phase, Lots 1, 2, 3, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Goodman jack and Ménard pressuremeter. Execution of primary stress measurements with the triaxial cell CSIRO up to a depth of 150 m (1994);

*Client: Arge Los 1, Arge Los 2, Terrasond GmbH + Co. KG*

**New Railway Line Stuttgart - Ulm, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Stuttgarter borehole jack, new railway line Stuttgart - Ulm (1992-1993);

*Client: Prakla-Seismos Geomechanik GmbH*

**New Railway Line Nuernberg - Ingolstadt, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Stuttgarter borehole jack, new railway line Nuernberg - Ingolstadt (1992 and 1994);

*Client: Abt GmbH & Co., Interfels GmbH, Keller, Hahn u. Co. GmbH, Dr. Stadtbäumer GmbH, Kling Bohrtechnik GmbH, Waschek GmbH*

**New Railway Line Rhein/Main – Rhein/Neckar, PA2, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack in the course of pre-investigation (2003);

*Client: BOG GmbH*

**Niedernhausen Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack for investigation of the deformation characteristics of the rock in the pre-cut of the Niedernhausen tunnel (1997-98);

*Client: Schützeichel GmbH & Co. KG*

**Nieder-Ramstadt, Germany**

Execution of flexible dilatometer tests and primary stress measurements with the triaxial cell CSIRO in exploratory drillings (2001);

*Client: Stölben GmbH*

**Niederseidewitz, Germany**

Execution of borehole jack tests with Ettliger dilatometer in exploratory drillings for a flood control basin (2009);

*Client: Bohrgesellschaft Roßla GmbH*

**Niederstetten Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack in the course of investigating the Niederstetten tunnel, section Crailsheim - Bad Mergentheim (1998 and 2007);

*Client: Schützeichel GmbH & Co. KG*

**Niederwennerscheid, Germany**

Monitoring of an exploratory drilling with the acoustic ABF system (2013);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Nittel Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic system ABF (2006);

*Client: Schützeichel GmbH & Co. KG*

**Nordhalben Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of under-ground drillings with borehole camera (2017);

*Client: Bohrgesellschaft Roßla mbH*

**Nossen, Castle Nossen, Germany**

Camera monitoring of drillings for anchors (1995);

*Client: Pressbau GmbH, Erfurt*

**Nuernberg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> in a drilling for the research project "geothermal test field" (2011);

*Client: Behringer + Dittmann GmbH*

**Nuernberg – Ansbach, Suburban Train, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in the course of pre-investigation for the suburban train Nuernberg – Ansbach (2006);

*Client: Arge Behringer + Dittmann / Terrasond GmbH + Co. KG*

**Nuernberg, Airport Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup>. Exploratory drillings for the BAB A3 airport tunnel in Nuernberg (2006);

*Client: LGA Bautechnik GmbH*

**Nuernberg, Airport Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system in exploratory drillings for the B4f-link airport Nuernberg to the motorway BAB A3 (2011);

*Client: Staatliches Bauamt Nürnberg*

**Nuernberg, Franken Expressway, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack in the course of the exploration "Tiefe Gradiente" (2017);

*Client: Behringer + Dittmann*

**Oberbillig, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in exploratory drillings of the flood precautionary measures Oberbillig/Mosel (1997);

*Client: Knauber GmbH*

**Oberbobritzsch, Germany**

Execution of borehole jack tests with Ettliger dilatometer in exploratory drillings for the flood control basin Oberbobritzsch (2009 and 2010);

*Client: Landsberger Bohr- und Brunnenbau GmbH, BOG GmbH*

**Oberbobritzsch, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> in exploratory drillings for the flood control basin Oberbobritzsch (2011);

*Client: BOG GmbH*

**Oberkirch, Germany**

Monitoring of boreholes with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system, exploratory drillings for the Federal Highway B 28 near Oberkirch (2009 and 2012);

*Client: Terrasond GmbH & Co. KG*

**Obernau, Diversion Dam, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of boreholes with the optic scanner system ETIBS<sup>®</sup> (2008);

*Client: Wöltjen GmbH*

**Oberrohrn, Subrosion Depressed Area, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS<sup>®</sup> in a sinkhole, execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack (2015 and 2016);

*Client: BOG GmbH*

**Oehringhausen, Viaduct, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> B55 Viaduct Oehringhausen (2016);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Ohra, Barrage, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer for a geomechanical test programme for investigation of the deformation characteristics of the rock (1996);

*Client: Thüringer Talsperrenverwaltung*

**ONKALO, Finland**

Primary stress measurements with the triaxial cell CSIRO in underground exploratory drillings for the planned repository for radioactive waste (2006);

*Client: Posiva Oy*



**Osann – Monzel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and borehole camera to explore boreholes for the restoration of a retaining wall (2014);  
 Client: *BIS Engineering GmbH*

**Ostelsheim, Germany**

Monitoring of drillings with optic scanner system ETIBS<sup>®</sup> and acoustic ABF system, pre-investigation for the Ostelsheim curve of the Deutsche Bahn (2009);  
 Client: *Dr. Spang GmbH*

**Ovella Weir System, Austria**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack in exploratory drillings of the common power station Inn (2015);  
 Client: *BG Roßla mbH*

**Passau, ZF Plant 1, Germany**

Monitoring of an exploratory drilling to prove the successful creation of HDI-pillars with the optic scanner system ETIBS<sup>®</sup> (2015);  
 Client: *BAUER Spezialtiefbau GmbH*

**Perjen Tunnel, Austria**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, inclinometer measurements in exploratory drillings for the second tube of the Perjen tunnel S 16 Arlberg expressway (2012);  
 Client: *Bohrergesellschaft Roßla mbH*

