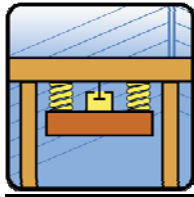


Reference List
"Tuned Mass Dampers"
 Page 1/7



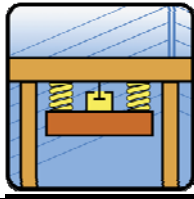
Country	Project	Structure	Dyn. Mass [kg]	Tuned Frequency [Hz]	Type of TMD	Year
Australia	Melbourne / Yarra Precinct	Footbridge	4 x 500	2,1 - 2,5	vertical	2005
	Kurilpa Bridge, Brisbane	Footbridge	3 x 3000	1,8	horizontal	2009
Austria	Wernstein	Footbridge	700	1,1	vertical	2006
Belgium	Durbay	Footbridge	460	2,1	vertical	2002
	Offshore Windpark Belwind	OHVS Station	20000	0,35	horizontal	2010
Brazil	Refab2	Stack	2 x 5000	0,7	horizontal	2003
Canada	Toronto, Art Gallery of Ontario	Floor	2 x 5000	3,6 / 4,1	vertical	2007
		Stair	1 x 2200	2,4		
	Bales Drive, York	Floor	7 x 550	5,0	vertical	2008
China	Lanxess, Chemical Plant Sarnia	Chem. Facility	4 x 2500	5,0	horizontal	2009
	Shanghai, Pudong Airport	Footbridges	88 x 750	2,5	vertical	2007
	Hangzhou Bay Bridge Tower	Tower	100000	0,3	horizontal	2009
Czech Rep.	Shanghai, Expo Arena	Galleries	12 x 4800	2,5	vertical	2009
	Cernice	Footbridge	2 x 900	1,4	vertical	2004
	Praha	Barrandov Bridge	2 x 850	2,05 - 2,3	vertical	2006
Denmark	Footbridge	Footbridge	3 x 200	4,1	vertical	1999
	Nykredit's New Domicil	Floor	3 x 1000	6,8	vertical	2001
	Aalborg – Hollow Core Prestressed Concrete Element		75	5,4	vertical	2003
	Kopenhagen	Footbridge	2 x 1600 12 x 2750	1,4 - 4,7	vertical	2005
Finland	NPP Olkiluoto	Stack	3000	0,8	horizontal	2009
France	Paris, Stade de Charletty	Stand	1 x 1450	3,1	vertical	1993
	Paris, Stade de France	Footbridge	2400	1,95	vertical	1997
			2800	1,80	vertical	
			2050	2,10	vertical	
	Tancarville	Bridge	4 x 6000	0,53	torsional	1998
			2 x 6000	0,73	torsional	
	SGN La Hague	Stack	2 x 200	1,4	horizontal	1999
	Paris, Solferino Bridge	Footbridge	6 x 2500	0,81	horizontal	2000
			4 x 2500	1,94	vertical	
	Kehl/Strasbourg	Foot/Cycle-bridge	4 x 1900	2,22	vertical	
			2 ext.	0,6	torsional	2001
			2 ext.	0,7	torsional	
	Suresnes	Footbridge	1 x 2600	1,92	vertical	2005
Fontenay Le Niemeyer II	Floor	6 x 480	6,2	vertical	2005	
Rouen	Bridges	4 x 7500	0,62	vertical	2006	
		4 x 7500	0,43	vertical		
Germany	Bercy/Tolbiac, Paris	Footbridge	2 x 3090	1,64	vertical	2006
			2 x 2665	2,12	vertical	
			2 x 3480	2,20	vertical	
			4 x 170	5,0	vertical	1984
Hannover Exhib. Centre	Bridge	4 x 170	5,0	vertical	1984	
Deutsche BP	Steel Structure	30	8,0	horizontal	1985	
Bergkamen	Security Door	1200	2,3	vertical	1986	



