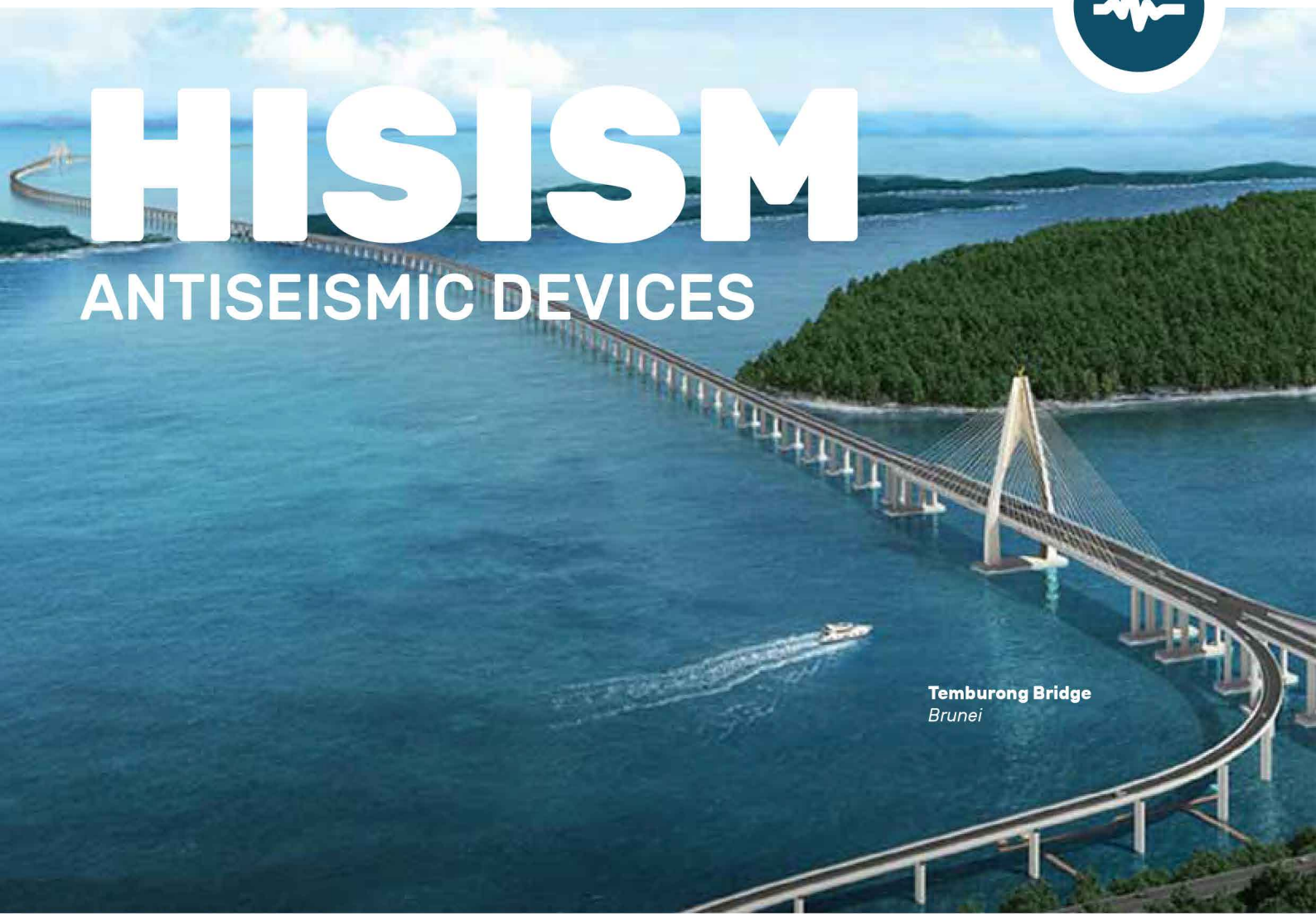
HISISM

ANTISEISMIC DEVICES



Temburong Bridge
Brunei

www.cecobearings.com | www.hirun.eu

Dependable Joining Technology

HILUD LOCK-UP DEVICES

The retrofitting solution.