**Pervari Dam, Turkey**

Execution of borehole jack tests with Ettliger dilatometer (2012 and 2014);  
 Client: *Insitu Ltd. Co., Ankara*

**Petersberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, inspection of drillings with borehole camera, stress measurements according to the method of compensation (2013 and 2016);  
 Client: *Gerätebau Wiedtal Schützeichel GmbH & Co. KG, gbm – Ges. für Baugeologie und -messtechnik mbH*

**Pfaender Tunnel, Austria**

Stress measurements according to the method of compensation in the concrete inner lining of the tunnel (2012);  
 Client: *Montanuniversität Leoben*

**Pflanzwirbach, Support Works at the B85, Germany**

Execution and evaluation of flexible dilatometer tests for soil investigation of the tunnel variant detour of Pflanzwirbach (1995);  
 Client: *Terrasond GmbH + Co. KG*

**Pforzheim Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack and Ettliger dilatometer. Monitoring of exploratory drillings with a borehole camera. Installation of convergence measuring sections with Distometer (2007-09, 2010, and 2015);  
 Client: *Schützeichel GmbH & Co. KG*

**Philippsthal/Hattorf, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the KALI+Salz KKF-plant Hattorf (2015);

*Client: Terrasond GmbH & Co. KG*

**Pians, Alpine Road, Austria**

Execution and evaluation of borehole jack tests with Ettliger dilatometer, installation and measurement of an inclinometer for investigation of a sliding slope near Pians (1996);

*Client: Preussag, Wien*

**Pleidelsheim, Barrage, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2014);

*Client: Terrasond GmbH & Co. KG*

**Pleidelsheim, Sluice, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018);

*Client: Sieberns & Stepanovicz GmbH*

**Poerzberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with the optic scanner system ETIBS®. Pre-investigation for the Poerzberg tunnel, county road L 1048 detour of Schaalaa (2001-02, 2004-06);

*Client: BOG GmbH*

**Pont Adolphe, Luxembourg**

Monitoring of numerous boreholes (all directions) in the masonry of the bridge with the optic scanner system ETIBS® to explore the condition of the masonry (2009);

*Client: Geopartner S.à.r.l.*

**Poschberg, Pump Storage Station, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® for the projected pump storage station Poschberg (2011);

*Client: BOG GmbH*

**Raffelberg, Ruhr Sluice, Germany**

Stress measurements according to the method of compensation and with the triaxial cell CSIRO in the lower part of the southern chamber wall to determine the state of stress (2001);

*Client: BAW, Karlsruhe*

**Ramholz Tunnel, Germany**

Stress measurements according to the compensation method in the brickwork of an old tunnel (1990);

*Client: DB Bundesbahndirektion Frankfurt/M.*

**Ramstein, Airbase, Germany**

Monitoring of drillings and probes with the optic scanner system ETIBS® (2001);

*Client: GFL*

**Ramstein, Airbase, Germany**

Monitoring of drillings and gauges with the optic scanner system ETIBS® and the acoustic ABF system (2010);

*Client: Fontus Logging Service*

**Rangoon, Pile Load Tests, Burma**

Pile load tests for the Yangon Patheingyi Road Project in Rangoon (1990);  
*Client: ITECO, Affoltern/Switzerland*

**Rappenstein Tunnel, Germany**

Camera monitoring in exploratory drillings of the tunnel and in the retaining wall in front of the tunnel (1998 and 2013);  
*Client: Terrasond GmbH + Co. KG, Schützeichel GmbH & Co. KG*

**Rastatt Tunnel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the borehole camera, borehole development measurements (2018-19);  
*Client: Arge Erkundung Tunnel Rastatt, Arge Tunnel Rastatt, Hettmannsperger GmbH*

**Ratingen, Germany**

Camera monitoring of seepage water shafts at the dump Ratingen (2007);  
*Client: Ing. Büro Zirfas*

**Ratingen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, measurements with the optic 4-arm-caliber. Exploration of Erdgas AL Uerdingen and CO-Pipeline (2012-13);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Raubach, Metsä Tissue, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Rauenthaler Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of the drillings with borehole camera, stress measurements according to the method of compensation (2016-17);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Rauheberg Tunnel, Germany**

Execution of stress measurements according to the compensation method (2011);  
*Client: Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, inspection of drillings in the tunnel with borehole camera, stress measurements according to the method of compensation, DB-section 2550 (2013);*  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Regen, Detour B11, Germany**

Execution and evaluation of flexible dilatometer tests for pre-investigation of the tunnel near Regen (1993);  
*Client: Terrasond GmbH + Co. KG*

**Rehberg Tunnel, Germany**

Stress measurements according to the method of compensation in the masonry of an old railway tunnel (2004);  
*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*

**Reichenstein Tunnel, Germany**

Stress measurements according to the method of compensation, installation and measurement of extensometer- and distometer measuring sections in the course of the documentation (2001-10 and 2016);

*Client: gbm - Ges. für Baugeologie und -messtechnik mbH*

**Reichshof, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2016);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Reitersberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettlinger borehole jack for the new railway line Ebensfeld – Erfurt, BA 3122, additional investigation Reitersberg tunnel (2003);

*Client: Arge Tunnel Reitersberg (BOG, Terrasond)*

**Reitersberg Tunnel, Germany**

Stress measurements according to the compensation method in the Shotcrete of the outer shell of the tunnel (2010);

*Client: Arge Tunnel Reitersberg*

**Remscheid-Lennep, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in exploratory drillings for the Federal Highway B 229 between Remscheid and Remscheid - Lennep (2000);