Reference List
"Tuned Mass Dampers"
 Page 2/7



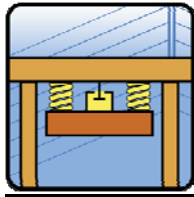
Country	Project	Structure	Dyn. Mass [kg]	Tuned Frequency [Hz]	Type of TMD	Year
	Saarlözbach	Footbridge	2 x 500 2100	1,3 1,7	horizontal vertical	1987
	Rhein-Herne-Kanal	Bridge	1200 2 x 500	2,3 1,3	vertical horizontal	1987
	Berlin, Arc de 124,5°	Steel Sculpture	75	1,1	horizontal	1988
	Munich, BMW	Factory Floor	20 x 380	13,0	vertical	1988
	Henckels Zwillingwerke	Factory Floor	6 x 400	14,0	vertical	1989
	Dorsten	Footbridge	2 x 1700	1,9	torsional	1990
	Peguform	Stack	2000	0,44	horizontal	1991
	Munich, Incineration Plant	Steel Structure	2 x 250	16,0	vertical	1992
	Vibrating Conveyor	Conveyor	2 x 120	16	vertical	1992
	Babcock	Steel Structure	2 x 200	12,0	vertical	1993
	Babcock	Steel Structure	200	9,5	vertical	1993
	Göttingen	Stack	1100	0,66	Ring Damper	1994
	Fürth	Stack	1200	0,22	Ring Damper	1995
	Shaking Screen		4 x 180	16	vertical	1995
	Regensburg, Siemens	Office Floor	11 x 160	7,5	vertical	1996
	Hamburg	Stack	780	0,7	Ring Damper	1996
	Footbridge		1000	0,53	vertical	1996
	Karlsruhe	Building Structure	10 x 500 14 x 250	2,8 3,0	vertical vertical	1997
	KWS Power Plant	Steel Structure	1 x 180 1 x 180	9,5 5,7	vertical vertical	1997
	Kiel, Incineration Plant	Steel Structure	200	16	vertical	1997
	Potsdam	Stack	200	0,8	horizontal	1997
	Berlin	Gymnasium	1200	3,8	vertical	1997
	Böblingen	Stack	3000	0,7	Ring Damper	1997
	Dresden University	Floor	4 x 1000	2,9	vertical	1997
	BGS Hannover	5 Footbridges	5 x 2200	3,0	vertical	1997
	Scholven, Power Station	Cooling Tower Fans	22 x 100	14	horizontal	1998
	Berlin	Musical Theatre	8000	3,1	vertical	1998
	Berlin Reichstag	Stairs	4 x 160	2,7	vertical	1998
	Kassel	Footbridge	2000	0,7	vertical	1998
	Passau	Footbridge	2 x 500	2,0	vertical	1998
	Berlin, Schwedter Str.	Footbridge	4 x 900	1,9	vertical	1999
	Lausward Power Station	Stack	800	0,9	Ring Damper	1999
	Dow Chemical	Stack	1400	0,8	Ring Damper	1999
	Berlin, Reichstag	Spectator Balconies	18 x 700	4,5	vertical	1999
	Henkel	Shaking Screen	4 x 150	10,5	vertical	1999
	Berlin, Federal Chancellery	Footbridge	4 x 2200	1,7	vertical	2000



