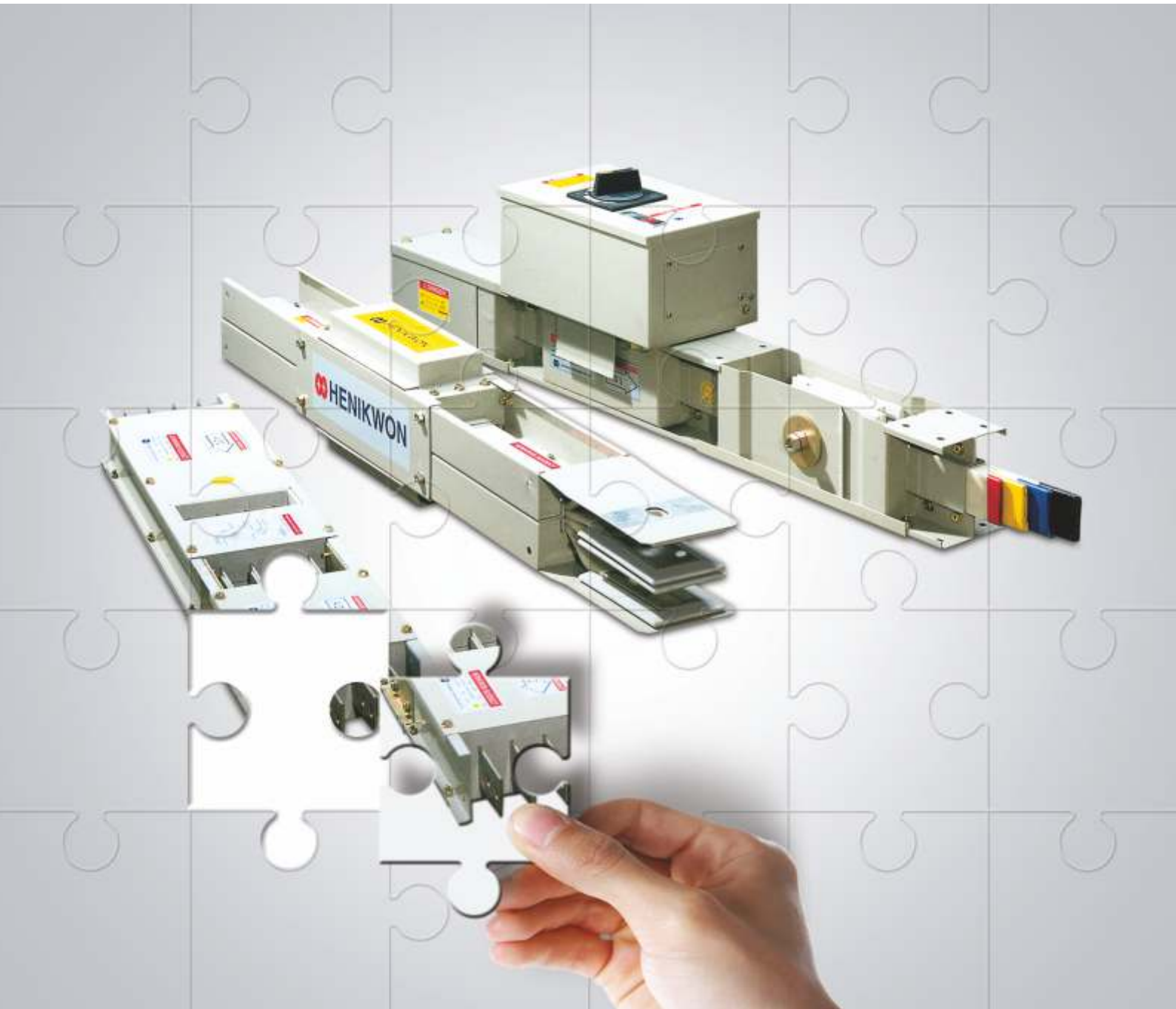


Henikwon Busduct Systems

Power Delivery Systems to Match Every Need



Larsen & Toubro is a leading technology, engineering, construction and manufacturing conglomerate, with global operations.

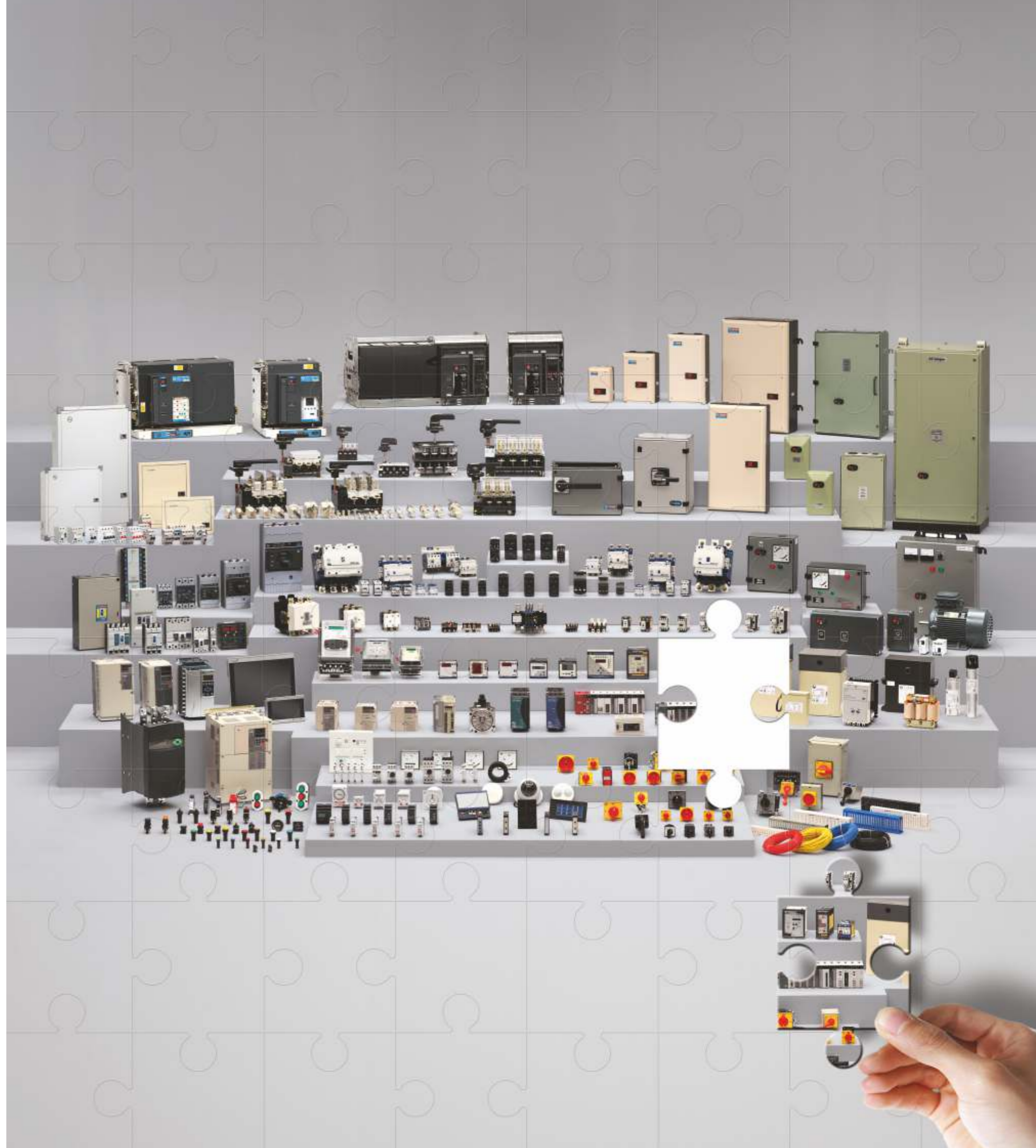
Team L&T – the finest engineering talent in the country – delivers integrated solutions, executes projects and offers plants and systems in key sectors: power, hydrocarbon, infrastructure, urban development, defence and aerospace. Sustainability and a concern for the environment are embedded in L&T's growth plans.

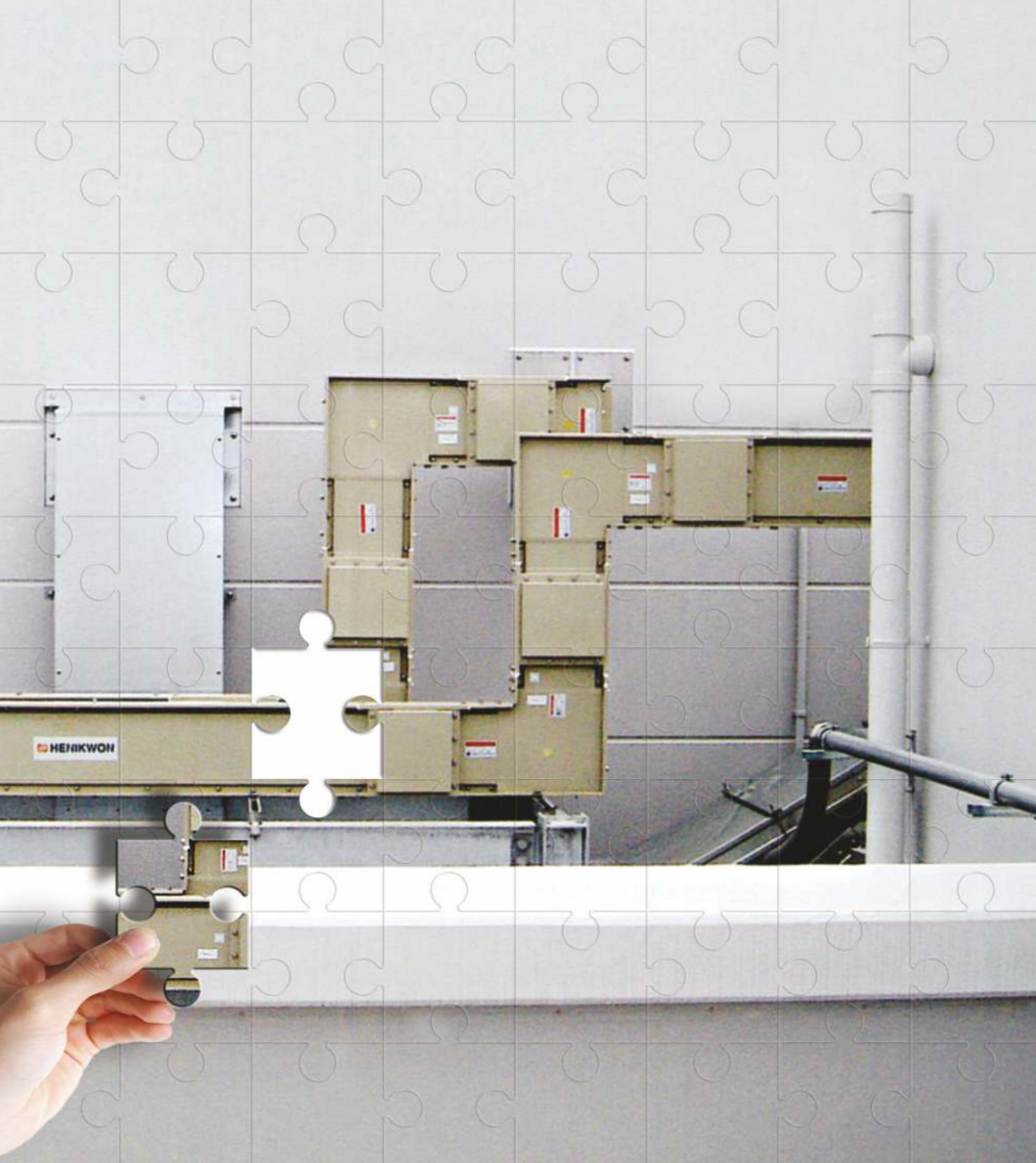
L&T has manufacturing facilities in eight countries, and exports products and systems to over 30 countries.

