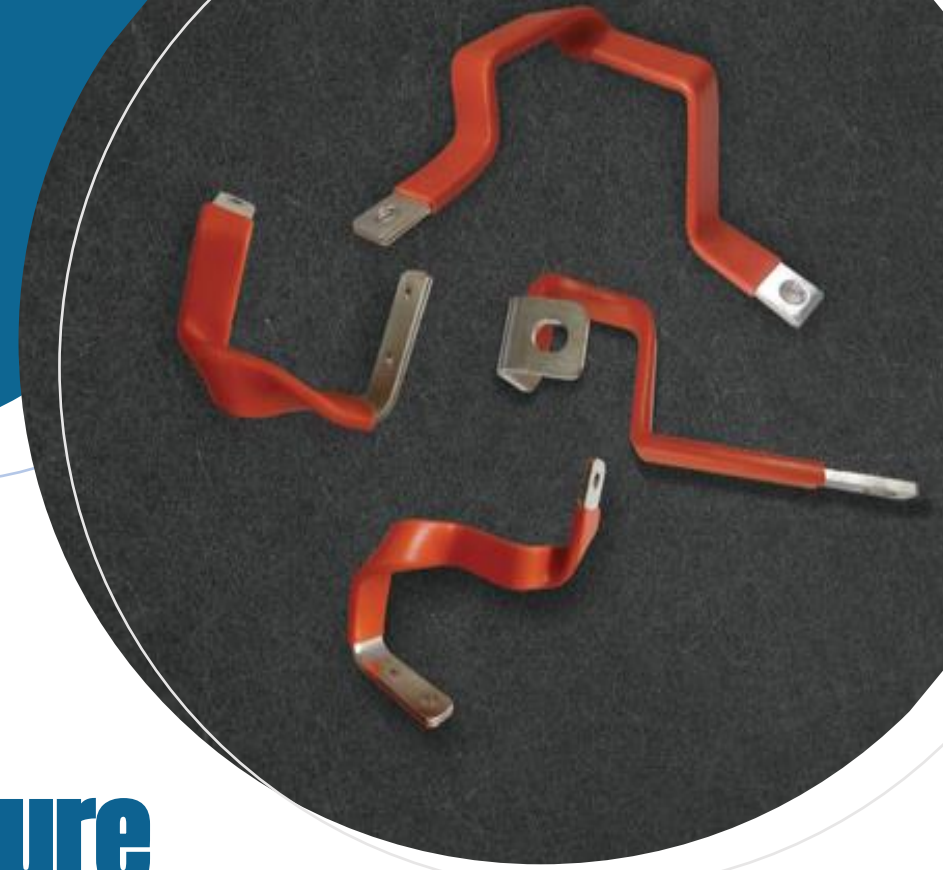


# SEILHI-TECH

## Innovation For Future



# COMPANY INFO

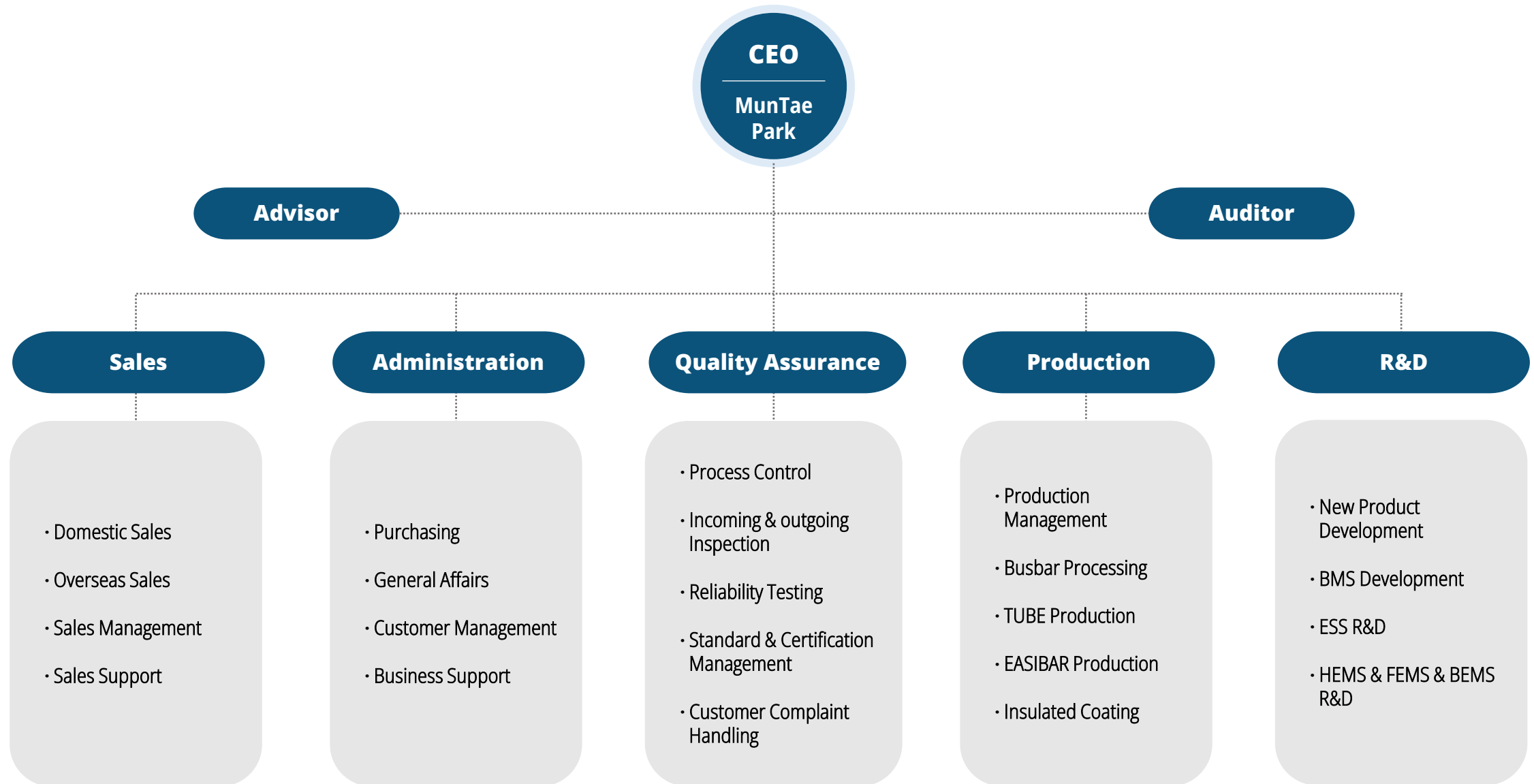
**세일하이텍**  
**SEILHI-TECH**

**CEO**  
Mun Tae Park

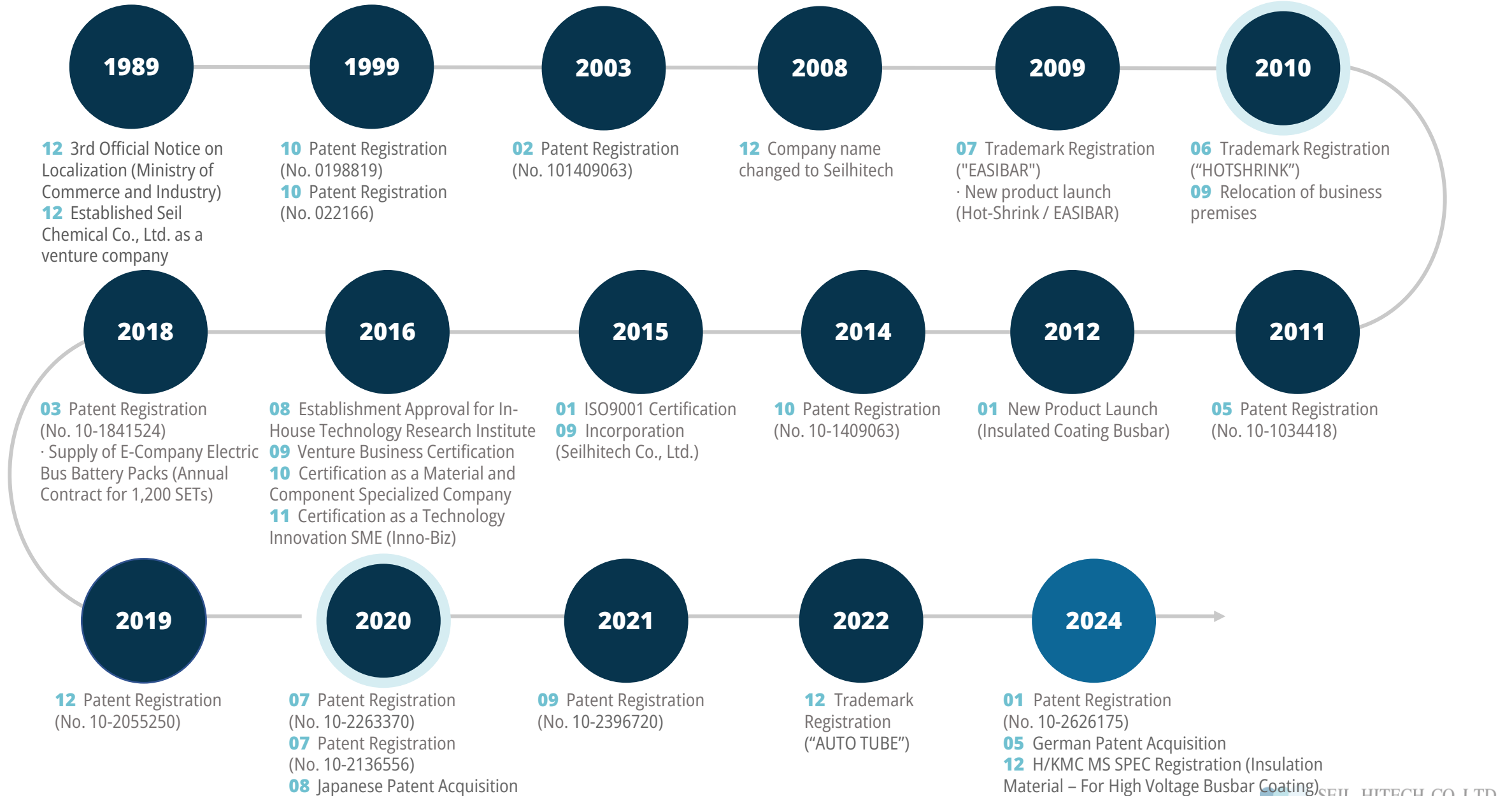
**Established**  
1989. 12

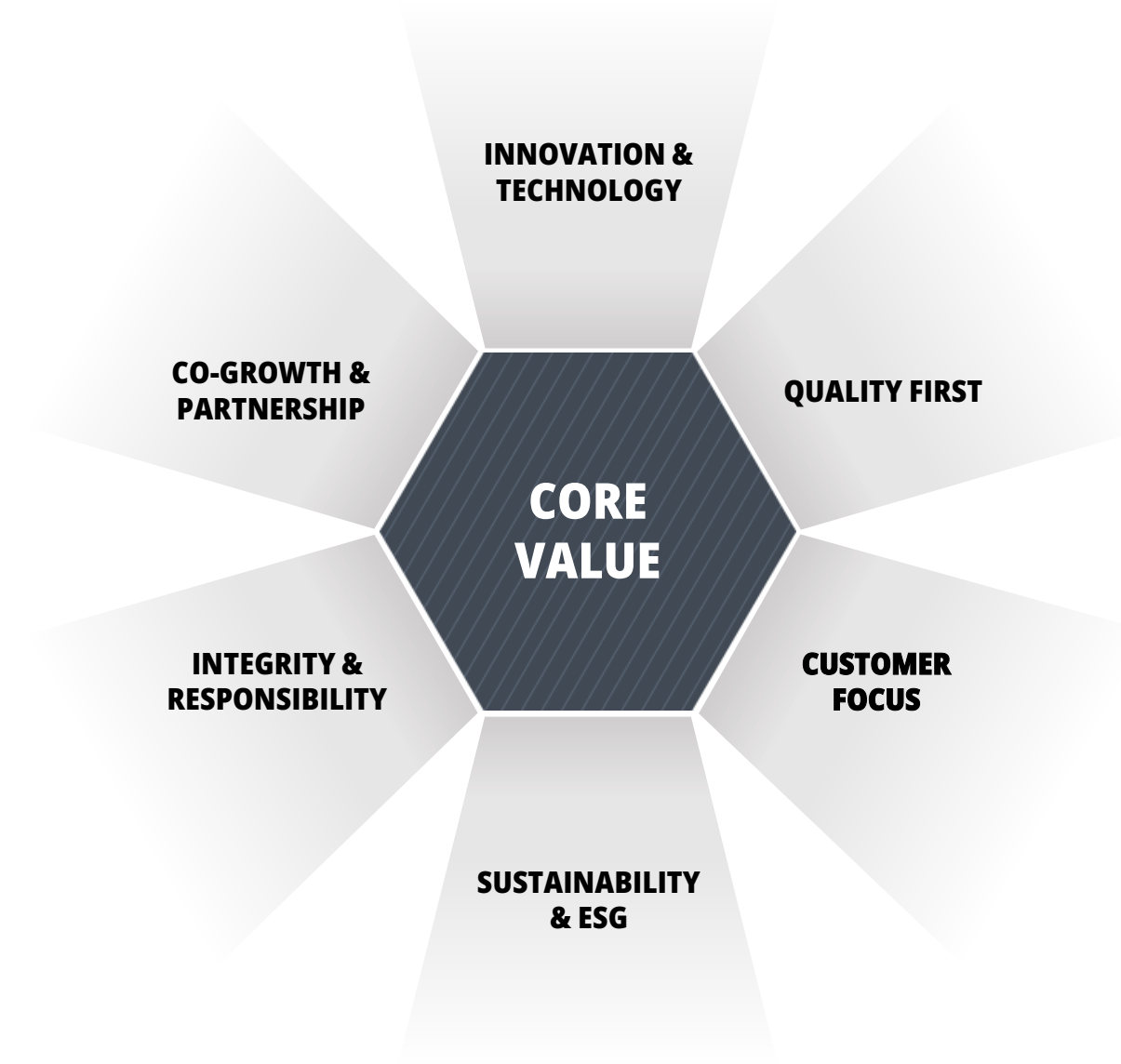
**Address**  
9, Bonggol-gil 171beon-gil, Opo-eup,  
Gwangju-si, Gyeonggi-do, South Korea

**Business Areas**  
Flexible Busbar (EASIBAR) |  
Air-Shrink Tube |  
Silicone Shrink Tube (AUTO-TUBE) |  
Heat-shrink Tube & Film (HOT-SHRINK) |  
Insulated Coating Busbar |  
Copper Plate & Busbar Processing



## HISTORY





- 01 Innovation & Technology**  
Providing the Best Products through Continuous Research, Development, and Technological Innovation
- 02 Quality First**  
Producing High-Quality Products that Meet Customer Demands and Building Trust through Strict Quality Control
- 03 Customer Focus**  
Providing Customized Solutions by Prioritizing Customer Needs
- 04 Sustainability & ESG**  
Achieving Social Responsibility through Materials and Processes Considerate of Environmental Friendliness and Sustainability
- 05 Integrity & Responsibility**  
Building Trust with Customers through Ethical Management and Responsible Business Practices
- 06 Co-Growth & Partnership**  
Creating a Sustainable Industrial Ecosystem by Growing Together through Close Collaboration with Suppliers and Partners

