

# Gas Insulated Switchgear

- 25.8kV
- 29kV
- 36kV
- 72.5kV
- 145kV
- 170kV
- 245kV
- 362kV
- 420kV



**ILJIN Electric is a global leader in the heavy electrical industry providing the best products and services with cutting edge technology of world class and competitiveness.**





ILJIN Electric Co., Ltd., established in 1968 from ILJIN Metal industry Company, the parent company of ILJIN, is reborn as a global heavy electric specialist that supplies core equipment and services on power generation, transmission and transformation of electric power and distribution through continuous R&D and constant product innovation during the past four decades.

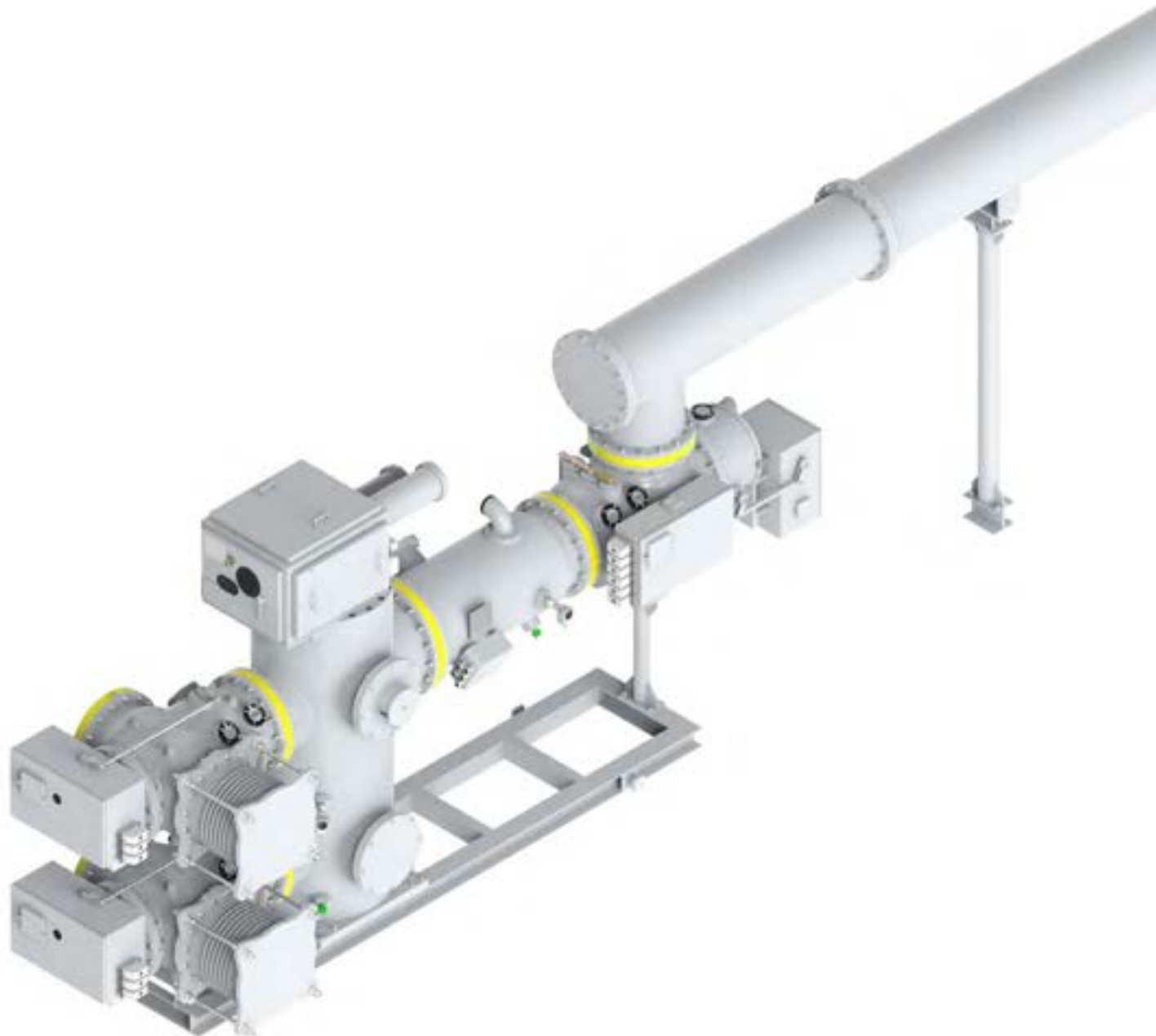
The Heavy Electric division that provides total solution for supplying stable power from power stations & large-sized plants to customer has been recognized globally through the successful execution of domestic and overseas turnkey projects. The Heavy Electric division is emerging as a global heavy electric total solutions company that leads the 21st century by setting customer satisfaction as its top priority.

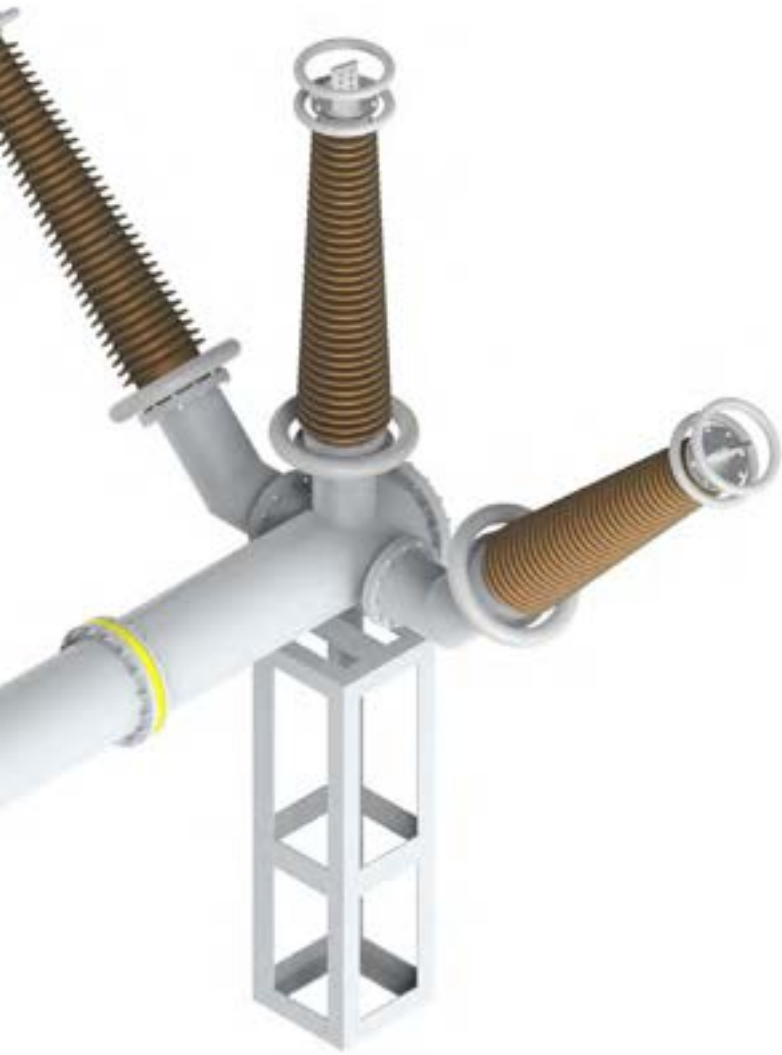
Since starting its power business through the development of substation fittings for the first time domestically, the Heavy Electric division is developing and manufacturing core device of electric equipment such as EHV transformer, EHV GIS, IPB, Gas SW, Recloser and C-GIS. Furthermore, the Heavy Electric division is expanding its power business area by providing IT Technology products, eco-friendly products and smart grid products.



