


METRO AND MASS TRANSIT TUNNELS


Selected References
Projects considered since 2010


AUSTRIA		
Owner Client	Project Services	Year Type
Wiener Linien ARGE U2 17-21 (Strabag/Porr)	U2/17-21 ; approx. 2 x 2 km single track TBM tunnels; 4 stations, 3 track change facilities with emergency exits (NATM), several shafts and connecting structures to the existing lines U3 and U4. The new line extends from the neighboring lot U2/22 Rathaus to Matzleinsdorfer Platz and runs in densely built-up areas. The total length is 3.277 m. Construction and heading survey, motorlaser systems, tunnel laser scanner, geotechnical monitoring and instrumentation incl. 3D displacements for all underground EUPALINOS	2021 -
Wiener Linien ARGE U2 x U5 Rathaus/ Frankhplatz (Swietelsky/ Habau/Hochtief)	U2/22 „Rathaus“, U5/2 „Frankplatz“ ; The existing U2 station Rathaus will be upgraded to a U2/U5 line hub. The line U2 from Karlsplatz to Rathaus will be part of the new fully automated operating U5. Therefore extensive underground construction work for the station Rathaus is required. Tunnelling for the 2 stations and about 2 x 1.300 m single track tunnels will be done by NATM Construction and heading survey, motorlaser systems, tunnel laser scanner, geotechnical monitoring and instrumentation incl. 3D displacements for all underground works, EUPALINOS	2021 -


AUSTRIA		
Owner Client	Project Services	Year Type
Wiener Linien Swietelsky/ Max Bögl	U1/8 Alaudagsse; 2 x 350 m single track subway tunnel (NATM), 237 m C&C station box and 85 m switch shaft Geotechnical monitoring incl. 3D displacements, network and control survey, construction and heading survey, motor laser systems, tunnel laser scanner, KRONOS tunnel information system, EUPALINOS	2013 - 2016
Wiener Linien STRABAG	U1/9 Altes Landgut & U1/10 Troststraße; 2 x 518 m single track and 1.225 m twin track subway tunnels (NATM), 2 stations each 120m (partially NATM), 2 x 40 m cross passages Geotechnical monitoring and instrumentation incl. 3D displacements, network and control survey, construction and heading survey, motor laser systems, tunnel laser scanner, IP-inclinometers and rotating laser level system with automatic data acquisition, KRONOS information system, EUPALINOS	2013 - 2016
Linz AG Hinteregger/ÖSTU-Stettin/ Dywidag	Tramway Harter Plateau; Linz, 2 single track tubes 2 x 1.000 m, C&C section 440 m Construction and heading survey, geotechnical instrumentation, EUPALINOS	2009 - 2010


Explanation of abbreviations for Austria owners and clients:


ARGE Joint venture companies


DENMARK		
Owner Client	Project Services	Year Type
Copenhagen Metro Metroselskabet	Nordhavn extension of Copenhagen Metro; The Nordhavnen Metro comprises a 3 km track with two new stations and one shaft KRONOS tunnel information system, geotechnical instrumentation, GEOROBOT – automatic 3D deformation monitoring, EUPALINOS	2014 -2020
Copenhagen Metro Metroselskabet	Cityringen; extension of Copenhagen Metro, ring line, two single-track tunnels, l=15,5 km, 17 stations with average dimensions of 65 x 20 m, three construction and ventilation shafts, a ramp structure and subsidiary structures Geotechnical instrumentation, optical 3D deformation monitoring, GEOROBOT- automatic 3D deformation monitoring, automatic data acquisition, KRONOS tunnel information system, EUPALINOS	2011 - 2018
Copenhagen Metro Metroselskabet	Sydhavn extension of Copenhagen Metro; The extension will be 4.5 km long and consist of five new stations from Fisketorvet to Ny Ellebjerg. KRONOS tunnel information system, 3D displacement on the surface, noise and vibration monitoring, slab track surveying	2017 -


FRANCE		
Owner Client	Project Services	Year Type
Société du Grand Paris ARGE AVENIR (Demathieu Bard Construction / Pizzarotti / Implenla /Bam Contractors)	Grand Paris Express Ligne 17, Lot 1; around 6 km tunnel, 2 stations (Le Bourget Aéroport and Triangle de Gonesse), 6 annexes (mainly ventilation shafts and safety access shafts) KRONOS tunnel information system	2019 -


GERMANY			
Owner Client	Project Services	Year Type	
DB Netze Geoconsult Germany	2. Core S-Bahn route Munic, VE 30 Main station with tunnel, VE 41 station Marienhof; 2 TBM tunnels l = 2x 2.974 m, 2 stations Construction supervision. The services include the monitoring activities during construction for surveying services incl. documentation of all results	2019 -	
City of Dortmund Wayss & Freytag	Stadtbahn Dortmund, line III, lot S 10.1.2; alteration of the main station, all in all 1.300 m NATM tunneling with cross-sections from 36 to 185 m ² TALOS motor laser, EUPALINOS surveying software	2015 - 2016	


