


**INVESTIGATION AND UTILITY GALLERIES,
CAVERNS, SHAFTS AND HYDROELECTRIC
POWER PLANTS**

Selected References
Projects considered since 2010

AUSTRIA		
Owner Client	Project Services	Year Project Type
Verbund AG ARGE PSW Limberg III - Marti/Porr/Hinteregger	HEPP Limberg III, 480 MW; headrace tunnel I = 3.000 m and penstock I = 584 m (TBM), powerhouse and transformer caverns (85.000 m ³ excavation volume), several other tunnels, galleries and shafts with 4.500 m length Construction and heading survey, geotechnical monitoring and instrumentation, Tauros TBM guidance system, EUPALINOS	2021 - Hydropower
TIWAG ARGE SKW Kühltai - Swietelsky/Jäger/Bodner	HEPP Kühltai, 130 MW; water transmission tunnel I = 25 km (TBM); power house cavern with 80.000 m ³ excavation volume and 4 km NATM tunnels, rockfill dam 113 m high, crest length 510 m and 2 km NATM galleries Construction and heading survey, geotechnical monitoring and instrumentation, EUPALINOS	2021 - Hydropower
Verbund AG ÖSTU-Stettin	HEPP ESA Reisseck II plus; efficiency enhancement plant, access tunnel, headrace tunnel, tailrace tunnel, by-pass and drainage tunnel, total length 890 m, power house cavern Construction and heading Survey, supply of geotechnical instruments, EUPALINOS	2021 - 2022 Hydropower
ÖBB ARGE Untertagebau KW Obervellach II - ÖSTU- Stettin/Jäger Bau	Traction Power Station Obervellach II; 37 MW, headrace tunnel I = 3.862 m, access tunnel, 2 inclined galleries, total length 380 m, storage tunnel and plant chamber I = 662m Construction and heading Survey, supply of geotechnical instruments, EUPALINOS	2020 - 2023 Hydropower

Selected references

Investigation and utility galleries, caverns, shafts and hydroelectric power plants



Owner Client	Project Services	Year Project Type
ÖBB ÖBB, Swietelsky Tunnelbau	HEPP Tauernmoos 170 MW; power house cavern, tailrace tunnel l = 1,6 km, access tunnels total length approx. 4,2 km Geotechnical monitoring and instrumentation, EUPALINOS	2020 - 2023 Hydropower
illwerke vkw AG ÖBB, Swietelsky Tunnelbau	Rodundwerk I; penstock tunnel l = 300 m, penstock shaft l = 470 m, 36° inclined TAUROS TBM guidance system	2020 - 2021 Hydropower
Octapharm ÖSTU-Stettin	Medientunnel Inneryard/Basiy neu; l = 14 m Heading Survey, TALOS motorlaser, EUPALINOS	2019 Utility tunnel
Verbund/TIWAG/ Engadiner Kraftwerke ARGE GKI Maria Stein - STRABAG/Jäger/ Hinteregger	Comunity HEPP Inn (Austria/Switzerland), 89 MW; power house Prutz/Ried and headrace tunnel, l = 23,2 km Geotechnical monitoring incl. optical 3D deformation, construction and heading survey, network and control survey, profile check, gyro measurements, EUPALINOS	2017 - 2022 Hydropower
Austrian Federal Forests ÖSTU-Stettin	HEPP Taurach; penstock l = 420 m Optical 3D displacement, construction and heading survey, network and control survey, profile check, motor laser system, EUPALINOS	2017 Hydropower
KELAG Züblin	HEPP Feldsee; raising of the storage dam GEOROBOT automatic 3D displacement monitoring	2015 Hydropower
Ski Area Operator Zauchensee HTB Bauges. mbH	Gallery Zauchensee; water supply for snow canons, l = 130 m Construction and heading survey, motor laser, EUPALINOS	2015 Water supply
KELAG HTB Bauges. mbH	HEPP Reisseck; widening of existing tunnel, l = 40 m Construction and heading survey, EUPALINOS	2014 - 2015 Hydropower
MA 31, City of Vienna Marti GmbH	Neubrucker Lehenstollen; drinking water supply, l = 1.075 m Construction and heading survey, geotechnical monitoring and instrumentation incl. 3D displacements, vibration monitoring, EUPALINOS	2014 - 2016 Water supply
Vorarlberger Illwerke Pöyry Illwerke	HEPP Obervermunt II, 360 MW; pumped-storage power plant, several galleries with total l = 8,1 km, powerhouse and transformer caverns Construction and heading survey, geotechnical instrumentation	2014 - 2017 Hydropower
ÖBB Infrastructure Bemo Tunneling	HEPP Tauernmoos; investigation gallery l = 850 m Construction and heading survey, geotechnical monitoring incl. 3D displacement, EUPALINOS	2013 Investigation for Hydropower