# Gas Insulated Switchgear

ILJIN is a reliable businesspartner  
in the power industry.





# Contents

---

06	Design Concept and Advantages
08	Technical Data
	Product Range
10	· 25.8/29/36 kV Gas Insulated Switchgear(Eco Gas)
12	· 72.5kV Gas Insulated Switchgear
14	· 145kV Gas Insulated Switchgear
16	· 170kV Gas Insulated Switchgear(Eco Gas)
18	· 245kV Gas Insulated Switchgear
20	· 362kV Gas Insulated Switchgear
22	· 420kV Gas Insulated Switchgear
24	Testing/Quality Assurance
26	ILJIN Electric Global Network



## DESIGN CONCEPT AND ADVANTAGES

# Design Concept and Advantages

## GAS INSULATED SWITCHGEAR TO MEET THE POWER NEEDS OF THE FUTURE

The SF<sub>6</sub> Gas Insulated Switchgear (GIS) contains major substation equipment, such as the gas circuit breaker, disconnecting switch, earthing switch, voltage transformer, current transformer, and lightning arrester, within a grounded metallic enclosure filled with SF<sub>6</sub> gas to provide the best possible insulation and arc-quenching capabilities.

ILJIN's GIS is the most highly-developed switchgear in the market today. Our products provide features such as compact designs, safety, reliability, simplified operation, long maintenance intervals and compatibility with surrounding systems. Our recently developed 3-phase encapsulated GIS is an example of the economical and compact substation design our customers have come to know and expect from ILJIN.

## WHAT MAKES ILJIN'S GIS SO OUTSTANDING?

### Reliability

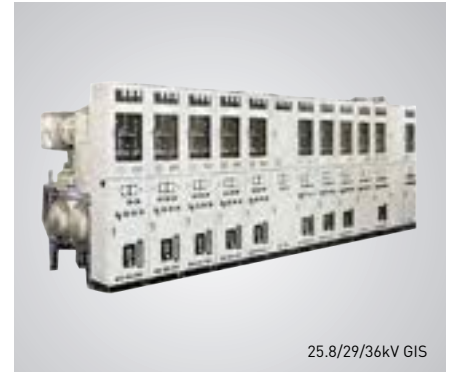
- Circuit breaker which passes the KERI and KEMA test regulations outlined in the latest IEC standards (IEC 62271-203 & IEC 62271-100).
- Phase common enclosure for fewer components and no errors.
- High-quality circuit breaker featuring a hydraulic operating mechanism (170kV, 362kV GIS), Amotorspringmechanism (25.8kV, 29kV, 36kV, 72.5kV, 145kV, 245kV, 420kV GIS) or PMAmechanism(25.8kV, 29kV GIS).

### Compact Design

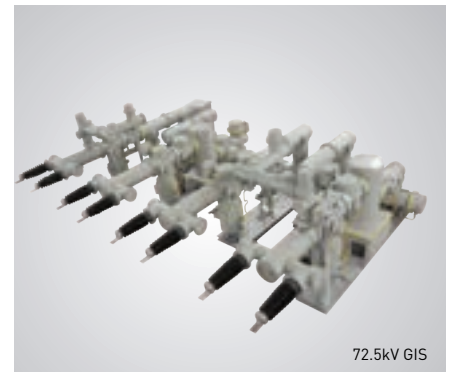
- Small and lightweight phase common enclosure design (25.8kV, 29kV, 36kV, 72.5kV, 145kV, 170kV GIS).
- CT housed in the CB and a line disconnecting switch, line earthing switch, and work earthing switch contain in a single enclosure to reduce size and weight.
- CB motor spring mechanism adopted to make our GIS lighter and more compact than comparable models. (25.8kV, 29kV, 36kV, 72.5kV, 145kV, 245kV, 420kV GIS)

### Safety

- Earthed enclosure to provide improved protection against current leakage.
- Interlocking system to optimize system operation.



25.8/29/36kV GIS



72.5kV GIS



145kV GIS



170kV GIS



362kV GIS

---

### Modular Design

Standardized modules to improve production quality and allow for easy assembly.

---

### Gas Tightness

Standardized sealing ring(O-ring) system to reduce the number of pipes and valves in each system and improve gas tightness.

---

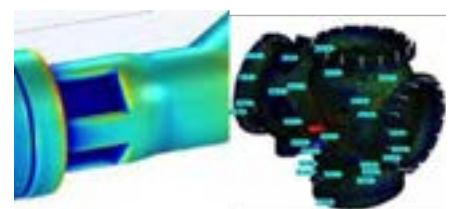
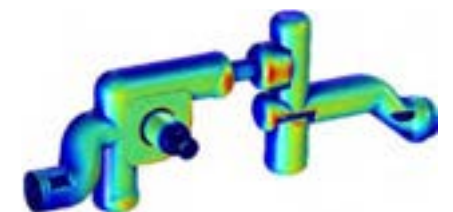
### Adoption of the Puffer & Hybrid Type Gas Circuit Breaker

Puffer & hybrid type gas circuit breaker for simplified construction, fewer components, no gas heating of components, and enhanced reliability.

---

### Simple Maintenance

Design which allows for inspection and replacement of circuit breaker contacts without disassembly.



## LEADING INTELLIGENT DESIGN

ILJIN adopts the integration design of each equipment through the electric and magnetic field Analysis, multi-body dynamic analysis, structure analysis, seismic analysis and UHF sensing technology.

Our integrated design and development competence of the GIS products ensures the competitive electrical power systems.

ILJIN has been manufacturing HV GIS since 2001. This experience, combined with our extensive knowledge gained throughout the development of the industry, means that the quality and reliability of ILJIN products equals or exceeds that of competing products.

## TECHNICAL DATA

# Technical Data

ILJIN Gas Insulated Switchgear is available with high voltage ratings from 25.8kV to 420kV.  
The newest GIS systems are used throughout the world wherever superior quality and features are required.

