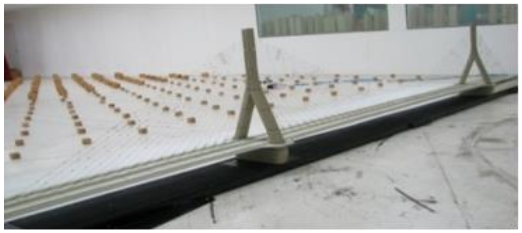
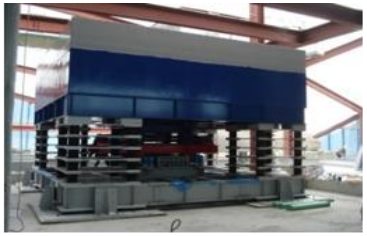
TE Solution
Total Engineering Solution
in Wind Engineering and Vibration Control

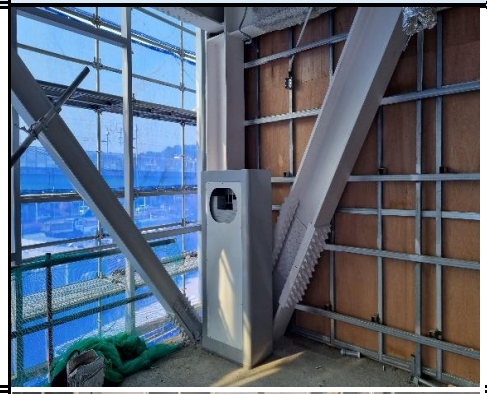
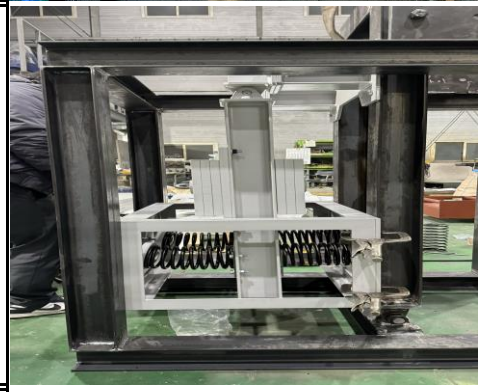
TRACK RECORD OF
VIBRATION CONTROL DEVICE

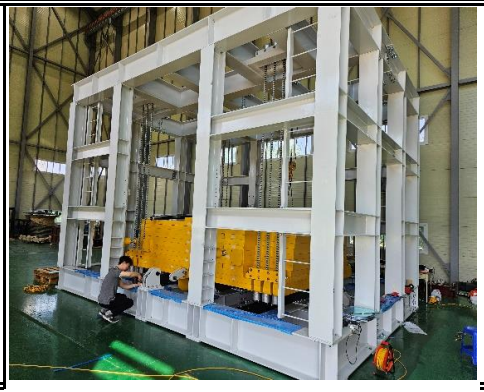



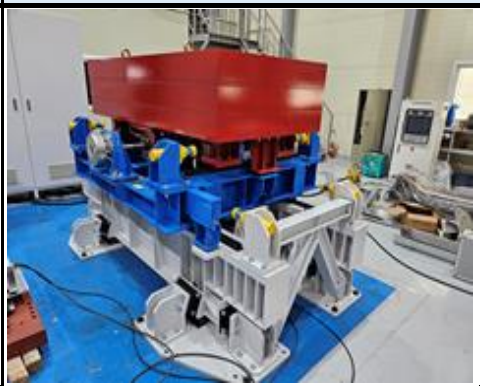
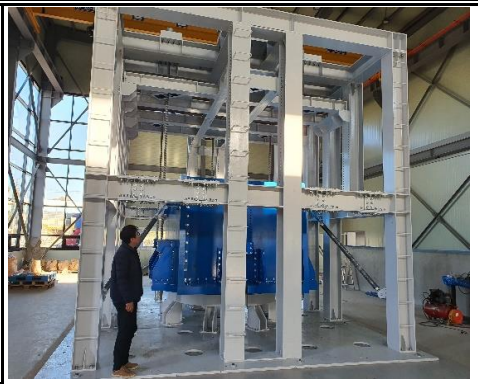


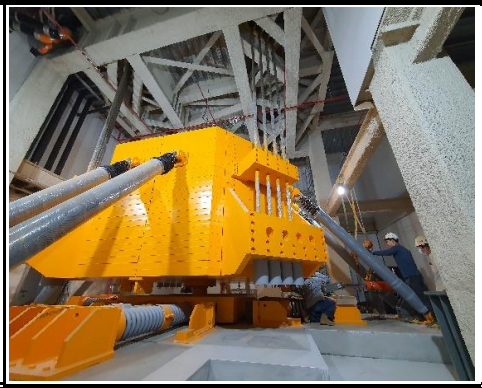
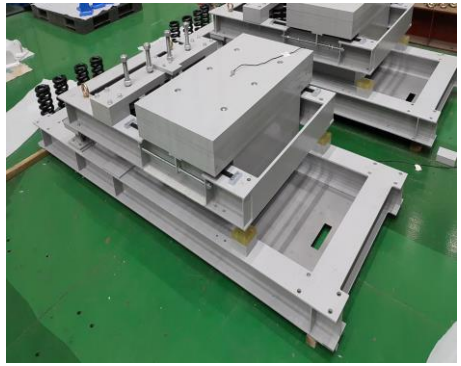




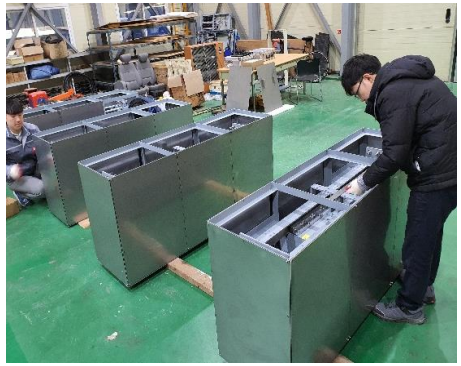
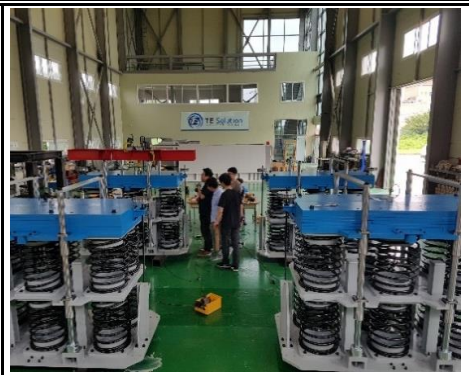
No.	Project	Vibration Control Device
71	 **Chuncheon Toegyedong** ▪ Client: Chuncheon si office ▪ Outline - Office Building - Length : 83.4m - Frequency: 1.932Hz(Ver) ▪ Year: In Progress	 ▪ Type: Sliding Type TMD (2sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 2ton - Stroke: 3cm ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
70	 **Seohaesun 5 gonggu Arch bridge** ▪ Client: DL E & C ▪ Outline - Bridge steel box hanger - Length : 155m - Frequency: 3.182~5.233 Hz(Long.) ▪ Year: In Progress	 ▪ Type: Cantilever Type TMD (18sets) ▪ Control direction: Horizontal ▪ Specification - Moving mass: 0.25ton - Stroke: 5cm ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
69	 **Pohang Poeungyo** ▪ Client: Daeyoung Engineering & Steel industries Co.,LTD ▪ Outline - Foot bridge - Length : 126.5m - Frequency: 3.592Hz, 3.16Hz ▪ Year: 2023	 ▪ Type: Cantilever Type TMD (2sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 1ton - Stroke: 4cm ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

