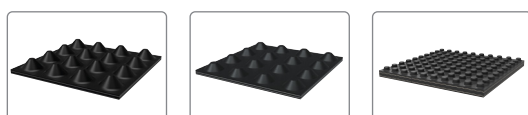




REFERENCE PROJECTS (EXTRACT)
PRODUCTS FOR RAILWAY



MASS-SPRING SYSTEMS

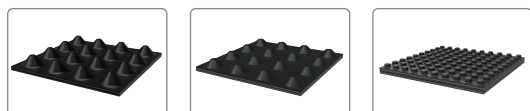


MASS-SPRING SYSTEMS						
Client City Country	Mode of Operation	Axle-load [t]	Type	System	Year	
Strabag Rail, Schkeuditz; GVB Gera, Wiesestraße, 2. BA (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2022	
KamPa BV, Oosterhout, Utrecht, Nieuwegein City (NL)	Light Rail	10.0	USM 4010	Mass-spring system	2022	
KamPa BV, Oosterhout, Utrecht, Nieuwegein City (NL)	Light Rail	10.0	USM 1000 W	Mass-spring system	2022	
Rhomberg Bahntechnik, f. SWA, Mobilitätsdreh- scheibe, Gleisbau Hbf, Augsburg (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2022	
Stadtbahn Dortmund, Brackeler-/Asselner Hellweg, zweigleisiger Ausbau, Dortmund (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2022	
Rhomberg Bahntechnik, KASIG, BV Kriegstraße, Karlsruhe (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2021	
Strabag Rail, Schkeuditz; GVB Gera: Wiesestraße, 2. BA (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2021	
ARTC, 6339 Bridge End Upgrades Z3, Breeza, Aberdeen, Muswellbrook (AUS)	Railway	22.5	USM 4015	Mass-spring system	2021	
MVB (Magdeburger Verkehrsbetriebe), Magdeburg; Gleisverschlingung Warschauer Str. (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2020	
KVB AG Köln, Köln-Weidenpesch, Gleisdreieck Neus- ser Str. (DE)	Light Rail	10.0	USM 2020	Mass-spring system	2020	
DB AG, Obercarsdorf Weißeritztalbahn 2. BA, EÜ BW 27, Ersatzneubau (DE)	Railway	22.5	USM G 1032	Ballasted track system	2019	
KVB AG, Köln, U-Bahn Haltestelle Appellhofplatz (DE)	Light Rail	10.0	USM 1000 W	Ballasted track system	2019	
Schubarth, Basel (CH)	Railway	22.5	USM G 1023	Ballasted track system	2019	
DB Netz AG, EÜ BAB Eppelheim (DE)	Railway	22.5	USM 2030 + USM 2025	Ballasted track system	2018	
KVB AG, Köln, U-Bahn Haltestelle Kölner Dom/Hauptbahnhof (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2018	
Schubarth, Basel (CH)	Railway	22.5	USM G 1015	Ballasted track system	2018	
Karlsruher Schieneninfrastruktur-Gesellschaft mbH KASIG, Stadtbahntunnel Karlsruhe, Haltestelle Durlacher Tor (DE)	Light Rail	11.0	USM 2020	Mass-spring system	2018	
Württembergische Eisenbahn Gesellschaft WEG, Ausbau der Schönbuchbahn in Böblingen (DE)	Railway	22.5	USM 4010	Ballasted track system	2018	
DB Netz AG, Erneuerung Pforzheimer Tunnel VE 03 (DE)	Railway	22.5	USM 2020 + USM 3000	Mass-spring system	2018	