Henikwon Corporation, acquired by L&T through its subsidiary TAMCO Switchgear, is market leader in high-performance low, medium and high-voltage busduct systems.

Henikwon's consistently high level of compliance to international standards and skilled talent pool of engineers and technicians enable it to offer the best-in-class solutions, ideally configured to its customer's application.

A continual focus on innovation and customer-driven R&D makes Henikwon the partner of choice and a leading busduct system manufacturer.





Give your project the L&T advantage

Give your prestigious project the winning edge. Give it the advantage of L&T's Henikwon Busduct system - trusted by discerning electrical engineers in 30 countries.

Longer life: Each Henikwon Busbar is epoxy compound-coated with a uniform thickness of 1.6 mm. The epoxy coating matches metallic expansion and contraction, ensuring that it does not crack or allow moisture to seep in. This means reduced corrosion, and a longer life for your system.

Higher savings: A higher joint overlapping area ensures less power loss. More savings – in terms of not just money, but also power, which is becoming scarcer by the day.

Enhanced safety: To ensure the highest degree of safety, Henikwon Busduct systems are totally enclosed and well-insulated.

Greater reliability : Comprehensive manufacturing processes, strict compliance and selection of inputs give you the assurance of reliability. Further, the Henikwon Busduct system is certified by an independent third party.

Across the years, the Henikwon Busduct system has been successfully installed in several locations in over 30 countries.



Busduct systems for every need

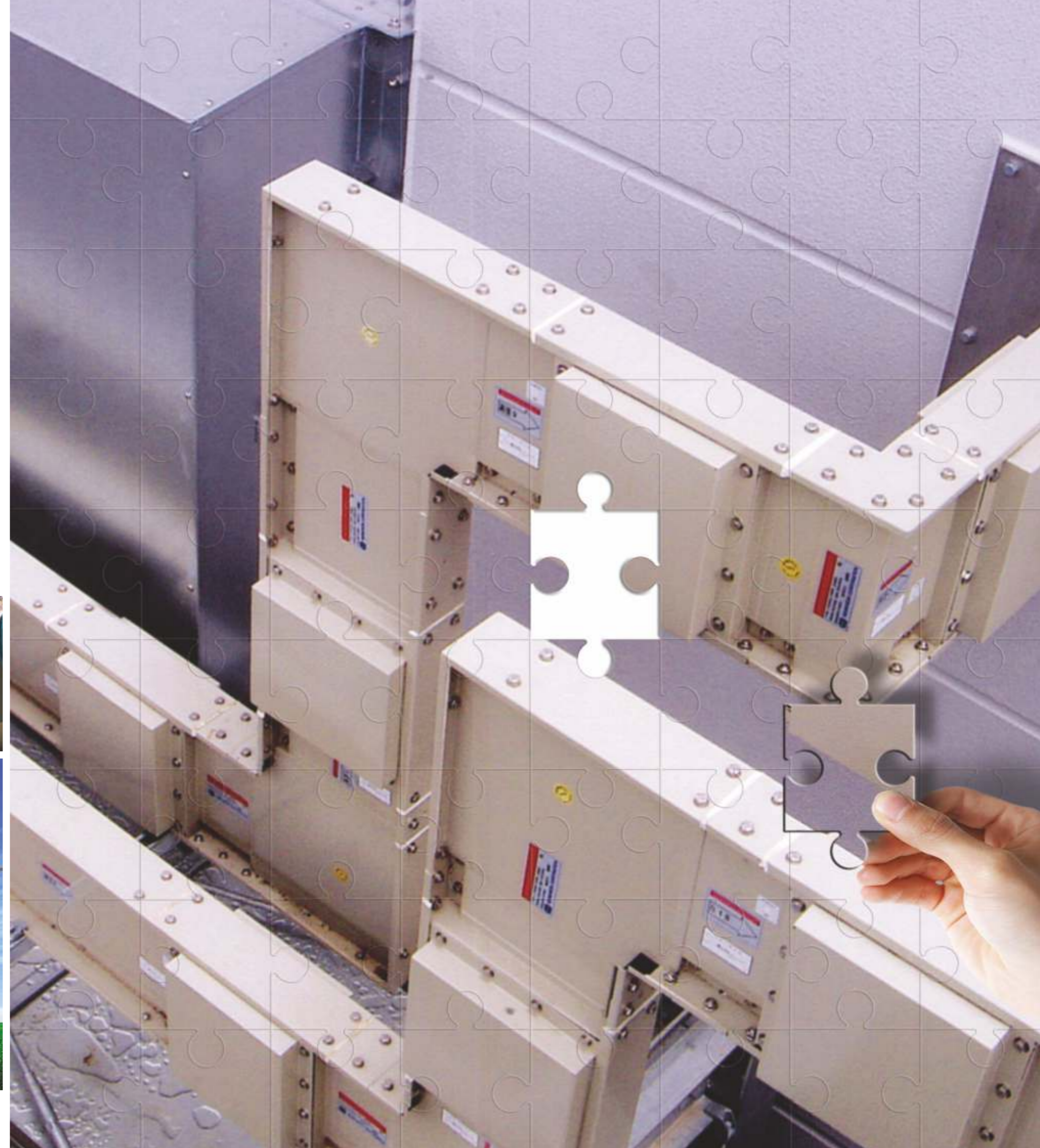
To meet your entire range of power delivery needs, Henikwon offers two Busduct systems from 100A to 6300A.

- Medium Voltage system for power transmission
- Low Voltage system for connection between transformer and for back-up supply to power distributions and as a plug-in in building power systems.

Whatever your project, whatever its size, you can rely on Henikwon to provide a Busduct system that precisely meets your requirements.

Busducts can be used in following areas:

- Residential apartments
- Business premises and commercial complexes
- Resorts and hotels
- Educational institutions
- Shopping centres
- Assembly lines
- Industries
- Airports
- Hospitals
- Oil & gas platforms
- Electricity generation plants





The cutting-edge choice

Our state-of-the-art automated factory ensures consistency in the quality of our products, before they are subjected to a series of tests.

Each Busduct is fully type-tested at various independent laboratories, and conforms to international standards. This ensures complete integrity of the Busduct system.

Our international accreditations speak for themselves:

- IEC 60439-1&2 / IEC 61439-1&6
- IEC 62271-200
- IEC 60529-2
- IEC 60331
- BS EN 60439-1&2
- AS NZ 3439-2
- AS 3439-2
- AS 60529
- VDE 532
- JISC 8364
- CCC

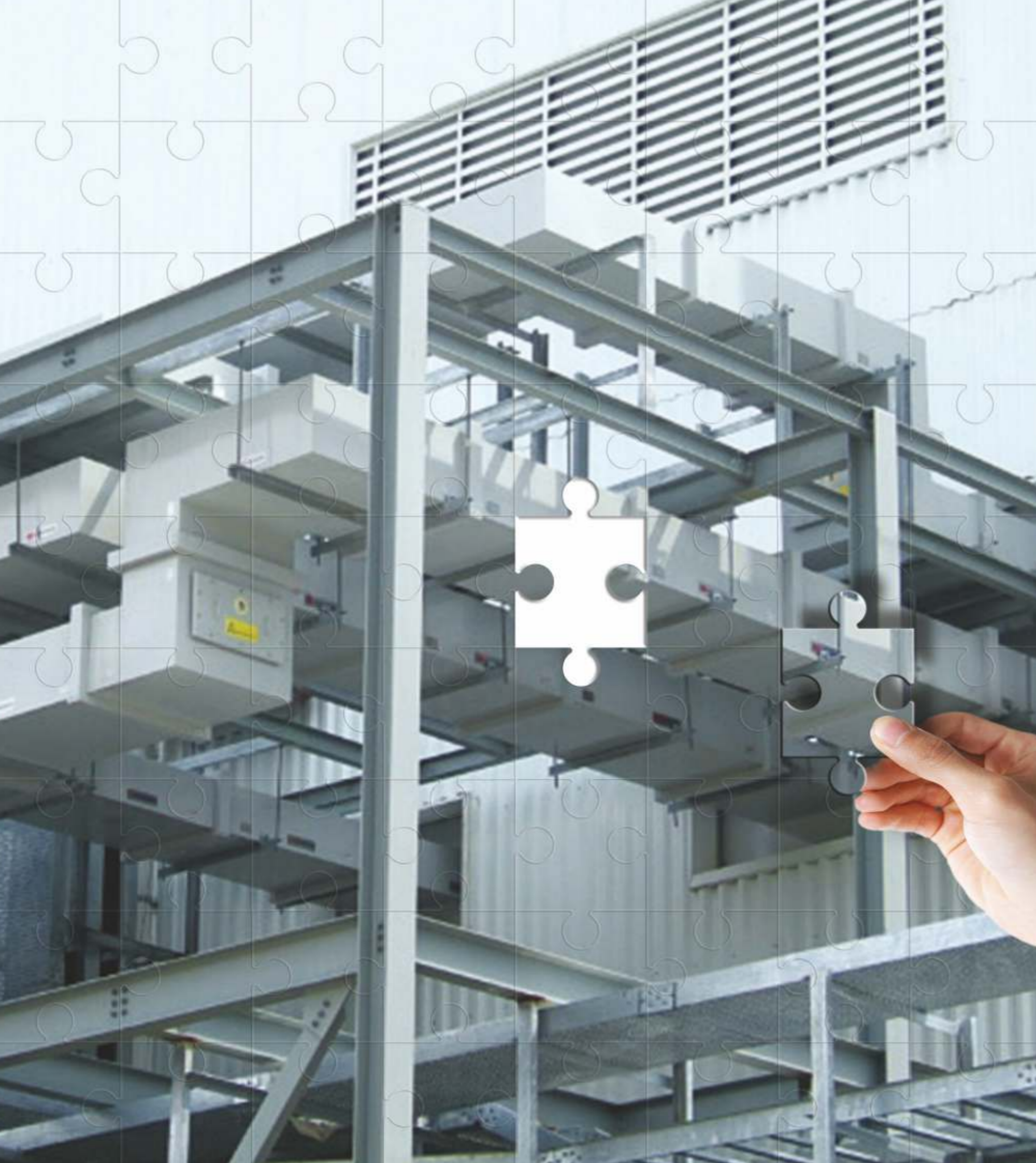


A legacy of perfect solutions





Your power delivery needs are paramount, and Henikwon's vast experience gives it an insight into them all. Henikwon has undertaken over 900 installations in 30 countries, making it the partner of choice for discerning global customers.

Henikwon's expertise is backed by India's leading manufacturer of Low Voltage switchgear, L&T Electrical & Automation – part of Larsen & Toubro - a technology, engineering, construction and manufacturing conglomerate. So, you can rest assured of the quality of our products, and the level of support you will receive – be it for product selection, installation or after sales service.





Index

	Sandwich System	1 – 2
	System Characteristics	3 – 16
	Other Offerings	17 – 20
	Project References	21

Sandwich System

The Sandwich System is a lightweight, low impedance, non-ventilated, naturally cooled and totally-enclosed system.