The HILUD lock-up devices allow slow movement (creep, shrinkage and temperature effects) and maximize reactions for dynamic effects (braking force of trains and earthquake).

Main Field

Bridges or Railways bridges where is important to share the seismic load with different elements, to avoid hammer effect in building retrofitting of bridges.

INSTALLATION	Requires trained team
DURABILITY	> 30 years
MAINTENANCE	Corrosion protection after 15 years
COST	High

VERTICAL LOAD

HORIZONTAL DISPLACEMENT

RE-CENTERING CAPACITY

DAMPING

FIRE RESISTANCE

HIRUN INTERNATIONAL CO.LTD
Hirun Europe S.r.l. Office: via, dell' Annunciata 31CAP, 20121 Milan, Italy
Web. : www.hirun.eu | Email: info@hirun.eu | Tel. : +39-346-0900669

CECO HIRUN India PVT. LTD.
First Floor, Parashar Trade Tower, Shatabdi Nagar, Sector-1, Delhi Road, Meerut, Uttar Pradesh-250103
E-mail : contact@cecohirun.com | Contact : +918445230422

Dependable Joining Technology

Plan

Section

Dimensions and performances are given for guidance only.

Different forces and displacements can be considered upon request.

Dimensions Table

HILUD

VISCOUS DAMPER DEVICES (VDD)

Mark	Max Force	Displa-cement	L	D
Type	*kN*	*mm*	*mm*	*mm*
LUD 200/50	200	±25	520	140
LUD 200/100	200	±50	670	140
LUD 300/50	300	±25	550	160
LUD 300/100	300	±50	690	160
LUD 500/50	500	±25	590	200
LUD 500/100	500	±50	740	200
LUD 1000/50	1000	±25	980	250
LUD 1000/100	1000	±50	1100	250
LUD 1500/50	1500	±25	1060	280
LUD 1500/100	1500	±50	1200	280
LUD 2000/300	2000	±150	1950	310
LUD 2000/500	2000	±250	2550	310
LUD 2500/300	2500	±150	2050	350
LUD 2500/500	2500	±250	2650	350
LUD 3000/300	3000	±150	2150	370
LUD 3000/500	3000	±250	2750	370
LUD 3500/300	3500	±150	2300	410
LUD 3500/500	3500	±250	2900	410
LUD 4000/300	4000	±150	2400	430
LUD 4000/500	4000	±250	3000	430
LUD 5000/300	5000	±150	2600	480
LUD 5000/500	5000	±250	3200	480

HIRUN INTERNATIONAL CO.LTD
Hirun Europe S.r.l. Office: via, dell' Annunciata 31CAP, 20121 Milan, Italy
Web. : www.hirun.eu | Email: info@hirun.eu | Tel. : +39-346-0900669

CECO HIRUN India PVT. LTD.
First Floor, Parashar Trade Tower, Shatabdi Nagar, Sector-1, Delhi Road, Meerut, Uttar Pradesh-250103
E-mail : contact@cecohirun.com | Contact : +918445230422

Dependable Joining Technology

Standard

Normally HISLIDE Sliding Pendulum Isolators are designed, manufactured and tested in accordance with EN 15129 and CE marked with supervision of the Notified Body ICECON that executes the regular audit visits as foreseen by the EN standard.

Quality Assurance

The whole production of CECO-HIRUN is subjected to a quality assurance program in accordance with ISO 9000 certified by CQC, member of the International Mutual Acknowledgment Body IQNET.
In addition the production of the Sliding Pendulum Isolators is subjected to a specific quality assurance program in accordance with EN 15129 Annex ZA for the CE marking with the supervision of the Notified Body ICECON. (The relevant certificates are shown on the side)

Sliding Materials

CECO-HIRUN developed outstanding sliding materials:
- HI-3 mainly for use in spherical bearings
- HI-M and HI-H for use in sliding pendulum isolators.
- Here below a comparison table of the most commonly used sliding materials