Reference List
"Tuned Mass Dampers"
 Page 3/7



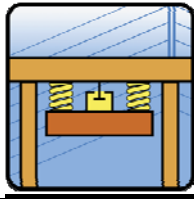
Country	Project	Structure	Dyn. Mass [kg]	Tuned Frequency [Hz]	Type of TMD	Year
	Karlsruhe, Museum of Art	Footbridge	2 x 1500	3,3	vertical	
	Glas Fibre Draw Towers	Tower	6 x 500	2,8	vertical	2000
	„MS Deutschland“	Cruise Liner	4 x 500	3,0	horizontal	2000
			2 x 200	13,5	horizontal	2001
			2 x 10000	3,4	vertical	
	Berlin, BUGA	Footbridge	2 x 300	1,9	horizontal	2001
			2 x 200	3,8	vertical	
	Berlin, Britzer Damm	Footbridge	2 x 500	5,9	vertical	2001
	Bayreuth (Trockau)	Footbridge	2 x 800	1,8	vertical	2001
	Freilassing	Footbridge	4 x 820	2,3	vertical	2002
	Stiebertal	Footbridge	8 x 290	1,77	vertical	2002
	Bonn, Deutsche Welle	Footbridge	6 x 400	4,4	vertical	2002
	Dresden, Neue Terrassen	Floor Slabs	8 x 5000	2,4	vertical	2003
	Dresden, Neue Terrassen	Stairs	3 x 500	3,9	vertical	2003
	Stuttgart	Stairs	6 x 220	4,5	vertical	2003
	Berlin, Plenar Hall – Suspension of a TV-Camera		18 x 700	4,5	vertical	2003
	Casino Hohensyburg	Floor	600	7,4	vertical	2003
	Marl	Conveyor	550	12,3	vertical	2003
	Hamburg Überseering	Stairs	115	2,0	horizontal	2003
	Düsseldorf	Shaking Screen	160	10,5	vertical	2003
	Möhnensee-Körbecke	Footbridge	2 x 500	1,9	vertical	2003
	Düsseldorf, Office Building - WAV Wels	Footbridge	5 x 1000	3,0 - 3,3	vertical	2004
		Stack	850	1,5	Ring Damper	2004
	CHP Römerbrücke	Stack	1800	0,7	Ring Damper	2004
	Berlin	Footbridge	2 x 800	2,5	vertical	2005
	München	Footbridge	1400	1,6	vertical	2005
	Hannover, Städtische Häfen	Steel Roof	1 x 150	2,2	vertical	2005
	Chemnitz	Textile Machine	1 x 10	10 - 15	radial	2005
			3 x 20	11	radial	2006
	Cottbus, Wernersteg	Footbridge	1 x 800	1,6	horizontal	2005
	BAB 113	Footbridge	2 x 800	2,56	vertical	2005
	Metzingen, Office Building	Footbridge	8 x 600	2,5 - 2,8	vertical	2006
	<i>Neuss</i>	Pipeworkbridge	1 x 450	1,6	horizontal	2006
	<i>Braunschweig</i>	Church Bell Tower	1 x 600	1,6	horizontal	2006
	<i>Berlin</i>	Floor	2 x 130	16,2	vertical	2006
	<i>Erfurt, advanced technical college</i>	Floor	4 x 750	4,5 - 6,5	vertical	2006
	<i>Borgholzhausen</i>	Skywalk	4 x 1500	3,4	vertical	2006
			4 x 750	6,4	vertical	2006
	<i>Hamburg –Museum Brooktorhafen</i>	Footbridge	2 x 1200	1,5	vertical	2006