The system is available with 50% internal earthing, 50% or 100% neutral busbar. To address harmonics, 200% neutral busbar is also available.

Busbars

99.99% pure copper Busbars are tin / silver coated to protect them from water and moisture that can cause reduction in dielectric strength. Likewise, aluminium Busbars are made of high-conductivity electrical grade aluminium (99.6% pure aluminium).

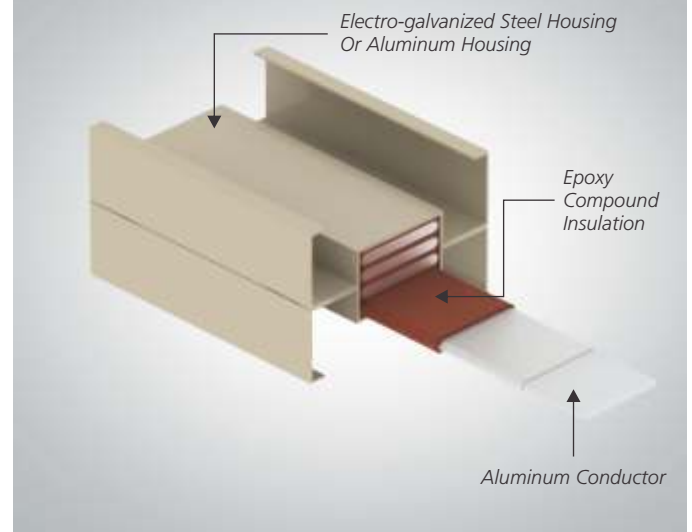
Joint

- Direct contact jointing, which ensures total and higher surface area contact, results in less power-loss and cooler performance.
- All joints are maintenance-free.
The high-strength bolt is insulated with a high quality insulation material.
- For uniform distribution of the clamping force, all bolted connections are equipped with a leaf spring.
- A maintenance-free lock nut is provided where the outer head will be twisted off, once it reaches the appropriate torque.

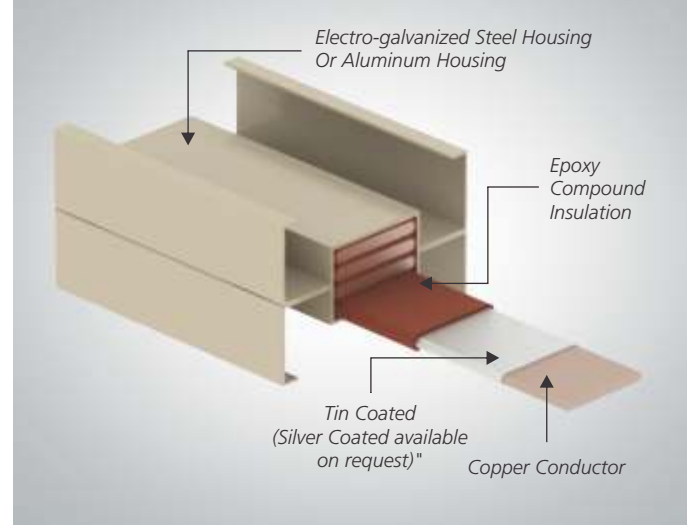
Enclosure / Housing

- Galvanized steel housing or aluminum housing with epoxy powder-coated by an automated process to achieve fire resistance.
- The housing also gives integral ground as standard requirement where it acts as an earth conductor.
- Due to its compact, sandwich-type construction, it does not require an internal fire-stop barrier.

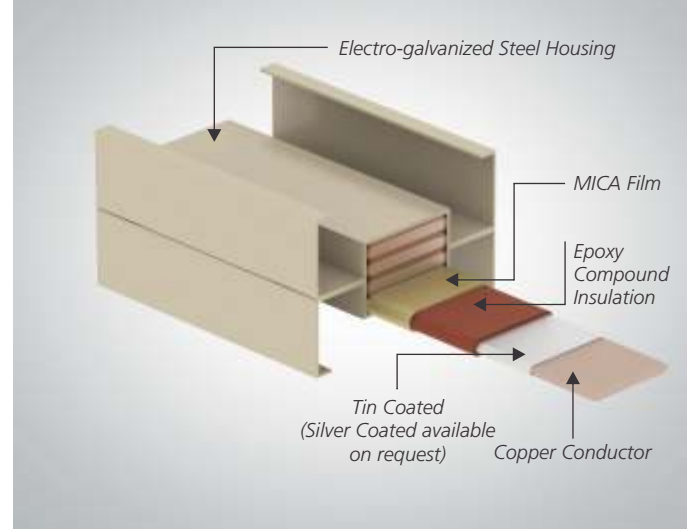
Aluminium Busduct System



Copper Busduct System



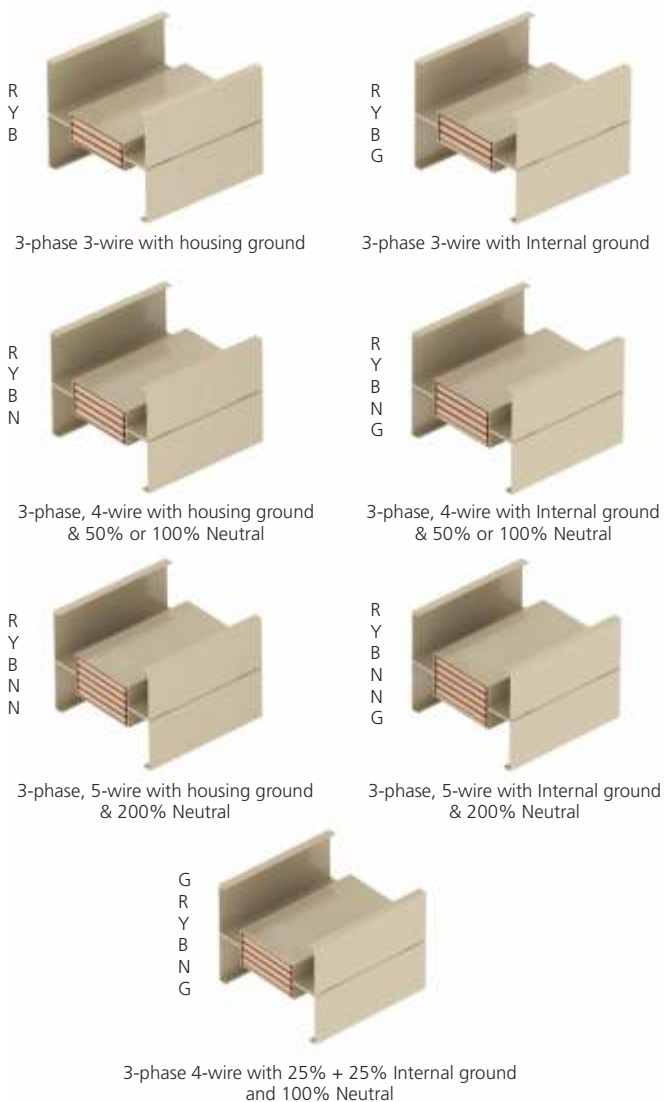
Fire Rated Copper Busduct System



Sandwich System

Plug-in Box / Tap-off Box

- Built-in interlock system that prevents opening of the cover when the device inside is ON.
- Safety provision to prevent the installation or removal of plug-in box when turned ON.
- During insertion, the earth conductor makes contact first before the phase conductors. This follows the first-in-last-out concept.
- The plug-in box is equipped with internal insulation barriers to prevent accidental contact with the conductor.
- TOUs are provided with padlocking.



Type	Sandwich	
Rated Operating Voltage	Up to 1000 V	
Rated Current	400 A to 6300 A	
Rated Insulation Voltage	1000 V	
Rated Withstand Voltage	8kV	
System Frequency	50 Hz & 60 Hz	
Fault Level for 1 Sec	400A	25 kA
	630A	40 kA
	800-1000	50 kA
	1250-2000	65 kA
	2500-6300	100 kA
Design Ambient Temp.	50°	
Degree of Protection (IP)	IP-54, IP-55, IP-65 & IP-66	
Relevant Standard	IEC-60439-1 & 2/IEC-61439	
Enclosure	Galvanized Steel or Aluminum	
Enclosure Coating	Epoxy Powder (RAL 7032)	
Enclosure Thickness	1.6mm (GS) / 3mm (Al)	
Conductor Material	Copper or Aluminum	
Configuration	3P3W, 3P4W, (50%, 100% or 200% Neutral) with internal earth (50% or 100%) or provision for external earth	
Joint	Direct Jointing	
Insulation Class	Class - F	
Insulation Material	Epoxy Compound	

System Characteristics

Copper Busduct Electrical Characteristics

Ampere Rating (A)	R(DC) (μΩ/m)	50Hz			Voltage Drop (V/100m)		
		R(AC) (μΩ/m)	X (μΩ/m)	Z (μΩ/m)	1.0 (p.f.)	0.9 (p.f.)	0.8 (p.f.)
400	139.9	141.9	33.2	145.7	9.83	9.85	9.24
630	100.3	102.9	32.8	107.9	11.22	11.66	11.12
800	80.2	83.2	30.0	88.4	11.53	12.19	11.72
1000	61.7	64.6	23.5	68.7	11.18	11.84	11.39
1250	44.6	46.6	18.5	50.2	10.10	10.84	10.49
1600	32.1	34.3	15.3	37.6	9.51	10.40	10.15
2000	22.9	25.1	10.7	27.3	8.71	9.45	9.19
2500	20.1	22.0	8.8	23.7	9.55	10.24	9.91
3200	16.0	18.3	6.7	19.5	10.15	10.75	10.34
3500	13.4	14.9	5.8	15.9	9.00	9.63	9.30
4000	11.5	12.6	5.5	13.7	8.71	9.49	9.25
4500	10.8	12.0	4.7	12.9	9.38	10.02	9.68
5000	10.0	11.2	4.6	12.1	9.67	10.42	10.10
6300	7.6	9.7	3.7	10.3	10.54	11.24	10.85

Voltage Drop Calculation Formula

$$\Delta V = (\sqrt{3} \times I_L (R(AC) \cos\phi + X \sin\phi)) \times K$$

Where: ΔV: Line-to-line Voltage Drop

I_L: Rated Current

R(AC): AC Resistance at Rated Current (μΩ/m)

X: Reactance (μΩ/m)

cosφ: Load Power Factor

$$\sin\phi = \sqrt{1 - \cos^2\phi}$$

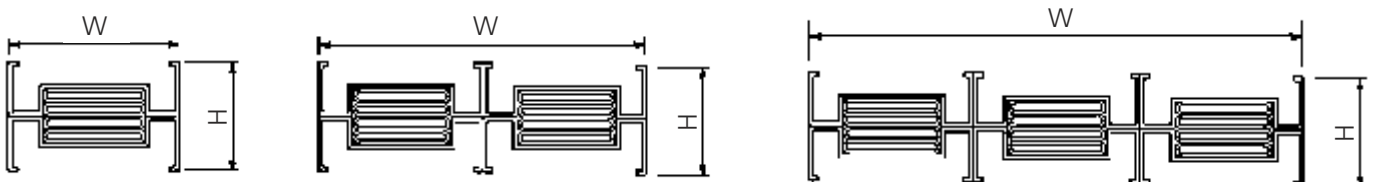
K: Load Distribution Factor

K=1, Full Load Concentrated at the End

K=(n+1)2n, Full Load is distributed between n branches

Copper Busduct Physical Characteristics

Ampere Rating (A)	Dimensions (mm)				Weight (kg/m)	
	Conductor	Width (W)	Height (H)		Indoor	Outdoor
			Indoor	Outdoor		
400	4 x 40 – 1	115	120	210	13.2	17.8
630	6 x 40 – 1	115	120	210	17.8	22.3
800	6 x 50 – 1	125	120	210	20.2	24.5
1000	6 x 65 – 1	140	120	210	25.1	29.6
1250	6 x 90 – 1	165	120	210	31.4	35.9
1600	6 x 125 – 1	200	120	210	44.0	48.5
2000	6 x 175 – 1	250	120	210	52.8	57.3
2500	6 x 200 – 1	275	120	210	64.4	68.9
3200	6 x 125 – 2	400	120	210	87.9	92.5
3500	6 x 150 – 2	450	120	210	105.6	110.1
4000	6 x 175 – 2	500	120	210	114.4	118.9
4500	6 x 185 – 2	520	120	210	123.2	127.8
5000	6 x 220 – 2	590	120	210	128.8	133.3
6300	6 x 175 – 3	750	120	210	158.4	162.9