Type of GIS		Unit	25.8kV	29kV	36kV	72.5kV
Rated voltage		kV rms	25.8	29	36	72.5
Arrangement of phase		-	3	2	3	2
Rated power frequency withstand voltage		kV rms	60	95/110	70	140
Rated lightning impulse withstand voltage		kV peak	150	200/220	170	325
Rated frequency		Hz	60	60	50	60
Rated normal current		A rms	630 / 2000	630 / 2000	1250 / 2000 / 2500	1250 / 2000
Rated short-circuit breaking current			25	20	31.5	20
Rated making current	Circuit breaker	kA peak	65	52	80	52
	Line earthing switch	kA peak	-	-	-	-
Rated short-time current(1 sec/3 sec)		kA rms	25 (1sec)	20 (1sec)	31.5 (3sec)	20 (1sec)
Operating method	Circuit breaker	-	PMA	PMA	Motor spring	Motor spring
	Disconnecting switch	-	Motor / Manual	Motor / Manual	Motor / Manual	Motor / Manual
	Earthing switch	-	Motor / Manual	Motor / Manual	Motor / Manual	Manual
Gas Type		-	DRY AIR	DRY AIR	SF <sub>6</sub> GAS	SF <sub>6</sub> GAS
Number of breakers		-	1	1	1	1
Phase per enclosure	Circuit breaker	-	3 phase common	2 phase common	3 phase common	2 phase common
	Disconnecting switch, earthing switch	-	3 phase common	2 phase common	3 phase common	2 phase common
	Feeder bus	-	3 phase common	2 phase common	3 phase common	2 phase common
	Main bus	-	3 phase common	2 phase common	3 phase common	2 phase common
Installation		-	-	-	Indoor	Indoor, Outdoor





25.8/36kV GIS indoor Substation



25.8kV E-GIS indoor substation



72.5kV GIS Outdoor substation



170kV GIS Outdoor substation

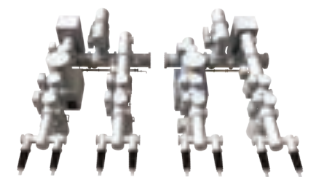


362kV GIS Outdoor substation

145kV	170kV	245kV	362kV	420kV
145	170	245	362	420
3	3	3	3	3
275	325	460	520	650
650	750	1050	1175	1425
50 / 60	60	50	60	50
1250 / 2000 / 3150	1250 / 2000 / 3150 / 4000	2000 / 3150	6300	4000
40	50	40 / 50	63	63
100	130	100 / 125	163.8	157.5
100	130	100 / 125	163.8	157.5
40 (3sec)	50 (1sec)	40 / 50 (3sec)	63 (1sec)	63 (3sec)
Motor spring	Hydraulic(SF <sub>6</sub> ) Motor Spring (DRY AIR)	Motor spring	Hydraulic	Motor spring
Motor / Manual	Motor / Manual	Motor / Manual	Motor / Manual	Motor / Manual
Motor / Manual	Motor / Manual	Motor / Manual	Motor / Manual	Motor / Manual
SF <sub>6</sub> GAS	SF <sub>6</sub> GAS, DRY AIR	SF <sub>6</sub> GAS	SF <sub>6</sub> GAS	SF <sub>6</sub> GAS
1	1	1	1	1
3 phase common	3 phase common	Single phase	Single phase	Single phase
3 phase common	3 phase common	Single phase	Single phase	Single phase
3 phase common	3 phase common	Single phase	Single phase	Single phase
3 phase common	3 phase common	Single phase	3 phase common	Single phase
Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor



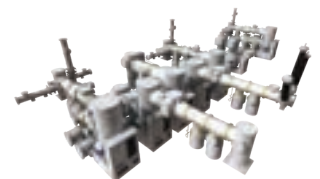
29kV GIS



72.5kV GIS



145kV GIS



170kV GIS



245kV GIS

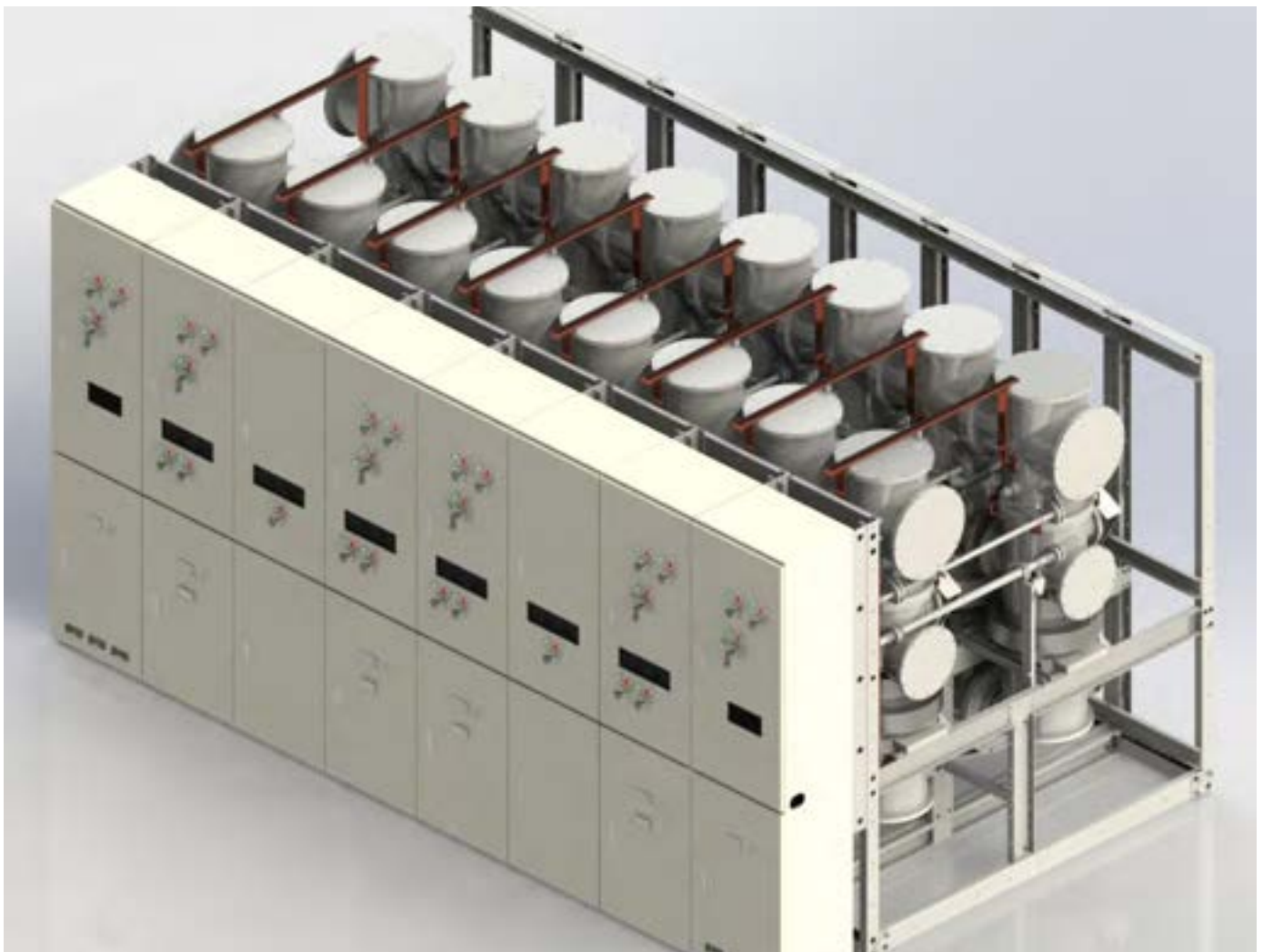


362kV GIS

## Product Range

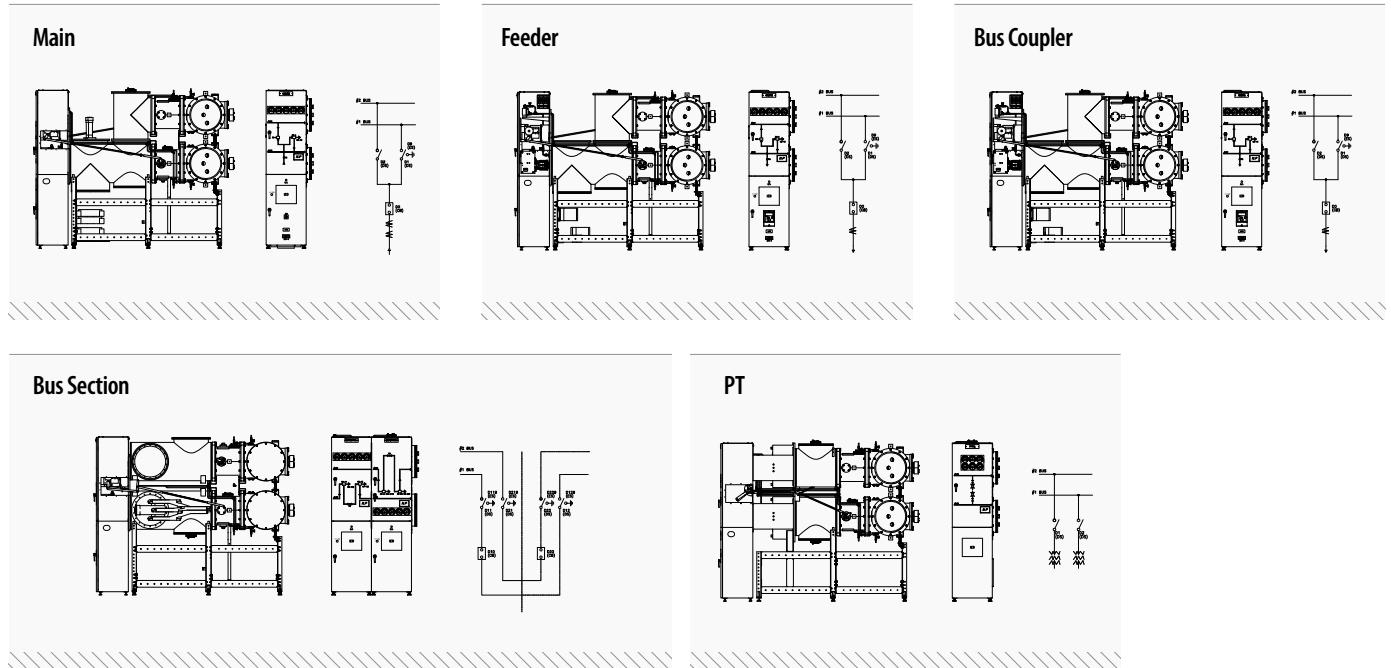
### 25.8/29/36KV GAS INSULATED SWITCHGEAR FOR 25KA / 20KA / 31.5KA EQUIPMENT

The ILJIN 25.8/29/36kV GIS features high availability and integrated technology in compact design.