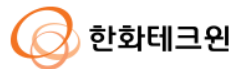
## MAJOR CLIENTS



Hyundai Motor  
Company



Kia Corporation



Hanwha  
Techwin



Hyundai Heavy  
Industries



SK On



Hyosung



Samsung SDI



TW Enersys



KAI



CS  
Enertech



IT Science



Argen Turbo



Woojin Electric



K-One TS



Geumseong  
Control



Sejeon Electric  
Machinery



Vinatech



Seoul Telecom



KD power



Mono Industry

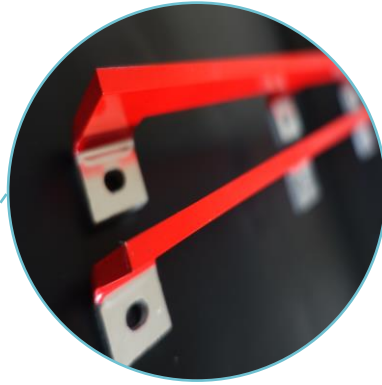


Youngjin General  
Electric

## PRODUCT PORTFOLIO



Easibar



Insulated Coating Busbar



Copper Braided Flexible Busbar



Shunt Flexible Busbar



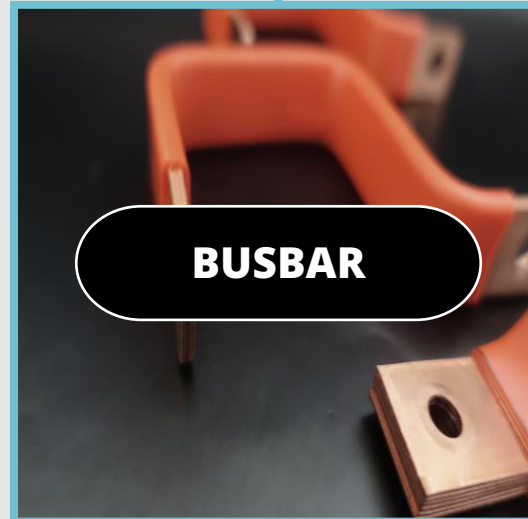
Stranded Wire Flexible Busbar



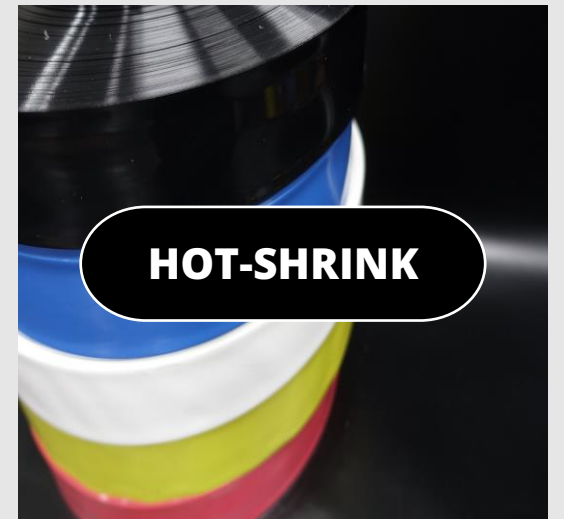
**AIR-SHRINK**



**AUTO-TUBE**



**BUSBAR**



**HOT-SHRINK**



## AIR-SHRINK TUBE



### AIR-SHRINK TUBE



Our room temperature shrink tube(Air-shrink Tube) **naturally contracts upon exposure to air without requiring heat application.** It enables quick and easy installation, making it particularly suitable for bent or irregularly shaped objects.

- **Ease of Installation:** Can be installed quickly and easily without heating equipment, suitable for irregular structures.
- **Safety:** Excellent insulation properties prevent electric shock and bridging accidents.
- **Durability:** Contains UV stabilizers, ensuring long-term use even in harsh environments.
- **Heat Resistance:** High heat resistance prevents arcing and tracking.
- **Appearance & Identification:** Available in various colors and sizes for easy identification and aesthetic improvement.
- **Chemical Resistance:** Flame-retardant and resistant to acidic and alkaline solvents.
- **Efficiency:** Cost-effective and reduces labor time.

Material Properties	Test Method	Typical Data
Dielectric Strength	KSC 2105	14KV / mm
Volume Resistivity	AS 1977 / MIL - 1	$1.0 * 10^{11}$ ohm.cm
Dielectric Constant	AS 1977	9.0
Tensile Strength	ISO 37	228 kg.f / cm <sup>2</sup> , 22MPA
Water Absorption Rate	AS 1977	0.5% after 14 days @ 23℃
Maximum Elongation	ISO 37	270%
Resistance against Tracking and Corrosion	KSC 3004	Pass
Resistance against Inflammation	KSM 3015-87	Pass
	UL 224	Pass
Accelerated Aging	ISO 188	168hrs @ 120℃ 150% (elongation)
Thermal Endurance	IEC 216	105℃





# AIR-SHRINK TUBE

## Usage Instructions (Work Steps)

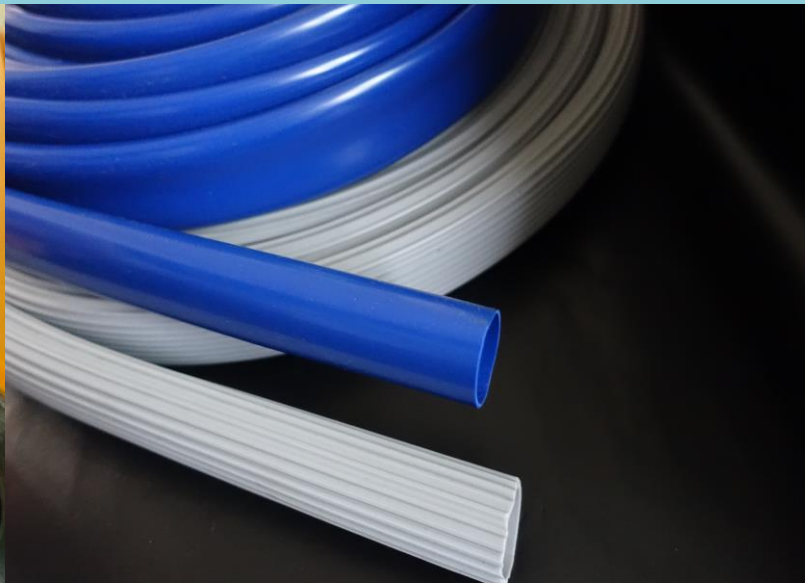
- STEP 1** Remove foreign substances from the surface of the target object (Busbar).
- STEP 2** Lay out a carton box on the workspace floor.
- STEP 3** Use the product from the bottom of the container (immersed in the solvent) first.
- STEP 4** Insert the tube by pushing it in.
- STEP 5** For curved sections, allow enough slack to prevent excessive tension.
- STEP 6** Cut the tubing with extra length beyond the intended area.
- STEP 7** Stand the tubed product upright to prevent sticking.
- STEP 8** After shrinkage is complete, make the final cut again.

## Production Specifications

<b>Diameter</b>	Ø7.0 ~ Ø90
<b>Color</b>	RED   WHITE   GRAY   BLUE   BLACK   YELLOW   GREEN
<b>Voltage Rating</b>	L: Voltage up to 600V M: Voltage up to 7.2kV H: Voltage up to 22.9kV E: Voltage above 22.9kV
<b>Tube Thickness</b>	1.0mm: Suitable for L voltage 1.5mm: Suitable for M voltage 2.0mm: Suitable for H voltage 3.0 ~ 3.5mm: Suitable for E voltage

## Application Cases

Insulation protection for electrical devices such as busbars, rollers, distribution panels, and power conversion devices.