System Characteristics

Aluminium Busduct Electrical Characteristics

Ampere Rating (A)	R(DC) ($\mu\Omega/m$)	50Hz			Voltage Drop (V/m)		
		R(AC) ($\mu\Omega/m$)	X ($\mu\Omega/m$)	Z ($\mu\Omega/m$)	1.0 (p.f.)	0.9 (p.f.)	0.8 (p.f.)
400	133.84	135.67	28.04	138.54	9.4	9.31	8.69
630	111.54	113.4	30.02	117.31	11.78	11.97	11.3
800	81.79	83.89	23.54	87.31	11.62	11.88	11.26
1000	61.34	63.77	18.53	66.41	11.05	11.34	10.76
1250	49.08	51.62	15.27	53.83	10.73	11.04	10.49
1600	33.16	36.18	10.71	37.73	10.03	10.32	9.8
2000	25.56	28.78	8.38	29.98	9.97	10.24	9.72
2500	20.45	21.78	6.67	22.78	9.43	9.75	9.28
3200	16.58	18.09	5.49	18.9	10.03	10.35	9.85
3500	13.94	15.53	4.65	16.21	9.41	9.7	9.22
4000	12.78	14.39	4.28	15.01	9.97	10.27	9.75
4500	11.05	12.06	3.69	12.61	9.4	9.71	9.25
5000	8.52	9.59	2.88	10.01	8.31	8.56	8.14

Voltage Drop Calculation Formula

$$\Delta V = (\sqrt{3} \times I_L (R(AC) \cos\phi + X \sin\phi)) \times K$$

Where: ΔV : Line-to-line Voltage Drop

I_L : Rated Current

$R(AC)$: AC Resistance at Rated Current ($\mu\Omega/m$)

X : Reactance ($\mu\Omega/m$)

$\cos\phi$: Load Power Factor

$$\sin\phi = \sqrt{1 - \cos^2\phi}$$

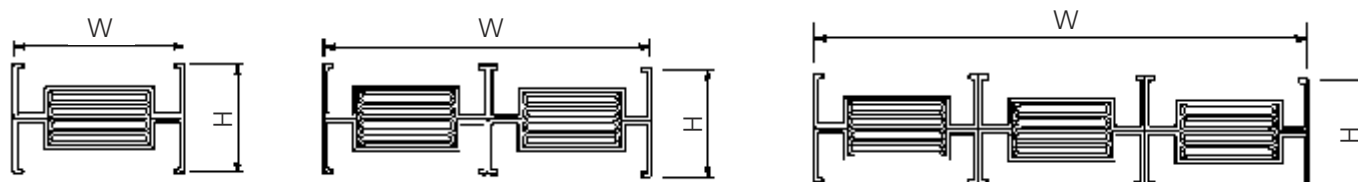
K : Load Distribution Factor

$K=1$, Full Load Concentrated at the End

$K = (n+1)/2n$, Full Load is distributed between n branches

Aluminum Busduct Physical Characteristics

Ampere Rating (A)	Dimensions (mm)				Weight (kg/m)	
	Conductor	Width (W)	Height (H)		Indoor	Outdoor
			Indoor	Outdoor		
400	5 x 55 – 1	130	120	210	9.6	14.2
630	6 x 55 – 1	130	120	210	11.4	16.0
800	6 x 75 – 1	150	120	210	13.2	17.8
1000	6 x 100 – 1	175	120	210	15.6	20.2
1250	6 x 125 – 1	200	120	210	18.0	22.6
1600	6 x 185 – 1	260	120	210	23.7	28.3
2000	6 x 240 – 1	315	120	210	28.9	33.5
2500	6 x 150 – 2	450	120	210	40.7	45.3
3200	6 x 185 – 2	520	120	210	47.3	51.9
3500	6 x 220 – 2	590	120	210	53.9	58.5
4000	6 x 240 – 2	630	120	210	57.7	62.3
4500	6 x 185 – 3	780	120	210	71.0	75.6
5000	6 x 240 – 3	945	120	210	86.6	91.2



System Characteristics

System Components

Straight Run Feeder Type

- Maximum Length: 3000mm
- Minimum Length: 500mm
- Available in IP-54, 55 65 & 66

* All lengths between 500mm to 3000mm is available



Straight Run Feeder Type

Straight Run Plug-in Type

- Maximum Length: 3000mm
- Minimum Length: 1500mm
- Available in IP-54, 55
- Standard Plug-in Point: 1 per 1000mm

* Plug-in positions are determined by the size of the TOU, length between the TOU and joint points

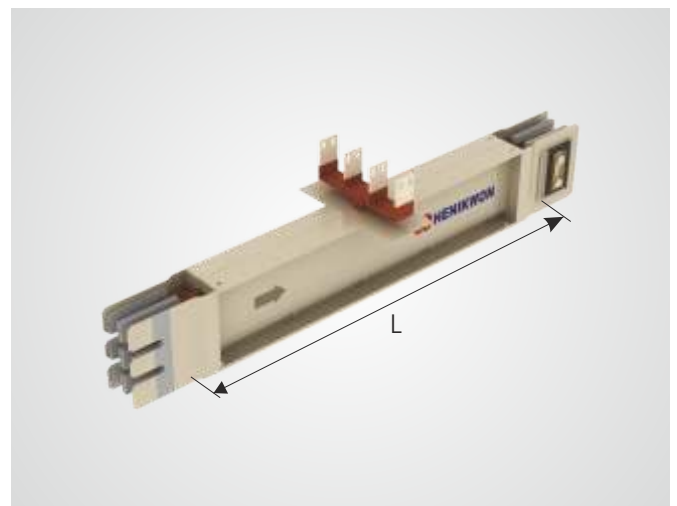


Straight Run Plug-in Type

Straight Run Tap-off Type

- Maximum Length: 3000mm
- Minimum Length: 1200mm
- Available in IP-54, 55
- Standard Tap-off Point: 1 per 1000mm

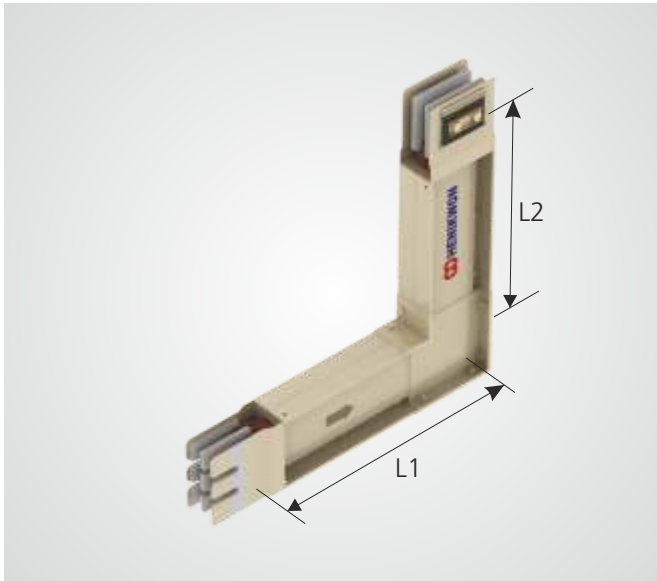
* A branch of >400A belongs to Tap-off Feeder Type



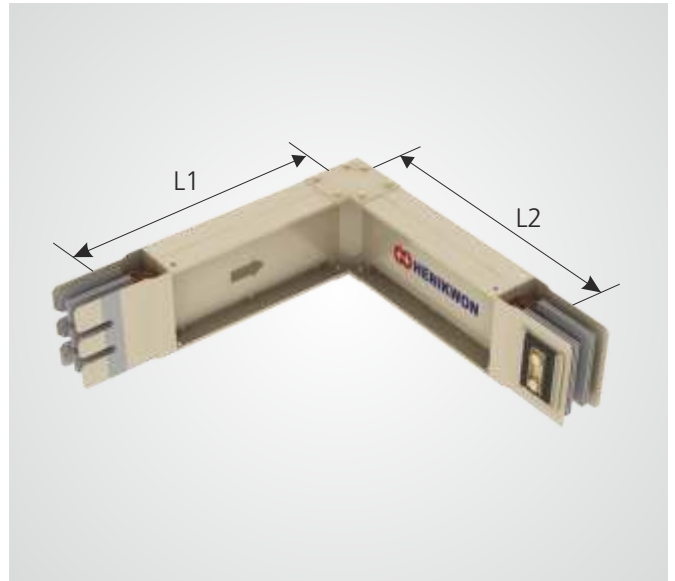
Straight Run Tap-off Type

Elbows

- Elbows are angled units which enable the busduct system to change directions.
- Various types of elbows can be provided as per requirement.
- Along with 90 deg elbow, elbow with angle >90 deg is also available.