For the sliding pendulum isolators a dynamic friction from 3 to 9%, according to the Engineers's requirements, can be granted

SLIDING MATERIAL PROPERTY	PTFE	HI-3	HI-M	HI-H
Compressive strength	90 MPa	180 MPa	270 MPa	180 MPa
Heat resistance (long term)	48°C	90°C	120°C	90°C
Heat resistance (short term)	80°C	120°C	180°C	180°C
Wear resistance	10,000 m	50,000 m	50,000 m	10,000 m
Static friction	<3%	<3%	<6%	<10%
Dynamic friction	<3%	<3%	2,5%	6 10%

HIRUN INTERNATIONAL CO.LTD
Hirun Europe S.r.l. Office: via, dell' Annunciata 31CAP, 20121 Milan, Italy
Web. : www.hirun.eu | Email: info@hirun.eu | Tel. : +39-346-0900669

CECO HIRUN India PVT. LTD.
First Floor, Parashar Trade Tower, Shatabdi Nagar, Sector-1, Delhi Road, Meerut, Uttar Pradesh-250103
E-mail : contact@cecohirun.com | Contact : +918445230422

Dependable Joining Technology

Corrosion protection

The corrosion protection of structural steel is normally performed in accordance with EN ISO 12944.
The working life of the protective coating system on the bearing can be assumed to be fulfilled with a protective system designed for the durability "high" of more than 15 years in accordance with EN ISO 12944-5:2007, 5.5 for corrosivity category C5-I (I=industrial) for inland locations and C5-M (M=marine) for sea side locations.
Surfaces in contact with concrete need no corrosion protection, however a layer of 50 µm of the first pack is applied in order to prevent oxidation during the storage before the installation. A return of at least 50 mm is applied.
In alternative paint will conform to the Project specifications, as specified by the purchaser

Fire resistance

HISLIDE Isolators are fire resistant and don't require special precautions to protect them from the fire. After a fire event an inspection is recommended and, depending on the fire intensity, the sliding material may need to be replaced

Fixings

The HISLIDE Sliding Pendulum isolators are provided with fixings made with bolts or dowels according to the type of structure. The fixing are connected to the Isolator in such a way to allow the easy replacement if necessary.

Fuses

In case of use of the HISLIDE Isolators in railway bridges it is recommended the use of mechanical fuses in order to grant the fixity of the bridge under service condition. In case of a strong earthquake the fuses will be sheared of and the isolators can start their antiseismic function