## AUTO TUBE



Our room temperature shrink tube made from high-performance silicone material that naturally contracts upon exposure to air without the need for heat. It offers excellent insulation, heat resistance, and flexibility, allowing for quick and easy installation, and is especially suitable for bent or irregularly shaped objects.

- **Ease of Installation:** Can be installed quickly and easily without heating equipment; suitable for irregular structures.
- **Heat Resistance:** Maintains its insulating properties without deformation even at high temperatures.
- **Excellent Insulation:** Offers electrical insulation protection with high dielectric strength and is applicable in various environments that require electrical stability.
- **Flexibility and Durability:** Provides higher elasticity and flexibility compared to heat shrink tubes, with uniform contraction that securely protects the covered object.
- **Stability and Flame Retardancy:** Exhibits excellent resistance to environmental factors such as UV exposure, and its flame retardant properties reduce the risk of electrical fires.

### Application Cases

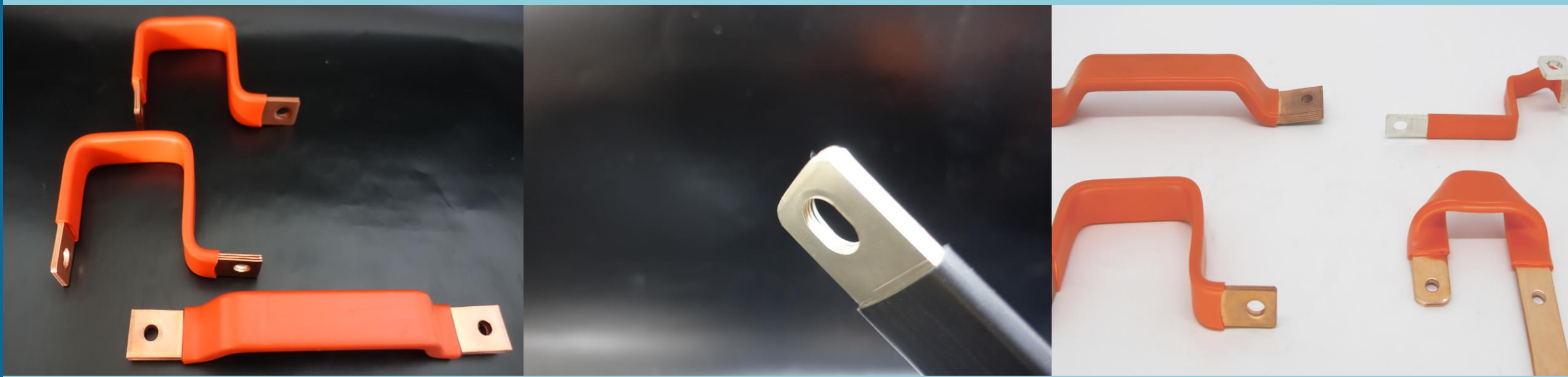
Insulation protection for electrical devices such as busbars, switchboards, and power conversion equipment.

### AutoTube Test

	Test Method	Values	AutoTube
Dielectric Strength ( AC 2.5kV / 1min)	High-Temperature Exposure	150°C × 500h	PASS
	High-Temperature Exposure	200°C * 168h	PASS
	Thermal Shock	-40°C to 125°C 500 cycles	PASS
	Low-Temperature Exposure	-40°C * 500h	PASS
Impact Resistance	Room Temperature	500g furniture, 1m Free fall	PASS
	Low Temperature	-40°C * 3h	PASS
Chipping Resistance		MS evaluation (in-house external coating)	PASS
Flammability		Burning time (within 10 seconds)	PASS

· The typical heat resistance test specification for busbars is 120°C, and in the case of our AutoTube, it ensures heat resistance performance equivalent to epoxy coating.

· Our AutoTube meets the performance requirements of the FCEV hydrogen stack and has been adopted for next-generation hydrogen vehicles (mass production in 2024).



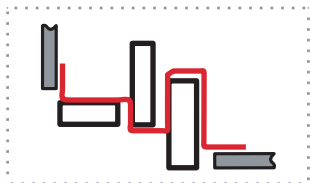
## EASIBAR (Copper Plate Laminating Flexible Busbar)



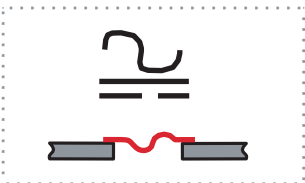
Easibar is our proprietary brand name for a new-concept flexible busbar, in which laminated thin copper plates are insulated using our unique room-temperature shrink tube technology. **It is a flexible busbar that can fully replace both cables and traditional busbars.**

· This product serves as an ideal alternative to flexible connectors for ESS, EV battery packs, power distribution panels, UPS, and MCC panels. It is also perfect for establishing power supply line connections with various devices such as inverters and circuit breakers.

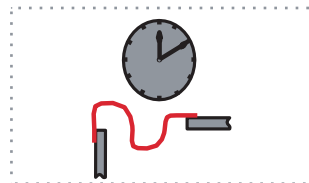
### Core Competencies



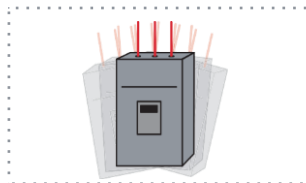
Capable of Connections in Complex Structures



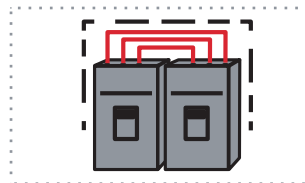
Applicable to Both DC and AC Currents



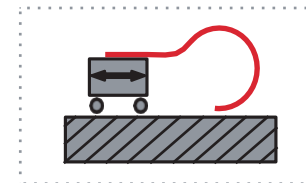
Reduced Work Time with Enhanced Flexibility



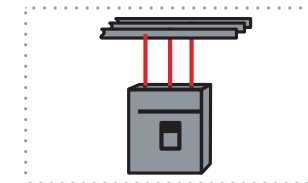
Ideal for Conductors Exposed to Vibration



Compact Layout for Reduced Assembly Size



Flexible Connection for Fixed & Moving Parts



Perfect for Power Circuit Breaker Wiring

## Key Features

### 1 Convenient Work Process

- No need for separate insulation tube processing
- Easy connection with terminal hole work
- Quick and easy installation

### 2 Flexible Design Shape

- Custom sizes available
- High flexibility for shape customization
- Shortened wiring paths and optimized space

### 3 Excellent Safety

- Coated with special insulating material for excellent insulation and flame resistance

### 4 Efficient Power Conduction with Low Heat

- High current efficiency with reduced resistance
- Lower heat generation than standard busbars

### 5 Cost-Effective

- Easy processing and wiring, cutting labor costs
- Cost savings with reduced materials and compact design



## Differentiation



### Tech

- Custom-developed Air-shrink tube allows for various shapes
- No wrinkles at bends, excellent insulation and appearance
- Eco-friendly tube, free of heavy metals and phthalates



### Quality

- Passed temperature rise test for key specifications (Testing agency: KERI)
- Assessed RoHS I, II (6 heavy metals, 4 phthalates) (Testing agency: SGS KOREA)



### Price

- Cost competitiveness through in-house production of Air-shrink tube
- Improved cost competitiveness with automated and localized production



## Product Comparison

### A Company



#### Product

General Extruded PVC

#### Process

- PVC tube with inserted copper coil

#### Feature

- Copper coil & tube are separated
- Wrinkles occur at bends

### SeilHi-Tech

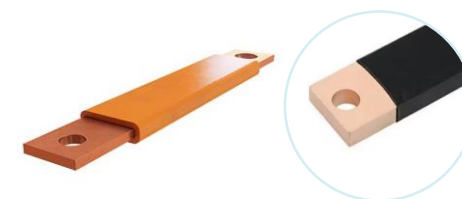


Air-shrink Tube

- Copper coil laminated with air-shrink tube that naturally shrinks at room temperature

- Copper coil and tube form a tight bond
- it adjusts to the copper coil's elongation, enabling various shapes.
- Clean bends with no wrinkles.