Reference List
"Tuned Mass Dampers"
 Page 4/7



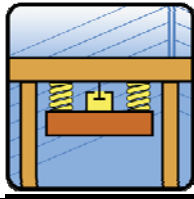
Country	Project	Structure	Dyn. Mass [kg]	Tuned Frequency [Hz]	Type of TMD	Year
	<i>Cottbus</i> – "Blechensteg"	Footbridge	1 x 1000	1,5	vertical	2006
	<i>Wetzlar</i>	PPM-Tower	25	7 - 9	radial	2007
	<i>Neu-Ulm</i> – Tiefbahnhof	Footbridge	1 x 2000	2,5	vertical	2006
	<i>Neu-Ulm</i> – "Grüne Brücke"	Footbridge	1 x 700	3,4	vertical	2007
			1 x 700	4,1	vertical	
			1 x 900	4,3	vertical	
			2 x 1000	1,3	horizontal	
	<i>Wolfsburg</i> – Erlebniswelt	Footbridge	1 x 2400	1,3	vertical	2007
	Allerpark					
	Plaza Bridge					
	<i>Oberschöneweide</i> – "Kaisersteg"	Footbridge	2 x 800	1,0	vertical	2007
			2 x 400	2,5		
	<i>Berlin</i> – Henry-Ford-Building, Audimax	Gallery	6 x 500	4,1	vertical	2008
	<i>Bielefeld</i>	Floor	4 x 500	4,9	vertical	2008
			4 x 500	5,4		
	Illerbrücke Kempten	Footbridge	1 x 2400	1,9	vertical	2008
			1 x 1800	2,5		
			1 x 1500	2,5		
			1 x 1600	2,35		
			1 x 2000	1,35		
	Free University Berlin, Audimax	Gallery	6 x 500	2,2	vertical	2008
	Lauchhammer	Footbridge	2 x 250	2,1	vertical	2008
	Super C , Aachen	Floor	6 x 1000	2,5	vertical	2008
	Jägersteg, Wurmberg	Footbridge	2100	1,6	horizontal	2008
			2 x 1100	1,9	vertical	
	BMFSFJ, Berlin	Footbridge	8 x 250	5,0 - 7,2	vertical	2008
	Museum Knappenrode	Staircase	2 x 1500	2,4	horizontal	2008
	Ersatz-Kettenbrücke Bamberg	Footbridge	8 x 300	1,4 – 1,8	vertical	2009
	Kettenbrücke Bamberg	Footbridge	22 x 3000	1,1 – 3,1	vertical	2009
	Evobus Mannheim	Footbridge	2 x 750	1,6	vertical	2009
	Uni Köln	Staircase	8 x 250	3,1	vertical	2009
	Felsenmeer Hemer	Footbridge			vertical	2009
	Ringstraße	Footbridge			vertical	2009
	Hansa Kolleg - Münster	Staircase	2 x 500	3,1	vertical	2010
	Evobus - Mannheim	Footbridge	2 x 750	2,5	vertical	2010
Great Britain	Kessock Bridge	Bridge	8 x 2000	0,5	vertical	1989
	London, Millennium Dome	Steel Structure	3 x 600	2,4	vertical	1999
	London, Stakis Metropole	Hotel Building	7 x 4500	4,4	vertical	2000
	London, Millennium Bridge	Footbridge	8 x 2500	0,8	horizontal	2001
			50 x			
			1 - 2000	1,2 - 2,2	vertical	
	Coventry	Footbridge	3 x 670	1,0	vertical	2003
		Ramp				
	Edinburgh, Air Traffic Control Tower	Tower	14000	1,7/2,0	horizontal	2005



Reference List
"Tuned Mass Dampers"
 Page 5/7



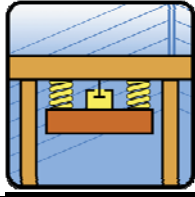
Country	Project	Structure	Dyn. Mass [kg]	Tuned Frequency [Hz]	Type of TMD	Year
	Newcastle, Northumbria University, Intersite Bridge	Footbridge	1 x 2200 2 x 650	4,3 2,9	vertical vertical	2006
	Newport/Wales Usk Bridge	Footbridge	4 x 800 4 x 800 2 x 1000 2 x 1200 2 x 1400	1,75 2,75 1,95 1,10 1,25	vertical vertical vertical sloped sloped	2006
	Hemel Hempstead	Footbridge	2 x 500 1 x 750	2,45 3,50	vertical vertical	2006
	Essex, Unilever House	Stair	1 x 500	5,3	vertical	2006
	Northumbria – University, City Campus	Footbridge	1 x 1000 2 x 700 1 x 750	1,4 2,7 3,4	vertical vertical vertical	2007
	Cambridge Riverside Bridge	Foot- and Cyclebridge	1 x 1000 2 x 700 1 x 700	1,4 2,7 3,4	vertical vertical vertical	2008
	Northshore Footbridge	Footbridge	3 x 5000 4 x 5000	0,88 1,8 / 2,1 2,45 / 2,55	horizontal vertical	2009
	South Crescent Building, London	Long Span Floor	20 x 400	4 – 8 Hz	vertical	2009
	Eagles Meadow Footbridge Wrexham	Footbridge	3000	2,7 Hz	Vertical	2009
Hungary	Mol – Refinery Tower	Tower	16000	0,4	Ring Damper	2005
Iceland	Footbridge		4 x 350	2,6	vertical	1999
Italy	Grinding Mill Sardinia, Sarlux – Cooling Tower Fan	Mill	2 x 180 24 x 700	18 11	horizontal horizontal	1997 2000
Japan	Ube	Stack	300	3,1	horizontal	2000
Korea	Seoul, Sun You Footbridge	Footbridge	2 x 1500 2 x 1650	0,75 2,0	horizontal vertical	2002
	Sculpture Bernar Venet – Ferrum Tower Seoul	Sculpture	2 x 200	1,4	horizontal	2010
Mexico	Guadalajara Diana Theatre	Balconies	8 x 2500	3,2	vertical	2005
	Estela de la Luz – Mexcio City	Tower/Sculpture	8 x 3000	0,25	horizontal	2010
Netherlands	Puente Oriente - Guadalajara Maastricht	Bridge Footbridge	8 x 10.000 3300 3000 4240	0,8 1,43 1,66 2,34	horizontal vertical vertical vertical	2010 2003
	Muiderbrug Fietsverbinding	Footbridge	10 x 3000	0,8 – 2,7 Hz	vertical horizontal	2009