*Client: Schützeichel GmbH & Co. KG*

**Rennsteig Tunnel, Germany**

Primary stress measurements with the triaxial cell CSIRO for pre-investigation of the new motorway BAB A71, ridge crossing Thueringer Wald (1995-96);

*Client: BOG GmbH*

**Reutlingen, Scheibengipfel Tunnel, Germany**

Execution of borehole jack tests with Ettlinger dilatometer, monitoring of boreholes with the optic scanner system ETIBS®, primary stress measurements with the HI-cell CSIRO. Exploratory drillings for the Scheibengipfel tunnel detour Reutlingen (2008);

*Client: Stölben GmbH*

**Rheinfelden, Rhine Footbridge, Germany and Switzerland**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2016);

*Client: drillexpert GmbH*

**Rhine crossing, Amprion, Germany**

Execution of borehole jack tests with Ettlinger borehole jack (2019);

*Client: Handke Brunnenbau GmbH*

**Riedensheim, Germany**

Execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system for the polder Riedensheim (2014);

*Client: Terrasond GmbH & Co. KG*

**Rieneck, Detour, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and borehole TV camera for underground reconnaissance (2014);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Rieneck and Ruppertsberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and borehole TV camera in the tunnel boreholes (2014 and 2015);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Riesenbeck, Dortmund-Ems-Canal, Germany**

Camera monitoring with the borehole scanner CORE BSS in exploratory drillings (1996-97);

*Client: Wasser- und Schifffahrtsamt Rheine*

**Ringenhain HRB, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2018);

*Client: IBES Baugrundinstitut Freiberg GmbH*

**Rockenau Barrage, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2013);

*Client: SBI Ingenieurgesellschaft Nieste*

**Roggiasca, Barrage, Switzerland**

Stress measurements according to the method of compensation to evaluate the stress condition of the masonry dam (2016);

*Client: Elettricità Industriale SA*

**Rollenberg Tunnel, Pilot Tunnel, Germany**

Installation of measuring cross sections and execution of geotechnical measurements and tests, new railway line M/S (1983-1985);

*Client: PrGr M/S der Bahnbauzentrale, Bundesbahndirektion Karlsruhe*

**Rosenfeld, Germany**

Monitoring of boreholes in the masonry of the cemetery chapel in Rosenfeld (2014);

*Client: Bewer Ingenieure*

**Rosenheim, Building Project Klepperstreet, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2016);

*Client: GEOPLAN GmbH*

**Rosenthal, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS®, exploratory drillings for the L3077 (2014);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Rosberg and Steinberg Tunnel, Germany**

Execution of flexible dilatometer tests, new railway line H/W south (1983);

*Client: Arge Anger`s Söhne, Waschek GmbH*

**Rossla, Germany**

Execution and evaluation of flexible dilatometer tests to pre-investigate the new motorway BAB A38 Goettingen - Halle (1997);  
*Client: Terrasond GmbH + Co. KG*

**Rostock, Marienehe Heating Plant, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2018);  
*Client: BG Roßla mbH*

**Rothenfels Barrage, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2013);  
*Client: Terrasond GmbH & Co. KG*

**Rothenstein, Detour B 88, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with the optic scanner system ETIBS® (2004);  
*Client: Nöring & Preißler GmbH*

**Rothenstein, Tunnel, Germany**

Monitoring of drillings with the optic scanner system ETIBS® (2019);  
*Client: Alfred Kunz Untertagebau*

**Rottbitze Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack for the post-investigation programme of the Rottbitze tunnel, new railway line Koeln – Rhein/Main (1998);  
*Client: Schützeichel GmbH & Co. KG*

**Rottenburg / Neckar, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings on the area of the jail Rottenburg (2016);  
*Client: Goller Bohrtechnik GmbH & Co. KG*

**Rudersberg, Tunnel, Germany**

Stress measurements according to the compensation method (2019-);  
*Client: Gerätebau Wiedtal, Schützeichel GmbH & Co. KG*

**Rudersdorf, Tunnel, Germany**

Monitoring of exploratory drillings with a borehole camera (2019);  
*Client: Bohrgesellschaft Roßla mbH*

**Rudersdorf Tunnel, Germany**

Stress measurements according to the compensation method to estimate the lining strain (2007);  
*Client: gbm – Ges. für Baugeologie und –messtechnik mbH*

**Rudersdorf Tunnel, Germany**

Stress measurements according to the method of compensation to estimate the stress of the lining. Monitoring of all exploratory drillings with borehole camera (2013-14);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Rudersdorf Tunnel, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack (2014);

*Client: Arge Tunnel Rudersdorf (Vormann, Ivers)*

**Ruedesheim, Germany**

Execution of borehole jack tests with Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® for the removal of the railroad crossing (2015 and 2016);

*Client: Terra Control GmbH*

**Ruegen, Germany**

Execution of borehole jack tests with Ettlenger borehole jack in the course of pre-investigation for the renewing of a 20 KV electro cable from Seehof to Heiderose (2008);

*Client: Vormann & Partner GmbH*

**Ruesselsheim, Adam Opel AG, Germany**

Execution and evaluation of borehole jack tests with Ettlenger borehole jack in an exploratory drilling in the hall K62 (1999);

*Client: Terrasond GmbH & Co. KG*

**S7, Krakau – Zakopane, Tunnel Maly-Lubon, Poland**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system for the tunnel Maly-Lubon, Poland (2009-2010);

*Client: BOG GmbH*

**S10, Expressway Unterweikersdorf – Wulowitz, Germany**

Monitoring of drillings with the optic scanner system ETIBS® and the acoustic ABF system before and after primary stress measurements with Hydraulic Fracturing to detect the frac-orientation in the borehole (2005);