REFERENCE PROJECTS (EXTRACT)
PRODUCTS FOR RAILWAY



MASS-SPRING SYSTEMS

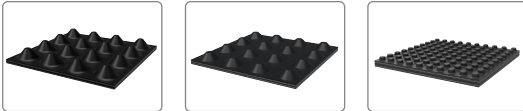


MASS-SPRING SYSTEMS						
Client City Country	Mode of Operation	Axle-load [t]	Type	System	Year	
DB AG, EÜ Derneburg (DE)	Railway	22.5	USM 4010	Ballasted track system	2017	
Karlsruher Schieneninfrastruktur-Gesellschaft mbH KASIG, Stadtbahntunnel Karlsruhe, Haltestelle Durlacher Tor (DE)	Light Rail	11.0	USM 2020	Mass-spring system	2017	
Schubarth, Basel (CH)	Railway	22.5	USM G 1023	Ballasted track system	2017	
Schubarth, Basel (CH)	Railway	22.5	USM G 1015	Ballasted track system	2016	
Schubarth, Basel (CH)	Railway	22.5	USM G 1023	Ballasted track system	2016	
Düsseldorf, Rheinbahn AG, Straßenbahn Linie U 71, Heinrichstraße (DE)	Light Rail	10.0	USM 2020	Mass-spring system	2015	
BOGESTRA, Erweiterung Straßenbahnlinie 310, Bochum-Langendreer (DE)	Light Rail	10.0	USM 2020	Mass-spring system	2015	
DB AG, Bremen Hauptbahnhof (DE)	Railway	22.5	USM 2020	Ballasted track system	2014	
Schubarth, Basel (CH)	Railway	22.5	USM G 1015 + G 1023	Ballasted track system	2014	
Metro Sao Paulo, Line 5, Construction Lot 08 (BR)	Light Rail	17.0	USM 1000 W	Mass-spring system	2014	
MTRC, Shenzhen Express Rail Link (HK)	Light Rail	17.0	USM 2025 + USM 4010	Mass-spring system	2013	
DB AG, Bahnhof Crailsheim (DE)	Railway	22.5	USM G 1023	Ballasted track system	2013	
Düsseldorf, Rheinbahn AG, Straßenbahn Medienhafen (DE)	Light Rail	10.0	USM 2020	Mass-spring system	2013	
Schubarth, Basel (CH)	Railway	22.5	USM G 1023	Ballasted track system	2013	
Schubarth, Basel, SBB, Wildtierdurchlässe Surhard (CH)	Railway	22.5	USM G 1015	Ballasted track system	2013	
Straßenbahn München, Wendeschleife Lothstraße (DE)	Light Rail	10.0	USM 1000 W + USM 3000 + USM 4010	Mass-spring system	2012	
Neubau Stadtbahn Heilbronn (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2012	
KVB AG, Köln, Heumarkt, Los D2. 06 (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2012	
Taiwan Taoyuan Airport MRT System, Taipei (TW)	Light Rail	-	USM 1000 W	Mass-spring system	2012	
Schubarth, Basel (CH)	Railway	22.5	USM G 1015	Ballasted track system	2012	
GJT, Gävle, Skanska (SE)	Railway	22.5	USM 2030	Ballasted track system	2012	
BAM Tunnel Project, Korshunika Tunnel 2, Sibirien (RU)	Railway	25.0	USM 2020	Mass-spring system	2012	
Schubarth, Basel, Schweiz	Light Rail	-	USM G 1027	Ballasted track system	2011	
DB Deutsche Bahn AG, Katzenbergtunnel, Aus- und Neubaustrecke Karlsruhe-Basel (DE)	Railway	max. 22.5	USM 1000 W	Mass-spring system	2011	
Strabag, Schkeuditz, Abdichtungsschutz	Railway	22.5	USM G 1015	Ballasted track system	2011	
Taiwan Taoyuan Airport MRT System, Taipei (TW)	Light Rail	-	USM 2025	Mass-spring system	2011	
Schubarth, Basel, Brücke Gais (CH)	Railway	22.5	USM G 1023	Ballasted track system	2011	
Emch + Berger, Karlsruhe, Buckelblechstahlbrücke (DE)	Railway	22.5	USM G 1023	Ballasted track system	2010	
Vulkaneifelbau, Koblenz, Bahnhof Gütersloh (DE)	Railway	-	USM G 1027	Ballasted track system	2010	
Stadt Düsseldorf, Stadtbahn Kö-Bogen (DE)	Light Rail	-	USM 1000 W	Mass-spring system	2010	
DB AG, Bahnhof Eisenach (DE)	Railway	22.5	USM G 1015	Ballasted track system	2010	
Schubarth, Basel, Unterführung Spiez (CH)	Railway	22.5	USM G 1015	Ballasted track system	2010	
Schubarth, Basel, Unterführung Riehen (CH)	Railway	22.5	USM G 1023	Ballasted track system	2009	
DB AG, EÜ Kirchfeld, Porta Westfalica (DE)	Railway	22.5	USM G 1015	Ballasted track system	2009	