### Rigid Busbar



#### Structure

- Solid single metal plate

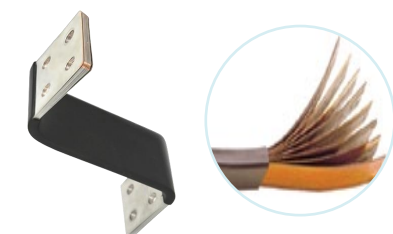
#### Flexibility

- Fixed shape, no shape changes

#### Feature

- High heat generation
- Large volume, occupies more space
- Extra insulation and processing costs

### Flexible Busbar



- Laminated thin copper sheets

- Easily bendable, simple to process

- Low heat generation
- Space-saving wiring
- Cost-effective processing and insulation

## Easibar Test

- Patent: Patent No. 1034418 (Flat Electrical Conductor)
- Test Results: Temperature Rise Test [KERI]

Current	Specifications		Measurement Time(Hr)	Temperature Rise( $\Delta T$ )	Ambient Temperature( $^{\circ}C$ )
	Width(mm)	Thickness(Sheet)			
320A	20	3	4.5	41.2	14.6
500A	32	5	4	39.6	20
800A	50	6	2.3	20.9	23.3
1000A	80	4	2.5	27.7	24
1250A	100	5	5.3	31.6	27
1600A	100	8	4.3	35.1	26.7
2000A	120	10	3.3	36.5	26.8

## Easibar Specs

Copper Plate Specs				Current	X-sectional Area (mm <sup>2</sup> )
CODE No.	Sheet	Width (mm)	Thickness (mm)	Ampere	
EB 0302010	3	20	1	280	60
EB 0402010	4	20	1	320	80
EB 0502010	5	20	1	330	100
EB 0602010	6	20	1	360	120
EB 1002010	10	20	1	500	200
EB 0302410	3	24	1	320	72
EB 0402410	4	24	1	360	96
EB 0502410	5	24	1	400	120
EB 0602410	6	24	1	400	120
EB 0802410	8	24	1	530	192
EB 1002410	10	24	1	600	240
EB 0303210	3	32	1	380	96
EB 0403210	4	32	1	430	128
EB 0503210	5	32	1	500	160
EB 0603210	6	32	1	560	192
EB 0803210	8	32	1	670	256
EB 1003210	10	32	1	810	320
EB 0304010	3	40	1	410	120
EB 0404010	4	40	1	480	160
EB 0504010	5	40	1	590	200
EB 0604010	6	40	1	670	240
EB 0804010	8	40	1	810	320

EB 1004010	10	40	1	920	400
EB 0305010	3	50	1	460	150
EB 0405010	4	50	1	570	200
EB 0505010	5	50	1	720	250
EB 0605010	6	50	1	810	300
EB 0805010	8	50	1	920	400
EB 1005010	10	50	1	1,080	500
EB 0406010	4	60	1	670	240
EB 0506010	5	60	1	800	300
EB 0606010	6	60	1	950	360
EB 0806010	8	60	1	1,080	480
EB 1006010	10	60	1	1,240	600
EB 0308010	3	80	1	640	240
EB 0408010	4	80	1	790	320
EB 0508010	5	80	1	910	400
EB 0608010	6	80	1	1,070	480
EB 0808010	8	80	1	1,240	640
EB 1008010	10	80	1	1,380	800
EB 0510010	5	100	1	1,070	500
EB 0610010	6	100	1	1,210	600
EB 0810010	8	100	1	1,410	800
EB 1010010	10	100	1	1,540	1,000
EB 1210010	12	100	1	1,640	1,200



## Application Cases

### Transportation

Battery systems for electric vehicles, buses, trucks, and golf carts |  
Battery packs and power systems for ships



▲ H-Company Electric Bus Battery Pack



▲ E-Company EV Battery Pack



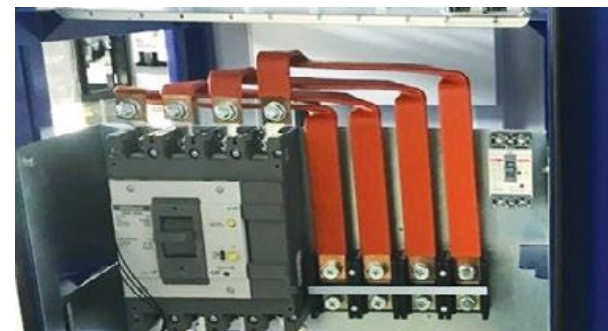
▲ P-Company Electric Bus Battery Pack



▼ S-Company EV Battery Pack



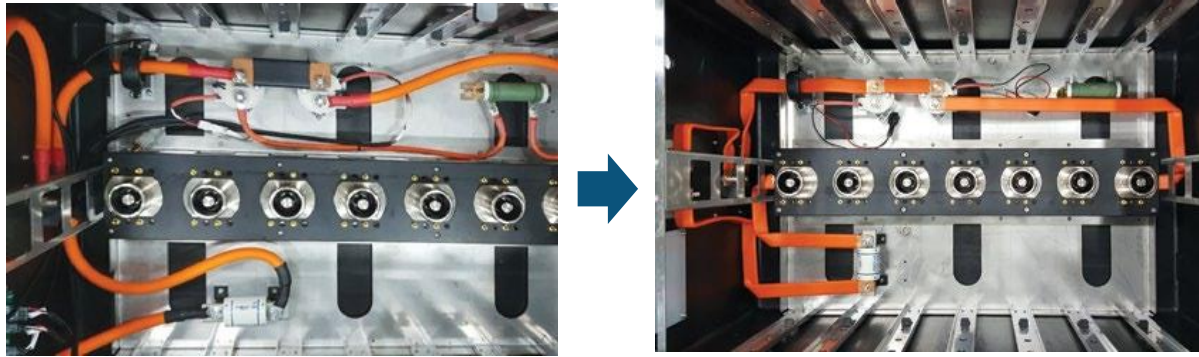
▲ M-Company 2.5T Truck Battery Pack



▲ P-Company Battery Charger



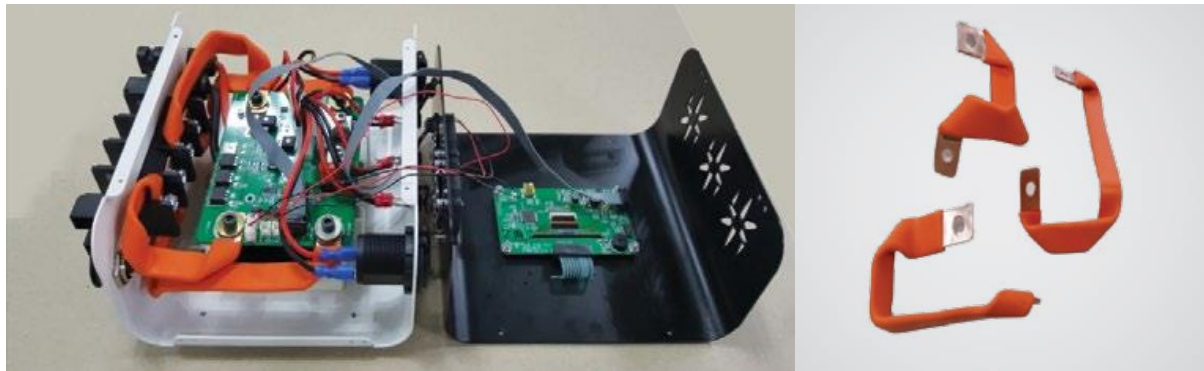




▲ L-Company Boat Battery Pack

**Electric**

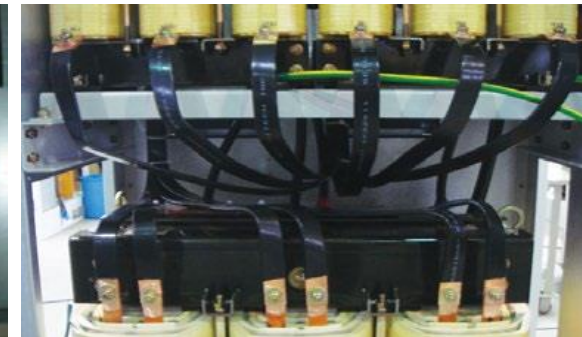
- Busbar expansion joints: Distribution panels, UPS, etc.
- Flexible jumper wires and cable alternatives.
- Connection wires for power equipment: Transformers, Capacitors, etc.
- Power supply lines for Starter Modules: MCC, Switchgear, etc.
- Main power lines, building automation systems, and power conversion systems.