*Client: Golder Associates*

**S31, Mattersburg Crossroads – Weppersdorf Interchange, Austria**

Execution of borehole jack tests with Ettlenger borehole jack (2016-17);

*Client: Urban Brunnenbau & Tiefbohr GesmbH*

**Saarbruecken, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS® for the foundation ground expertise for the ministry for education and sports (2011);

*Client: Geotechnik Dr. Heer*

**Saarbruecken, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® to explore the cross-way building of the Deutsche Bahn (2017);

*Client: Bohrgesellschaft Roßla mbH*

**Saarbruecken, Johannes Bridge, Germany**

Camera monitoring of an exploratory drilling under the foundation of the bridge pier with the optic scanner system ETIBS® (1999);

*Client: WPW, Saarbrücken*

**Saarbruecken - Guedingen, Noise Abatement Wall, Germany**

Measurement of a pile load test with an inclinometer (1994);  
*Client: Ing.-Büro Rogmann GmbH*

**Saarbruecken, Diversion Dam, Germany**

Execution and evaluation of an in situ shear test (1992);  
*Client: Bundesanstalt für Wasserbau, Karlsruhe*

**Sabaloka, Sudan**

Execution of flexible dilatometer tests in exploratory drillings for the hydraulic power station Sabaloka. Monitoring of drillings with the optic scanner system ETIBS® (2008);  
*Client: DIU, Dams Implementation Unit*

**Sannerz, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system. Investigation for the backfill of debris in the ancient clay pit Paul (2010);  
*Client: Stölben GmbH*

**Saukopf Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the rescue gallery (2008);  
*Client: Terrasond GmbH & Co. KG*

**Scharnitz, Austria**

Execution of borehole jack tests with Ettliger flexible dilatometer in exploratory drillings for the detour Scharnitz (2013);  
*Client: BG Roßla mbH*

**Scheibenberg Tunnel, New Railway Line Paderborn - Kassel, Germany**

Execution and evaluation of borehole jack test with Stuttgarter borehole jack, new railway line Paderborn - Kassel (1992);  
*Client: H. Anger's Söhne GmbH & Co. KG, Hessisch Lichtenau*

**Scheuerfeld, Germany**

Monitoring of drillings with the borehole camera in the tunnel of the Westerwald railway line (2002);  
*Client: gbm - Ges. für Baugeologie und -messtechnik mbH*

**Schlossberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring with borehole camera, Stress measurements according to the compensation method (2019-);  
*Client: Gerätebau Wiedtal, Schützeichel GmbH & Co. KG*

**Schluechtern Tunnel, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Stuttgarter borehole jack, inclinometer measurements, primary stress measurements with the triaxial cell CSIRO according to the method of hard inclusion, construction planning of the new Schluechtern tunnel (1992-94);  
*Client: Waschek GmbH*

**Schluechtern Tunnel, Germany**

Execution of stress measurements according to the method of compensation in the tunnel masonry in the course of current repair works (1999);  
*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*



**Schluechtern Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, camera monitoring of ascending boreholes of the tunnel in the course of exploratory works for the reconstruction and renewing of the Schluechtern tunnel (2000-01);

*Client: Arge Terrasond/Schützeichel*

**Schmitt-Brombach, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2014);

*Client: Bodenmechanisches Labor Gumm*

**Schmuecke Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with the optic scanner system ETIBS® in the course of pre-investigation for the motorway BAB A71 (2003-04);

*Client: Arge Schmücketunnel (BOG-Roßla)*

**Schnarrenberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for recovery of the tunnel (1998);

*Client: Schützeichel GmbH & Co. KG*

**Schuerzeberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer, monitoring of the drillings with the optic scanner system ETIBS® and the acoustic ABF system, gamma measurements and loggings of borehole running (2010);

*Client: BG Roßla mbH*

**Schulberg Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests in exploratory drillings for the Schulberg tunnel, motorway BAB A44 Kassel - Herleshausen (2001);

*Client: Bohr- und Brunnenbau GmbH, Stedten*

**Schwaebisch Hall, Tunnel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2011);

*Client: Stölben GmbH*

**Schwarze Pumpe, Power-Station Schwarze Pumpe AG, Germany**

Execution of an in situ plate load test (1992);

*Client: Geo, Büro für Geotechnik Romberg GmbH, Darmstadt*

**Schwarzer Berg Tunnel, Germany**

Execution of borehole jack tests with flexible dilatometer and Ettliger borehole jack, camera monitoring with the optic borehole scanner in the course of pre-investigation for the motorway BAB A70 of Autobahndirektion Nordbayern (2001);

*Client: Terrasond GmbH & Co. KG*

**Schwarzkopf Tunnel, Germany**

Execution and evaluation of flexible dilatometer tests, stress measurements according to the compensation method, investigation to evaluate the stability of the tunnel (1997-98);

*Client: Schützeichel GmbH & Co. KG*

**Schwoerstadt, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system for the project TENP deodorisation site (2017);  
*Client: Terrasond GmbH & Co. KG*

**Seckach, Plaster Mine, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings above the abandoned plaster mine (2011);  
*Client: H. Anger's Söhne*

**Seeheim – Jugenheim, Germany**

Monitoring of drillings with the optic scanner system ETIBS®, exploratory drillings for the Lufthansa training center (2007);  
*Client: Stölben GmbH*

**Serfaus, Austria**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the reservoir HOEG (2011);  
*Client: BG Roßla mbH*

**Shereik, Sudan**

Execution of flexible dilatometer tests in exploratory drillings for the hydraulic power station Shereik (2007);  
*Client: DIU, Dams Implementation Unit*