REFERENCE PROJECTS (EXTRACT)
PRODUCTS FOR RAILWAY



MASS-SPRING SYSTEMS

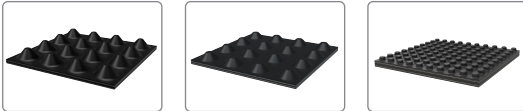


MASS-SPRING SYSTEMS						
Client City Country	Mode of Operation	Axle-load [t]	Type	System	Year	
Concrete Bridge, SSDI, Chengdu (CN)	Light Rail	16.0	USM 2020	Mass-spring system	2009	
BAM Tunnel Project, Krollskij Tunnel, Sibirien (RU)	Railway	25.0	USM 2020	Mass-spring system	2009	
Schubarth, Basel (CH)	Railway	-	USM G 1023 + G 1015	Ballasted track system	2009	
BLT, Vogesenplatz, Basel (CH)	Light Rail	-	USM 1000 W	Mass-spring system	2008	
Basler Verkehrsbetriebe (CH)	Light Rail	10.0	USM G 1032	Ballasted track system	2008	
BAM Tunnel Project, Korshunika and Lagar Aulskij Tunnel, Sibirien (RU)	Railway	25.0	USM 2020	Mass-spring system	2008	
KVB AG, Köln, Nord-Süd Bahn, Chlodwigplatz (DE)	Light Rail	10.0	USM 1000 W	Mass-spring system	2007	
DB AG, Rad-/Fußgängertunnel, Lingen (DE)	Railway	22.5	USM G 1023	Ballasted track system	2007	
MTRC Tseung Kwan O, South Station (HK)	Light Rail	16.0	USM 1000 W	Mass-spring system	2007	
Basel (CH)	Light Rail	12.5	USM G 1032	Ballasted track system	2006	
SBB (CH)	Railway	22.5	USM G 1023	Ballasted track system	2006	
Kaohsiung MRT (TW)	Light Rail	17.0	USM 1000 W	Mass-spring system	2006	
SBB, Lottstetten-Jestetten (DE)	Light Rail	12.5	USM 2020 + USM G 1023	Mass-spring system	2006	
Kaohsiung MRT (TW)	Light Rail	17.0	USM 1000 W	Mass-spring system	2005	
Bujeon Line (KR)	Railway	22.5	USM 2030	Ballasted track system	2004	
Warri (NG)	Cement Mills	-	USM 4010	Ballasted track system	2004	
Huangzhou (CN)	Opera House	-	USM 1000 W	Ballasted track system	2003	
ASM, Langenthal (CH)	Railway	25.0	USM G 1023	Ballasted track system	2003	
BLT, Oberwil (CH)	Light Rail	12.5	USM 1000 W	Ballasted track system	2003	
Rhein-Haardt-Bahn (D)	Light Rail	12.5	USM G 1015	Ballasted track system	2003	
BLT Basel (CH)	Light Rail	12.5	USM G 1023 + G 1027 + G 1032	Ballasted track system	2002	
Los Angeles (USA)	Light Rail	12.5	USM 1000 W	Ballasted track system	2002	
SBB, Waldenberg-Tunnel (CH)	Light Rail	12.5	USM 2020 + USM 4010	Mass-spring system	2002	
DB AG, ABS/NBS Karlsruhe-Basel (DE, CH)	Railway	22.5	USM 4015 + 4010 + USM G 1015	Ballasted track system	2001	
KCRC (HK)	Light Rail	12.5	USM 1000 W + 1000 + 2020 + 2025 + 2030	Ballasted track system	2001	
SBB, Waldenberg-Tunnel (CH)	Light Rail	12.5	USM 2020 + 4010 + USM G 1032 S	Ballasted track system	2001	
CPTM Sao Paulo (BR)	Light Rail	12.5	USM 1000 W + 2020 + 3000	Mass-spring system	2001	
Stadt Dortmund (D)	Underground	12.5	USM 2025 + G 1015	Ballasted track system	2000	
Basel (CH)	Light Rail	10.0	USM 1000 W + G 1032	Ballasted track system	2000	
Amtrack (USA)	Railway	25.0	USM 3000 + 4010	Ballasted track system	2000	
DB AG, Strecke ABS 4/S13, Köln-Düren-Aachen (DE)	Railway	22.5	USM G 1015	Ballasted track system	2000	
San Francisco (USA)	Underground	12.5	USM 1000 W	Ballasted track system	1999	
LEB Lausanne (CH), 2. Etappe	Light Rail	12.0	USM 2020 + USM G 1015	Ballasted track system	1999	
Berliner Senat, Verlegung der U-Bahnlinie U1 (DE)	Light Rail	12.5	USM 1000 W + G 1015	Ballasted track system	1999	
NSB (N), NYE Nationaltheatre, Stasjon (NO)	Railway	22.5	USM G 1027	Ballasted track system	1999	
Stadt Bielefeld, Universitätslinie (DE)	Light Rail	12.5	USM 1000 W	Ballasted track system	1998	
SBB, BV: Bahnhof Ost, Basel (CH)	Railway	22.5	USM 2030 + G 1027 + G 1015	Ballasted track system	1998	
DB AG, Rb Berlin, EBR Havelbrücke (DE)	Railway	16.0-22.5	USM G 1023 + G 1032	Ballasted track system	1998	