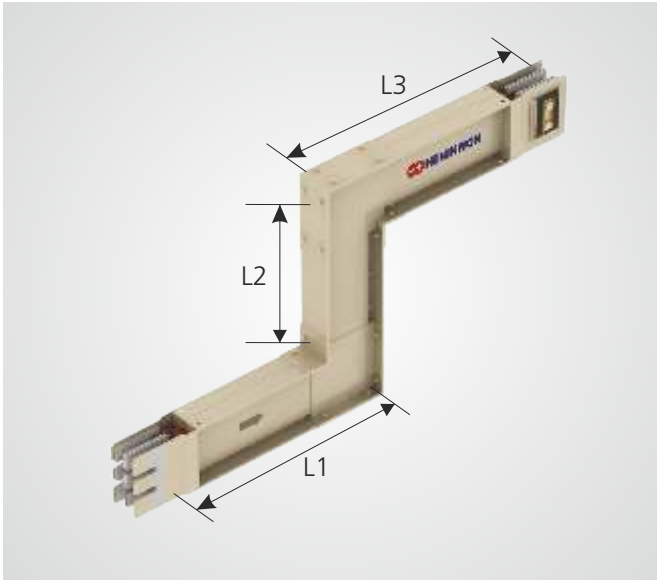


Flatwise Elbow

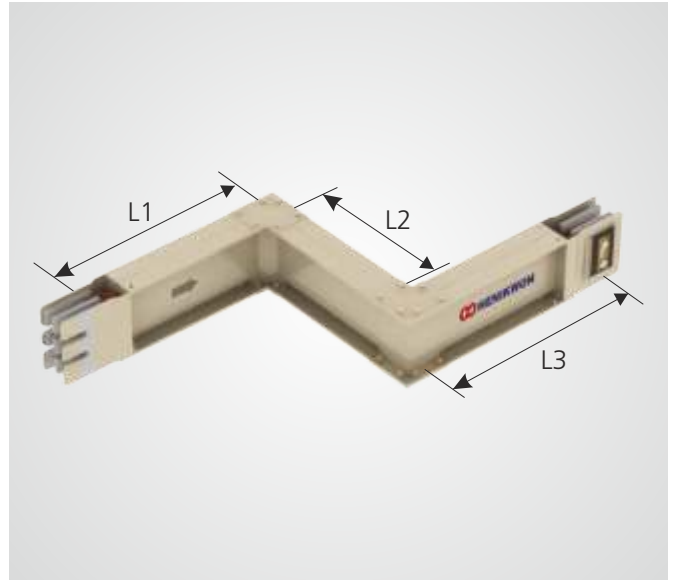


Edgewise Elbow

Ampere Rating (A)		Flatwise Elbow				Edgewise Elbow			
		Standard Dimension (mm)		Minimum Dimension (mm)		Standard Dimension (mm)		Minimum Dimension (mm)	
Cu	Al	L1	L2	L1	L2	L1	L2	L1	L2
400	-	500	500	325	325	500	500	300	300
630	400	500	500	330	330	500	500	300	300
800	630	500	500	330	330	500	500	300	300
1000	800	500	500	340	340	500	500	300	300
1250	1000	500	500	353	353	500	500	300	300
1600	1250	500	500	378	378	500	500	300	300
2000	1600	500	500	395	395	500	500	300	300
2500	2000	500	500	423	423	500	500	300	300
3200	2500	500	500	490	490	500	500	300	300
3500	3200	700	700	515	515	500	500	300	300
4000	3500	700	700	525	525	500	500	300	300
4500	4000	700	700	580	580	500	500	300	300
5000	4500	700	700	580	580	500	500	300	300
6300	5000	700	700	670	670	500	500	300	300

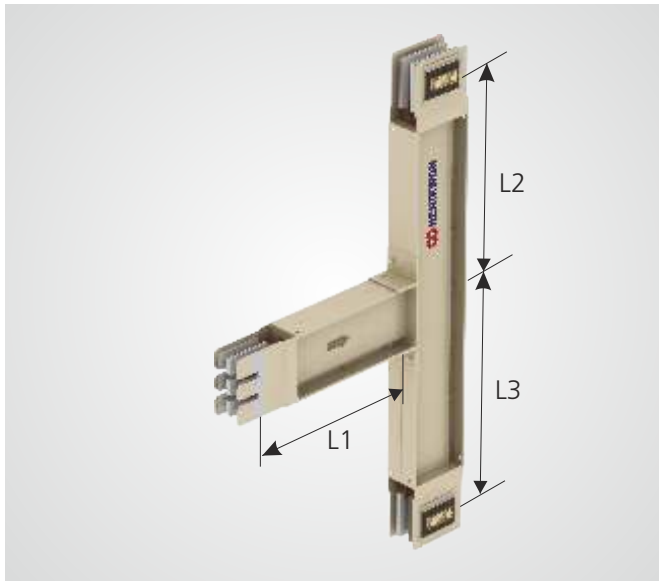


Flatwise Offset

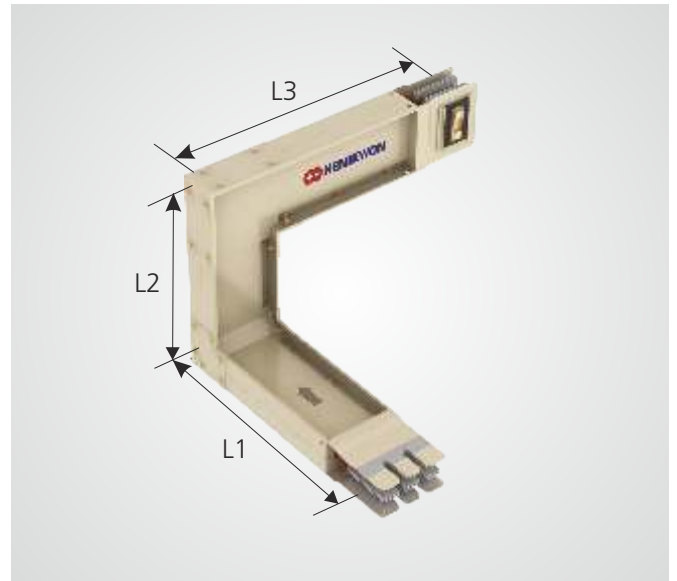


Edgewise Offset

Ampere Rating (A)		Flatwise Offset						Edgewise Offset					
		Standard Dimension (mm)			Minimum Dimension (mm)			Standard Dimension (mm)			Minimum Dimension (mm)		
Cu	Al	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
400	-	500	500	500	323	260	323	500	500	500	300	210	300
630	400	500	500	500	330	275	330	500	500	500	300	210	300
800	630	500	500	500	330	275	330	500	500	500	300	210	300
1000	800	500	500	500	340	295	340	500	500	500	300	210	300
1250	1000	500	500	500	353	320	353	500	500	500	300	210	300
1600	1250	500	500	500	378	370	378	500	500	500	300	210	300
2000	1600	500	500	500	395	405	395	500	500	500	300	210	300
2500	2000	500	500	500	423	460	423	500	500	500	300	210	300
3200	2500	500	500	500	490	370	490	500	500	500	300	210	300
3500	3200	750	750	750	515	395	515	500	500	500	300	210	300
4000	3500	750	750	750	525	405	525	500	500	500	300	210	300
4500	4000	750	750	750	560	440	560	500	500	500	300	210	300
5000	4500	750	750	750	580	460	580	500	500	500	300	210	300
6300	5000	750	750	750	670	450	670	500	500	500	300	210	300

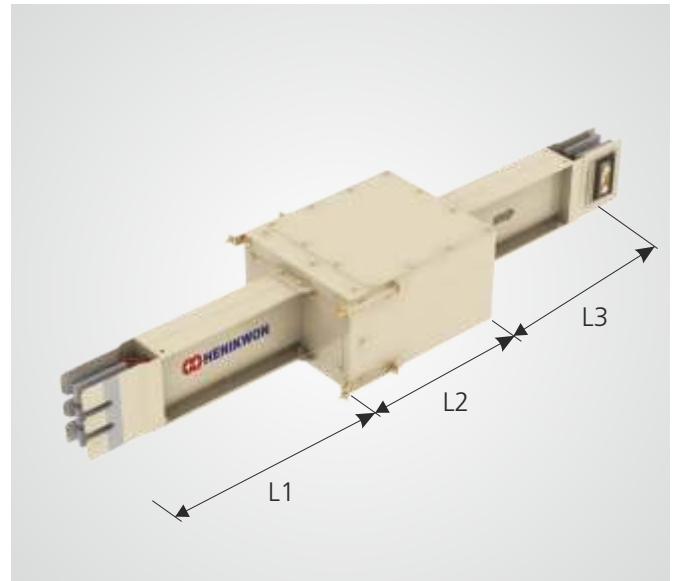


Tee Section



Combination Elbow

Ampere Rating (A)		Tee Section						Combination Elbow					
		Standard Dimension (mm)			Minimum Dimension (mm)			Standard Dimension (mm)			Minimum Dimension (mm)		
Cu	Al	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
400	-	500	500	500	293	293	293	500	500	500	300	233	323
630	400	500	500	500	300	300	300	500	500	500	300	240	330
800	630	500	500	500	300	300	300	500	500	500	300	240	330
1000	800	500	500	500	310	310	310	500	500	500	300	250	340
1250	1000	500	500	500	323	323	323	500	500	500	300	263	353
1600	1250	500	500	500	348	348	348	500	500	500	300	288	378
2000	1600	500	500	500	365	365	365	500	500	500	300	305	395
2500	2000	500	500	500	393	393	393	500	500	500	300	333	423
3200	2500	500	500	500	460	460	460	500	500	500	300	400	490
3500	3200	750	750	750	485	485	485	700	700	700	300	425	515
4000	3500	750	750	750	530	530	530	700	700	700	300	435	525
4500	4000	750	750	750	530	530	530	700	700	700	300	470	560
5000	4500	750	750	750	550	550	550	700	700	700	300	490	580
6300	5000	750	750	750	670	670	670	700	700	700	300	580	670



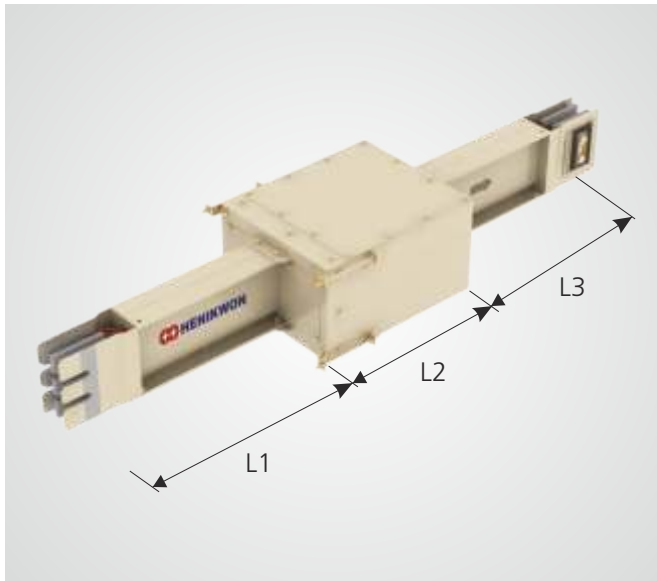
Reducer

- Reducer is use to reduce the rating of the busduct.
- The National Electrical Code states that over current protection is required where busduct are reduced by >20% in rating.