References

Asan Cheonan Expressway
South Korea

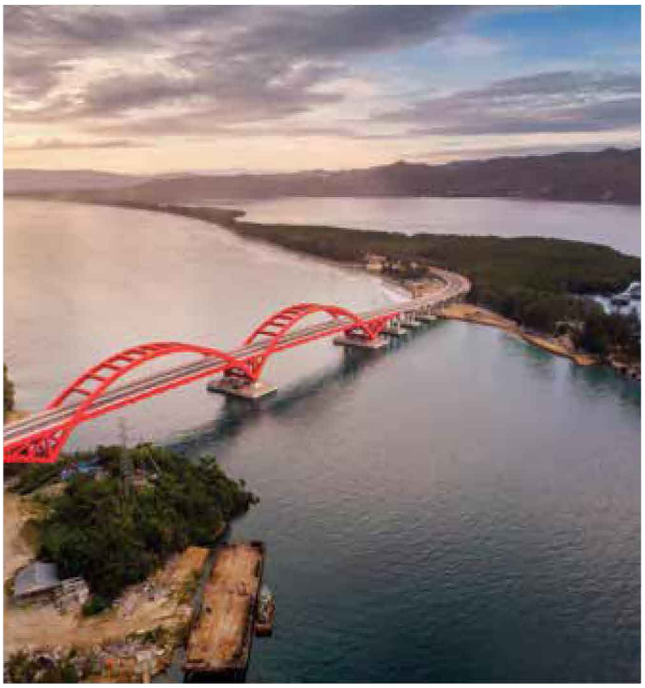
Bursa Hospital
Turkey

Dintai Building
Taiwan

Green Museum
Taiwan

References

Cibubur LRT
Jakarta, Indonesia



Holtekamp bridge
Turkey

Kerch bridge
Russia, Crimea

Casaclima
Rimini, Italy

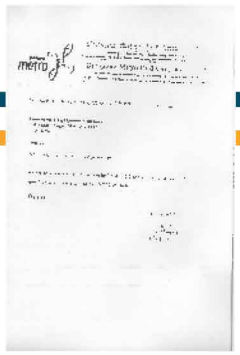
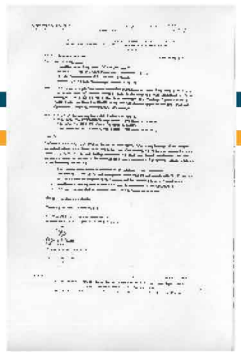
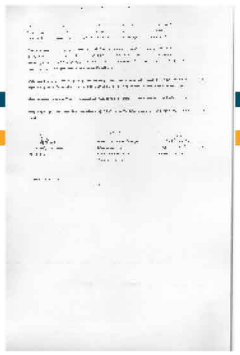
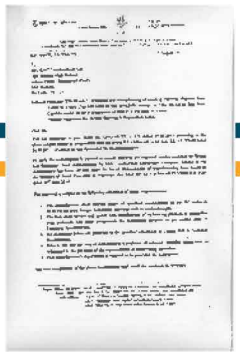
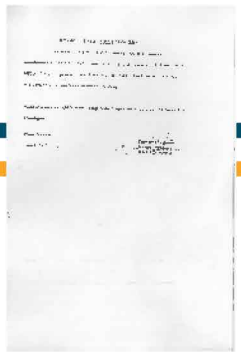
HIRUN INTERNATIONAL CO.LTD
Hirun Europe S.r.l. Office: via, dell' Annunciata 31CAP, 20121 Milan, Italy
Web. : www.hirun.eu | Email: info@hirun.eu | Tel. : +39-346-0900669

CECO HIRUN India PVT. LTD.
First Floor, Parashar Trade Tower, Shatabdi Nagar, Sector-1, Delhi Road, Meerut, Uttar Pradesh-250103
E-mail : contact@cecohirun.com | Contact : +918445230422

Dependable Joining Technology

APPROVALS, APPRECIATIONS

CECO has long list of approvals, appreciation letters and satisfactory perfomance repotrs issued from various goverment agencies, many Indian & International cunsultants those who are working in India.


QUALITY CERTIFICATIONS

Hirun International and its partners cooperate with important international institutions in order to guarantee the test performances and the advanced research on materials and products

QUALITY

EUROPEAN CERTIFICATION - CE MARK

EUROPEAN CERTIFICATION - ETA

HIRUN INTERNATIONAL is actively working with its partner to obtain the European Technical Assessment for all its advanced products like special sliding materials, post tensioning kit, expansion joints

HIRUN INTERNATIONAL CO.LTD
Hirun Europe S.r.l. Office: via, dell' Annunciata 31CAP, 20121 Milan, Italy
Web. : www.hirun.eu | Email: info@hirun.eu | Tel. : +39-346-0900669

CECO HIRUN India PVT. LTD.
First Floor, Parashar Trade Tower, Shatabdi Nagar, Sector-1, Delhi Road, Meerut, Uttar Pradesh-250103
E-mail : contact@cecohirun.com | Contact : +918445230422

Dependable Joining Technology

Dependable Joining Technology

CECO HIRUN India PVT. LTD.
First Floor, Parashar Trade Tower, Shatabdi Nagar, Sector-1, Delhi Road, Meerut, Uttar Pradesh-250103
E-mail : contact@cecohirun.com | Contact : +918445230422

HIRUN INTERNATIONAL CO.LTD
Hirun Europe S.r.l. Office: via, dell' Annunciata 31CAP, 20121 Milan, Italy
Web. : www.hirun.eu | Email: info@hirun.eu |Tel. : +39-346-0900669