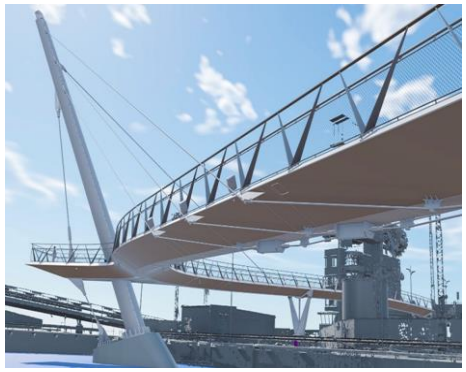
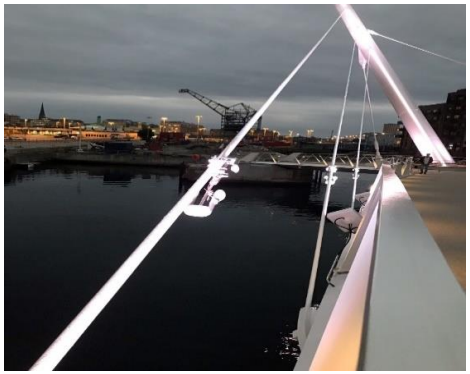
No.	Project	Vibration Control Device
68	 **Yeosu Ando port footbridge** ▪ Client: kukmin industrial Co.,Ltd. ▪ Outline - bridge - Length : 140m - Frequency: 1.723Hz(1st mode), 2.443Hz(2nd mode) ▪ Year: 2023	 ▪ Type: Cantilever Type TMD (4sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 0.6ton - Stroke: 4cm ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
67	 **Yeosu Dolsan daegyo** ▪ Client: Wookyung construction ▪ Outline - Bridge - Length : 449.6m - Frequency: 0.532Hz(Ver) ▪ Year: In Progress	 ▪ Type: Sliding Type TMD (4sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 3ton - Stroke: 19cm + 5cm(buffer) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
66	 **Yangsan Jungbudong** ▪ Client: Kumho E & C ▪ Outline - Residence Building - Height : 144.2m - Frequency: 0.210Hz(Y), 0.296Hz(X) ▪ Year: In Progress	 ▪ Type: Pendulum Type TMD (1sets) ▪ Control direction: Y direction ▪ Specification - Moving mass: 130ton - Stroke: 30cm + 8cm(buffer) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

No.	Project	Vibration Control Device
65	 **Jeju Airport** ▪ Client: Jeju Regional Office of Aviation ▪ Outline - Air Traffic Control Tower - Height : 58.6m - Frequency: 0.763Hz(X), 0.929Hz(Y) ▪ Year: In Progress	 ▪ Type: Active Mass damper (2sets) ▪ Control direction: X & Y direction ▪ Specification - Moving mass: 9.0ton(X), 7.5ton(Y) - Stroke: 12cm(X) ,8cm(Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
64	 **Bangkapi Flyover Bridge, Thailand** ▪ Client: IETL Co.,LTD ▪ Outline - Bridge - Length : Max. 43(m) - Frequency: 2.6Hz ▪ Year: In Progress	 ▪ Type: TMD (4sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 2ton (vertical 4 sets) - Stroke: 5.0cm(vert) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
63	 **Daegu Bonridong** ▪ Client: Taewang E & C ▪ Outline - Residence Building - Height : 132.3m - Frequency: 0.256Hz(X), 0.301Hz(Y) ▪ Year: In Progress	 ▪ Type: Pendulum Type TMD (1sets) ▪ Control direction: X & Y direction ▪ Specification - Moving mass: 100ton - Stroke: 25cm + 15cm(buffer) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

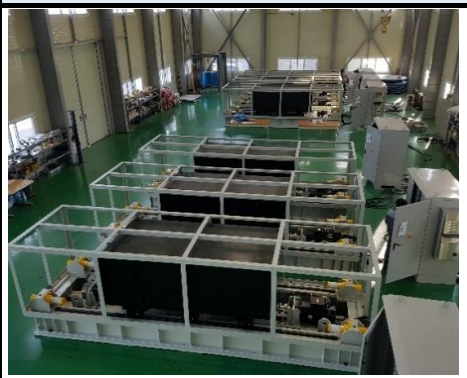
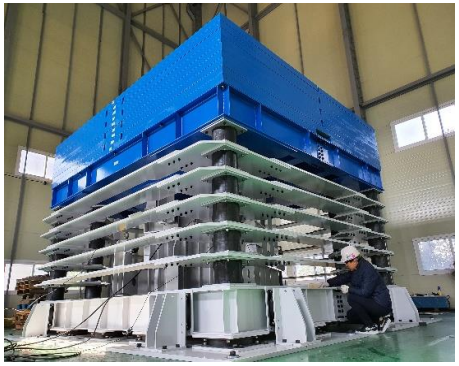
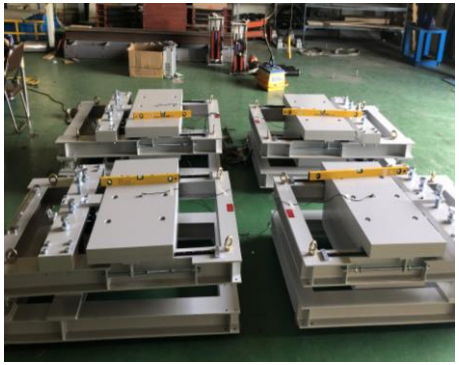
No.	Project	Vibration Control Device
62	 **Fubon Life A25 Tower, Taiwan** ▪ Client: **ARDEN Engineering Consultant** ▪ Outline - Height: 256.65m - Frequency 0.2209Hz(x-dir) 0.2210Hz(y-dir) ▪ Year: 2022	 ▪ Type: Pendulum type ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 500ton - Stroke: 0.7m(xdir) 0.7m(y-dir) - Optimal damping ratio : 7.76~31.4% ▪ Conceptual & Detailed Design / / Manufacture / Installation Supervision / / Performance test /
61	 **Sejong Geumgang(Riv.) foot bridge** ▪ Client: Lotte construction ▪ Outline - Arch + Truss - Length : 113m + 113m - Frequency: 2.853Hz(Z), 1.276(X), 2.324Hz(Z) ▪ Year: 2021	 ▪ Type: TMD (7sets) ▪ Control direction: Horizontal, Vertical ▪ Specification - Moving mass: 2.0ton (vertical 6 sets) +2.0ton (Horizontal 1set) - Stroke: 2.1cm(vert) + 0.8cm(Hor.) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
60	 **2020 Dubai Expo Korean pavilion, UAE** ▪ Client: KOTRA + Ssangyong E&C ▪ Outline - 4 Truss Ramps(cantilever type) - Length : Max. 92(m) - Frequency: 1.684(Z), 2.132(Z), 2.681(Z) ▪ Year: 2021	 ▪ Type: TMD (5sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 0.3ton (vertical 5 sets) - Stroke: 3.0cm(vert) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

