ESTABLISHED IN YEAR 1978

A subsidiary of

KOSSAN
STRETCHING LIMITS • SINCE 1979
“To be the world class market leader in Engineering Rubber Products driven by technological advancement, people value and continual improvement to deliver long term and sustainable growth”

“We strive beyond customers’ quality requirements through continuous improvement plans with specific attention to technical excellence and innovation”
CERTIFICATIONS

QUALITY SYSTEM MANAGEMENT
ISO 9001:2015

LABORATORY ACCREDITATION
SKIM AKREDITASI MAKMAL MALAYSIA(SAMM)
MS ISO / IEC 17025

SEISMIC ISOLATOR HDRB
CE MARK CERTIFICATE
CE 1835
QUALITY CERTIFICATION

QUALITY MANAGEMENT SYSTEM
Which Complies with the requirements of

ISO 9001:2015

For the following Scope:

Design development, Manufacture, Testing and Installation of Elastomeric bearings, Mechanical Pot Bearings, High Damping Rubber Bearings, Floating Slab Track Bearings, Steel and Rubber Expansion joints, Marine Fenders, Spherical Bearings, dampers and other Engineered Rubber Products and Metal Products for Bridges, Buildings, Railways, Tramways, Marine, Mining, Oil and Gas, Nuclear Plants and others Civil Engineering application.
A SOLUTION FOR ENGINEERED RUBBER AND STEEL PRODUCTS FOR BRIDGES, BUILDINGS, RAILWAYS, MININGS, AND OTHER CIVIL ENGINEERING APPLICATIONS
MARINE DOCK FENDERS

- To perform as bumper to protect the hull and bearing facility from damages
- To perform as a shock absorber on the bearing operation
ELASTOMERIC BEARINGS
To design, produce, and test to meet BS, EN, AS, AASHTO and other international specs
Doshin Spherical bearings are designed for very high vertical, horizontal and lateral loads and where large rotational structural displacements need to be accommodated.
EXPANSION JOINTS AND SEALS

TYPES OF JOINTS:
1. Elastomer Expansion Joints
2. Modular Joints (3 DOF)
3. Finger Joint (DFJ)
4. Compression Seals
MECHANICAL POT BEARINGS

Design, Fabricate, Testing and Install POT BEARINGS up to vertical load 50,000 KN
MINING RUBBER PRODUCTS

Superior wear resistant rubber compound formulation
RAILWAY RUBBER PRODUCTS

- A proven mass-spring system for achieving very high levels of noise & vibration isolation
- Floating slab track (FST), rubber wedge, rail fastening

PROJECT REFERENCE:
- Downtown Line SINGAPORE
- Heikamo Rail GERMANY
- TTY Airport Line TAIWAN
- HONG KONG KCRC KSL
- UK Cross Road 2016
- TAIWAN Tai Chung Green Line 2016
TRAMWAY & LIGHT RAIL

Special formulated electrical Insulated rubber technology Electrical resistivity ground-level power supply (APS 3) and Static Charging System (SRS) for Alstom’s Trams

APS is a service-proven power system for tramways which supplies electricity through a third rail at ground level and eliminates the need for catenaries, thus preserving the aesthetics of city center and guaranteeing maximum safety.
HIGH DAMPING RUBBER BEARINGS

Design & Produce UHDRB with damping ratio up to 24%
LEAD RUBBER BEARINGS
MANUFACTURING FACILITIES
MANUFACTURING FACILITIES-MIXING

- Mixing capacity up to 2000 tons compound per month
- Farrell Chronos Richardan mixing 80L & 160L
- ST rotor variable speed
- Temperature control
- Chronos auto material feeding system
MANUFACTURING FACILITIES