**Shiabishe, Underground Powerhouse, Iran**

Execution of in situ stress measurements with the triaxial cell CSIRO and flexible dilatometer tests in the investigation tunnel (1985-86);  
*Client: Soletanche, Nanterre, France*

**Siegen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® for the new building of the university canteen (2017);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Sinaia, Romania**

Execution of borehole jack tests with Ettliger dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, borehole deviation measurements. Exploratory works for the tunnel Sinaia-Comarnic (2011-12);  
*Client: Terrasond GmbH & Co. KG*

**Solingen, Germany**

Execution and evaluation of flexible dilatometer tests in exploratory drillings at the L 407 - Solinger Street (1999);  
*Client: Knauber GmbH*

**Sooneck Castle, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2006);  
*Client: Schützeichel GmbH & Co. KG*

**Sprockhoevel, ENB culvert Stefansbach, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system (2019);

*Client: Deponata GmbH & Co. KG*

**Spitzeich Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with borehole camera and optic scanner system ETIBS<sup>®</sup>. Drillings on the surface and underground (2009);

*Client: Erkelenzer BG, Schützeichel GmbH & Co. KG*

**Stadtberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack. Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system. Exploratory drillings for the Federal Highway B 21 detour Bad Reichenhall, Stadtberg tunnel (2010);

*Client: Terrasond GmbH & Co. KG*

**Staffel-Siehrshahn, Arched Bridges Westerwald Railroad, Germany**

Underground reconnaissance with borehole TV camera in exploratory drillings in the abutments of the arched bridges (2014);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Starnberg, B2 By-Pass Tunnel, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack (2009);

*Client: Abt GmbH*

**Staufen, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, monitoring of drillings with optic scanner system ETIBS<sup>®</sup> and acoustic ABF system, primary stress measurements with the triaxial cell CSIRO (2009);

*Client: Anger's Söhne GmbH*

**Steinebach Valley Bridge, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack, pre-investigation for the motorway BAB A71 (1996);

*Client: BOG GmbH, Thüringer Bohrgesellschaft*

**Stetten am Heuchelberg, Germany**

Execution of borehole jack tests with Ettliger borehole jack in an exploratory drilling in the waste dump Stetten (2012);

*Client: Terrasond GmbH & Co. KG*

**Stetten am Kalten Markt, Germany**

Execution of borehole jack tests with Ettliger dilatometer, recording of the drillings with the optic scanner system ETIBS<sup>®</sup>. Exploratory drillings at the training area Heuberg (2007);

*Client: Stölben GmbH*

**Straßberg, Germany**

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> in the course of pre-investigation for a flood detention basin (2006);

*Client: Stölben GmbH*



**Stress Measurements in old Tunnels of the Deutsche Bundesbahn, Germany**

Possibilities and limits of stress measurements use on strain assessment of old tunnel supports; study (1990);

*Client: BZA München*

**Stuttgart 21, Site Versandstraße, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2018);

*Client: Terrasond GmbH & Co. KG*

**Stuttgart 21, Lots 1 + 2, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer, Ettliger borehole jack and pressiometer according to Ménard (1995);

*Client: Arge Lot 1 (Terrasond GmbH + Co. KG, Waschek GmbH, Geomechanik GmbH), Abt GmbH & Co*

**Stuttgart 21, 3rd EKP, Lots 1 - 7, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, primary stress measurements with the triaxial cell CSIRO, new railway line Stuttgart - Augsburg (1996-98);

*Client: ARGE Stuttgart 21 (Waschek GmbH, Terrasond GmbH + Co. KG)*

**Stuttgart 21, 4th EKP, Lots 1 - 7, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, new railway line Stuttgart - Augsburg (1997-99);

*Client: ARGE Stuttgart 21, 4. EKP and Hettmannsperger GmbH*

**Stuttgart 21, 5. EKP, Lots 1 – 7, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack, new railway line Stuttgart – Augsburg of the Deutsche Bahn (2002-03);

*Client: Arge Stuttgart 21, 5. EKP*

**Stuttgart 21, PFA 1.3b, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2016);

*Client: drillexpert GmbH*

**Stuttgart 21, PFA 2.1a/b – Large Wendlinger bend, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2019);

*Client: Terrasond GmbH & Co. KG*

**Stuttgart, City Railway Terminal Fasananhof, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings (2003);

*Client: Waschek Bohrtechnik GmbH & Co. KG*

**Stuttgart, City Railway U 15, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings (2003);

*Client: Kling Bohrtechnik GmbH*

**Stuttgart, City Railway U 15, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in exploratory drillings (2007);

*Client: Terrasond GmbH & Co. KG*

**Stuttgart, Daimler Benz, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack in exploratory drillings for the Daimler Benz Technology Center (2002);

*Client: Ing.-Büro Dr. Hafner*

**Stuttgart, EBGD Dorotheen Quarters, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2014);

*Client: Stölben GmbH*

**Stuttgart, Gaeubahn, Germany**

Execution and evaluation of flexible dilatometer tests (1997);

*Client: geo-Bohrtechnik GmbH*

**Stuttgart, Heilbronner Street, Germany**

Monitoring of an exploratory drilling with the optic scanner system ETIBS® (2012);

*Client: Goller Bohrtechnik GmbH & Co. KG*

**Stuttgart, LBS, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2018);

*Client: Goller Bohrtechnik GmbH & Co. KG*

**Stuttgart Neugereut, Germany**

Execution and evaluation of flexible dilatometer tests and borehole jack tests in exploratory drillings for the Steinhaldenfeld tunnel of the city railway line U2 (2000);