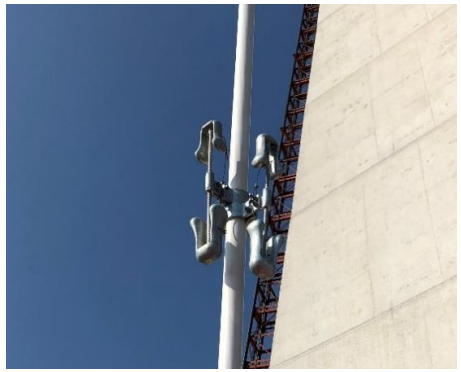
No.	Project	Vibration Control Device
59	 **Incheon International Airport ATCT** ▪ Client: Incheon International Airport Corporation ▪ Outline - Air Traffic Control Tower - Height : 65m - Frequency: 0.844Hz(X), 0.833Hz(Y) ▪ Year: 2020	 ▪ Type: Active Mass damper (2sets) ▪ Control direction: X & Y direction ▪ Specification - Moving mass: 1.3ton - Stroke: 15cm(X) +12cm(Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
58	 **AICHI Stack, Japan** ▪ Client: Nichizo Tech Inc. ▪ Outline - Stack - Height : 45m - Frequency: 1.31Hz(X & Y) ▪ Year: 2021	 ▪ Type: TMD (4sets) ▪ Control direction: Horizontal bi-dir. ▪ Specification - Moving mass: 180kg (X & Y) - Stroke: 13.5cm(X & Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
57	 **Seohee Star Hills** ▪ Client: SeoHee E & C ▪ Outline - Residence Building - Height : 110m - Frequency: 0.314Hz(X), 0.307Hz(Y) ▪ Year: 2022	 ▪ Type: Pendulum Type TMD (1sets) ▪ Control direction: 1-direction(Y) ▪ Specification - Moving mass: 60ton - Stroke: 20cm +10cm(buffer) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

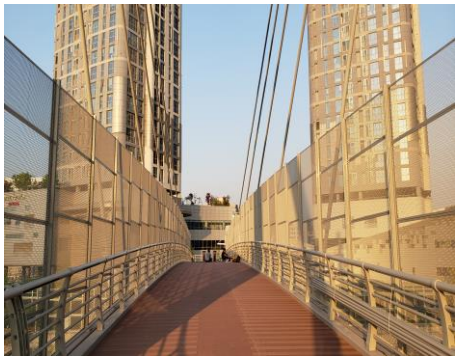
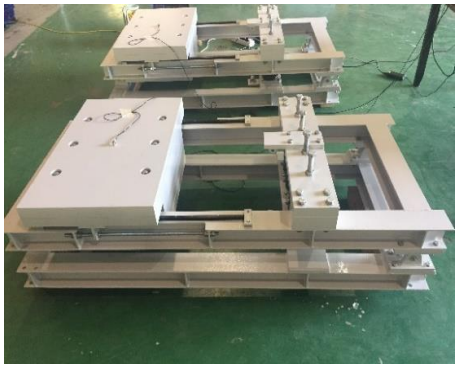
No.	Project	Vibration Control Device
56	 **Jincheon Duta Mt. observatory** ▪ Client: Jincheon County office ▪ Outline - Ramp type tower - Height : 14.5m - Frequency: 1.719(Y), 1.83(Z-rot), 2.192Hz(X) ▪ Year: 2020	 ▪ Type: TMD (4sets) ▪ Control direction: Horizontal ▪ Specification - Moving mass: 0.3ton (Horizontal 2 sets) 0.3ton (Torsional 2sets) - Stroke: 2.5cm(Hor.), 2.0cm(Tor.) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
55	 **KOBE Steel Stack, Japan** ▪ Client: Nichizo Tech(Japan) ▪ Outline - Steel Stack - Height : 90m - Frequency: 0.57Hz ▪ Year: 2020	 ▪ Type: TMD (4sets) ▪ Control direction: 1-direction ▪ Specification - Moving mass: 0.76ton - Stroke: 20cm - Magnetic damper ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
54	 **Cheonsa(1004) Bridge** ▪ Client: Daewoo Engineering & Construction ▪ Outline - Cable-Stayed bridge - Length: 1,004m (307+510+187) - Frequency: 0.32Hz ▪ Year: 2020	 ▪ Type: TMD (4sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 3.5ton - Stroke: 19cm(vert) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

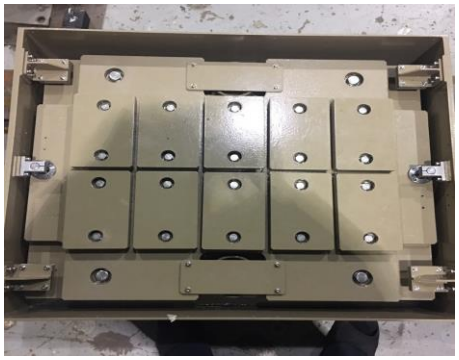
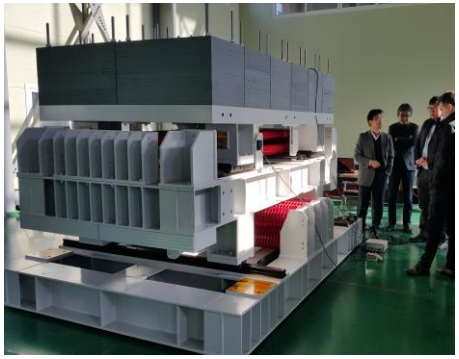
No.	Project	Vibration Control Device
53	 **Gagok 2nd Bridge** ▪ Client: Hyundai Engineering ▪ Outline - 3-sapn Preflex Girder bridge - Length: 40m - Frequency: 1.92Hz ▪ Year: 2019	 ▪ Type: TMD (1sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 3ton - Stroke: 4cm(vert) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
52	 **Oceanpiren bridge, Sweden** ▪ Client: PEAB ▪ Outline - Stay Cable bridge - Length: 40m - Frequency: 5~30Hz ▪ Year: 2021	 ▪ Type: Stockbridge Damper(Hanger Cable) ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 4.62kg +7.90 kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.687% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
51	 **Halogaland bridge, Norway** ▪ Client: Joint Venture Halogaland (SRBG) ▪ Outline - Suspension bridge (Handrope) - Main span length of 1,178m - Frequency: 5Hz ~ 30Hz ▪ Year: 2021	 ▪ Type: Stockbridge Damper(Handrope) ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 2.78kg +4.46 kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.687% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