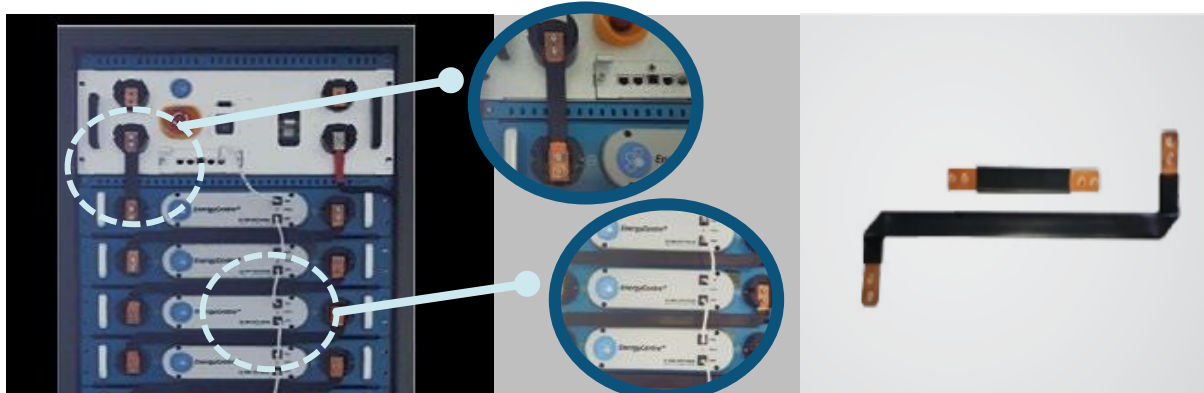
▲ Inverter



▲ Current Transformer (CT)



▲ Inverter



▲ ESS



▲ Switchgear



▲ MCC Panel





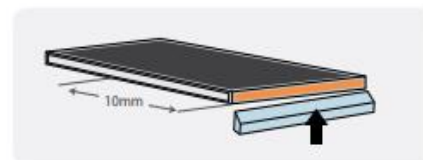
▲ Motor Controller



▲ Solar Inverter

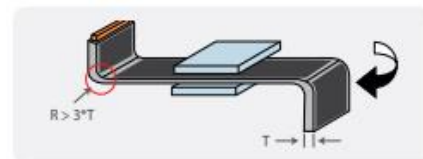


## Manufacturing Process



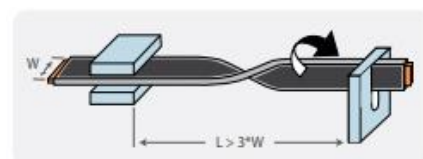
### STEP 1

Cutting is done with a tool, leaving about 10mm extra length to prevent misalignment of layers during bending.



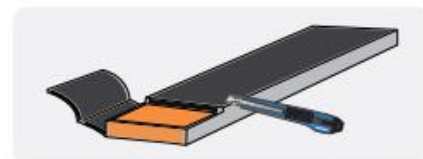
### STEP 2

For smaller Easibar widths, manual bending is possible. For larger cross-sections, use proper tools and take precautions to protect the insulation during bending.



### STEP 3

If the twisting angle is 90 degrees, fix both ends at a distance at least three times the width of the Easibar and twist accordingly.



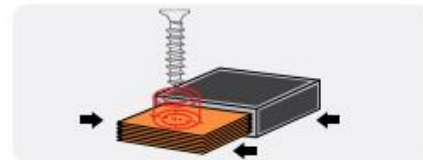
### STEP 4

Use a blade or insulation stripper to remove insulation from the necessary areas. Be careful not to scratch the copper surface.



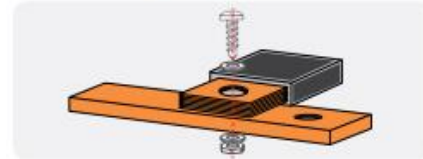
### STEP 5

When bending the Easibar, be cautious as the multiple layers of copper may misalign. To prevent this, appropriately trim the ends to finish the process.



### STEP 6

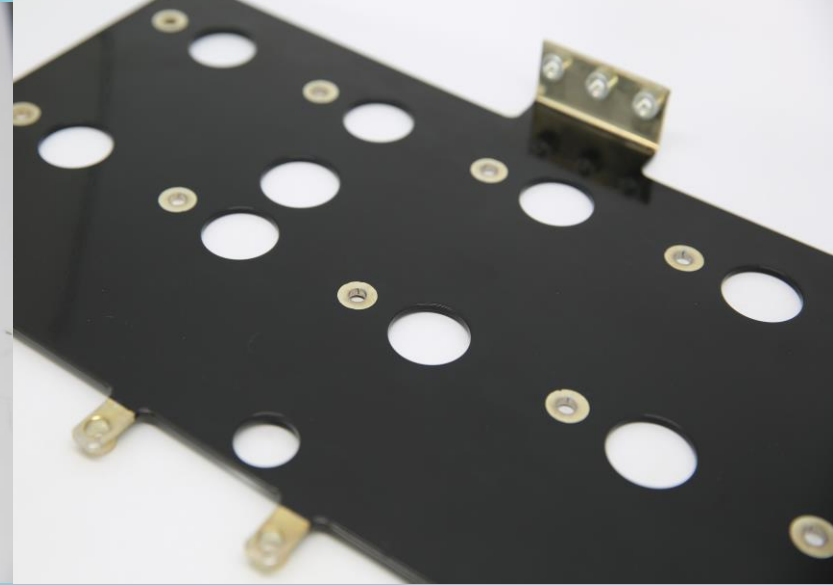
After bending and cutting, punch or drill holes for bolts. Use a drill guide to prevent twisting. The hole size should be no more than 50% of the copper strip width.



### STEP 7

When connecting to power equipment or general busbars, apply the appropriate torque for each specification to secure the connection.

## INSULATED COATING BUSBAR



### INSULATED COATING BUSBAR

Cu plates and busbars are enhanced with an insulation coating to improve safety and durability. The proprietary insulation coating utilizes an inorganic alkyd-based material, which offers excellent insulation properties, flexibility, and tensile strength.

- Excellent insulation, durability, impact resistance, flexibility, and adhesion.
- Maintains performance while reducing insulation costs for better cost efficiency.
- Inorganic alkyd-based coating enhances polymer properties.

#### Coating Layer Properties

- 1 Dielectric Withstand Voltage(200 $\mu$ m Thickness) : 5kV
- 2 Standard Coating Thickness: 60 $\mu$ m
- 3 Pencil Hardness: H
- 4 Adhesion: 100/100
- 5 Glossiness (60°): 50~90%
- 6 Impact:  $\geq 25$  kg·cm (Epoxy: 15)
- 7 Bending:  $\leq 5$ mm (Epoxy: 10)
- 8 Elongation:  $\geq 6$ mm (Epoxy: 4)

#### Application Cases

- Insulation Coating for Power Distribution Panels, Busbars, and Power Supply Lines

### Comparison of Properties with General Coatings

- **Epoxy-based:** Improves upon the drawbacks of urethane and fluorine-based coatings as an insulation coating.
- **Urethane-based:** Excellent impact and tensile strength but weak in bending strength.
- **Fluoropolymer-based:** High impact resistance but weak tensile strength.
- **Inorganic Alkyd-based:** Superior insulation, bending, and tensile strength.