Expansion Unit

- To confront expansion and contraction due to the heat by current loading and ambient temperature.
- For Horizontal run, it is recommended in every 40 meters
- For vertical run, it is recommended in every 60 meters

Ampere Rating (A)		Reducer				Expansion Unit					
		Standard Dimension (mm)		Minimum Dimension (mm)		Standard Dimension (mm)			Minimum Dimension (mm)		
Cu	Al	L1	L2	L1	L2	L1	L2	L3	L1	L2	L3
400	-	500	500	300	300	500	540	500	300	540	300
630	400	500	500	300	300	500	540	500	300	540	300
800	630	500	500	300	300	500	540	500	300	540	300
1000	800	500	500	300	300	500	540	500	300	540	300
1250	1000	500	500	300	300	500	540	500	300	540	300
1600	1250	500	500	300	300	500	540	500	300	540	300
2000	1600	500	500	450	450	500	540	500	300	540	300
2500	2000	700	700	450	450	500	540	500	300	540	300
3200	2500	700	700	450	450	500	540	500	300	540	300
3500	3200	700	700	450	450	500	540	500	300	540	300
4000	3500	700	700	450	450	500	540	500	300	540	300
4500	4000	700	700	450	450	500	540	500	300	540	300
5000	4500	700	700	450	450	500	540	500	300	540	300
6300	5000	700	700	450	450	500	540	500	300	540	300



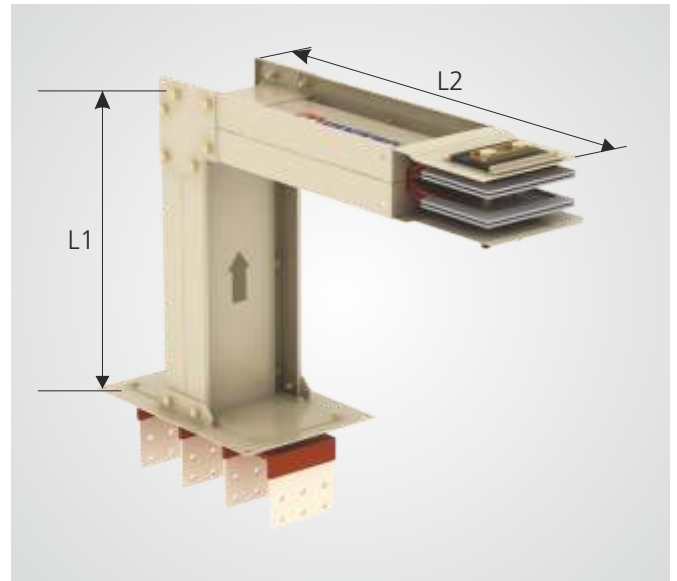
Phase Transposition Unit

- To maintain the phase sequence as per requirement

Flange End with Straight Length

- For terminations

Ampere Rating (A)		Phase Transposition Unit						Flange End with Straight Length	
		Standard Dimension (mm)			Minimum Dimension (mm)			Standard Dimension (mm)	Minimum Dimension (mm)
Cu	Al	L1	L2	L3	L1	L2	L3	L	L
400	-	500	800	500	300	800	300	500	250
630	400	500	800	500	300	800	300	500	250
800	630	500	800	500	300	800	300	500	250
1000	800	500	800	500	300	800	300	500	250
1250	1000	500	800	500	300	800	300	500	250
1600	1250	500	800	500	300	800	300	500	250
2000	1600	500	800	500	300	800	300	500	250
2500	2000	500	800	500	300	800	300	500	250
3200	2500	500	800	500	300	800	300	500	250
3500	3200	500	800	500	300	800	300	500	250
4000	3500	500	800	500	300	800	300	500	250
4500	4000	500	800	500	300	800	300	500	250
5000	4500	500	800	500	300	800	300	500	250
6300	5000	500	800	500	300	800	300	500	250



Flange End with Flatwise Elbow

Flange End with Edgewise Elbow

- Flange end with different elbow to counter site conditions

Ampere Rating (A)		Flange End with Flatwise Elbow				Flange End with Edgewise Elbow			
		Standard Dimension (mm)		Minimum Dimension (mm)		Standard Dimension (mm)		Minimum Dimension (mm)	
Cu	Al	L1	L2	L1	L2	L1	L2	L1	L2
400	-	500	500	178	323	500	500	180	300
630	400	500	500	185	330	500	500	180	300
800	630	500	500	185	330	500	500	180	300
1000	800	500	500	195	340	500	500	180	300
1250	1000	500	500	208	353	500	500	180	300
1600	1250	500	500	233	378	500	500	180	300
2000	1600	500	500	278	423	500	500	180	300
2500	2000	500	500	320	465	500	500	180	300
3200	2500	500	500	345	490	500	500	180	300
3500	3200	700	700	370	515	500	500	180	300
4000	3500	700	700	378	525	500	500	180	300
4500	4000	700	700	415	560	500	500	180	300
5000	4500	700	700	435	580	500	500	180	300
6300	5000	700	700	520	670	500	500	180	300

End Termination

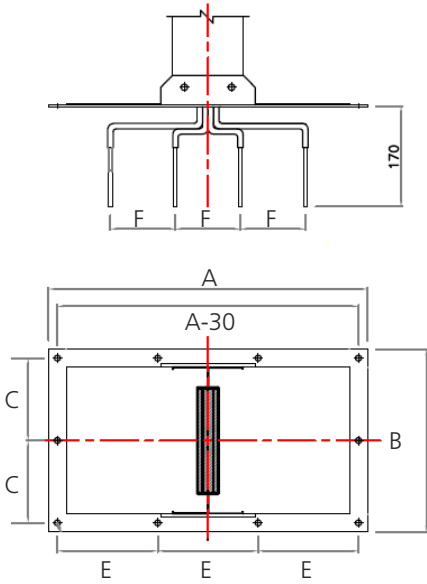


Figure 1

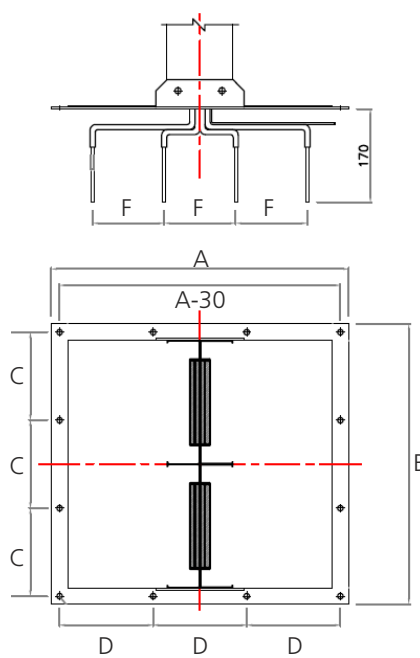


Figure 2

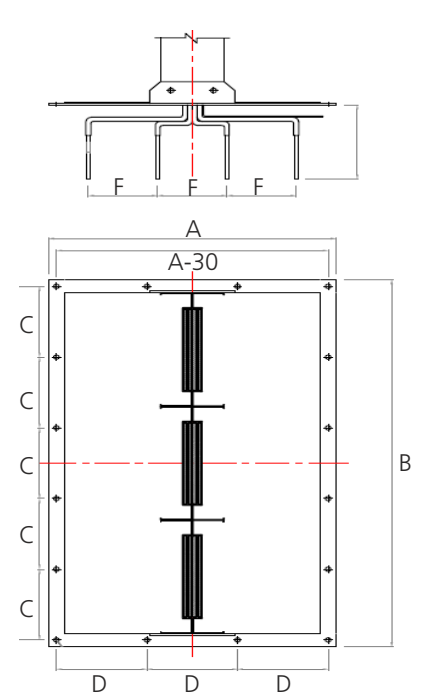
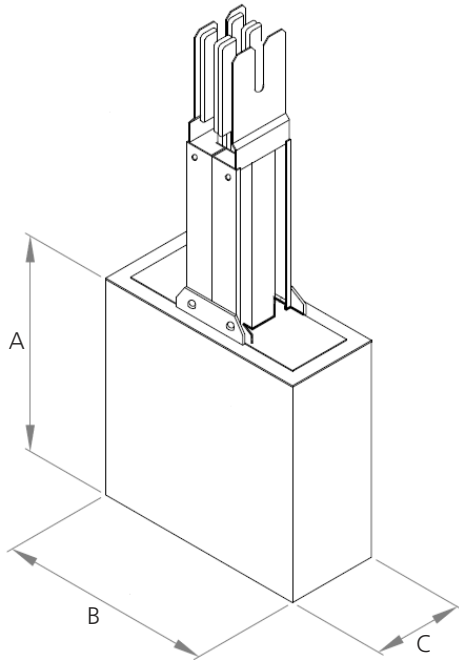
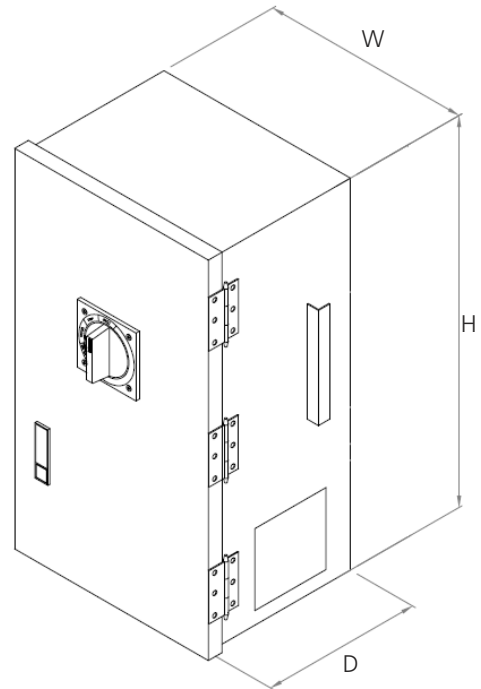


Figure 3

Ampere Rating (A)		Figure	Standard Dimension (mm)					
Cu	Al		A	B	C	D	E	F
400	-	1	450	175	145	-	210	110
630	400	1	450	190	160	-	210	110
800	630	1	450	190	160	-	210	110
1000	800	1	450	210	180	-	210	110
1250	1000	1	450	235	205	-	210	110
-	1250	1	450	260	230	-	210	110
1600	-	1	450	285	255	-	210	110
2000	1600	1	450	320	290	-	210	110
-	2000	1	450	375	345	-	210	110
2500	-	1	450	365	335	-	210	110
3200	2500	2	540	510	240	255	-	130
3500	-	2	540	560	265	255	-	130
4000	3200	2	540	580	275	255	-	130
4500	3500	2	540	650	310	255	-	130
-	4000	2	540	690	330	255	-	130
5000	-	2	540	670	320	255	-	130
6300	4500	3	540	840	270	255	-	130
-	5000	3	540	1005	325	255	-	130



End Feed Unit / Flange End Box



Plug-in Box / Tap-Off Box

Ampere Rating (A)		Standard Dimension (mm)		
Cu	Al	A	B	C
400	-	450	450	175
630	400	450	450	190
800	630	450	450	190
1000	800	450	450	210
1250	1000	450	450	235
-	1250	450	450	260
1600	-	450	450	285
2000	1600	450	450	320
-	2000	450	450	375
2500	-	450	450	365
3200	2500	450	540	510
3500	-	450	540	560
4000	3200	450	540	580
4500	3500	450	540	650
-	4000	450	540	690
5000	-	450	540	670
6300	4500	450	540	840
-	5000	450	540	1005

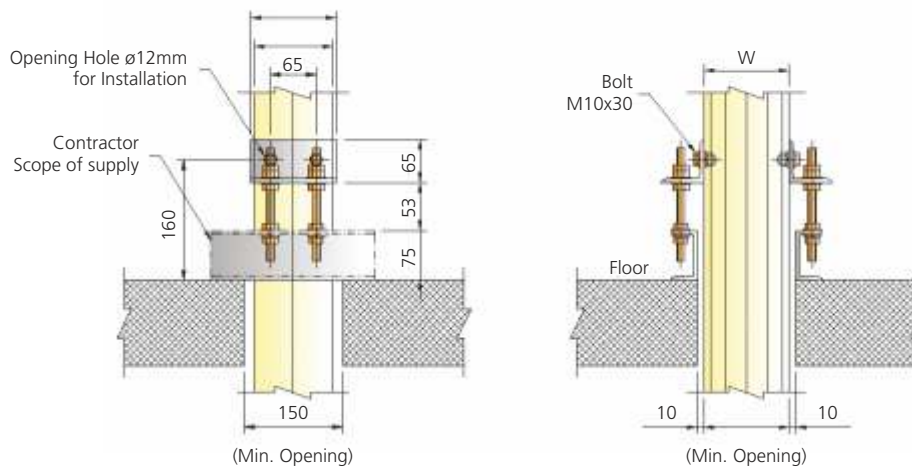
Tap-Off Unit

- Tap-Off Units can be equipped with fused switches, MCCBs, etc. as per requirement.
- Built in mechanical interlocks are available to prevent the opening of TOU cover and installation or removal of TOU when the device inside is ON
- During insertion, earth conductor makes contact first before the phase conductors, this follows first-in-last-out concept