No.	Project	Vibration Control Device
50	 **Halogaland bridge, Norway** ▪ Client: Joint Venture Halogaland (SRBG) ▪ Outline - Suspension bridge (Hanger cable) - Main span length of 1,178m - Frequency: 5~30Hz ▪ Year: 2021	 ▪ Type: Stockbridge Damper (Hanger Cable) ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 4.62kg +7.90 kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.687% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
49	 **1915 Canakkale Bridge, Turkey** ▪ Client: DLSY JV ▪ Outline - Span Length: 3,536m (770+2,023+770) - Tower Height: 318m - Frequency 5Hz ~ 30Hz ▪ Year: 2019	 ▪ Type: Stockbridge Damper(Handrope) ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 2.78kg +7.46kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.687% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
48	 **1915 Canakkale Bridge, Turkey** ▪ Client: DLSY JV ▪ Outline - Span Length: 3,536m (770+2,023+770) - Tower Height: 318m - Frequency 5Hz ~ 30Hz ▪ Year: 2019	 ▪ Type: Stockbridge Damper(Hanger cable) ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 4.62kg +7.90 kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.687% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

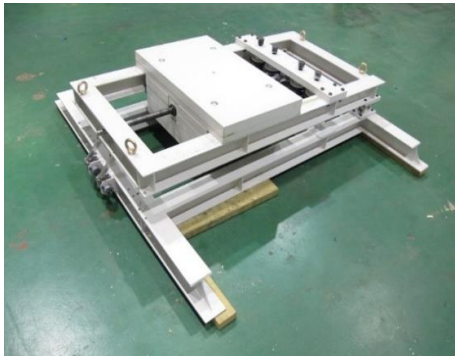
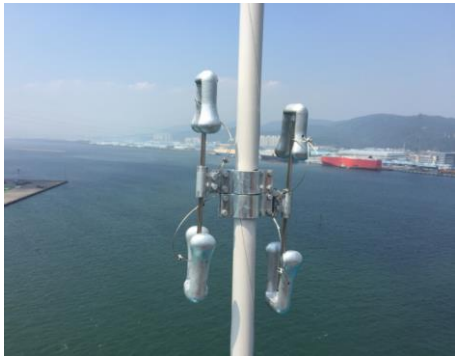
No.	Project	Vibration Control Device
47	 **1915 Canakkale Bridge, Turkey** ▪ Client: DLSY JV ▪ Outline - Span Length: 3,536m (770+2,023+770) - Tower Height: 318m - Frequency 0.08-0.63Hz(Long-dir) 0.52-0.70Hz(Torsion-dir) ▪ Year: 2019	 ▪ Type: AMD (6 sets) ▪ Control direction: Horizontal dir. ▪ Specification - Moving mass: 30ton (6 sets) - Max. Stroke: 120cm - Installation location: Tower ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
46	 **Greenland Centre Sydney, Australia** ▪ Client: Probuild Consruction ▪ Outline - Height: 235m - Frequency: 0.153Hz (x-dir) 0.170 (y-dir) ▪ Year: 2020	 ▪ Type: TMD (1 set) ▪ Control direction: Horizontal bi-dir. ▪ Specification - Rubber Bearing + Coil-Spring type - Moving mass: 180tons - Stroke: ±336mm ▪ Conceptual & Detailed Design / / Manufacture / Performance test /
45	 **Masan west harbor Bridge** ▪ Client: Suhyun Engineering ▪ Outline - Suspension bridge - Length: 130m - Frequency: 0.804Hz ▪ Year: 2018	 ▪ Type: TMD (4sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 1.2ton (2 sets)+1.0ton (2 sets) - Stroke: 3cm(vert) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

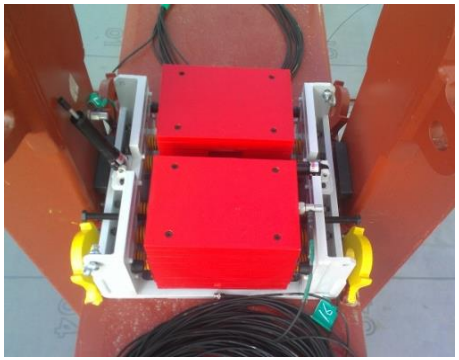
No.	Project	Vibration Control Device
44	 **Haneda Bridge, Japan** ▪ Client: **Hitachi Zonsen** ▪ Outline - Length: 594.7m (182+240+172.7) - Frequency 0.563Hz(ver-dir) ▪ Year: 2019	 ▪ Type: TMD (20 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 3.5ton (20 sets) - Installation location: Steel box girder ▪ Conceptual & Detailed Design / / Manufacture / Installation Supervision / Performance test /
43	 **2nd Namhae Bridge (Hanger Cable)** ▪ Client: GS E&C ▪ Outline - Suspension bridge - Length: 990m (50+890+50) - Cable Frequency: 1Hz ~ 40Hz - Damping ratio: 0.01%~0.03% ▪ Year: 2018	 ▪ Type: Stockbridge Damper ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 4.62kg +7.90 kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.687% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
42	 **Choansan Footbridge** ▪ Client: Hanyang Industry ▪ Outline - Arch Bridge - Length: 191m (45+80+40+30) - Frequency 1.594Hz(1st Ver-dir) 1.845Hz(2nd Ver-dir) - Damping ratio: 0.51% ▪ Year: 2017	 ▪ Type: TMD (4sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 1.5ton (2 sets)+0.4ton (2 sets) - Stroke: 3cm(vert) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