*Client: Terrasond GmbH & Co. KG*

**Stuttgart Panorama Street 25 – 27, Germany**

Execution of borehole jack tests with Ettliger borehole jack (2017);

*Client: Goller Bohrtechnik GmbH & Co. KG*

**Stuttgart, Rosenstein Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in the course of exploratory drillings for the B 10 tunnel Rosenstein (2006);

*Client: Terrasond GmbH & Co. KG*

**Stuttgart, Rossbollengaessle, Germany**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the underground car park Rossbollengaessle (2009);

*Client: Terrasond GmbH & Co. KG*

**Stuttgart, Suburban Train Stuttgart - Airport Bernhausen, Germany**

Execution of borehole jack tests with flexible dilatometer, primary stress measurements with the triaxial cell CSIRO, execution of air injection tests with online control of 13 levels with electrical pressure loggers and data recording unit (1995);

*Client: Erkelenzer Bohrgesellschaft, Schützeichel GmbH & Co. KG*

**Stuttgart, SWR Radio Station, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings for the new building near the broadcasting studio (2006);

*Client: Südwestrundfunk*

**Stuttgart, Trump Tower, Germany**

Execution and evaluation of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack in exploratory drillings for the Trump Tower (2002);

*Client: Terrasond GmbH & Co. KG*

**Stuttgart / Vaihingen, Germany**

Execution of primary stress measurements with the triaxial cell CSIRO for pre-investigation of the planned detour of Vaihingen (1995);

*Client: Waschek GmbH*

**Suhl, Germany**

Execution and evaluation of primary stress measurements with the triaxial cell CSIRO, borehole jack tests with Ettlenger dilatometer, camera monitoring with borehole scanner CORE BSS for investigation of an area damaged by mining (1997);

*Client: Thüringer Bohrgesellschaft*

**Sylvenstein Reservoir, Germany**

Execution of borehole jack tests with Ettlenger dilatometer in exploratory drillings (2009); ;

*Client: Stölben GmbH*

**Tai Chung, Taiwan**

Instrumentation and measuring of test piles with pile bottom load cells, dia 1.500 for pile loading tests until 2000 t for the Taiwan Highspeed Rail Project C 250 (2000-);

*Client: HBP Joint Venture, THSE Lot C 250*

**Tanahu HPP, Nepal**

Execution of borehole jack tests with Ettlenger flexible dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, stress measurements with the borehole slotter in the exploratory gallery for the Tanahu HPP (2017);

*Client: Lahmeyer International*

**Tauernkraftwerke AG, Austria**

Determination of the primary stress condition for an underground powerhouse according to the borehole-slotter-method (1989);

*Client: Tauernkraftwerke AG, Salzburg, Austria*

**Taunusstein, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup>, ground exploration for Feinkost Dittmann (2008);

*Client: Schützeichel GmbH & Co. KG*

**Tournemire, France**

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> (2007);

*Client; TU Clausthal*

**Trier, 2<sup>nd</sup> Sluice of the Mosel, Germany**

Camera monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> (1999);

*Client: Wasser- und Schifffahrtsamt Trier*

**Trier, 2<sup>nd</sup> Sluice of the Mosel, Germany**

Execution of borehole jack tests with Ettlenger borehole jack and Ettlenger dilatometer. Insertion of boreholes to interstitial pressure measuring points with automatic data acquisition (2007);

*Client: Erkelenzer BG*

**Trier, Pump Storage Power Station RIO, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system, monitoring of a drilling with borehole camera, borehole development measurement (2013);

*Client: Geopartner S.à.r.l.*

**Tuebingen, B 27 Junction of Tuebingen, Germany**

Execution of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of drillings with the optic scanner system ETIBS®. Exploratory drillings for the Schindhau base tunnel (2006);

*Client: geo-Bohrtechnik GmbH*

**Tuellinger Tunnel, Germany**

Stress measurements according to the compensation method in the brickwork of an old tunnel(1990);

*Client: BZA München und Bundesbahndirektion Karlsruhe*

**Tuellinger Tunnel, Germany**

Stress measurements according to the method of compensation, assessment of tunnel stability (2013);

*Client: gbm – Ges. für Baugeologie und -messtechnik mbH*

**Ulm, Germany**

Monitoring of an exploratory drilling with the acoustic ABF system in the course of the reconstruction Nordkopf Ulm (2016);

*Client: BauGrund Süd GmbH*

**Ulm, Cathedral, Germany**

Stress measurements according to the compensation method in the steeple dome of the southern chancel steeple (2003);

*Client: Glötzl GmbH*

**Urft Barrage, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer in boreholes inside the barrage (1998);

*Client: Wasserverband Eifel-Rur*

**Venhaus, Sluice, Germany**

Execution of borehole jack tests with Ettliger dilatometer. Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2010);

*Client: Arge BG AA DEK Nordstrecke*

**Vianden, Pump Storage Station, Germany**

Execution of flexible dilatometer tests, monitoring of boreholes with the optic scanner system ETIBS® in exploratory drillings for the extension of the pump storage station Vianden (2008);

*Client: Feldhaus Bergbau GmbH + Co. KG*

**Viereth, Weir System, Germany**

Monitoring of exploratory drillings with a borehole camera (2016);

*Client: Sieberns & Stepanowicz GmbH*

**Vomp/Fiecht Investigation Galleries, Austria**

Execution of horizontal double plate load tests, primary stress measurements with the triaxial cell CSIRO, execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in investigation galleries of the railway axis Brenner, access section north, section Kundl/Radfeld-Baumkirchen (2002);