Selected references

Investigation and utility galleries, caverns, shafts and hydroelectric power plants



Owner Client	Project Services	Year Project Type
Project Company KWK Stanzertal JV ÖSTU-Stettin/ Hinteregger	HEPP Stanzertal, 20 MW; headrace and pressure tunnel l = 5,4 km Geotechnical monitoring incl. optical 3D displacement, construction and heading survey, network and control survey, gyro measurements profile check, motor laser system, TAUROS TBM guidance system, EUPALINOS	2013 - 2015 Hydropower
TIWAG Swietelsky Bau GmbH	HEPP Kaunertal 900 MW; upgrading of existing plant, headrace gallery, l = 4.500 m, access tunnel, inspection tunnel & shafts with total l = 1.000 m Optical 3D deformation monitoring, construction and heading survey, network and control survey, profile check, motor laser system, EUPALINOS, KRONOS tunnel information system, TAUROS TBM guidance system	2012 - 2014 Hydropower
ÖBB Infrastructure ÖBB Infrastructure	Ventilation structure Paierdorf; complex underground structure for ventilation purposes as part of Koralm tunnel high speed rail Geotechnical instrumentation, optical 3D deformation monitoring	2012 - 2013 Ventilation
VERBUND AHP ARGE PSKW Reisseck II – Hinteregger/ÖSTUStettin/ Porr/Swietelsky	HEPP Reisseck II, 430 MW; pumped storage power plant, upgrading of existing power plant scheme Malta/Reisseck, headrace and pressure shaft, l = 5,3 km, powerhouse and transformer caverns Optical 3D deformation monitoring, geotechnical instrumentation, construction and heading survey, network and control survey, profile check, motor laser system, tunnel scanner, TAUROS TBM guidance system, KRIOS online monitoring system, EUPALINOS	2010 - 2014 Hydropower
TIWAG Alpine Bemo Tunneling	HEPP Kühtai; investigation gallery Längental, l = 735 m Optical 3D deformation monitoring, construction surveying and heading control, EUPALINOS	2010 Hydropower
STRABAG STRABAG	Mucking Gallery Diabas; Saalfelden, l = 3.000 m Heading survey, TAROS machine guidance system, EUPALINOS	2008 - 2010 Haulage
VOESTALPINE ÖSTU-Stettin	Gallery Annaberg; Leoben, water supply concept for steel plant, l = 600 m Construction and heading survey, profile check, EUPALINOS	2007 - 2008 Water supply
VERBUND AHP JV Jäger/STRABAG/ Frutiger	HEPP Hieflau, 63 MW; headrace tunnel, l = 600 m drill & blast and 4.900 m TBM excavation Optical 3D deformation monitoring, construction and heading survey, network and control survey, profile check, motor laser system, TAUROS TBM guidance system, EUPALINOS	2007 - 2009 Hydropower

Selected references


Investigation and utility galleries, caverns, shafts and hydroelectric power plants