Type		Epoxy	Urethane	Fluoropolymer	Inorganic Alkyd
Bending Strength	kg.f/ai	910~1,500	49~630	520~770	980~1,300
		●	X	▲	●
Tensile Strength	kg.f/ai	280~910	1,400	140~520	580~740
		▲	●	X	●
Impact Strength	kg.f.cm /cm	1.1~5.5	No Breakage	17~22	1.4~5.5
		▲	●	●	▲
Dielectric Breakdown Strength	kv/mm	12~20	13~25	10~19	17~22
		▲	▲	▲	●

※ Impact Strength: Izod Notched, 1.25 × 1.25 cm





## COPPER BRAIDED FLEXIBLE BUSBAR

A product fabricated by bundling multiple strands of fine copper wire, with width adjusted according to the required capacity. It is custom-cut to the user's specifications and processed at both ends using copper pipes to match the terminal size.

- In applications where heat generation is a concern, this product, made from fine copper wires, facilitates natural air cooling.
- For installations in areas with uncertain dimensions or complex setups, the product offers flexible length adjustments in all directions (left, right, up, down) for ease of installation.
- In environments with significant vibration, the product effectively absorbs vibrations between the terminals, ensuring stable performance.
- The product can be custom-engineered to meet specific specifications and usage requirements, offering flexibility in design and application.

### Application Cases

- 1 Transformer / Switchgear / Welder / Power Equipment
- 2 Electrolytic Furnace / Electric Furnace / IPB / Electrical Connectors



## STRANDED WIRE FLEXIBLE BUSBAR

The Stranded Copper Wire Flexible Busbar is a flexible power conductor made by stacking multiple thin copper wires or copper foils.

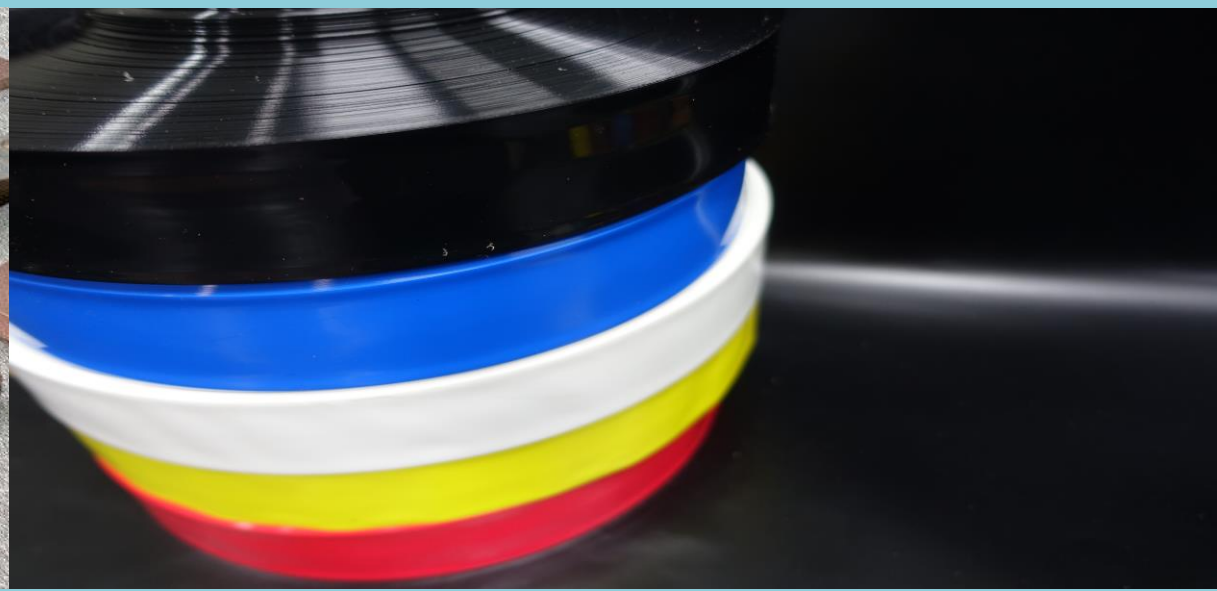
- **High Flexibility:** The multi-layered structure allows for free bending and twisting, making installation easy even in tight spaces.
- **Excellent Current Conductivity:** The stranded design minimizes the skin effect and enables higher current capacity in the same cross-sectional area.
- **Low Heat Generation & High Safety:** Reduced inductive resistance minimizes heat generation, and the special insulation provides excellent insulation and flame resistance.
- **Easy Processing and Installation:** Can be used immediately without additional insulation processing, reducing installation time compared to traditional cables.
- **Space-Saving & Lightweight:** The flexible wiring design optimizes panel and equipment space and is lighter than conventional busbars.



### Application Cases

- 1 EV & Battery Packs / ESS / Industrial Power Systems
- 2 Semiconductors & Data Centers Power Supply / Railways & Heavy Equipment





## SHUNT FLEXIBLE BUSBAR

Product made by stacking multiple sheets of copper foil, customized to the required thickness, width, and length, then compressed or welded to match the terminal size of the terminal of an object.

- The product, made by stacking multiple sheets, is easy to handle and install.
- This product operates smoothly even with high current capacity.
- When installed in areas with significant vibration, it absorbs vibrations between terminals and prevents loosening or tightening of bolts..

### Application Cases

- 1 Transformer / Rectifier / Welder / Power Generation Equipment
- 2 GIS (Gas Insulated Switchgear) / ACB (Air Circuit Breaker) / IPB (Insulated Power Bus) / VCB (Vacuum Circuit Breaker) / Other Electrical Connection Accessories

## HOT-SHRINK FILM & TUBE

Hot-Shrink film & tube is applied with simple heating and can shrink up to approximately 45%.

- Resistant to low temperatures, reducing the risk of breakage.
- Heat-resistant, ensuring low defect rates during installation.
- Made from a special material with excellent self-extinguishing and insulation properties.
- Ideal for insulating busbars in switchgear, substations, and other electrical devices, making it widely used.

### Usage Specifications

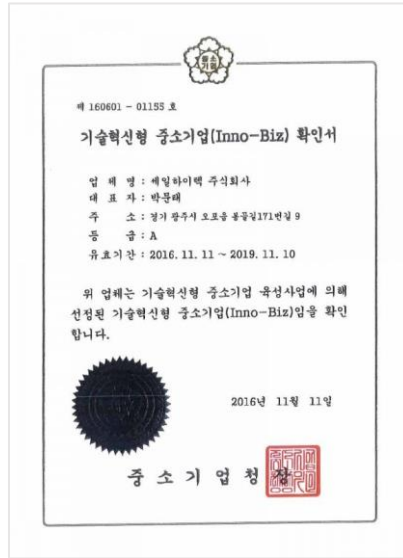
**Color** Black | White | Red | Blue | Yellow | Brown | Gray

**Specs** Width: 8mm ~ 175mm | Length: 200 M/R (up to 55mm) / 150 M/R (above 65mm)

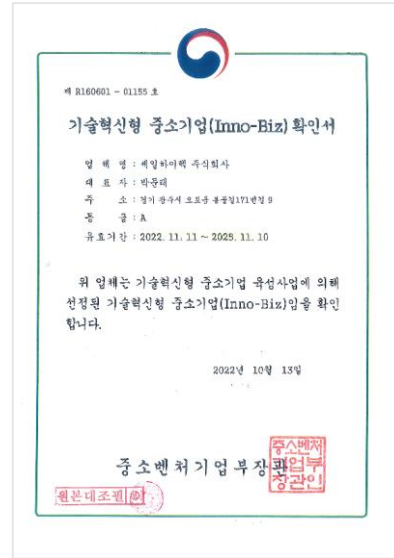
### Application Cases

- 1 Wire Insulation / Busbar Insulation / Other Electrical Insulations
- 2 Bundles / Protective Wrapping / Various Types of Insulation