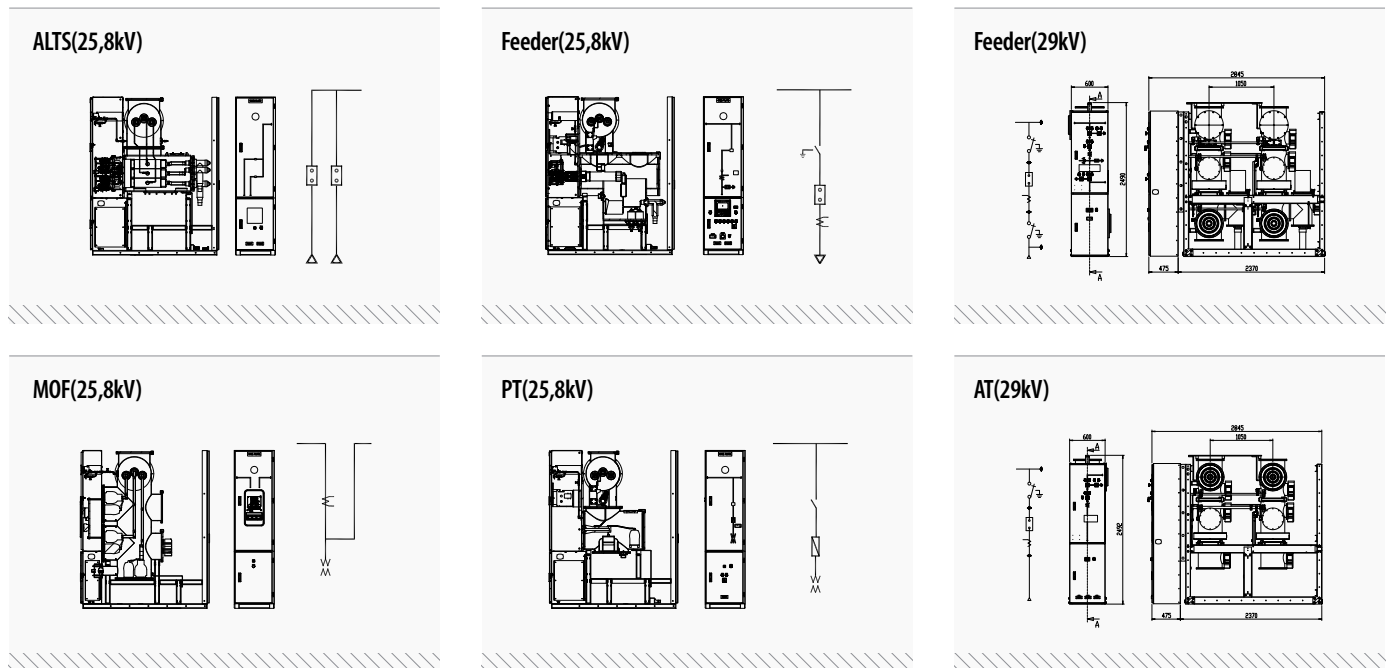


# Typical Arrangements

## Double Bus Type for KEPCO



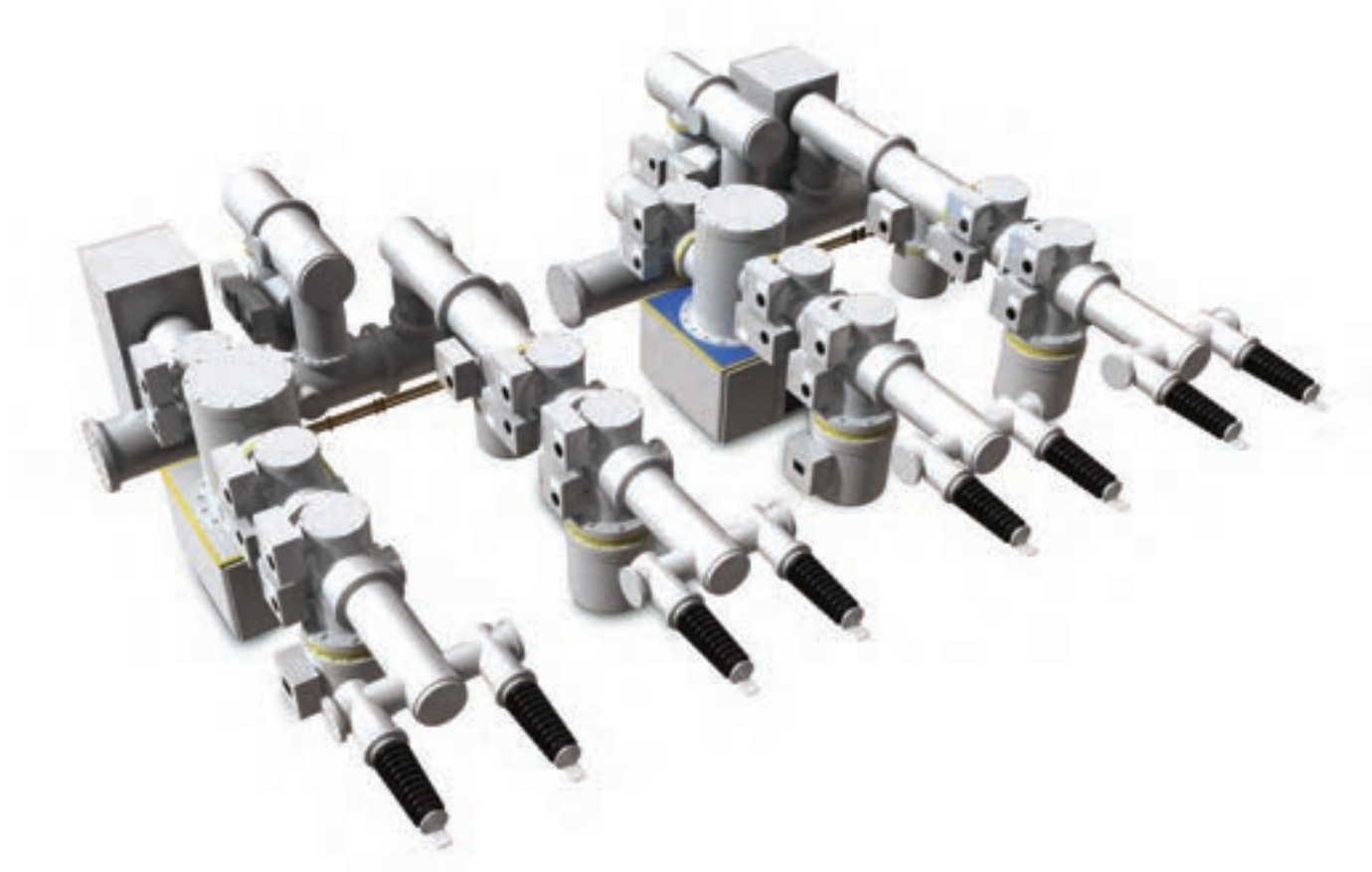
## Single Bus Type for KORAIL



## Product Range

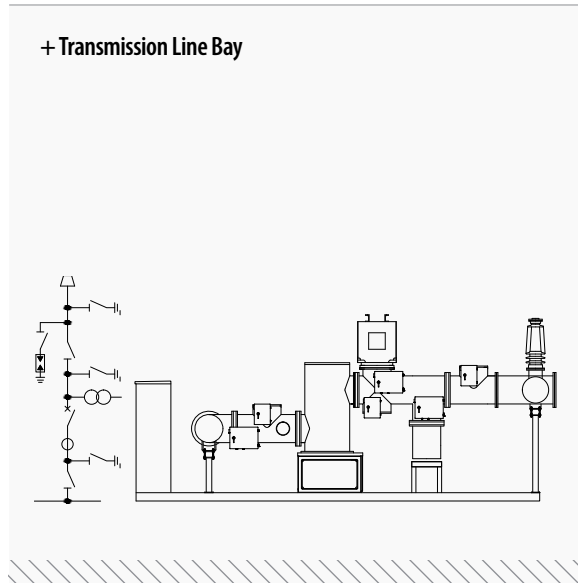
### 72.5kV GAS INSULATED SWITCHGEAR FOR 20kA EQUIPMENT

The ILJIN 72.5kV GIS features high availability and integrated technology in compact design.