VARIOUS MOULDING MACHINES FROM 500 TONS TO 2000 TONS

INJECTION TO FENDER AT 1500KG/HR

3 UNITS GEAR PUMP EXTRUDER 1500KG/HR

2000 TONS CLAMPING MACHINE 3.5M X 3.5M X 3.0M DAYLIGHT

1200 TONS COMPRESSION PRESS 1.2M X 2.2M

SHEETING PREFORM MACHINE
MANUFACTURING FACILITIES

CNC

2000 TONS COMPRESSION MACHINE
1.2M X 3.2M

2000 TONS COMPRESSION MACHINE
3.5M X 3.5M X 3M

2000 TONS COMPRESSION MACHINE
1.5M X 3.5M

2000 TONS COMPRESSION MACHINE
2.2M X 2.2M

1800 TONS HYDRAULIC BUILT INTO AUTOLAVE FOR CURING
E-LAB TESTING & RESEARCH CENTER

CERTIFIED TO ISO/IEC 17025

Innovating the best testing machines with our well trained engineers for engineered rubber solution
This laboratory accredited under Skim Akreditasi Makmal Malaysia (SAMD) meets the requirements of MS ISO-IEC 17025:2005 General requirements for competence of testing and calibration laboratories. This Malaysian Standards is identical with ISO-IEC 17025:2005 published by the International Organization for Standardization (ISO).
### Field of Testing: Mechanical

**Scope of Accreditation:**

**Product:** Laminated Elastomeric Bearings, Elastomeric Bearing Pads and Strips

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Test Method</th>
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</thead>
<tbody>
<tr>
<td><strong>Shear Stiffness</strong></td>
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</tr>
<tr>
<td><strong>#Single Shear</strong></td>
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</tr>
<tr>
<td>BS 5400 – 1983 Section 9.2 Appendix A</td>
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</tr>
<tr>
<td>BS 6177 : 1982 Clause 9.5 (Single Shear Configuration)</td>
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</tr>
<tr>
<td><strong>#Double Shear</strong></td>
<td></td>
</tr>
<tr>
<td>BS 6177 : 1982 Clause 9.5 (Double Shear Configuration)</td>
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</tr>
<tr>
<td>RMS B281 Clause 2.2.5 (Apr’ 12)</td>
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<tr>
<td>RTA B280 Clause 2.2.5 (2011)</td>
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<tr>
<td>AASHTO Sec. 18 (2003) Clause 18.7.4.5.8</td>
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<tr>
<td><strong>Compression Quality Assurance Test</strong></td>
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<td>BS 6177: 1982 Clause 9.3 (Safe Carrying Capacity Test)</td>
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<tr>
<td>BS 6177: 1982 Clause 9.4 (Stability Test)</td>
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<tr>
<td>RMS B281 Clause 2.2.7 (Apr’ 12)</td>
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<td>BSEN 1337 – 3 : 2005 (Annex H : Level 1)</td>
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<tr>
<td>AASHTO Sec 18 (2003) Clause 18.7.4.5.6 (Short Duration)</td>
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<tr>
<td>AASHTO Sec.18 (2003) Clause 18.7.4.5.7 (Long Duration)</td>
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<tr>
<td>RMS B281 Clause 2.2.4 (Apr’12)</td>
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<tr>
<td>RMS B281 Clause 2.2.6 (Apr’12) (Applied Rotation)</td>
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<tr>
<td>RTA B280 Clause 2.2.4 (2011)</td>
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</tbody>
</table>
**Product:** SEISMIC BEARINGS  
*(STRUCTURAL ISOLATION, e.g. HDRB, LRB and PENDULUM)*

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<tr>
<td>COMPRESSION QUALITY ASSURANCE TEST</td>
<td>BSEN 15129 : 2009 Clause 8.2.1.2.6 Compression under Zero Lateral Displacement</td>
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<td>BSEN 15129 : 2009 Clause 8.2.1.2.7</td>
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<td>COMPRESSION STIFFNESS</td>
<td>BSEN 15129 : 2009 Clause 8.2.1.2.8</td>
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<tr>
<td>HORIZONTAL CAPACITY</td>
<td>BSEN 15129 : 2009 Clause 8.2.1.2.5</td>
</tr>
<tr>
<td></td>
<td>Horizontal Characteristics on Repeated Cycling</td>
</tr>
</tbody>
</table>