REFERENCE PROJECTS (EXTRACT)
PRODUCTS FOR RAILWAY



MASS-SPRING SYSTEMS



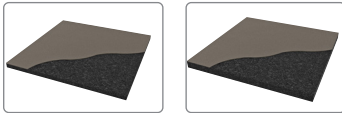
MASS-SPRING SYSTEMS					
Client City Country	Mode of Operation	Axle-load [t]	Type	System	Year
DB AG, Rb Karlsruhe, NBS Nürnberg-Ingolstadt (DE)	Railway	22.5	USM G 1015	Ballasted track system	1998
Lakeside Cinemas Project, Perth, WA (AU)	Railway	18.0	USM 2000	Ballasted track system	1998
DB AG, Rb (PGS), SBV Hannover-Berlin (DE)	Railway	40.0	USM 4000 + G 1015	Ballasted track system	1997
PBDE, 4 x EBR Muldenstein, ABS 8.1 (DE)	Railway	33.0	USM G 1023	Ballasted track system	1997
New York (USA), Freight Line, Heavy-haul	Railway	22.5	USM G 1015	Ballasted track system	1997
Boston (USA), Commuter Trains, Heavy-haul	Railway	22.5	USM 4000	Ballasted track system	1997
BLT, Linie 10, (CH), Baulos 3	Light Rail	7.0	USM G 1023 + G 1027	Ballasted track system	1996
Pymont Light Rail, Sydney (AU), Gateway Site	Light Rail	10.0	USM 1000 W	Ballasted track system	1996
Boston (USA), Commuter Trains	Railway	22.5	USM 3000	Ballasted track system	1996
Boston (USA)	Railway	22.5	USM 3000	Ballasted track system	1995
LEB, Lausanne (CH)	Light Rail	12.5	USM G 1023 + G 1027 + USM 2000	Ballasted track system	1995
Berliner Senat, Sanierung U1, Stralauer Brücke (DE)	Light Rail	10.0	USM 2000	Ballasted track system	1995
Toronto (CA)	Light Rail	11.0	USM 1000 W	Ballasted track system	1994
MBTA, Boston (USA)	Light Rail	10.0	USM 1000 W	Ballasted track system	1994
BLT/Linie 10 (CH)	Light Rail	7.0	USM G 1027	Ballasted track system	1994
San Francisco (USA)	Light Rail	12.5	USM 1000 W	Ballasted track system	1993
SBB/Zürich (CH)	Railway	22.5	USM G 1027	Ballasted track system	1993
SBB/Erstfeld (CH)	Railway	22.5	USM G 1023	Ballasted track system	1993
Boston (US)	Light Rail	16.0	USM 2000	Ballasted track system	1993
Parliament Station, Melbourne (AU)	Light Rail	10.0	USM G 1027	Ballasted track system	1993
Stuttgart (DE)	Underground	12.5	USM G 1027	Ballasted track system	1992
DR/Jena (DE)	Railway	22.5	USM G 1023	Ballasted track system	1992
Bochum (DE)	Underground	12.5	USM 1000 W	Ballasted track system	1991
RBS Moosseedorf (CH)	Light Rail	12.5	USM G 1023	Ballasted track system	1991
EBT Burgdorf (CH)	Railway	22.5	USM G 1023	Ballasted track system	1991
Baltimore (USA)	Light Rail	22.5	USM 2000	Ballasted track system	1990
SBB Zürich (CH)	Railway	22.5	USM 1000 W + 2000	Ballasted track system	1990
Frankfurt (DE)	Underground	12.5	USM 1000 W	Ballasted track system	1989
Amtrack (US)	Railway	30.0	USM 3000	Ballasted track system	1988
Australien (AU)	Light Rail	12.5	USM 1000 W	Ballasted track system	1987
Kanada (CA)	Railway	30.0	USM 3000	Ballasted track system	1987
Bielefeld (DE)	Underground	12.5	USM 1000 W	Ballasted track system	1986
Singapur (SG)	Light Rail	12.5	USM 1000 W	Ballasted track system	1986