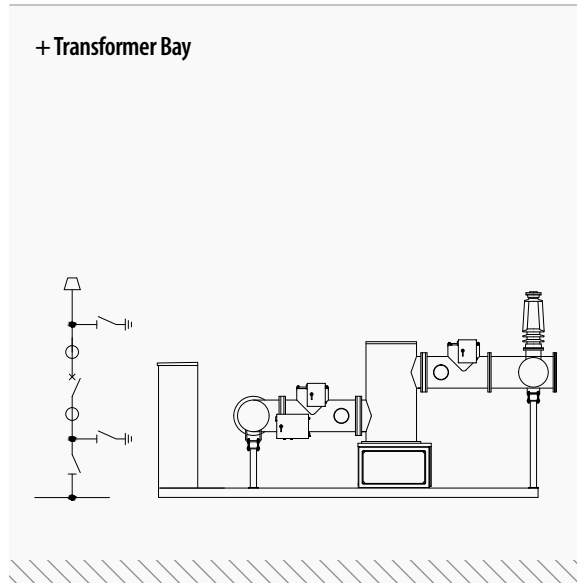


## Typical Arrangements

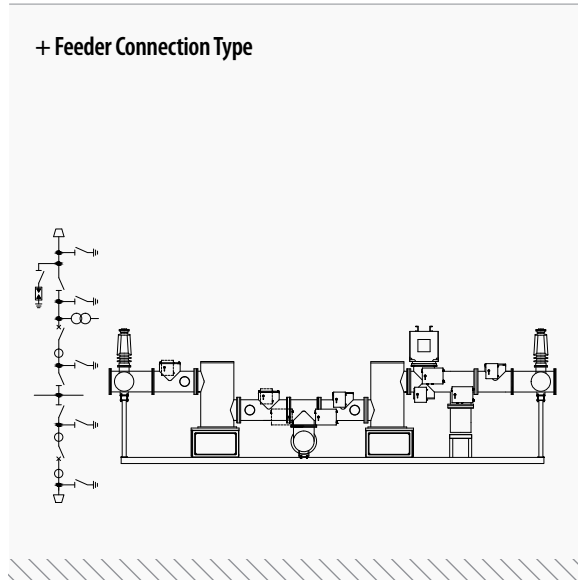
+ Transmission Line Bay



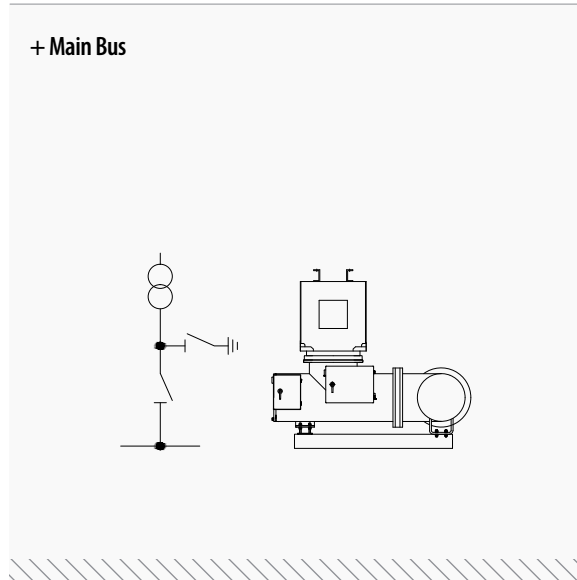
+ Transformer Bay



+ Feeder Connection Type



+ Main Bus



## 72.5kV GIS

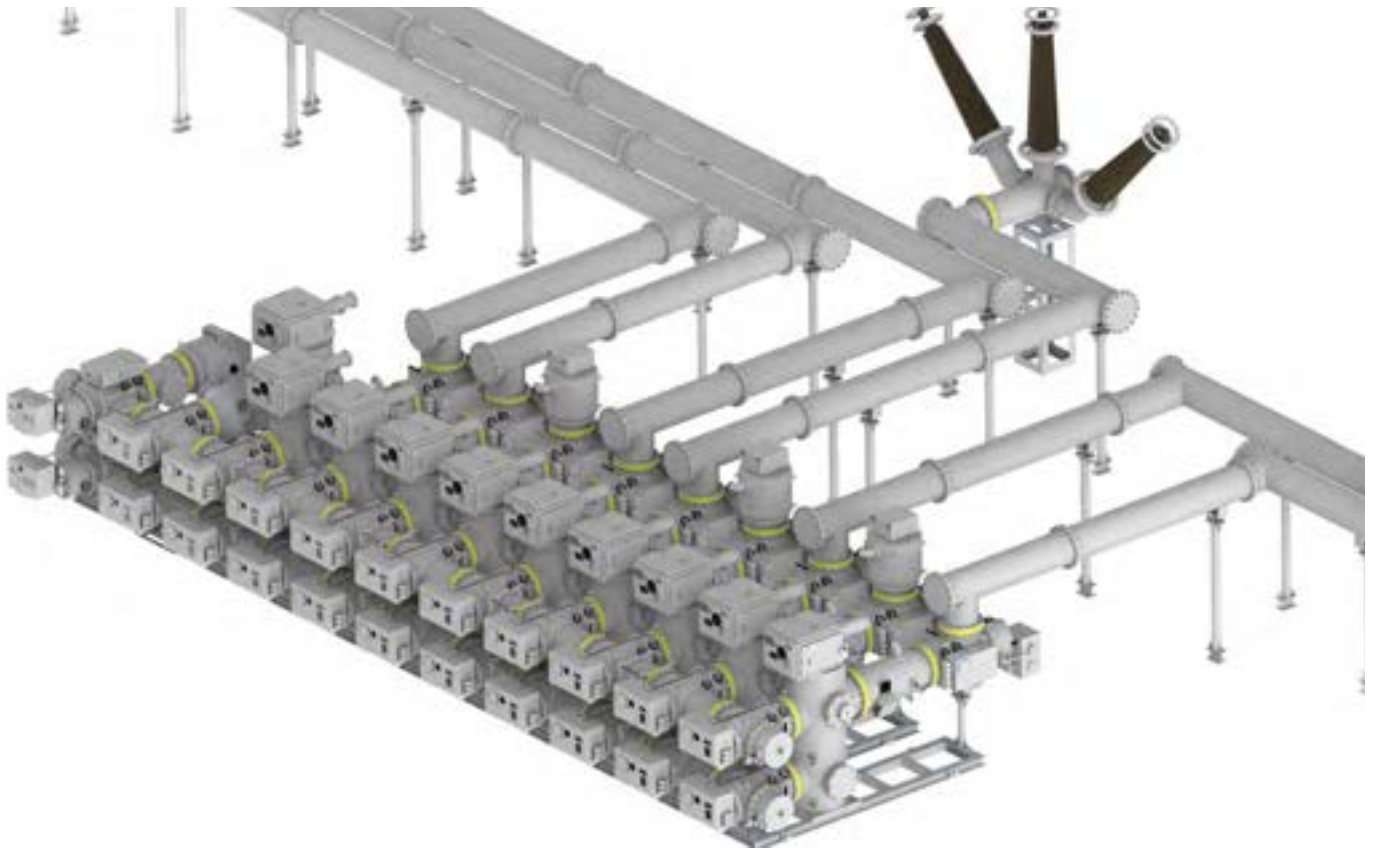
- > GIS for railway substations
- > Reliable motor spring mechanism for CB
- > Ingenious modular system



## Product Range

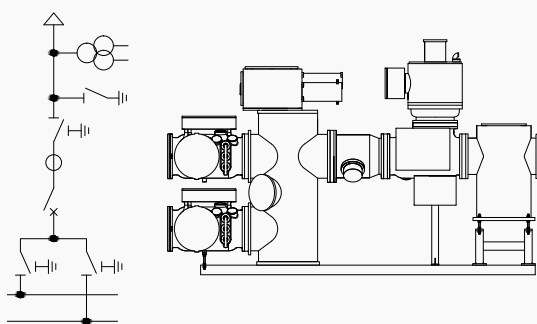
### 145kV GAS INSULATED SWITCHGEAR FOR 40kA EQUIPMENT

The ILJIN 145kV GIS features high availability and integrated technology in a compact design.