**Notes:**  
HDRB : High Damping Rubber Bearing  
LRB : Lead Rubber Bearing

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**Product:** STRUCTURAL BEARINGS  
*(SPHERICAL BEARINGS AND MECHANICAL POT BEARINGS)*

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<td>BSEN 5400 : 1983 Section 9.2 Clause 7.2 (b)</td>
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<td>AASHTO Sec. 18 (2003) Clause 18.7.2.5 Short-term Compression Proof Load Test</td>
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<td>BS 5400 : 1983 Section 9.2 Clause 7.2 (b)</td>
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<td>VERTICAL LOAD TEST</td>
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<td>AASHTO Sec. 18 (2003) Clause 18.7.2.6</td>
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<tr>
<td>HORIZONTAL LOAD TEST</td>
<td>BS 5400 : 1983 Section 9.2 Clause 7.2 (b)</td>
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<tr>
<td></td>
<td>AASHTO Sec. 18 (2003) Clause 18.7.2.9 (Fixed or Guided Bearings Only)</td>
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<tr>
<td>FRICTION &amp; SLIDING TEST</td>
<td>BS 5400:1983 (Part 9.1 &amp; 9.2) AASHTO Sec 18 Clause 18.7.2.7</td>
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<td>BS EN 1337 : 2004, Annex B</td>
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<tr>
<td>ROTATION TEST</td>
<td>MRT S81-Appendix D (D4) AASHTO Sec 18, Clause 18.7.4.4.3</td>
</tr>
<tr>
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<td>BS EN 1337 : 2004, Annex B</td>
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</table>
E-LAB 100

Fender Compression & Durability Test

COMPRESSION FORCE : 3,000kN
E-LAB 121 & E-LAB 122

Static Stiffness Performance Test for Floating Slab Track Bearings and Base Plate

E-LAB 121 Vertical Load: 200KN
E-LAB 122 Vertical Load: 1,000KN
Static Compression Loading Rate: 2.5~120KN/MIN
Hysteresis Damping Testing for Structural Bearings and Seismic Isolators

Vertical Load : 10,000KN
Shear Load : 1,000KN
Displacement : +/- 500mm
E-LAB 140

Hysteresis Damping Testing for Structural Bearings and Seismic Isolators

Vertical Load: 20,000KN
Shear Load: 2,000KN
Displacement: +/- 500mm
E-LAB 150

HYSTRESIS DAMPING TESTING
FOR STRUCTURAL BEARINGS
AND SEISMIC ISOLATORS

One of the biggest testing machine
with shear capability in the world

Vertical Load : 50,000KN
Shear Load : 5,000KN
Displacement : +/- 1,000 MM

Machine platen size:
2,200 mm x 2,200 mm

Capable to Test Bearing size
up to 2,000 mm
E-LAB 160

Fenders Compression Test

- Energy Absorption & Reaction Force Test
- Compression Load: 10,000KN
E-LAB 170
Hysteresis Damping Test for Rubber Compound Development

Vertical Load : 1,000KN
Shear Load : 100KN
Displacement : +/- 200 MM
Displacement Speed : 200mm per second
E-LAB 180
HYSTERESIS DAMPING TEST FOR STRUCTURAL BEARINGS AND SEISMIC ISOLATORS