REFERENCE PROJECTS (EXTRACT)
PRODUCTS FOR RAILWAY



SUB-BALLAST MATS

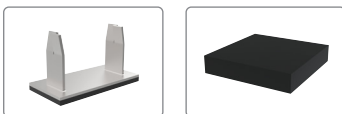
CIPROTEC



SUB-BALLAST MAT CIPROTEC				
Client City Country	Mode of Operation	Axle-load [t]	Type	Year
KamPa BV, Oosterhout, ProRail (NL)	Railway	22.5	Ciprotec 6018	2023
Schubarth, Basel, SBB (CH)	Railway	22.5	Ciprotec 1013	2023
KamPa BV, Oosterhout (NL)	Railway	22.5	Ciprotec 6018	2022
KR, JangHang Line (SinChang-Hong Sung), (KR)	Railway	22.5	Ciprotec 1013	2021

SPECIAL PRODUCTS

DIRECTIONAL CONTROL BEARING, EPDM SHEAR CAM PAD

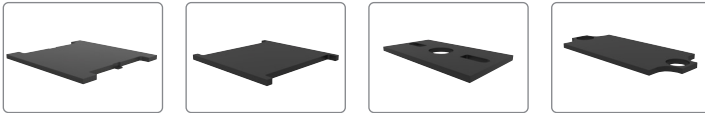


SPECIAL PRODUCTS				
Client City Country	Mode of Operation	Type	System	Year
PoHang - SamCheok (KR)	Railway	EPDM Shear cam pad	Slab track	2020
DB, NBS Wendlingen-Ulm, Feste Fahrbahn Brücken Schwäbische Alb (DE)	Railway	Directional control bearing	Slab track	2020 -
DB, Erneuerung EÜ Bayer, Eisenstein Bahn- km 132,511 (DE)	Railway	Directional control bearing	Slab track	2019
Dodam-Yeongcheon double track (KR)	Railway	EPDM Shear cam pad	Slab track	2018 -
DB, Feste Fahrbahn Hohenthum bei Halle-Peißen (DE)	Railway	Directional control bearing	Slab track	2017
DB, ABS Feste Fahrbahn Hanau-Nantenbach (DE)	Railway	Directional control bearing	Slab track	2016
Wonju-Gangneung all Sections (KR)	Railway	EPDM Shear cam pad	Slab track	2016
A 1 High Speed Railway to Jerusalem, Sha'ar HarGay (IL)	Railway	Directional control bearing	Slab track	2015
DB, NBS Feste Fahrbahn Ilmenau-Erfurt (DE)	Railway	Directional control bearing	Slab track	2013
DB, Neuer Kaiser-Wilhelm-Tunnel, Ediger-Eller (DE)	Railway	Directional control bearing	Slab track	2013
Honam HSR Line (KR)	Railway	EPDM Shear cam pad	Slab track	2013
Jeolla Line BTL (KR)	Railway	EPDM Shear cam pad	Slab track	2010
KTX Phase 5 (KR)	Railway	EPDM Shear cam pad	Slab track	2009
KTX Phase 5 (KR)	Railway	EPDM Shear cam pad	Slab track	2008
KTX Phase 4 (KR)	Railway	EPDM Shear cam pad	Slab track	2007
High Speed Railway Line Taipei - Kaohsiung (TW)	Railway	EPDM Shear cam pad	Slab track	2004 -
DB, Section Köln-Frankfurt, Lahntal Bridge, Limburg (DE)	Railway	EPDM Shear cam pad	Slab track	2000 -
				2001