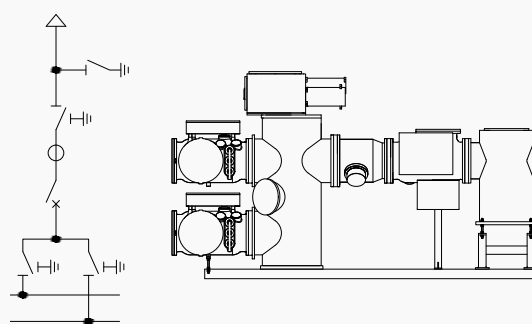


## Typical Arrangements

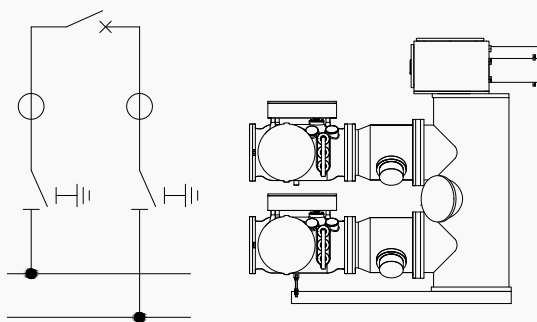
+ Transmission Line Bay



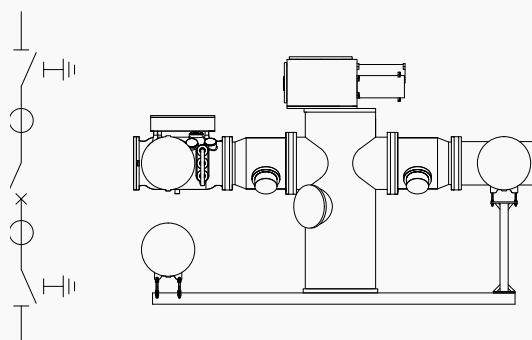
+ Transformer Bay



+ Bus Coupler



+ Bus Section



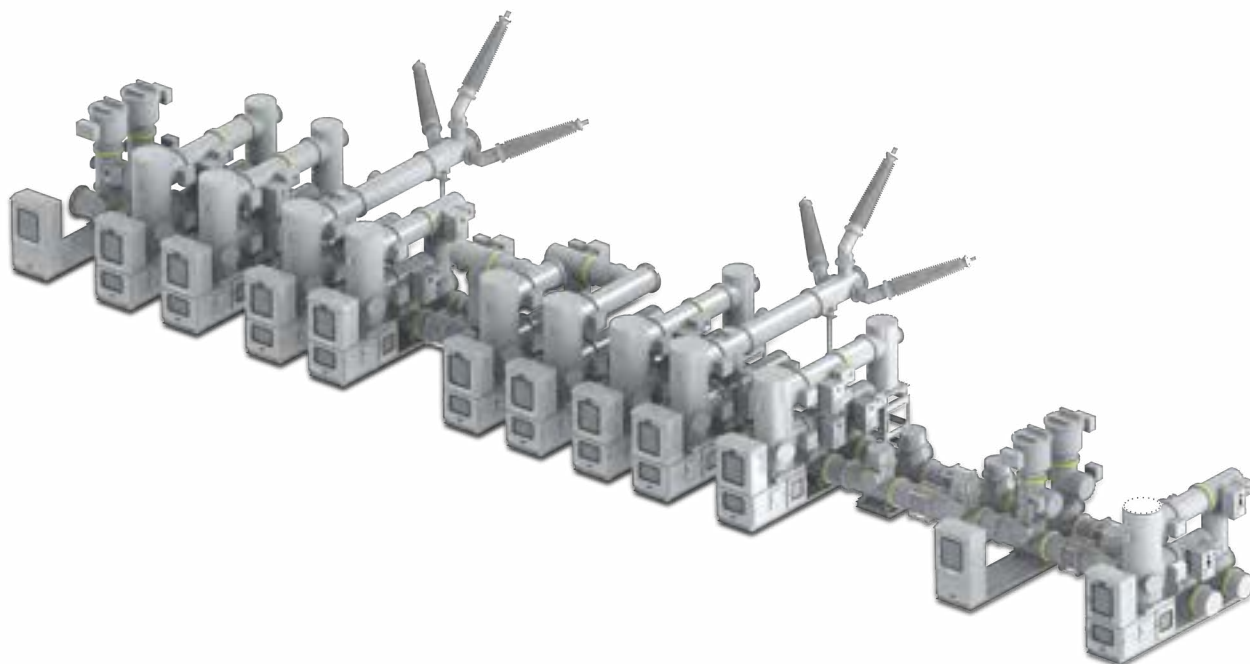
## 145kV GIS

- > GIS for indoor/outdoor substations
- > Reliable motor spring mechanism for CB
- > Combined disconnector and earthing switch
- > Ingenious modular system

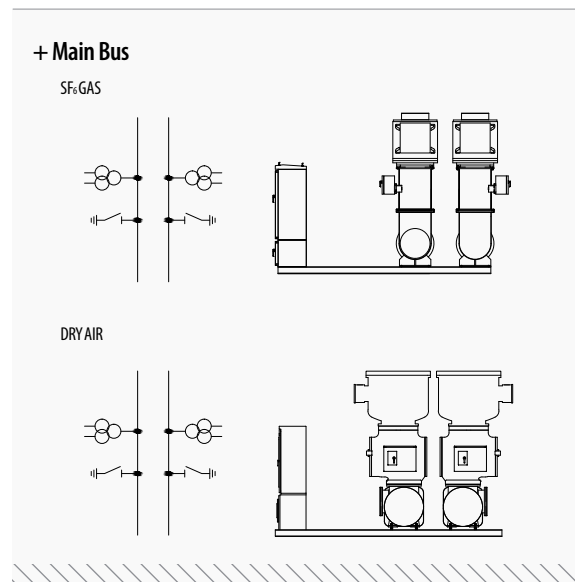
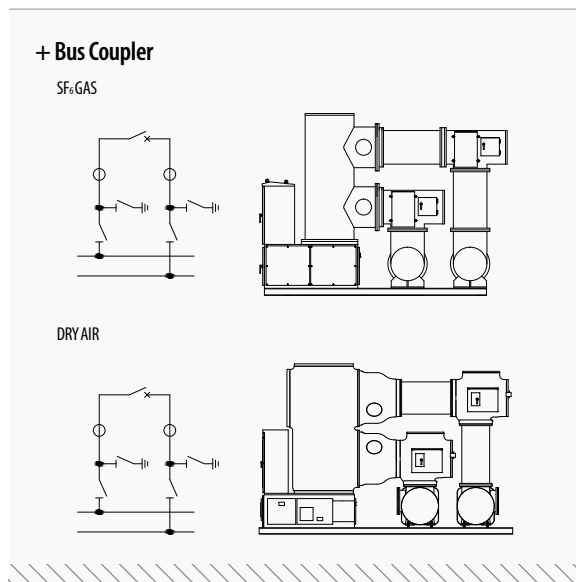
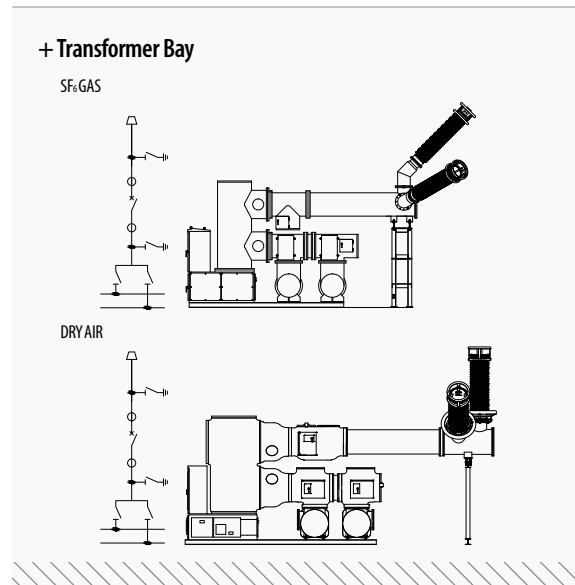
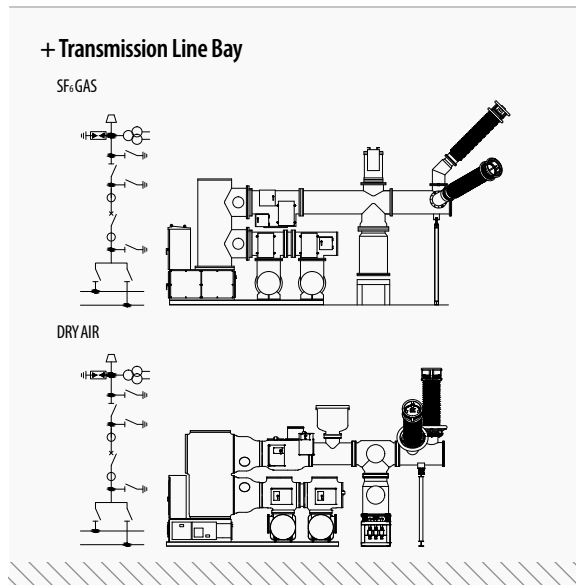
## Product Range

### 170kV GAS INSULATED SWITCHGEAR FOR 50kA EQUIPMENT

The ILJIN 170kV GIS features high availability and integrated technology in a compact design.