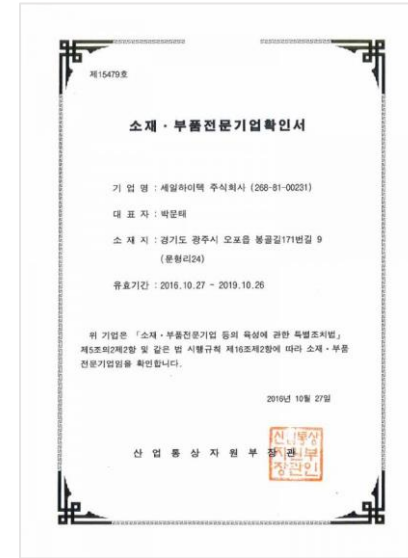




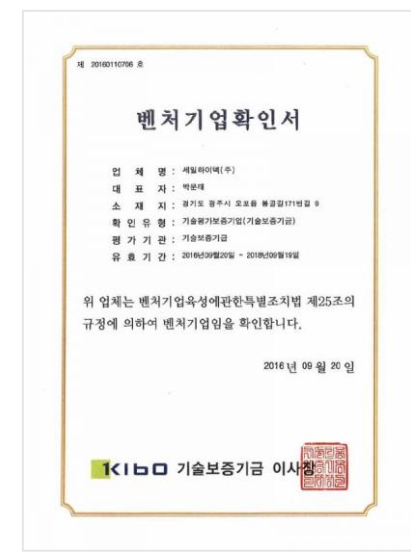
Inno-Biz Certificate



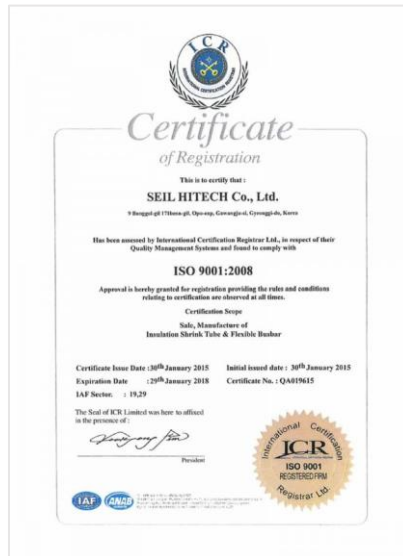
Inno-Biz Certificate



Specialized Materials and Components Certificate



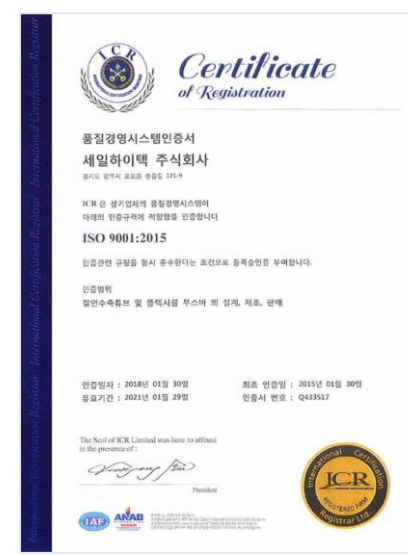
Venture Business Certificate



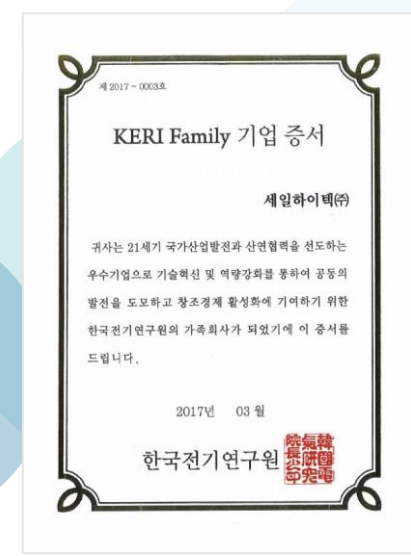
ISO 9001:2008  
(English Certificate)



ISO 9001:2008  
(Korean Certificate)



ISO 9001:2015



KERI Family Company  
certificate





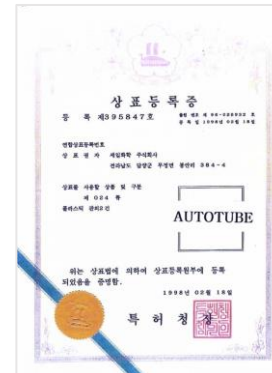
Corporate Research Institute Certificate



Trademark ('HOT-SHRINK')



Trademark ('EASIBAR')



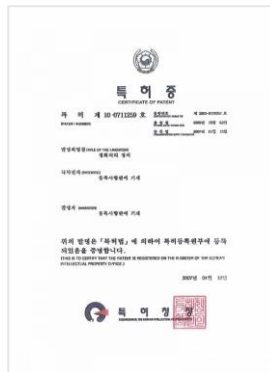
Trademark ('AUTOTUBE')



Trademark ('AIR-SHRINK')



Trademark ('AUTOTUBE')



Patent(10-0711259)



Patent (10-2626175)



Patent (10-2396720)



Patent (10-2055250)



Patent (10-2136556)



Patent (10-2263370)



Patent (10-1034418)



Patent (10-1841524)



Patent (10-1034418)



Patent (10-1841524)



[Japan] Patent (2020-542612)



[Germany] Patent (11-2019-000-996)

**PATENT**

No.	Patent No.	Title	Country	Year
1	0198819	Aqueous Swelling Treatment for Polymer Materials	South Korea	1999
2	022166	Eco-friendly Swelling Treatment for Polymer Materials	South Korea	1999
3	101409063	Insulated Conductor Manufacturing Method	South Korea	2003
4	10-0711259	Purification System	South Korea	2007
5	10-1034418	Plate Conductor	South Korea	2011
6	10-1409063	Insulated Conductor Manufacturing Method	South Korea	2014
7	10-1841524	Insulation Removal Device and Method	South Korea	2018
8	10-2055250	Room-Temperature Shrink Tube Manufacturing Method Using Water and Expanding Agents	South Korea	2019
9	10-2263370	Method for Manufacturing Flexible Busbars Using Room-Temperature Shrink Tubes with Enhanced Integrity	South Korea	2020
10	10-2136556	Flexible Busbar and Method of Manufacturing Using Room-Temperature Shrink Tubes	South Korea	2020
11	2020-542612	Room-Temperature Shrink Tube Manufacturing Method Using Water and Expanding Agents and Flexible Busbar	Japan	2020
12	10-2396720	Stack Busbar and Method of Manufacturing Using High-Heat-Resistant Eco-friendly Elastomer	South Korea	2021
13	10-2626175	Stack Busbar and Method of Manufacturing Using High-Heat-Resistant Eco-friendly Elastomer	South Korea	2024
14	11-2019-000-996	Room-Temperature Shrink Tube Manufacturing Method Using Water and Expanding Agents and Flexible Busbar	Germany	2024

**TRADEMARK**

No.	Registration No.	Trademark Name	Country	Year
1	395847	AUTOTUBE	South Korea	1998
2	411032	AIRSHRINK	South Korea	1998
3	40-0796602	EASIBAR	South Korea	2009
4	40-0825521	HOTSHRINK	South Korea	2010
5	40-1945318	AUTOTUBE	South Korea	2022



Easibar Verification - KERI



Air-Shrink Tube Verification - KERI



SGS TEST (RoHS I)



SGS TEST (RoHS II)

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