REFERENCE PROJECTS (EXTRACT)
PRODUCTS FOR RAILWAY



RAIL PADS AND BASE PLATE PADS
ZW AND ZWP

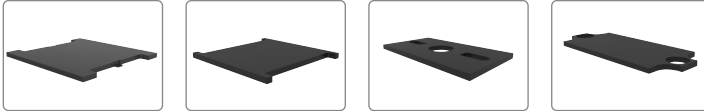


RAIL PADS (ZW) AND BASE PLATE PADS (ZWP)				
Project City Country	Mode of Operation	Type	Spring coefficient	Year
Korea (KR)	Railway / High Speed Line	Zw 700 ECO ClipPad	c 60 kN/mm	2023
Deutschland DB (DE)	Railway	Zw 900b / Zw700a/b	c 60 kN/mm	2023
DVB Dresden (DE)	Metro / local traffic	Zw 1000	c 60 kN/mm	2023
DB/Berlin (DE)	Light rail	Zwp 104 NT/125	c 22,5 kN/mm	2023
Spanien (ES)	Railway	Zw 700a	c 60 kN/mm	2023
Deutschland DB (DE)	Railway/High Speed Line	diverse Weichenlager	c 30 kN/mm	2023
Cottbus (DE)	Metro / local traffic	Zw 205x178x12mm	c 30 kN/mm	2023
Schweiz SBB (CH)	Railway	diverse Weichenlager	c 60 / 200 kN/mm	2023
Bonn (DE)	Metro / local traffic	Zw 205x175x12mm	c 50 kN/mm	2023
Deutschland DB (DE)	Railway/High Speed Line	Zwp 104 NT-15mm	c 22,5 kN/mm	2022
Köln KVB (DE)	Metro / local traffic	Zwp Weichenanlage	c 6 kN/mm	2022
Deutschland DB (DE)	Railway FF	Zw BSP 700	c 60 kN/mm	2022
Rhätische Bahn (CH)	Alpine railway	Zw 700 AT	c 85/100/200 kN/mm	2022
RNV (DE)	Metro / local traffic	Zw 205x175x12mm	c 30 kN/mm	2022
Kanada (CA)	Light rail	Zw 700/140spezial	c 60 kN/mm	2022
Deutschland DB (DE)	Railway/High Speed Line	Zw 1000	c 40 kN/mm	2022
ÖBB (AT)	Railway	Zw 700a/b	c 60 / 100 kN/mm	2022
München (DE)	Metro / local traffic	Zw 195x175x12mm	c 22,5 kN/mm	2022
Den Haag (NL)	Metro / local traffic	Zw 9 ABC 7	c 60 kN/mm	2021
Parramatta (AU)	Metro / local traffic	Zw 180x145x10mm	c 40 kN/mm	2021
Deutschland DB (DE)	Railway/High Speed Line	Zwp 104 NT-12mm	c 22,5 kN/mm	2021
Berlin BVG (DE)	Metro / local traffic	Zw 160x125x12mm	c 25 kN/mm	2021
Karlsruhe (DE)	Metro / local traffic	Zw 235x177x12mm	c 25 kN/mm	2021
Deutschland DB (DE)	Railway	Zwp 194a/b ECF	c 22,5 kN/mm	2021
Türkei (TR)	Railway/High Speed Line	Zwp Weichenlager	c 30 kN/mm	2021
Ukraine (UA)	Railway	Zw 900 SL	c 60 kN/mm	2021
Deutschland DB (DE)	Railway/High Speed Line	Zw 1000	c 40 kN/mm	2021
Thriasion Metro, Athen (GR)	Metro / local traffic	Zw 205x120x16mm	c 20 kN/mm	2020
BVG-Berlin, Karlshorst (DE)	Metro / local traffic	Zw 160x125x12mm	c 25 kN/mm	2020
DB, BSP-FF high speed lines, (DE)	Railway/Slab track	Zw 700 special	c 60 kN/mm	2020
Ukrainian Railways (UZ)	Railway	Zw 900 SL 2-60 /180 Zw 900 SL 2-60 / 167	c 60 kN/mm	2020
BVB, Wendenschlossstraße (DE)	Metro / local traffic	Zw 205x178x7mm	c 70 kN/mm	2020
Azerbaijan Railways (AZ)	Railway	Zw 700-SF 150 NT	c 60 kN/mm	2020
sw Augsburg, Gleiserneuerung (DE)	Metro / local traffic	Zwp 335x155x20mm Zwp 335x155x15mm	c 22,5 kN/mm c 22,5 kN/mm	2020
Yerköy-Sivas (TR)	Railway/High Speed Line	Elastic layers for high speed turnouts	c 30 kN/mm	2020
Marienzellerbahn, St. Pölten (AU)	Narrow-gauge railway	Zw Y elastic fastening system	c 80 kN/mm	2020
Bahnbrücke Kattwyk, Hamburg (DE)	-	Elastic turnout layers	c 22,5 / 80 kN/mm	2020
Karlsruhe, Knielingen (DE)	Metro / local traffic	Zw 205/178/10, Kippschutz	c 32 kN/mm	2019
Estonian State Railways (EE)	Railway	Zw 900NT	c 60 kN/mm	2019
HTM Personenvervoer NV, Den Haag (NL)	Metro / local traffic	Zw 9 ABC-7	c 60 kN/mm	2019
Karlsruhe Kriegstraße (DE)	Metro / local traffic	Zw 235x177x12mm	c 25 kN/mm	2019
Estonian State Railways (EE)	Railway	Zw 900NT	c 60 kN/mm	2019