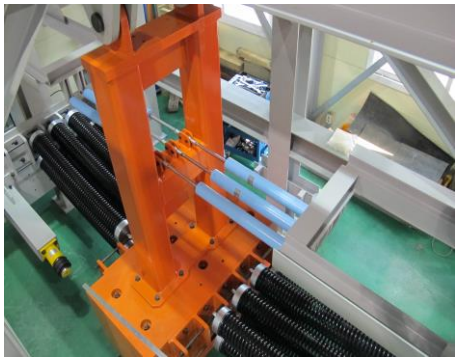
No.	Project	Vibration Control Device
41	 **Wangsibri Haengdang Footbridge** ▪ Client: Samil E&C ▪ Outline - Cable Stayed Bridge - Length: 78m - Frequency 1.482Hz(Ver-dir) - Damping ratio: 0.346% ▪ Year: 2017	 ▪ Type: TMD (2sets) ▪ Control direction: Vertical ▪ Specification - Moving mass: 0.7ton x2(vert) - Stroke: 5cm(vert) ▪ Achieve damping ratio : 5.134% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
40	 **Incheon International Airport Main Tower** ▪ Client: Sungji E&C ▪ Outline - Airtraffic control tower - Height: 100.4m - Frequency: 0.71Hz(X), 0.74Hz(Y) - Damping ratio: 0.6% ▪ Year: 2017	 ▪ Type: AMD (2 sets) ▪ Control direction: Horizontal bi-dir. ▪ Specification - Moving mass: 6.78ton(X), 9.23ton(Y) - Stroke: ±350mm - Optimal damping ratio: 15.0% ▪ Achieve damping ratio : 13.24%(X), 13.65%(Y) ▪ Replacement of Control unit / / Performance test /
39	 **Pyeongtaek Bridge (Stay Cable)** ▪ Client: SK E&C ▪ Outline - Extradosed bridge - Length: 1210m (7 Pylons) - Cable Frequency: 2Hz ~ 10Hz - Damping ratio: 0.04%~0.06% ▪ Year: 2017	 ▪ Type: Stockbridge Damper ▪ Control direction: Vertical dir. ▪ Specification - High-frequency & Low-frequency Combined Type - Messenger Cable: Φ-19mm ▪ Achieve damping ratio : 0.316% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

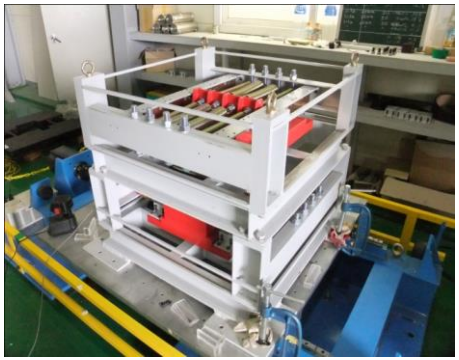
No.	Project	Vibration Control Device
38	 **Gonjiam Hwadam Forest Footbridge** ▪ Client: Serve One ▪ Outline - Arch Bridge - Length: 59m - Frequency 2.28Hz(Hor-dir) 8.20Hz(Ver-dir) ▪ Year: 2017	 ▪ Type: TMD (3sets) ▪ Control direction: Vertical, Horizontal ▪ Specification - Moving mass: 0.4ton x2(hor), 0.3t(vert) - Stroke: 0.587cm/0.779cm(hor), 0.1m(vert) ▪ Achieve damping ratio: 8.176%(Hor.), 5.84%(ver.) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
37	 **New York Wheel, USA** ▪ Client: **Mammoet-Starneth** ▪ Outline - Height: 192m - Frequency 0.737Hz(x-dir) 0.278Hz(y-dir) ▪ Year: 2016	 ▪ Type: Brace TMD(2ea) ▪ Control direction: horizontal bi-dir. ▪ Specification - Moving mass: 32ton & 28ton - Stroke: 50mm(xdir) 270mm(y-dir) - Optimal damping ratio : 6% ▪ Conceptual & Detailed Design / / Manufacture / Installation supervision/ / Performance test /
36	 **Taichung Bauger Building, Taiwan** ▪ Client: **CEC** **(Continental Engineering Orporation)** ▪ Outline - Height: 158.4m - Frequency 0.237Hz(x-dir) 0.230Hz(y-dir) ▪ Year: 2018	 ▪ Type: Pendulum type ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 150ton - Stroke: 0.6m(xdir) 1.35m(y-dir) - Optimal damping ratio : 12.3% ▪ Conceptual & Detailed Design / / Manufacture / Installation Supervision / / Performance test /

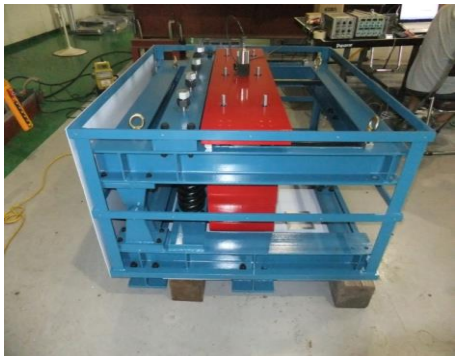
No.	Project	Vibration Control Device
35		**Incheon International Airport 2nd Tower** ▪ Client : Dongyang E&C ▪ Outline - Steel & concrete - Height : 93.90m - Frequency : 0.9560Hz (y-dir) 1.0231Hz (x-dir) - Damping ratio : 0.6% ▪ Year: 2017		▪ Type : AMD (2 set) ▪ Control direction : Horizontal bi-dir. ▪ Specification - Moving Mass : 10.4ton(x), 9.2ton(y) (2sets) - Stroke: ±70mm - Optimal damping ratio: 8.39%(x), 9.89%(y) ▪ Achieve damping ratio: 8.19%(x), 6.66%(y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
34		**DUBAI I Ferris Wheel, UAE** ▪ Client : Hyundai E&C ▪ Outline - 4 leg column+Wheel - Height: 258m - Diameter of wheel: 250m - World's Highest Ferris Wheel ▪ Year: 2021		▪ Type : LEG TMD (4ea),Brace TMD(2ea) ▪ Control direction : horizontal dir.(X&Y) ▪ Specification - Moving mass: 4ton(4ea) & 45ton(2ea) - Installation location: Leg - Optimal damping ratio: 10% - Stroke: 250mm (45ton) / 300mm(4ton) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
33		**Palyung Bridge (Hanger Cable)** ▪ Client: Daelim Industries ▪ Outline - Suspension bridge - Length: 1340m (310+850+180) - Cable Frequency: 1Hz ~ 40Hz - Damping ratio: 0.01%~0.03% ▪ Year: 2016		▪ Type: Stockbridge Damper ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 4.62kg +7.90 kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.695% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

No.	Project	Vibration Control Device
32	 **Cheonan Cheongsoo Footbridge** ▪ Client: Heunglim construction ▪ Outline - Cable Stayed bridge - Length: 38.15m - Frequency: 1.9296Hz (V) - Damping ratio: 0.44% ▪ Year: 2015	 ▪ Type: TMD (1 set) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 0.75ton(1 set) - Stroke : ±13mm - Optimal damping ratio: 6.7% ▪ Achieve damping ratio : 6.403% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
31	 **Ulsan Bridge (Hanger Cable)** ▪ Client: Hyundai E&C ▪ Outline - Suspension Bridge - Length : 1,800m - Cable Frequency: 1Hz ~ 40Hz - Damping ratio: 0.016%~0.04% ▪ Year: 2015	 ▪ Type: Stockbridge damper (120 sets) ▪ Control direction: horizontal dir. ▪ Specification - Moving mass: 4.62kg +7.90 kg - Messenger Cable: Φ-16mm ▪ Achieve damping ratio : 0.35% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
30	 **Sejong Government Office Footbridge** ▪ Client: OK Consultant ▪ Outline - Single span+2span bridge - Length : 163m - Frequency : 2.07Hz - Damping ratio : 0.92% ▪ Year: 2014	 ▪ Type: TMD (3 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 1.0ton (3 sets) - Installation location: Under the deck ▪ Achieve damping ratio : 2.12% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