Owner Client	Project Services	Year Project Type
SALZBURG AG Jäger Bau	HEPP Hintermuhr 104 MW; pumped storage power plant, penstock, l = 129 m Geotechnical monitoring and instrumentation incl. 3D displacement monitoring, construction and heading survey, EUPALINOS	2006 - 2007 Hydropower
VERBUND AHP JV Hinteregger/ ÖSTUStettin/ Porr/Swietelsky	HEPP Limberg II, 480 MW; pumped-storage power plant, headrace, l = 4.200 m, penstock 45%, l = 770 m, power house cavern 66.650 m ³ , NATM and TBM excavation. Total l = 15 km Geotechnical monitoring and instrumentation incl. 3D displacement, laser scanning, gyro measurements, motor laser system, TAUROS machine guidance, KRIOS online monitoring system, EUPALINOS	2006 - 2010 Hydropower


Explanation of abbreviations for Austria owners and clients:


ARGE	Joint venture companies
ASFINAG	Austrian federal road administration (responsible for construction, maintenance and financing of the Austrian freeways)
ÖBB	Federal railway company


GERMANY		
Owner Client	Project Services	Year Project Type
Emschergenossenschaft ÖSTU-Stettin/ Hinteregger	Emscher Sewage Canal, BA40; 10 km section between Bottrop and Oberhausen with to parallel shield tubes, total l = 20 km 3D displacement monitoring, construction and heading survey, network and control survey, profile check, motor laser system, EUPALINOS	2014 - 2016 Waste water
Regional Authority in Baden-Württemberg ARGE Emscher ba 40	Emergency tunnel Hugenwald, B294; emergency tunnel for existing road tunnel, l = 1.200 m Geotechnical monitoring and instrumentation, construction and heading survey, network and control survey, gyro measurements	2011 - 2012 Tunnel safety


DENMARK		
Owner	Project	Year
Client	Services	Project Type
HOFOR	Kalvebod Brygge Cloudburst Tunnel ; l = 1.250 m	2021 -
HOFOR	Surface monitoring (3D-displacement), noise and vibration monitoring, extensometer	Flood protection


ENGLAND		
Owner	Project	Year
Client	Services	Project Type
Bazalgette Tunnel Limited	Thames Tideway West ; 6 km sewer tunnel from Acton in West	2015 - 2016
BMB JV	London to Wandsworth in South West London Operation of KRONOS tunnel information system	Waste water


GREECE		
Owner	Project	Year
Client	Services	Project Type
INTRAKAT	Aposelemis Tunnel ; 3,5 km long water supply tunnel in Creta	2014 - 2018
Jäger Bau	TAUROS TBM guidance system	Water supply


ITALY		
Owner	Project	Year
Client	Services	Project Type
ANAS	SS38 Morbegno ; escape tunnel l=2,3 km	2017
Hinteregger	TAUROS TBM guidance system	Tunnel safety
AHR-ENERGIE G.m.b.H.	HEPP In der Klamme, 8,7 MW ; penstock, l = 1.300 m	2010
STRABAG	Optical 3D deformation monitoring, EUPALINOS	Hydropower


NORWAY		
Owner	Project	Year
Client	Services	Project Type
VAV Oslo Kommune Marti AS	Tunnel Skullerud - Enebakkveien; l = 3.320 m (drill & blast), 2 access galleries l = 100 m + 200 m, 2 shafts Construction and heading survey, EUPALINOS	2020 - Water supply


TURKEY		
Owner	Project	Year
Client	Services	Project Type
Enerji SA Sargin Construction	HEPP Dogancy, 62 MW; headrace tunnel, l = 6.900 m TAUROS TBM guidance system, GNSS network and control survey	2012 - 2015 Hydropower


LESOTHO		
Owner	Project	Year
Client	Services	Project Type
Lesotho Highlands Development Authority KOPANO KE MATLA JV	Polihali Transfer Tunnel; water is transferred via the penstock to the ‚Muela‘ hydropower station, and then on to the Ash River outlet, L = 38 km. EUPALINOS, training	2023 - Water supply Hydropower