REFERENCE PROJECTS (EXTRACT)
PRODUCTS FOR RAILWAY



RAIL PADS AND BASE PLATE PADS
ZW AND ZWP



RAIL PADS (ZW) AND BASE PLATE PADS (ZWP)				
Project City Country	Mode of Operation	Type	Spring coefficient	Year
Karlsruhe, Knielingen (DE)	Metro / local traffic	Zw 205/178/10, Kippschutz	c 32 kN/mm	2019
Estonian State Railways (EE)	Railway	Zw 900NT	c 60 kN/mm	2019
HTM Personenvervoer NV, Den Haag (NL)	Metro / local traffic	Zw 9 ABC-7	c 60 kN/mm	2019
Karlsruhe Kriegstraße (DE)	Metro / local traffic	Zw 235x177x12mm	c 25 kN/mm	2019
TCDD high speed lines (TR)	Railway / High Speed Line	Zw1000 210x150x10 System W21	c 40 kN/mm	2019
DVB, Dresdner Verkehrsbetriebe (DE)	Metro / local traffic	Zw 148x180x10 Zw 178x180x10	c 60 kN/mm c 60 kN/mm	2019
Chemnitz CVAG (DE)	Metro / local traffic	Elastic Turnout layers / switch systems	c 100 kN/mm	2019
Deutzer Brücke, Köln (DE)	Metro / local traffic	Elastic Turnout layers / switch systems	c 100 kN/mm	2019
Busan (KR)	Metro / local traffic	Zwp 300 UTS/E14 SF 125	c 30 kN/mm	2019
Projekt W14, (CH)	Railway	Zw 700b EPDM	c 100 kN/mm	2019
Azerbaijan Railways (AZ)	Railway	Zw 700NT	c 60 kN/mm	2018
DB, Stuttgart 21 (DE)	Railway	Elastic turnout layers system	c 30 kN/mm	2018
Den Haag (NL)	Metro / local traffic	Zw 140x125x9mm	c 60 kN/mm	2018
Ulsan - Pohang (KR)	Railway	Zwp 104 NT 60 E1	c 40 / 60kN/mm	2018
Metro Moskau (RU)	Metro / local traffic	Zw 1000/210/150/10	c 120 kN/mm	2018
Metro Doha (QA)	Metro / local traffic	Zw178x150x12	c 30 kN/mm	2018
Marienzellerbahn, St. Pölten (AU)	Narrow-gauge railway	Zw 700a/270/110/7	c 80 kN/mm	2018
Kassel-Würzburg (DE)	Railway / High Speed Line	Zw 1000/210/150/10 System W21	c 40 kN/mm	2018
Berlin BVG Seestraße (DE)	Metro / local traffic	Zw 1200/160/125	c 25 kN/mm	2018
SSL Austria/Linz (AU)	Narrow-gauge railway	Zw 700/160/110	c 80 kN/mm	2018
Ulsan - Singyeongju (KR)	Railway / High Speed Line	Zwp 318/138/12	c 25 kN/mm	2018