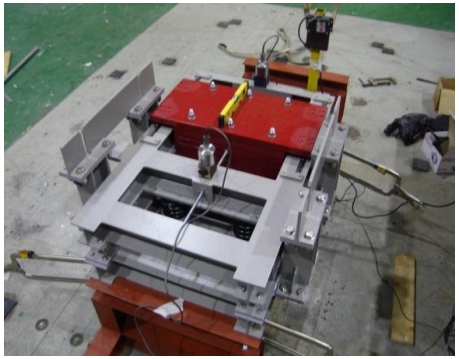
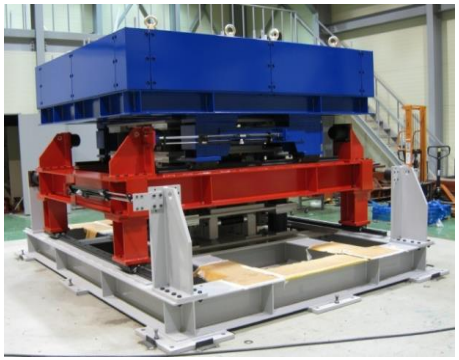
No.	Project	Vibration Control Device
29	 **Daehalang Kkochgelang Footbridge** ▪ Client : Hyundai Steel ▪ Outline - Cable Stayed bridge - Length : 260m - Frequency : 1.9296Hz (V) - Damping ratio : 0.28% ▪ Year : 2013	 ▪ Type : TMD (4 sets) ▪ Control direction : Vertical dir. ▪ Specification - moving mass : 1.5ton(2ea), 0.6ton(2ea) - stroke : ±28mm - optimal damping ratio : 6.8% ▪ Achieve damping ratio : 5.4% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
28	 **Gangneung Dano Footbridge** ▪ Client: Gangneung City Hall ▪ Outline - 3-span steel Bridge - Length: 108m - Frequency: 2.01Hz (1st V), 3.07Hz (2nd V) - Damping ratio: 0.47%(1st), 0.77%(2nd) ▪ Year: 2013	 ▪ Type : TMD (3 sets) ▪ Control direction : Vertical dir. ▪ Specification - Moving mass: 1.6ton (1ea), 0.3ton (2ea) - Stroke : ±30mm ▪ Achieve damping ratio 9.7%(1st V), 9.3%(2nd V) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
27	 **Lashing Bridge on Maersk Ship** ▪ Client : DSME ▪ Outline - Lashing Bridge - Hight: 8.5m - Frequency: 6.0~8.0Hz - Damping ratio: 0.2% ▪ Year: 2013	 ▪ Type : TMD (2 sets) ▪ Control direction : Horizontal dir. ▪ Specification - Moving mass : 0.2ton (2 sets) - Stroke : ±15mm - Optimal damping ratio : 8.96% ▪ Achieve damping ratio: 6.81% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

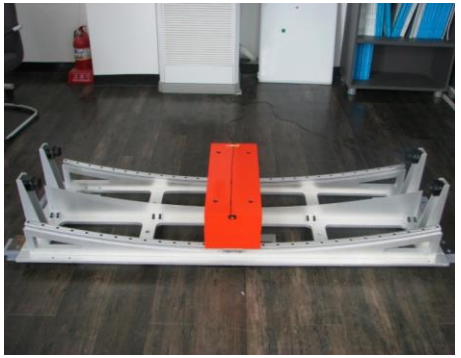
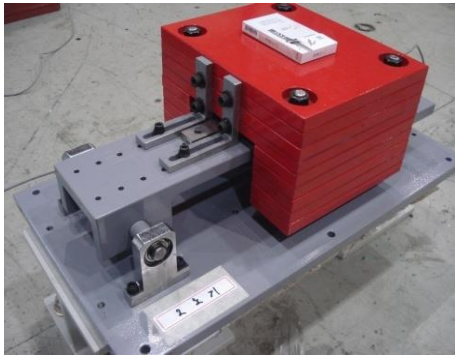
No.	Project	Vibration Control Device
26	 **Gang-byun Techno Mart** ▪ Client: Prime Development Co., Ltd ▪ Outline - Shoping Mall & Office - Height: 187m(39-stories) - Frequency: 0.19Hz(Y-Dir.), 2.7Hz(Z-Dir.) - Damping ratio: 1.0% (Y-dir.), 0.3% (Z-dir.) ▪ Year : 2013	 ▪ Type: HMD (AMD+TMD,1 sets) ▪ Control direction: Ver. & Hor. dir. ▪ Specification - Moving mass: V.40t(TMD), H.50t(AMD) - Stroke: ±10mm(TMD), ±600mm(AMD) - Optimal damping ratio: 4.63%(TMD) ▪ Achieve damping ratio: 6.7%(x), 6.7%(z) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
25	 **Songdo 4th Bridge, Tower during Construction & In-service** ▪ Client : GS E&C ▪ Outline - Cable stayed bridge - Height: 105.2m - Frequency: 0.351Hz~0.645Hz (During Construction) - Damping ratio: 0.4% ▪ Year: 2013	 ▪ Type: TMD (2 sets) ▪ Control direction : Horizontal dir. ▪ Specification - Moving mass : 6.0 ton (2 sets) - Stroke : ±460mm - Optimal damping ratio : 7.3% ~ 8.3% ▪ Achieve damping ratio: 5.76% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
24	 **2nd Jindo Bridge (In-Service Stage)** ▪ Client: Hyundai E&C ▪ Outline - Cable stayed bridge - Length: 484m - Frequency: 0.438Hz ▪ Year: 2012	 ▪ Type: TMD (4 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 3.25ton (4 sets) - Installation location: Steel box girder ▪ Achieve damping ratio: 5.75% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