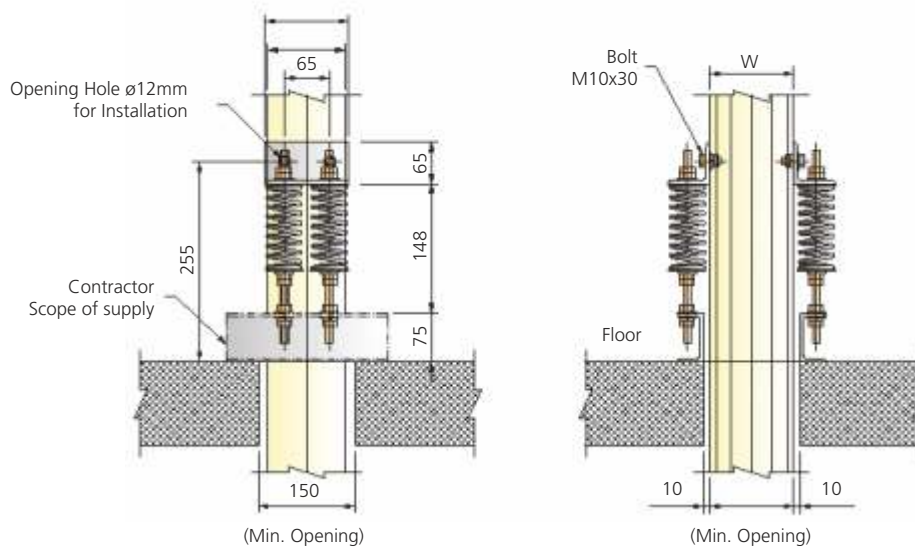
Frame	Standard Dimension (mm)		
	W	H	D
30A-100A	230	340	190
125A-225A	230	370	200
250A-400A	250	540	250
500A-800A	360	840	250
1000A-1250A	400	1000	300

Vertical Support

Vertical Spring hanger is installed to support busduct in each floor of standard height. When the height between the floor level exceed standard height, a support in middle is required



Vertical Fixed Support

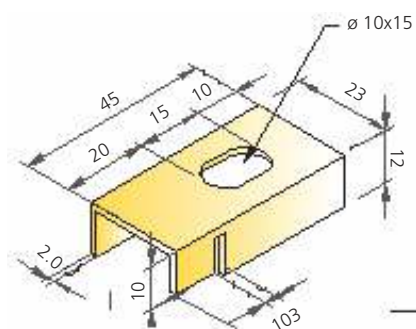
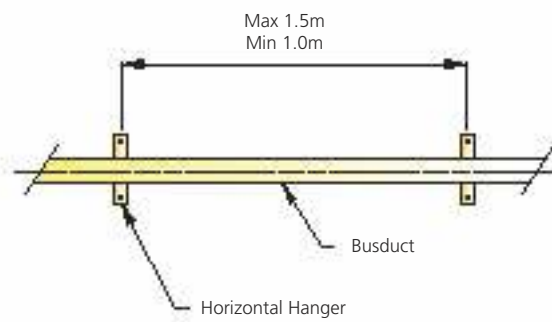
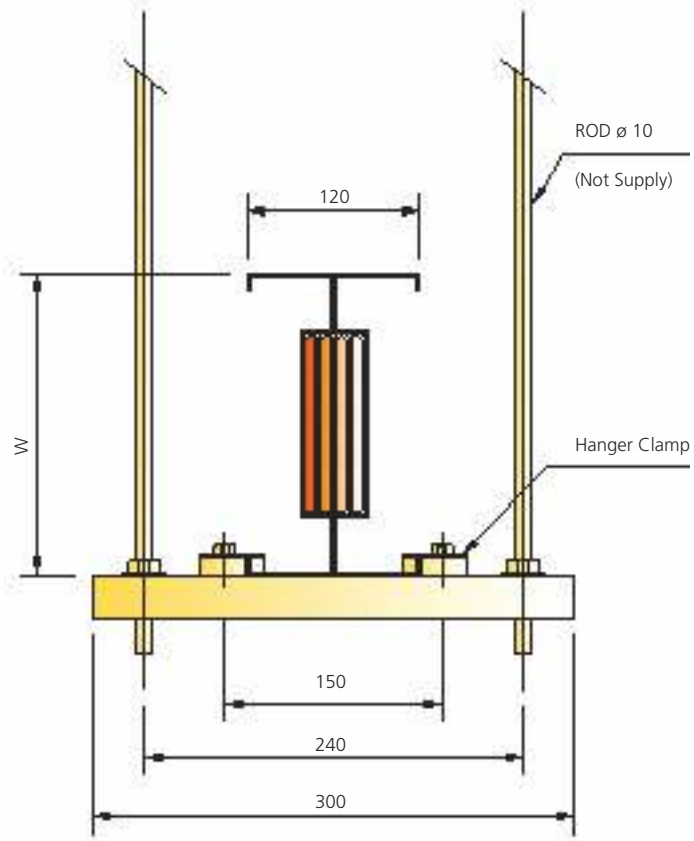


Vertical Spring Hanger

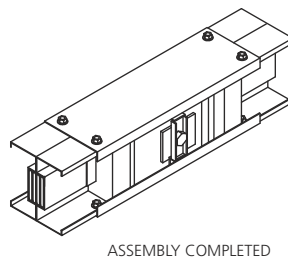
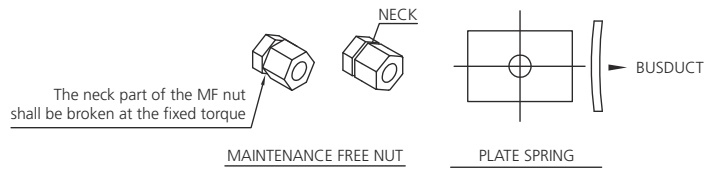
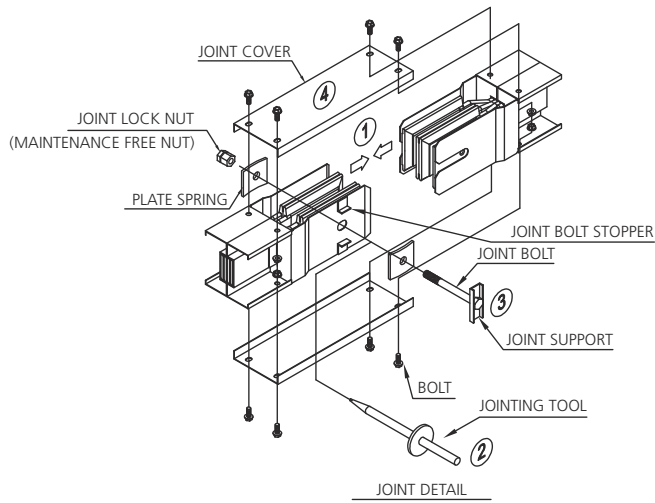
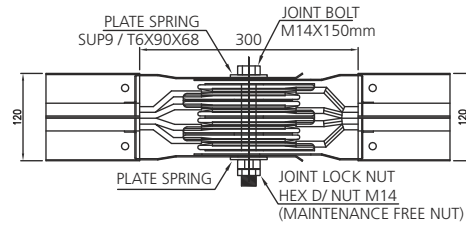
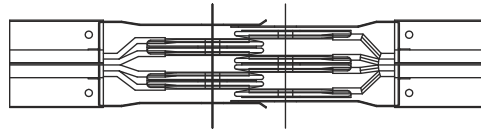
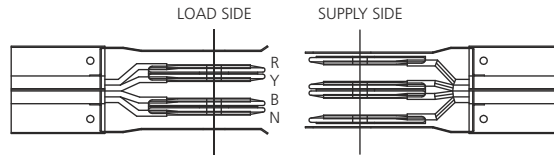
Ampere Rating (A)		Standard Dimension (mm)	
Cu	Al	A	B
400-3200	400-5000	130	120
3500-5000	-	195	120
6300	-	260	120

Horizontal Support

Standard interval length between horizontal support = 1500mm



Joint



ASSEMBLY COMPLETED

Other Offerings

Conventional System

This is a totally metal-enclosed air-insulated Busduct system which complies with the characteristics and structure specified in BS 5486-2, IEC 60439-2, JIS C 8364, NEMA, ANSI and CSA.

- Low-capacity power supply systems are widely used for various factories, machine shops, school laboratories and commercial buildings.
- For most indoor locations where there is a need for small blocks of conveniently available power, the conventional system serves as a highly rationalized solution with various features.
- A total of 6 plug-in holes per 3000 mm unit are available for various capacity ranges of the system..

Busbars

- The bus conductor is available in tin-plated 99.99% pure copper.
- Busbar is supported with fiberglass reinforced SMC insulator which withstands above 180°C.
- Internal or provision for external earth bars are available, as required.

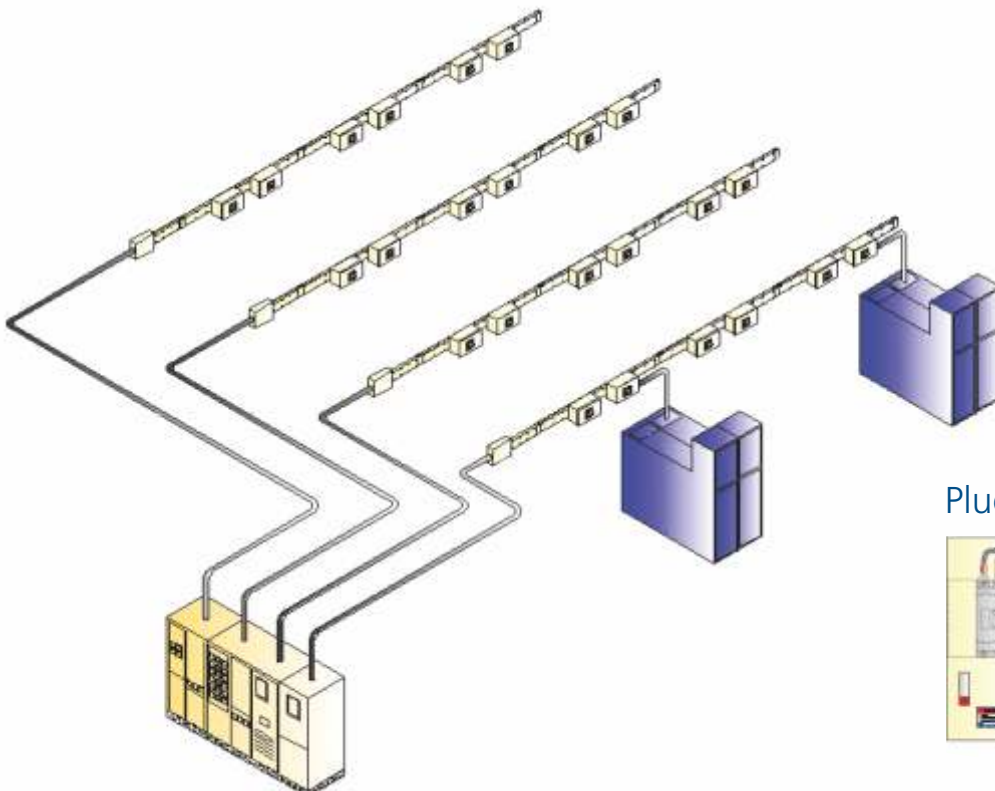
Enclosure/Housing

- The indoor Busduct is totally enclosed in non-ventilated housing made of 1.6 mm thick epoxy powder-coated electro-galvanized steel sheet.