Kassel-Würzburg (DE)	Railway / High Speed Line	Zw 1000/210/150/10 System W21	c 40 kN/mm	2017
ÖPNV Gotha (DE)	Metro / local traffic	Zwp TO 800x178x9	c 60 kN/mm	2017
Tampere (FI)	Metro / local traffic	Zw205x178x12mm	c 30 kN/mm	2017
Dodam-Yeongcheon (KR)	Railway / High Speed Line	Zwp 104NT SF 150	c 25 kN/mm	2017
Heidelberg RNV (DE)	Metro / local traffic	Zw 205x178x10	c 32 kN/mm	2017
Metro Ankara (TR)	Metro / local traffic	Zw 1000/160/140	c 40 kN/mm	2017
Schkeuditz-Radefeld (DE)	Railway	Zwp URG 45b	c 30 kN/mm	2017
Brücke Marienzellerbahn, St. Pölten (AU)	Narrow-gauge railway	Zw 700a SF 110	c 80 kN/mm	2017
Metro St. Petersburg (RU)	Metro / local traffic	Zw 700b/160/168/7	c 60 kN/mm	2017
Leipziger Verkehrsbetriebe (DE)	Metro / local traffic	Zw 205x178x10	c 32 kN/mm	2017
Dresdener Verkehrsbetriebe (DE)	Metro / local traffic	Zw 178x110x10	c 60 kN/mm	2017
Darmstadt (DE)	Metro / local traffic	Zw 218x178x7	c 45 kN/mm	2017
System 336 Butzbach (DE)	Metro / local traffic	Zwp 345x160x10	c 22,5 kN/mm	2017
Wonju, Jecheon (KR)	Railway / High Speed Line	Zwp 318x138x12	c 25 kN/mm	2017
Ratingen (DE)	Metro / local traffic	Zw 205x178x10	c 22 kN/mm	2017
Dodam - Yeongcheon (KR)	Railway / High Speed Line	Zwp 104 NT SF150	c 25 kN/mm	2017
KVB Severinsbrücke, Köln (DE)	Metro / local traffic	Zwp ECF 345x160x12	c 22,5 kN/mm	2016
Gyeonggi-do (KR)	Railway / High Speed Line	Zwp 104/145 NT	c 25/40/60 kN/mm	2016
Hannover (DE)	Metro / local traffic	Zw 205x178x12	c 30 kN/mm	2016
Rethebrücke, Hamburg (DE)	Railway	Zwp 580x540x12	c 22,5 kN/mm	2016
Doncaster (GB)	Metro / local traffic	Zwp 685x250x10 Zwp 336x140x12x4 AS	c 80 kN/mm c 22,5 kN/mm	2016
Waldviertelbahn (AU)	Narrow-gauge railway	Zw 700 Y, 35E1	c 60 kN/mm	2016
Potsdam (DE)	Metro / local traffic	Zw 205x178x9	c 60 kN/mm	2016
Marienzellerbahn, St. Pölten (AU)	Narrow-gauge railway	Zw 700a SF 110 Y-40	c 60 kN/mm	2015