GREAT BRITAIN			
Owner Client	Project Services	Year Type	
London Underground Bechtel	London Underground Vauxhall Station Upgrade; The station, its subways and stairways will be completely refurbished and a lift will be installed between the ticket hall and platforms KRONOS tunnel information system, geotechnical instrumentation, GEOROBOT - automatic 3D-deformation monitoring, EUPALINOS	2012 - 2015	
Crossrail JV BAM/Ferrovial/Kier	Crossrail London, C410, Bond Street & Tottenham Court Road Station; construction of two underground station buildings (NATM) KRONOS tunnel information system, optical 3D deformation monitoring, EUPALINOS surveying software, construction surveying and heading control, network and control surveys, profile check, tunnel scanner	2012 - 2016	
Crossrail JV Lain O'Rourke/ STRABAG/ Züblin	Crossrail London, C430, Farringdon Station, subsurface interchange between Thameslink, Crossrail and London Underground; construction of the eastern and western integrated ticket halls, both surrounded by residential and commercial properties Geotechnical instrumentation, optical 3D deformation monitoring, GEOROBOT – automatic 3D deformation monitoring, automatic data acquisition, KRONOS tunnel information system, environmental monitoring, construction surveying and heading control, network and control surveys, EUPALINOS surveying software	2011 - 2013	


GREECE			
Owner Client	Project Services	Year Type	
Attiko Metro Aktor ATE	Metro Thessaloniki, extension Kalamaria; 2 parallel 1-track tunnels, excavation with 2 TBMs, 5 stations, total l = 4.780 m Geotechnical instrumentation, optical 3D deformation monitoring, GEOROBOT – automatic 3D deformation monitoring, automatic data acquisition, KRONOS tunnel information system, EUPALINOS surveying software	2014 -	
Attiko Metro AEGEK-IMPREGILO-ALSTOM JV	Metro Athens, Holargos, Nomismatokopecio, Agia Paraskevi Stations; The stations were not completed during construction of line 3 due to pressure to complete the metro in time for the Athens Olympic Games in 2004 Geotechnical instrumentation, optical 3D deformation monitoring, GEOROBOT – automatic 3D deformation monitoring, automatic data acquisition, KRONOS tunnel information system, EUPALINOS surveying software	2008 - 2010	
Attiko Metro JV Aegek/ Impregilo/ SELI/Ansaldobreda	Metro Thessaloniki; 2 parallel 1-track tunnels, excavation with 2 TBMs, 13 stations, total l = 7.700 m Geotechnical instrumentation, optical 3D deformation monitoring, GEOROBOT – automatic 3D deformation monitoring, automatic data acquisition, KRONOS tunnel information system, EUPALINOS surveying software	2007 - 2017	


HUNGARY			
Owner Client	Project Services	Year Type	
BKV BAMCO Kkt	Metro Budapest, line 4; 2 single-track running tunnels 7,3 km long (TBM), NATM excavation of Gellert station Geotechnical instrumentation, optical 3D deformation monitoring, construction surveying and heading control, network and control surveys, motor laser system, EUPALINOS surveying software, KRONOS tunnel information system	2007 - 2010	


SWEDEN			
Owner Client	Project Services	Year Type	
Trafikverket Züblin Scandinavia AB	Södermalmstunnel, Citybanan Stockholm; 1.400 m long twin-track tunnel with parallel emergency gallery under historical buildings Geotechnical instrumentation, horizontal IPIs, DAMOS automatic data acquisition system	2012 - 2014	