CANADA		
Owner	Project	Year
Client	Services	Project Type
Regional Municipality of Halton STRABAG Inc.	Mid Halton Outfall Tunnel; wastewater tunnel, l = 6,3 km, 2 x 60 m deep shafts EUPALINOS	2015 - 2017 Waste water
Ontario Power Generation STRABAG Inc.	Niagara Tunnel Facility Project; diversion tunnel, l = 10,2 km Network and control survey, gyro measurements, EUPALINOS	2009 - 2011 Hydropower

USA		
Owner Client	Project Services	Year Project Type
Orange County California KEC Engineering	Edinger Storm Channel Improvements; Huntington Beach, CA, water channel undercrossing IS 405, l = 85 m Optical 3D displacement monitoring, GeoRobot automatic 3D monitoring, KRONOS tunnel information system, EUPALINOS	2012 - 2014 Flood protection

CHILE		
Owner Client	Project Services	Year Project Type
Alto Maipo S.p.A. Strabag SE	HEPP Alto Maipo, Alfafal II und Las Lajas section, 531 MW total; Alfafal II headrace tunnel, l = 14,5 km, Alfafal II tailrace tunnels, l = 3,4 km, Las Lajas headrace tunnel 1 & 2, l = 5,8 + 3,7 km, Las Lajas tailrace tunnel, l = 12,9 km, access tunnels, l = 4,3 km, 2 power house caverns and several shafts, NATM and TBM excavations Total length: TBM 30,8 km; NATM 44,5 km Optical 3D displacement monitoring, construction and heading survey, network and control survey, gyro measurements, profile check, TALOS motor laser systems, EUPALINOS	2013 - Hydropower

BHUTAN		
Owner Client	Project Services	Year Project Type
SJVNL/Druk Green Power Corp. Druk Green Power Corp.	HEPP Kholongchu, 600 MW; headrace tunnel, l = 15,8 km, diversion tunnel, l = 420 m, power house cavern Geotechnical instruments, EUPALINOS	2014 - 2019 Hydropower

INDIA		
Owner Client	Project Services	Year Project Type
ISPRL Hindustan Constr. Comp. (HCC)	Padur Crude Oil Strategic Storage Project Unit 1; 2 caverns, 656 m/20 m/ 30 m (L/B/H) and 2 caverns, 700 m/ 20 m/ 30 m (L/B/H), capacity: 2,5 MMT Optical 3D displacement monitoring, EUPALINOS, KRONOS tunnel information system, training & consulting, laserscanning, calculation of strapping tables	2011 - 2014 Storage

Selected references

Investigation and utility galleries, caverns, shafts and hydroelectric power plants



Owner Client	Project Services	Year Project Type
LANCO Teesta Lanco Infratech Ltd.	HEPP Teesta VI, 520 MW; North-Sikkim, 2 headrace tunnels, l = 13,65 km, 4 tailrace tunnels, l = 250 m Optical 3D displacement monitoring, consulting & training, EUPALINOS	2010 - 2011 Hydropower
DANS Energy Pvt Ltd. DANS Energy Pvt Ltd.	HEPP Jorethang Loop, 96 MW; head race tunnel, l = 6,8 km, tailrace tunnel, l = 30 m, surge shaft, d = 25 m Optical 3D displacement monitoring, consulting & training, EUPALINOS	2010 - 2013 Hydropower
Brihan Mumbai Municipal Corp. (BMC) Pratibha/ÖSTU-Stettin	IV Mumbai Water Supply Project; intake tunnel, l = 7,5 km, high pressure tunnel, l = 15,1 km Construction surveying and heading control, network and control survey, gyro measurements, consulting & training, EUPALINOS	2009 - 2010 Water supply

ISRAEL



Owner Client	Project Services	Year Project Type
Ellomay Pumped Storage Electra	Manara hydroelectric plant; powerhouse cavern, pressure shaft about 620 m deep and pressure tunnel l = 470 m, headrace tunnel l = 1500 m, tailrace tunnel l = 1500 m. Supply of targets for 3D- displacement monitoring, motor laser, EUPALINOS, training	2022 - Hydropower