VERTICAL LOAD : 5,000KN
SHEAR LOAD : 2,000KN
DISPLACEMENT : +/- 500 MM
E-LAB 190

Performance Test for Fender with Shear Capabilities

- Energy absorption & reaction force test
- Vertical load: 10,000KN
- Shear load: 1,000KN
- Displacement: 3,000MM
- Machine platen size: 3700mm X 3700mm
A. RUBBER MATERIAL TESTING
✓ Tensile Properties Test
✓ Hardness Test (ASTM Shore A, JIS Shore A, IRHD)
✓ Hot Air Heat Aging Test (up to 300°C)
✓ Compression Set Test
✓ Ozone Resistance Test (up to 400 pphm)
✓ Quadruple Shear Test
✓ ISO/DIN Abrasion Resistance Test
✓ Low Temperature Brittleness Test (up to -70°C)
✓ Density/SG Test
✓ Rheology Test
✓ Tear Resistance Test (Trouser and Crescent)
✓ Fluid/Oil Immersion Test.
✓ Rebound Resilience Test

B. PRODUCT / PART PERFORMANCE TESTING
✓ Static Compression/Load Deflection test (up to 100kN capacity)
✓ Dynamic Spring Rate Test
✓ Durability/Endurance/Life Test
✓ Adhesion/Bond Failure Test (Rubber-Metal Bonded)

SCOPE OF KOSSAN AND DOSHIN LABORATORY TEST & MEASUREMENT CAPABILITIES
Certified to: ISO/IEC 17025
AUSTRALIA PROJECT

Elastomeric Laminated Bearings, Bearing Strips and Elastomeric Bearings

- Western Australia’s largest road project – WA Gateway
- OH2K
- F&B
- Fredrickton to Eungai project (F2E)
- KWR Bypass
- PJ677 Toowoomba OCR
- PJ676 Cooroy to Currahh
- F2E Project BR013 & BR017
- Dingo to Bluff
- Patrick Access Ramp D
- T2E project
- Singleton Rail Bridge
- M2 Widening
- South Expressway Duplication
- BHP Nelson Point
- PJ622 Sapphire to Woolgoolga
- PJ621 Tamworth Bridge Renewal
- PJ620 Iron Creek
- Gerrinong Upgrade
- RRL-E Boundary Rd
- Cavill Ridge
- RRL-E Project - Armstrong Rd
- Dohertys Road
- Parkes Way Widening
- MGI Koolan Island Top Deck
- Gerrinong Upgrade
- Molonglo
- BLJV Update
- PJ573 Wamban Creek
- Bega Bypass
- Gateway Motorway
- Yeppen Lagoon Bridge
- McLarenvale Overpass
- F11 Hunter Expressway
- South Rd Superway
- Trackstar Station
- Pacific Highway Upgrade

100% tested to AS5100, RMS B281, RMS B280, RTA 280
PROJECTS REFERENCE
FRESSINET, AUSTRALIA

Laminated Rubber Bearing

PROJECTS REFERENCE
HOSPITAL LAS HIGUERAS, CHILE

High Damping Rubber Bearings & Lead Rubber Bearing

PROJECTS REFERENCE
HIGH SPEED TRAIN RUBBER ISOLATORS, CHINA

- Very High Level of Noise and Vibration Isolation
- Simple Installation
- Cost Effective
WIKA TOWER, JAKARTA, INDONESIA

High Damping Rubber Bearings at 20-24% Damping Ratio
ALSTOM

Electrical resistivity ground-level power supply for trams (APS3) and electric buses (SRS) for ALSTOM

- Test to meet compression load, cyclic fatigue, road running, electrical insulation, coupling, thermal aging, UV, hydrocarbon, comparative tracking index (CTI) and fire retardant test.
MIDDLE EAST

172 meter of Elastomeric Expansion Joint (DR 165, DR 230 and DR 330)
ORUMEIH BRIDGE, MIDDLE EAST

High Damping Rubber Bearing

PROJECTS REFERENCE
TAXIWAY, MIDDLE EAST

Lead Rubber Bearing (LRB)
ABOZAR BRIDGE – MIDDLE EAST

49 NOS High Damping Rubber Bearing

PROJECTS REFERENCE
UNDP, MIDDLE EAST

3DOF 80 Modular Joint and 364 nos of Laminated Bearing
CABLE STAYED BRIDGE – MIDDLE EAST