INDIA		
Owner Client	Project Services	Year Type
MMRC CEC-ITD CEM-TPL JV	Metro Mumbai line 3 package-04; 3 TBM drives total length 11 km, 3 stations EUPALINOS surveying software	2019 -
MMRC J. Kumar Infraprojects Ltd.	Metro Mumbai line 3 package-06; 4,45 km twin-tube TBM tunnels, 2 stations EUPALINOS surveying software	2019 -
MMRC L&T-STECC JV	Metro Mumbai line 3 package-07; 7 km tunnel excavation, 3 stations EUPALINOS surveying software	2019 - 2020
DMRC Prathiba Industries Ltd.	Metro Delhi, Phase III, DMRC CC-23; 5 underground stations and a total length of 9.080 m bored tunnels with 4 TBM EUPALINOS surveying software	2014 - 2016
DMRC J. Kumar Infrastructure Ltd.	Metro Delhi, Phase III, DMRC CC-24; 2 TBM tunnels with a total length of approx. 6,8 km EUPALINOS surveying software	2013 - 2015
DMRC Prathiba Industries Ltd.	Metro Delhi, Phase III, DMRC CC-18; tunnel length 1.994 m (TBM) EUPALINOS surveying software	2013 - 2015
DMRC L&T/SUCG JV	Metro Delhi, Phase III, DMRC CC-27; 5 TBM tunnels with a total length of 4,49 km and 5 stations EUPALINOS surveying software	2013 - 2014
DMRC Era Infra Ing. Ltd.	Metro Delhi, Phase III, DMRC CC-07; 2 TBM tunnels with 2.040 m length of each tunnel EUPALINOS surveying software	2013 - 2014
DMRC Continental Eng. Corp.	Metro Delhi, Phase III, DMRC CC-04; 2 TBM tunnels with 2.145 m length of each tunnel EUPALINOS surveying software	2013 - 2014
DMRC Prathiba Industries Ltd.	Metro Delhi, Phase III, DMRC CC-01; 1 launching shaft, 2 metro stations and 2 approach tunnels with a total length of 2.3 km EUPALINOS surveying software	2012 - 2014
CMRL Mosmetro	Metro Chennai, packages UAA-02 and UAA-03; 6.4km of twin TBM running tunnels and seven underground stations EUPALINOS surveying software	2012 - 2015


INDIA			
Owner Client	Project Services	Year Type	
DMRC Larsen & Toubro Ltd.	Metro Delhi, Phase III, DMRC CMC-1; Launching Shaft, Retrieval Shaft and 3.2-Km long tunnel alignment around Safderjung Airport EUPALINOS surveying software	2010 - 2013	
DMRC Alpine/ HCC JV	Metro Delhi, AMEL-C6 Project; double track metro tunnel (NATM), length 2,5 km Consulting & Training, EUPALINOS surveying software	2008 - 2010	
DMRC Alpine/ Samsung/ HCC JV	Metro Delhi, AMEL-C1 Project; 2.2km long twin bored tunnels Consulting & Training, EUPALINOS surveying software	2008 - 2010	
DMRC Metro Tunneling Group	Metro Delhi, DMRC Corridor Contract BC-18; 3,1 km long metro twin tunnel and two underground metro stations EUPALINOS surveying software	2007 - 2010	


ISRAEL			
Owner Client	Project Services	Year Type	
NTA – Metropolitan Mass Transit System LTD. China State Construction Engineering Corp. Israel	Green Line Tel Aviv; the length of the line is approx. 39 Km, of which 4,5 Km are underground, with 61 stations, five of which are underground KRONOS tunnel information system	2020 -	
NTA – Metropolitan Mass Transit System LTD. NTA	Red Line Tel Aviv; 24 km subway with 11 km twin tunnels and 10 underground stations. KRONOS tunnel information system	2012 -	

QATAR			
Owner Client	Project Services	Year Type	
Qrail QVDC/GS E&C/ADE JV	Doha Metro Red Line South; 12.8km twin-tube underground line EUPALINOS surveying software	2014 - 2017	

ARGENTINA		
Owner Client	Project Services	Year Type
Ciudad Autonoma de Buenos Aires Roggio/Geocunsult Buenos Aires SA	Subte Buenos Aires, line B, lot C; holding cavern, NATM excavation Optical 3D deformation monitoring, network and control surveys, consulting & training, EUPALINOS surveying software	2010

CHILE		
Owner Client	Project Services	Year Type
Metro de Santiago Metro de Santiago	Line 3 & 6; line 3: 21.2 km twin track tubes with 18 stations; line 6: 15.3 km twin track tubes with 10 stations Optical 3D deformation monitoring, geotechnical monitoring and instrumentation, automatic horizontal inclinometer chains, KRONOS tunnel information system, EUPALINOS surveying software	2013 - 2017

USA		
Owner Client	Project Services	Year Type
Metropolitan Washington Airports Authority Dulles Transit Partners, LLC	Metro Washington; Tysons Corner NATM tunnel construction with 520 m length about 15m to 20 m below freeway Optical 3D deformation monitoring, network and control surveys, consulting / training, EUPALINOS surveying software, KRONOS tunnel information system	2009 - 2012

AUSTRALIA		
Owner Client	Project Services	Year Type
Sydney Metro Metro2TSE - CPB John Holland Ghella	Sydney Metro City & Southwest; 15.5-km twin railway tunnels between the end of Sydney Metro Northwest at Chatswood and Sydenham, 6 new stations KRONOS tunnel information system, over 10 automation total station monitoring systems, with integrated vibration and geotechnical measurement systems, over 25 Km of track surveys using GRP 1000 track trolley	2018 -