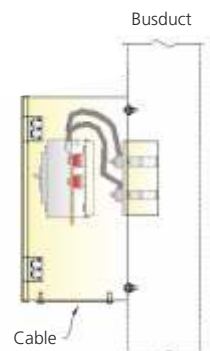
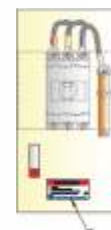
Accessories

- A complete set of elbows, tees, terminations for switchgear, floor flanges and end closures are available.

Straight Run



Plug-in Box



Plug-in Box

- The Plug-in Box is safely grounded with earth springs and they are the first to make contact with the Busduct when the Plug-in Box is installed.
- When the Plug-in box is attached to the Bus Duct, the neutral line is the first to connect forming a solid neutral circuit. Likewise, the neutral plug is the last to break circuit while disconnecting the plug-in box from the Bus Duct to provide total neutral line priority over all the energized lines.
- The built-in interlock system prevents opening of the cover when the device inside is ON.
- A safety provision will prevent the installation or removal of a plug-in box when it is ON.

Type	Air-insulated
Rated Current	100 A to 400 A
Conductor Material	Copper and Aluminium
Rated Operating Voltage	Up to 415 V
Peak Impulse Withstand Voltage	6 kV
Power Frequency Withstand voltage for 1min	2.5kV
System Frequency	50 Hz & 60 Hz
Fault Level for 1 Sec	20 kA
Degree of Protection	IP - 54
Enclosure	Galvanize Steel Sheet
Enclosure Coating	Epoxy
Enclosure Thickness	1.6 mm
Configuration	3P4W, 3P5W (with / without Internal earth)
Joint	Multiple Bolt Direct Joint System
Insulator Class	Class – H
Insulator Material	SMC
Design Ambient Temp.	50°C
Reference Standard	IEC – 60439 – 1&2

Flatwise Elbow



Edgewise Elbow



End-Feed Unit



Centre-Feed Unit



Medium Voltage System

The Medium Voltage system is a non-segregated phase Busduct designed for inter-connection of switchgear, power transformers or other related equipment, providing a wide range of ratings to allow proper application for a variety of installation conditions. The Busduct is designed, manufactured and tested in accordance with IEC 62271-200:2003

Busbars

- 99.99% pure copper conductor is available in either tin or silver plating at the contact surface.
- Busbars are equipped with heat-shrinkable sleeves.
- Busbars are supported by flame-retardant epoxy insulators.
- Provision for internal or external earth bars.

Joint

Splice plates joint, which are equal in cross section to the main Busduct.

Enclosure/Housing

- Indoor and outdoor ducts are totally enclosed in non-ventilated housings.
- Epoxy-powder coated aluminum or electro-galvanized plus stainless steel housings to meet a variety of environment conditions.



Space Heaters/Thermostat

- As per customer requirements, space heaters or thermostats are mounted inside the housings, spaced at approximately 2-metre intervals along the length of the Busduct run. These prevent condensation and detect temperature changes.

Accessories

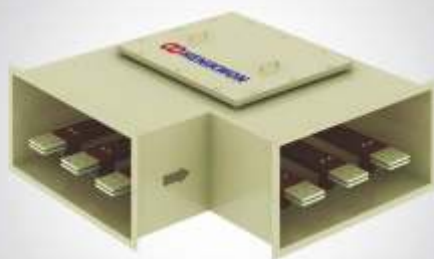
- A complete set of elbows, tees, terminations for transformers and switchgear phase transpositions, expansion joints, wall flanges, flexible conductors, bushing boxes, bushing stud connectors and terminal enclosures are available.

Type	Air-insulated
Rated Current	400 A to 5000 A
Conductor Material	Copper
Rated Operating Voltage	3.6 kV to 33 kV
Peak Impulse Withstand Voltage for 1 sec	50 kV – 195 kV
Power Frequency Withstand Voltage for 1min	20 kV
System Frequency	50 Hz & 60 Hz
Fault Level for 1 Sec	70 kA
Degree of Protection (IP)	54, 55 & 65
Enclosure	GI+ Stainless Steel & Aluminium
Enclosure Coating	Epoxy
Enclosure Thickness	2 mm
Configuration	3P3W (with/without internal earth)
Joint	Splice plate multiple Bolt
Insulator Material	Heat Shrinkable Tube
Reference Standard	IEC – 62271 – 200

Straight Length



Flatwise Elbow



Edgewise Elbow



Project Reference

Residential Apartments

Shreepati Tower, Mumbai (2002)
Godrej Towers, Mumbai (2003)
Plumeria Garden, Delhi (2007)
Rattha Somerset, Chennai (2008)
Parinee Developers (2009)
Blue Ridge (2009)

IT/ITES

TCS IT Park, Mumbai (2001)
Vanenburg IT Park, Hyderabad (2002)
Sahara Amby Valley IT Park, Mumbai (2002)
Inte IT Park, Bangalore (2002)
TCS IT Park, Hyderabad (2003)
Magarpatta Cyber City IT Park, Pune (2003)
Hallmark Foundation IT Park (2003)
Wipro IT Park, Hyderabad (2004)
L&T Cyber IT Park, Bangalore (2004)
Wipro IT Park, Bangalore (2004)
TCS IT Park, Kolkata (2005)
Jasmin Infotech IT Park (2007)
GKS Technology IT Park (2007)
Wipro Data Center, Mysore (2009)

Offices & Commercial Buildings

MTNL Charkop, Mumbai (2002)
Vyasya Bank (2002)
Godrej Towers, Mumbai (2003)
State Bank of India (2004)
HSBC Bank, Hyderabad (2004)
ITPL, Bangalore (2004)
MTNL, Delhi (2002)
Indian Overseas Bank (2005)
HSBC Bank, Kolkata (2005)
World Bank (2005)
Dell Computers, Bangalore (2005)
EGL Signature Fidelity -
Manyatha, Bangalore (2005)
White Field Palms, Bangalore (2005)
DMRC, Delhi (2005)
Sales Tax Building, Mumbai (2005)
Sahara, Lonavala (2005)
Sahara Grace, Mumbai (2005)
Power Plaza (2005)
Uppal, Delhi (2005)
R&R Tech (2006)
HCL, Bangalore (2006)
IMTMA Exhibition Center,
Bangalore (2006)
VP Stadium, Mumbai (2006)
IBM Manyatha, Bangalore (2007)
Astra Infonet, Bangalore (2007)
Ascendas Park, Chennai (2008)
ANZ Manyata Embassy Park,
Bangalore (2008)
Premier L.T. Parks Pvt. Ltd. (2009)
TATA Power Project Intelenet (2009)
Marine Electrical, Mumbai (2009)

Stock Holding Corporation of India,
Mumbai (2009)
Ceejang House (2009)
TCE, Jamshedpur (2009)
JP Hydro, Delhi (2010)

Resorts & Hotels

Taj Mahal Hotel & Tower, Mumbai (2006)
Taj Hotel, Bangalore (2007)
Mariott Courtyard Hotel Andheri,
Mumbai (2009)
Leela Palace Hotel, Mumbai (2009)
RAS ADTAR Hotels Pvt. Ltd. (2009)
Hotel Akriti, Noida (2009)
Jaypee Greens, Noida (2009)
Pullman Hotel (2010)
Novotel Hotel, Mumbai (2010)

Educational Institutions and Laboratories

Cipla R&D Lab, Mumbai (2005)
Welinkar Institute, Mumbai (2005)
International School, Bangalore (2005)
International Business School,
Bangalore (2005)
IMTMA, Bangalore (2006)
BARC, Mumbai (2006)
Jubliant Organisis R&D Lab., Mysore (2009)
IIT Powai, Mumbai (2009)
RRCAT, Indore (2009)

Shopping Centers

Safal Fruit and Vegetable -
Auction Market (2002)
Sahara, Gurgaon (2004)
Inorbit Mall, Mumbai (2006)
Ascendas Mall, Bangalore (2009)
Lulu International Shopping Mall (2009)
Phoenix Mall, Mumbai (2009)

Assembly Lines

MICO, Nasik (2000)
Technova Imaging System, Mumbai (2000)
BSES, Delhi (2000)
Hyundai, Chennai (2004)
MICO, Bangalore (2005)
Jubliant Organisis, Mysore (2005)
Nokia Mobile Phone Facility, Chennai (2005)
Renault Nissan Automotive, Chennai (2009)
Daimler, Chennai (2009)

Industries

SSG, Chennai (2000)
Vishnu Prayang (2005)
Seepz++ Andheri, Mumbai (2005)
American Power Conversion (2006)
Perlos, Chennai (2007)
Moog Controls (2007)
RPG Raychem, Pune (2008)

Metso Paper Mill, Noida (2008)
Global Tech., Noida (2009)
Allison Transmission, Chennai (2009)
Four Star International Ltd. (2009)

Airports, Railways and Ports

DMRC, Delhi (2005)
DMRC, Vadodara (2005)
Hyderabad International Airport (2006)
ICTT, Kochi (2005)
DMRC, Mumbai (2009)
Bangalore International Airport (2010)

Hospitals

Godrej Memorial Hospital, Mumbai (2003)
Ambani Hospital, Mumbai (2006)

Oil & Gas Plants

L&T Gas Rejection Project (2005)

Electricity Generation Plant

BARC, Kalpakkam (2009)

Other Countries having Henikwon SCM Busduct installations







Algeria
Bangladesh
Bahrain
China
Chile
Egypt
Hong Kong
Indonesia
Iran
Ireland
Japan
Malaysia
Maldives
Mexico
Mauritius
Myanmar
Nigeria
Philippines
Pakistan
Romania
Sri Lanka
Singapore
Thailand
Taiwan
Turkmenistan
UAE (Abu Dhabi, Dubai,
Qatar, Sharjah, Kuwait,
Saudi Arabia, Oman, etc.)
UK
Vietnam

Ingress Protection (IP)









The protection of enclosures against ingress of dirt or against the ingress of water is defined in IEC-60529 (BSEN60529:1991). Conversely, an enclosure which protects equipment against ingress of particles will also protect a person from potential hazards within that enclosure, and this degree of protection is also defined as a standard.

The degrees of protection are most commonly expressed as 'IP' followed by two numbers, e.g. IP65, where the numbers define the degree of protection.

1st Digit Protection against Human Contact/ Protection against Foreign Bodies

	0	No special protection
	1	With back of hand / large foreign bodies, of diameter >50mm
	2	With a finger / medium-sized foreign bodies of diameter >12.5mm
	3	With tools and wires etc., with a thickness >2.5mm / small foreign bodies of diameter >2.5mm
	4	With tools and wires etc., with a thickness >1mm / granular foreign bodies of diameter >1mm
	5	Complete protection / dust-protected
	6	Complete protection / dust-proof

2nd Digit Protection against Water Ingress

	0	No special protection
	1	Water dripping vertically
	2	Water dripping at an angle (up to 15 degrees from the vertical)
	3	Spray water (any direction up to 60 degrees from the vertical)
	4	Spray water from all directions
	5	Water jets from a nozzle in all directions
	6	High pressure jets
	7	Temporary immersion
	8	Permanent immersion

Electrical Standard Products (ESP) Branch Offices:

REGISTERED OFFICE AND HEAD OFFICE

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Fax: 022-67525858
Website: www.Larsentoubro.com

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