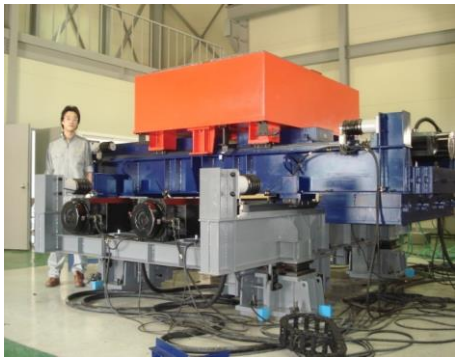
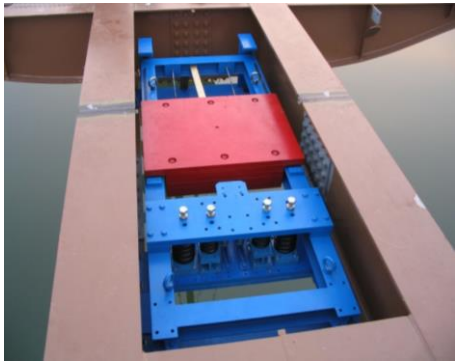
No.	Project	Vibration Control Device
23	 **Paju Lotte Premium Outlets Footbridge** ▪ Client: Lotte Shopping ▪ Outline - 2-span steel bridge - Length: 93m - Frequency: 1.78Hz (V) - Damping ratio: 0.76% ▪ Year: 2012	 ▪ Type: TMD (4 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 0.75ton (4 sets) - Stroke: ±30mm - Optimal damping ratio: 6.0% ▪ Achieve damping ratio: 8.6% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
22	 **BEXCO Footbridge** ▪ Client: Seung Hwa Plant ▪ Outline - Cable stayed bridge - Length: 82m - Frequency: 1.60Hz (V) - Damping ratio: 0.7% ▪ Year: 2012	 ▪ Type : TMD (2 sets) ▪ Control direction : Vertical dir. ▪ Specification - moving mass : 1.3ton (2 sets) - stroke : ±100mm - optimal damping ratio : 3.6% ▪ Achieve damping ratio: 3.05% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
21	 **Ube Steel Stack, Japan** ▪ Client: **Hitachi Zosen** ▪ Outline - Steel chimney - Height: 50m - Frequency: 1.567Hz(X,Y) - Damping ratio: 1.27%(X), 1.02%(Y) ▪ Year: 2011	 ▪ Type: TMD (2 sets) ▪ Control direction: Horizontal bi-dir. ▪ Specification - Moving mass: 0.24ton (2 sets) - Stroke: ±95mm - Optimal damping ratio: 10.8% ▪ Achieve damping ratio: 3.799%(X), 3.336%(Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation Supervision / / Performance test /

No.	Project	Vibration Control Device
20	 **Ulleungdo Footbridge** ▪ Client: New-millennium E&C ▪ Outline - Suspension bridge - Length: 140m - Frequency: 1.80Hz(V) - Damping ratio: 0.4% ▪ Year: 2011	 ▪ Type: TMD (2 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 1.2ton (2 sets) - Stroke: ±30mm - Optimal damping ratio: 14.2% ▪ Achieve damping ratio: 8.69% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
19	 **Dongchon Footbridge** ▪ Client: Cheonggu E&C. ▪ Outline - Cable stayed bridge - Length: 222m - Frequency: 1.63Hz (V) - Damping ratio: 0.4% ▪ Year: 2011	 ▪ Type: TMD (6 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 1.4ton(2ea), 0.4ton(4ea) - Stroke: ±30mm - Optimal damping ratio: 10.0% ▪ Achieve damping ratio: 5.91% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
18	 **Hyundai-steel Stock House** ▪ Client: Hyundai-steel ▪ Outline - Long span slab - Frequency: 13.6~15.7Hz - Damping ratio: 0.3% ▪ Year: 2011	 ▪ Type: TMD (38 sets) ▪ Control direction: Vertical dir. ▪ Specification - Leaf spring & silicone damper - Moving mass: 0.06ton (38 sets) - Stroke: ±25mm - Optimal damping ratio: 4.0~6.0% ▪ Achieve damping ratio: 2.51% ▪ Conceptual & Detailed Design / Manufacture / Installation / Performance test

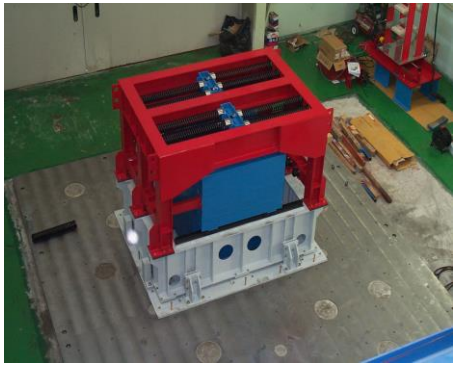
No.	Project	Vibration Control Device
17	 **Yeoido Setgang Footbridge** ▪ Client: Ilkyung E&C. ▪ Outline - Cable stayed bridge - Length: 220m - Frequency: 0.94Hz(V), 1.11Hz(H) - Damping ratio: 0.6% ▪ Year: 2011	 ▪ Type: TMD (4 sets) ▪ Control direction: Ver. & Horizontal ▪ Specification - Moving mass: V.1.2ton(2ea), H.1.2ton(2ea) - Stroke: V :±70mm, H : 110mm - Optimal damping ratio: 2.0% ▪ Achieve damping ratio: 4.41%(V), 2.55%(H) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
16	 **Pylon of Geoga Bridge** ▪ Client: Deawoo E&C ▪ Outline - 3-pylon cable stayed bridge (Construction stage) - Height : 101.9m - Frequency : 0.22~0.28Hz - Damping ratio : 0.5% ▪ Year: 2010	 ▪ Type: TMD (3 sets) ▪ Control direction: Longitudinal dir. ▪ Specification - Pendulum type - Moving mass: 24.0ton (3 sets) - Stroke: ±3000mm - Optimal damping ratio: 2.23% ▪ Achieve damping ratio: 5.38% ▪ Conceptual & Detailed Design / Manufacture / Installation / Performance test
15	 **POSCO E&C Head Office (A)** ▪ Client: POSCO E&C ▪ Outline - Height: 185m(39-stories) - Frequency: 0.26Hz(X), 0.24Hz(Y) - Damping ratio: 1.0% ▪ Year: 2010	 ▪ Type: TMD (1 set) ▪ Control direction: Horizontal bi-dir. ▪ Specification - Moving mass : 80.0ton - Stroke : ±300mm - Optimal damping ratio: 4.5%(X), 4.7%(Y) ▪ Achieve damping ratio: 4.58%(X), 8.49%(Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

No.	Project	Vibration Control Device
14	 **POSCO E&C Head Office (B)** ▪ Client : POSCO E&C ▪ Outline - Height: 185m(39-stories) - Frequency: 0.25Hz(X), 0.24Hz(Y) - Damping ratio: 1.0% ▪ Year: 2010	 ▪ Type: TMD (1 set) ▪ Control direction: Horizontal bi-dir. ▪ Specification - Moving mass : 160.0ton - Stroke : ±250mm - Optimal damping ratio : 6.1%(X), 6.6%(Y) ▪ Achieve damping ratio: 3.60%(X), 4.94%(Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
13	 **Naksaeng Footbridge** ▪ Client: Lotte E&C ▪ Outline - Cable stayed bridge - Length: 54m - Frequency: 1.52Hz(V) - Damping ratio: 0.6% ▪ Year: 2009	 ▪ Type: TMD (2 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 0.8ton (2 sets) - Stroke: ±40mm - Optimal damping ratio: 4.7% ▪ Achieve damping ratio: 5.4% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
12	 **Alpensia Ski Jump Tower** ▪ Client : Taeyoung E&C ▪ Outline - Height : 115m - Frequency : 0.49Hz(X), 0.39Hz(Y) - Damping ratio : 2.0% ▪ Year : 2009	 ▪ Type : TMD (1set) ▪ Control direction : Horizontal bi-dir. ▪ Specification - Moving mass : 25.0ton(X), 23.0ton(Y) - Stroke : ±250mm - Optimal damping ratio : 5.6%(X), 5.4%(Y) ▪ Achieve damping ratio: 3.43%(X), 3.43%(Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