Reference List
"Tuned Mass Dampers"
 Page 6/7



Country	Project	Structure	Dyn. Mass [kg]	Tuned Frequency [Hz]	Type of TMD	Year
Norway	North Trondelag Bridge	Bridge	10000	0,53	vertical	1989
	Mjasundet Bridge	Bridge	6000	0,6	vertical	1992
	Mjomnsundet Bridge	Bridge	5800	0,8	vertical	1996
	Bulandet/Vaerlandet	3 Bridges	3 x 10000 2 x 5000	0,8 2,0	vertical	2002
Poland	Bergen	Gym Floor	2 x 2000	3,76	vertical	2003
	Wroclaw	Footbridge	2 x 850 1 x 2100	1,24 1,48	vertical	2003
	Poznan	Footbridge	2 x 2200	1,4	Vertical	2009
Qatar	Sport City Tower	High rise building	140000	0,23	horizontal 2-fold pendulum	2006
	QEEC, Doha	Floor	12 x 12500 4 x 17000	2,5	vertical	2009
Romania	Magura Odobesti	TV Tower	1 x 300 1 x 2850	2,2 0,7	horizontal horizontal	2008
Singapore	Changi Airport	Footbridge	2 x 500	0,88	horizontal	2003
Spain	Meteorological Radar Tower	Tower	1 x 8000	1,4	Ring Damper	2005
Switzerland	Rümlang	Footbridge	1 x 1000	2,0	vertical	1992
	RISI, Baar	Riddle	4 x 200	16,6	vertical horizontal	2001
	Passerelle du Jonc	Footbridge	1400	2,6	vertical	2004
Thailand	Bangkok, Chao Phya Bridge	Bridge	2 x 4500 8 x 4500 8 x 4500	0,4 0,7 0,3	horizontal vertical torsional	1985
	Bangkok	Stack	3500	0,8	Ring Damper	1999
UAE	Dubai, Burj al Arab Hotel	Steel Sceleton and Mast	11 x 5000	0,75 - 2,0	horizontal	1997
	Dubai, Emirates Towers	Mast	6 x 1200	0,9	horizontal	1999
	Dubai, Al Rostamani Tower	Mast	2 x 500	1,05	horizontal	2003
	Dubai, Bright Start Tower	Mast	1 x 300	0,95	horizontal	2005
	Dubai, Al Mas Tower	Mast	2 x 2000 2 x 2000	0,4 - 0,75 1,6 - 3,2	horizontal	2008
	Capital Gate Tower	Footbridge	2 x 750	2,3	vertical	2010
USA	YAS Marina Hotel	Footbridge	4 x 3000	1,8 - 2,7	vertical	2009
	Braidwood Station (NPP)	Floor	2 x 970	30,0	vertical	2005
	200 West Street, NYC	Stair	2 x 250	3,0	vertical	2008



Reference List
"Tuned Mass Dampers"
Page 7/7



Country	Project	Structure	Dyn. Mass [kg]	Tuned Frequency [Hz]	Type of TMD	Year
	200 West Street , NYC	Floor	5 x 500	4,5	vertical	2010