*Client: Brenner Eisenbahn GmbH, Insond Ges. m.b.H.*

**Wagrain, Austria**

Execution of borehole jack tests with Ettliger borehole jack in exploratory drillings for the ponds Wagrainer Hoehe II and Hoellenstein (2012 and 2013);

*Client: BG Roßla mbH*

**Walchensee, Barrage, Germany**

Camera monitoring of exploratory drillings in the course of stability controls of the water castle dam, installation of packers with pneumatic foundation water pressure transducers (1998);

*Client: Terrasond GmbH + Co. KG*

**Waldau, Germany**

Execution and evaluation of flexible dilatometer tests during the pre-investigation for the new motorway BAB A73 between Schleusingen and Eisfeld North (1996);

*Client: Terrasond GmbH + Co. KG*

**Waldbaerenburg, Germany**

Execution of borehole jack tests with Ettliger dilatometer in exploratory drillings for the flood control basin Waldbaerenburg (2010);

*Client: Terrasond GmbH & Co. KG*

**Waldeck I, Power Station, Germany**

Monitoring of drillings with the optic scanner system ETIBS® and execution of borehole jack tests with Ettliger borehole jack in the course of investigation for the new building (2004 and 2006);

*Client: Lahmeyer International GmbH, Bilfinger Berger*

**Waldeck II, Power Station, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic system ABF, execution of borehole jack tests with Ettliger dilatometer for the extension of the Power Station Waldeck II (2009-10);

*Client: Arge PSW Waldeck (Terrasond, Schützeichel, BOG), Bohrgesellschaft  
Roßla*

**Waldeck II, Power Station, Germany**

Execution of borehole jack tests with Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS®, determination of primary stress state with borehole slotter, borehole development measurements in underground exploratory drillings for the transformer and machine cavern (2011);

*Client: BG Roßla mbH*

**Waldrems, Germany**

Execution of borehole jack tests with Ettliger borehole jack, geophysical measurements (caliber, flowmeter, temperature and conductivity) in exploratory drillings for the B14 tunnel Waldrems (2011);

*Client: Andreas Goller Bohrtechnik*



**Waldshut-Tiengen, Klettgau-Carree, Germany**

Monitoring of exploratory drillings with the acoustic ABF system (2018);  
 Client: *Drillexpert GmbH*

**Wambach, Federal Highway B260, Germany**

Execution of borehole jack tests with flexible dilatometer and Ettlinger borehole jack, installation of multiple extensometers (1995);  
 Client: *Waschek GmbH*

**Wank Tunnel, Federal Highway B 2, Germany**

Execution of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in exploratory drillings for the rerouting of the Federal Highway B2 east of Garmisch-Partenkirchen (2010 and 2011);  
 Client: *BG Roßla mbH, Arge Wanktunnel (E+M, Abt)*

**Warstein, Federal Highway B55n, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer and Ettlinger borehole jack in the course of pre-investigation for the B55n detour of Warstein (2003-04);  
 Client: *Knauber GmbH*

**Wasungen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system, execution of borehole jack tests with Ettlinger flexible dilatometer and Ettlinger borehole jack, exploratory drillings for the B19 detour Wasungen (2013 and 2016);  
 Client: *BOG GmbH*

**Wasseralfingen, Detour, Germany**

Execution and evaluation of flexible dilatometer tests (1990);  
 Client: *Keller & Hahn, Insingen*

**Weida, Barrage, Germany**

Execution and evaluation of borehole jack tests with flexible dilatometer and Ettlinger borehole jack in the course of preparatory works for redevelopment of the anticlinal wall (1995);  
 Client: *Anger's Söhne GmbH & Co. KG*

**Weida, Barrage, Germany**

Execution and evaluation of borehole jack tests with Ettlinger dilatometer in boreholes downstream of the barrage and in the control gallery (1997);  
 Client: *BOG GmbH*

**Weilburg, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> for the projected pump storage station Weilburg (2011);  
 Client: *Schützeichel GmbH & Co. KG*

**Weilburg, Germany**

Monitoring of an exploratory drilling for the school of Weilburg with the optic scanner system ETIBS<sup>®</sup> (2010);  
 Client: *Schützeichel GmbH & Co. KG*

**Weingarten, Germany**

Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup> for the building project Goerner (2006);  
 Client: *Hettmannsperger GmbH*

**Weinsberg Tunnel, Germany**

Execution of in situ stress measurements in the tunnel wall for reconstruction works (1989);  
*Client: DB Bundesbahndirektion Stuttgart*

**Weissach, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® for the enlargement of the Porsche factory in Weissach (2013);  
*Client: Henke und Partner GmbH*

**Weissensteiner Tunnel, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer and Ettlenger borehole jack, stress measurements according to the method of compensation, monitoring of underground drillings with borehole camera (2017);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Wenden, BV Caritas, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2019);  
*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Wetzell, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack in the course of foundation exploration for the satellite station Wetzell (1998);  
*Client: BOG GmbH*

**Wetzlar, Germany**

Execution of borehole jack tests with Ettlenger dilatometer and Ettlenger borehole jack, exploratory drillings for the enlargement WEST at the waste dump Eulingsberg (2009);  
*Client: Schützeichel GmbH & Co. KG*

**Weyer, Detour, Austria**

Execution of borehole jack tests with Ettlenger borehole jack (2018);  
*Client: Felbermayr Bau GmbH & Co. KG*

**Wildberg – Kengel Tunnel, Germany**

Execution of borehole jack tests with Ettlenger borehole jack, monitoring of the boreholes with borehole camera, stress measurements according to the method of compensation (2016);  
*Client: BG Roßla mbH*