109 meter of Elastomeric Expansion Joint (DR 250)
QAZVIN BRIDGE, MIDDLE EAST
Laminated Rubber Bearing
100% customer Witness Testing

PROJECTS REFERENCE
DARESAZ, MIDDLE EAST

24 NOS Dia 600 and Dia 500
High Damping Rubber Bearing (Damping Ratio 16%)
PARAND DOWNTOWN PROJECT, MIDDLE EAST

High Damping Rubber Bearings
UNIVERSITY HOSPITAL OF INDONESIA, JAKARTA

High Damping Rubber Bearings at 20-24% Damping Ratio
RA 166, JAHRA ROAD, KUWAIT

Mechanical Pot Bearings
LRT AESTHETIC GUIDEWAY ENVELOPE, KLJ LINE, MALAYSIA

Mechanical Pot Bearings
PENANG SECOND BRIDGE, MALAYSIA

The longest bridge in South East to install Base Isolation High Damping Rubber Bearings (2500 NOS HDRB)

PROJECTS REFERENCE
FIRST PENANG BRIDGE, MALAYSIA

Elastomer Bearings and Expansion Joints (DR 50 & DR 100)
LRT KELANA JAYA EXTENSION, MALAYSIA

PROJECTS REFERENCE

Mechanical Pot Bearings
SUNGAI GOMBAK – JALAN KUCHING, KL, MALAYSIA (DBKL PROJECT)

Mechanical Pot Bearings
LRT DEPOT, AMPANG LINE EXTENSION. MALAYSIA

PROJECTS REFERENCE

LRT Ampang Line Extension, package B, Malaysia
DRAWBRIDGE, KUALA TERENGGANU, MALAYSIA

Mechanical Pot Bearings and Expansion Joints *(Finger Joints)*

PROJECTS REFERENCE
U-TURN, CYBERJAYA, SETIA ECO GLADES, MALAYSIA

Mechanical Pot Bearings

PROJECTS REFERENCE
PROJECTS REFERENCE

BAYAN LEPAS EXPRESSWAY, PENANG, MALAYSIA

Modular Joints & Elastomeric Expansion Joints
RAWANG BYPASS - ELEVATED STRUCTURE, MALAYSIA

Mechanical Pot Bearings
DUKE PHASE 2 – TUN RAZAK LINK, MALAYSIA

PROJECTS REFERENCE
JAMBATAN BATANG SADONG, SAMARAHAN BRIDGE, SARAWAK, MALAYSIA

Mechanical Pot Bearings
KVMRT LINE 2, MALAYSIA
SUNGAI BULOH – SEDANG – PUTRAJAYA LINK 2017 – 2020

PACKAGE V201 – 614 NOS of High Damping Rubber Bearing (Damping Ratio 17 - 23%)
KVMRT, SBK LINE 1, Malaysia

Elastomeric & Mechanical Pot Bearings

Projects Reference
PNG - BRIDGE (BRRIP) PAPAU NEW GUINEA

Steel Expansion Joint (Finger Type)

PROJECTS REFERENCE
LAOAG BY-PASS BRIDGE, PHILIPPINES

Ultra High Damping Rubber Bearings (20-24% Damping)
CENTRAL EXPRESSWAY PROJECT (CEP), SRI LANKA

2000nos of laminated bearings
VLCC JETTY 2, PORT OF FUJAIRAH, UAE

Mechanical Pot Bearings
&
Marine Dock Fenders

PROJECTS REFERENCE

Fender – Type SPC 2000
METRO HO CHI MINH LINE 1, VIETNAM

1200 NOS of Elastomeric Laminated Bearings

PROJECTS REFERENCE
Ultra High Damping Rubber Bearings (19% Damping Ratio)
Bearing Size: 1550mm x 1550mm x 506mm (4000kg)

DONG THAP BRIDGE, VIETNAM

Testing Shear displacement at 513mm