No.	Project	Vibration Control Device
11	 **Namsan Cable Car** ▪ Client: Namsan Cable Car Way ▪ Outline - Cable Car - Weight: 5,600kg - Total length: 605m - Frequency: 0.16~0.27Hz - Damping ratio: 1.0% ▪ Year: 2009	 ▪ Type: TMD (2sets) ▪ Control direction: Transverse ▪ Specification (Pendulum Type) - Moving mass : 170kg (2 sets) - Stroke : 700mm - Magnetic Damper - Optimal damping ratio : 7.0% ▪ Achieve damping ratio: 6.564% ▪ Conceptual & Detailed Design / Manufacture / Installation / Performance test
10	 **Light Rail Transit, Japan** ▪ Client: **IHI corporation** ▪ Outline - Light Rail Transit - Frequency: 8.0~10.0Hz - Damping ratio: 1.0%(approx.) ▪ Year: 2009	 ▪ Type: TMD (2 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 40kg (2 sets) - Stroke: ±5.0mm - Optimal damping ratio: 7.0% ▪ Achieve damping ratio: 2.1% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
9	 **Cheonan Footbridge** ▪ Client: Human bridge ▪ Outline - Suspension bridge - Length: 63m - Frequency: 2.8Hz(V) - Damping ratio: 0.5% ▪ Year: 2008	 ▪ Type: TMD (2 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass : 0.6ton (2 sets) - Stroke : ±50mm - Optimal damping ratio : 5.0% ▪ Achieve damping ratio: 6.985% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

No.	Project	Vibration Control Device
8	 **Ulsan Lotte Hotel** ▪ Client: **IHI corporation** ▪ Outline - Hotel - Height: 110m (24-stories) - Frequency: 0.42Hz(X), 0.36Hz(Y) - Damping ratio: 1.0% ▪ Year: 2007	 ▪ Type : AMD (2 sets) ▪ Control direction : Horizontal bi-dir. ▪ Specification - Moving mass : 20.0ton(X), 10.0ton(Y) - Stroke : ±600mm - Optimal damping ratio : 20.6%(X), 13.9%(Y) ▪ Achieve damping ratio: 12.8%(X), 7.5%(Y) ▪ Conceptual & Detailed Design / Manufacture / Installation / Performance test
7	 **Whaseong Dongtan Footbridge** ▪ Client: KR ▪ Outline - Nielsen arch bridge - Length: 87m - Frequency: 2.50Hz(V), 1.57Hz(H) - Damping ratio: 0.5% ▪ Year: 2006	 ▪ Type: TMD (6 sets) ▪ Control direction: Vertical & Horizontal ▪ Specification - Moving mass: 0.6ton (Ver., 4 sets) 0.6ton (Hor., 2 sets) - Stroke: ±50mm - Optimal damping ratio: 5.0% ▪ Achieve damping ratio: 4.31%(V), 2.50%(H) ▪ Conceptual & Detailed Design / Manufacture / Installation / Performance test
6	 **Eunpa Footbridge** ▪ Client: Human bridge ▪ Outline - Suspension bridge - Length: 110m - Frequency: 1.77Hz - Damping ratio: 0.5% ▪ Year: 2006	 ▪ Type: TMD (2 sets) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass: 0.65ton (2 sets) - Stroke: ±40mm - Optimal damping ratio: 5.0% ▪ Achieve damping ratio: 2.8% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /

No.	Project	Vibration Control Device
5	 **Busan Centumcity** ▪ Client: POSCO E&C ▪ Outline - Residence building - Weight: 33950ton - Height: 121.7m - Frequency: 0.52Hz(X), 0.47Hz(Y) - Damping ratio: 1.0% ▪ Year: 2004	 ▪ Type: TMD (3 sets) ▪ Control dir : Horizontal dir. ▪ Specification - Moving mass: 100ton - Stroke: ±300mm ▪ Optimal damping ratio: 6.0% ▪ Achieve damping ratio: 4.15%(X), 3.90%(Y) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
4	 **2nd Jindo Bridge, Tower during Construction** ▪ Client: Hyundai E&C ▪ Outline - Construction stage - Cable stayed bridge - Height: 88.9m - Frequency: 0.576Hz - Damping ratio: 0.2% ▪ Year: 2003	 ▪ Type: Sliding Block (2 sets) ▪ Control direction: Horizontal dir. ▪ Specification - Moving mass : 4.5ton (2 sets) - Stroke : ±385mm - Friction Coefficient : 0.3 ▪ Achieve damping ratio: 3.6% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test
3	 **2nd Jindo Bridge, Deck during Construction** ▪ Client: Hyundai E&C ▪ Outline - Construction stage - Cable stayed bridge - Length: 484m - Frequency: 0.19~1.0Hz - Damping ratio: 0.4% ▪ Year: 2003	 ▪ Type: TMD (2 sets) ▪ Control direction: Horizontal dir. ▪ Specification - Moving mass : 12.0ton (2 sets) - Stroke : ±1000mm - Optimal damping ratio : 6.0% ▪ Achieve damping ratio: 5.55% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test

No.	Project	Vibration Control Device
2	 **Yangyang Airport** ▪ Client: KAC(Korea Airport Corporation) ▪ Outline - Steel & concrete - Height : 80.1m - Frequency : 0.386 - Damping ratio : 1.0% ▪ Year: 2001	 ▪ Type : Sliding TMD (1 set) ▪ Control direction : Horizontal 1 way ▪ Specification - Moving Mass : 15ton - Stroke: ±300mm - Optimal damping ratio: 6.8%(x) ▪ Achieve damping ratio: 4.5%(x) ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /
1	 **Rima Building** ▪ Client: Rima ▪ Outline - Slab vibration due to traffic load - Frequency: 10.5Hz(Z) - Damping ratio: 2.0% ▪ Year: 2001	 ▪ Type: TMD (1 set) ▪ Control direction: Vertical dir. ▪ Specification - Moving mass : 200kg - Stroke : ±50mm - Optimal damping ratio : 4.0% ▪ Achieve damping ratio: 3.2% ▪ Conceptual & Detailed Design / / Manufacture / Installation / / Performance test /