**Wincheringen, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2019);  
*Client: Terrasond GmbH & Co. KG*

**Windeck, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® in the course of pre-investigation for the extension of the county road K 23 (2000);  
*Client: BLM GmbH*

**Winden, Germany**

Execution of borehole jack tests with Ettlenger flexible dilatometer, monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system in the course of the pre-investigation for the detour B294 Winden (2016);  
*Client: drillexpert GmbH*

**Wintrich, Sluice, Germany**

Camera monitoring with the borehole scanner CORE BSS in exploratory drillings for the sluice Wintrich (1996);

*Client: Wasser - und Schifffahrtsamt Trier*

**Wisenta and Walsburg, Dams, Germany**

Execution of borehole jack tests with Ettlinger dilatometer. Monitoring of exploratory drillings with the optic scanner system ETIBS® (2008);

*Client: BOG GmbH*

**Witten, Old Deposit "An der Schlinke", Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® and the acoustic ABF system (2015);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Wittighausen Tunnel, Germany**

Execution of borehole jack tests with Ettlinger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS®. Monitoring of drillings in the tunnel with borehole camera (2015-16)

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Wittlich, Germany**

Monitoring of boreholes with the borehole camera (2019);

*Client: Stölben GmbH*

**Wittlich, JDC, Germany**

Monitoring of boreholes with the borehole camera (2020);

*Client: Stölben GmbH*

**Woergl West, Inn Crossing, Austria**

Execution of borehole jack tests with Ettlinger borehole jack in an exploratory drilling for the Inn crossing Woergl West (2017);

*Client: Plankel Bohrungen GmbH*

**Woerth, Sound-proofing Wall Maximiliansau, Germany**

Execution of pile load tests (1995);

*Client: Reif GmbH & Co. KG*

**Wolfach, Clinical Center, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS® (2007);

*Client: Erkelenzer BG*

**Wolfstein, Wind farm, Germany**

Befahrung der Erkundungsbohrungen mit dem optischen Bohrlochscanner ETIBS® (2019);

*Client: S-BB Baustoffprüfung GmbH*

**Worringen, Canal, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in exploratory drillings for the canal Worringen, town drainage Cologne (2008);

*Client: Schützeichel GmbH & Co. KG*

**Wuennenberg, Detour, Germany**

Execution of borehole jack tests with Ettliger dilatometer, monitoring of boreholes with the optic scanner system ETIBS<sup>®</sup> and the acoustic scanner ABF, borehole development measurements (2008 and 2013);

*Client: Terrasond GmbH & Co. KG, BOG GmbH*

**Wuerzburg, Wintershaeuser Source, Germany**

Execution and evaluation of borehole jack tests with Ettliger borehole jack (1996);

*Client: Ost-West Bohr-Equipment Vertrieb GmbH*

**Wuppertal, Helios Hospital, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2003);

*Client: Erkelenzer Bohrgesellschaft mbH*

**Wuppertal, Kiesberg Tunnel, Germany**

Monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> (2009);

*Client: Schützeichel GmbH & Co. KG*

**Yedigoel & Aksu HPP, Turkey**

Execution of borehole jack tests with Ettliger dilatometer, monitoring of drillings with the optic scanner system ETIBS<sup>®</sup>, determination of state of stress with the borehole slotter. Exploratory drillings in the pressure galleries for the power station projects Yedigoel and Aksu (2010);

*Client: Eren Jeoteknik*

**Zelgenberger Tunnel, Germany**

Execution of borehole jack tests with Ettliger borehole jack, stress measurements according to the method of compensation, monitoring of underground drillings with borehole camera (2017);

*Client: Gerätebau Wiedtal Schützeichel GmbH & Co. KG*

**Zeltingen, Sluice, Germany**

Camera monitoring with the borehole scanner CORE BSS in exploratory drillings for the sluice Zeltingen (1996);

*Client: Bundesanstalt für Wasserbau*

**Ziegenberg Tunnel, Germany**

Stress measurements according to the compensation method, evaluation of the stability and assessment of reconstruction necessity of the tunnel (1990-1991);

*Client: DB Bundesbahndirektion Frankfurt/M.*

**Ziegenberg Tunnel, Germany**

Execution of borehole jack tests with Ettliger flexible dilatometer and Ettliger borehole jack, monitoring of exploratory drillings with the optic scanner system ETIBS<sup>®</sup> and the acoustic ABF system and with borehole camera (2018);

*Client: BG Roßla mbH*

**Zierenberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack in exploratory drillings of the Zierenberg tunnel, camera monitoring of drillings (1999);

*Client: Schützeichel GmbH & Co. KG*

**Zierenberg Tunnel, Germany**

Execution and evaluation of borehole jack tests with Ettliger dilatometer and Ettliger borehole jack. Monitoring of drillings with the optic scanner system ETIBS<sup>®</sup>. Exploratory drillings for the new



Zierenberg tunnel (2006);  
*Client: Bohrgesellschaft Roßla*

**Zierenberg Tunnel, Germany**

Camera monitoring of exploratory drillings in the tunnel, borehole jack tests with Ettlinger borehole jack and optic investigation with the scanner system ETIBS<sup>®</sup> of surface drillings (2003-04);  
*Client: Schützeichel GmbH & Co. KG*

**Zuffenhausen, Germany**

Execution of borehole jack tests with Ettlinger borehole jack in an exploratory drilling in the area of Porsche Zuffenhausen (2016);  
*Client: drillexpert GmbH*

**Zweibruecken, Airfield Area, Germany**

Execution of borehole jack tests with the pressiometer according to Ménard and with Ettlinger borehole jack before and after the dynamic intensive soil compression to control the effectiveness of the compression (1997);  
*Client: Geotechnik Hundhausen*