## Typical Arrangements



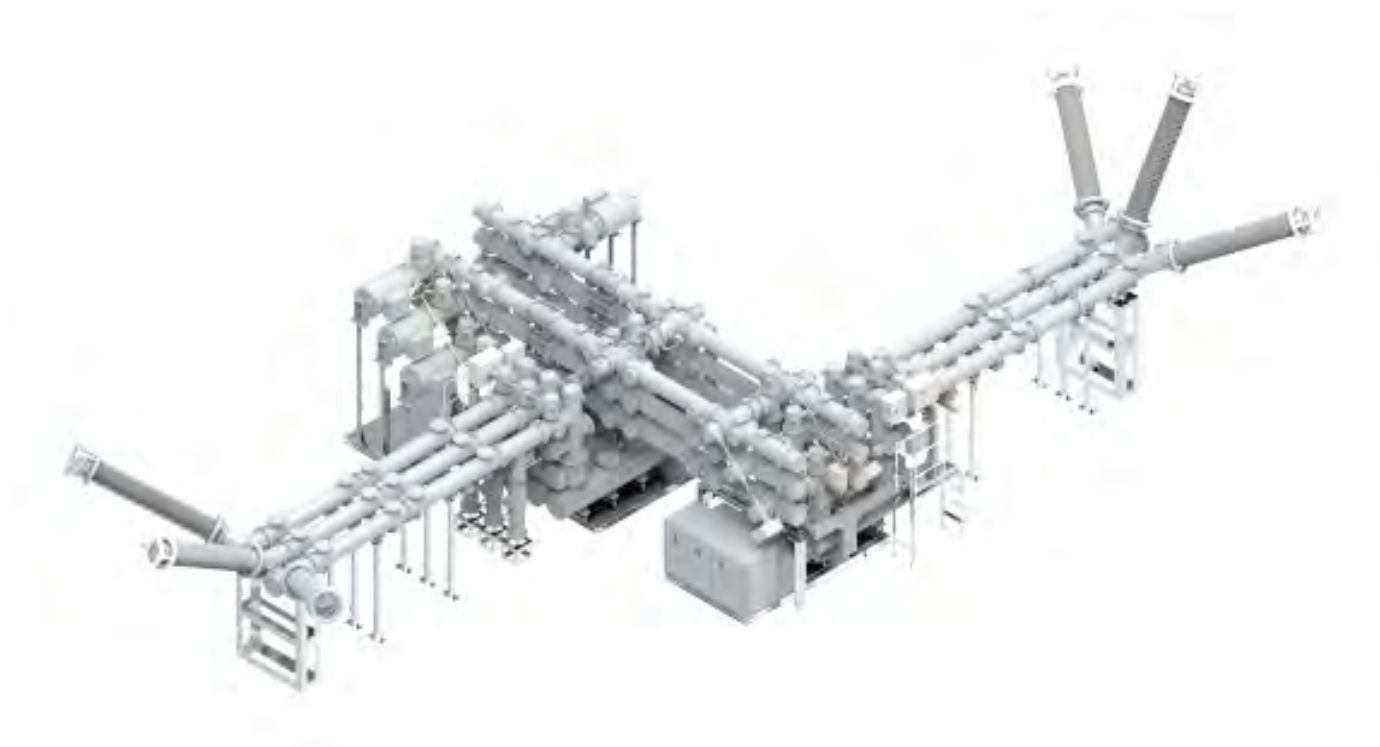
## 170kV GIS

- > GIS for indoor/outdoor substations
- > Reliable hydraulic(SF<sub>6</sub> Gas) & Motor Spring(Dry Air) mechanism for CB
- > Ingenious modular system

## Product Range

### 245kV GAS INSULATED SWITCHGEAR FOR 40kA / 50kA EQUIPMENT

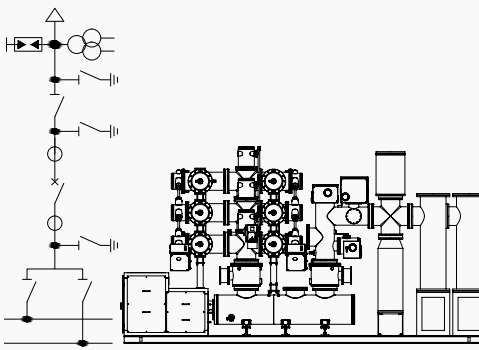
The ILJIN 245kV GIS features high availability and integrated technology in a compact design.



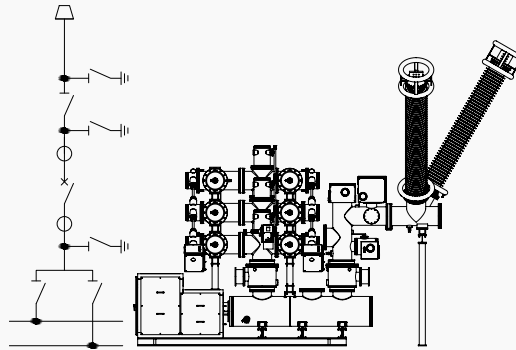


## Typical Arrangements

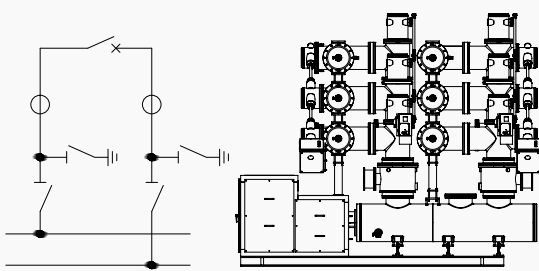
+ Transmission Line Bay



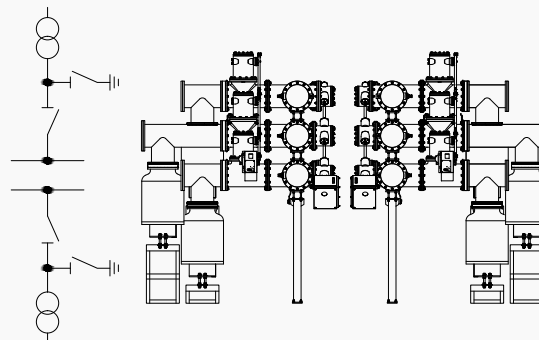
+ Transformer Bay



+ Bus Coupler



+ Main Bus



## 245kV GIS

- > GIS for indoor/outdoor substations
- > Reliable Motor Spring mechanism for CB
- > Ingenious modular system

## Product Range

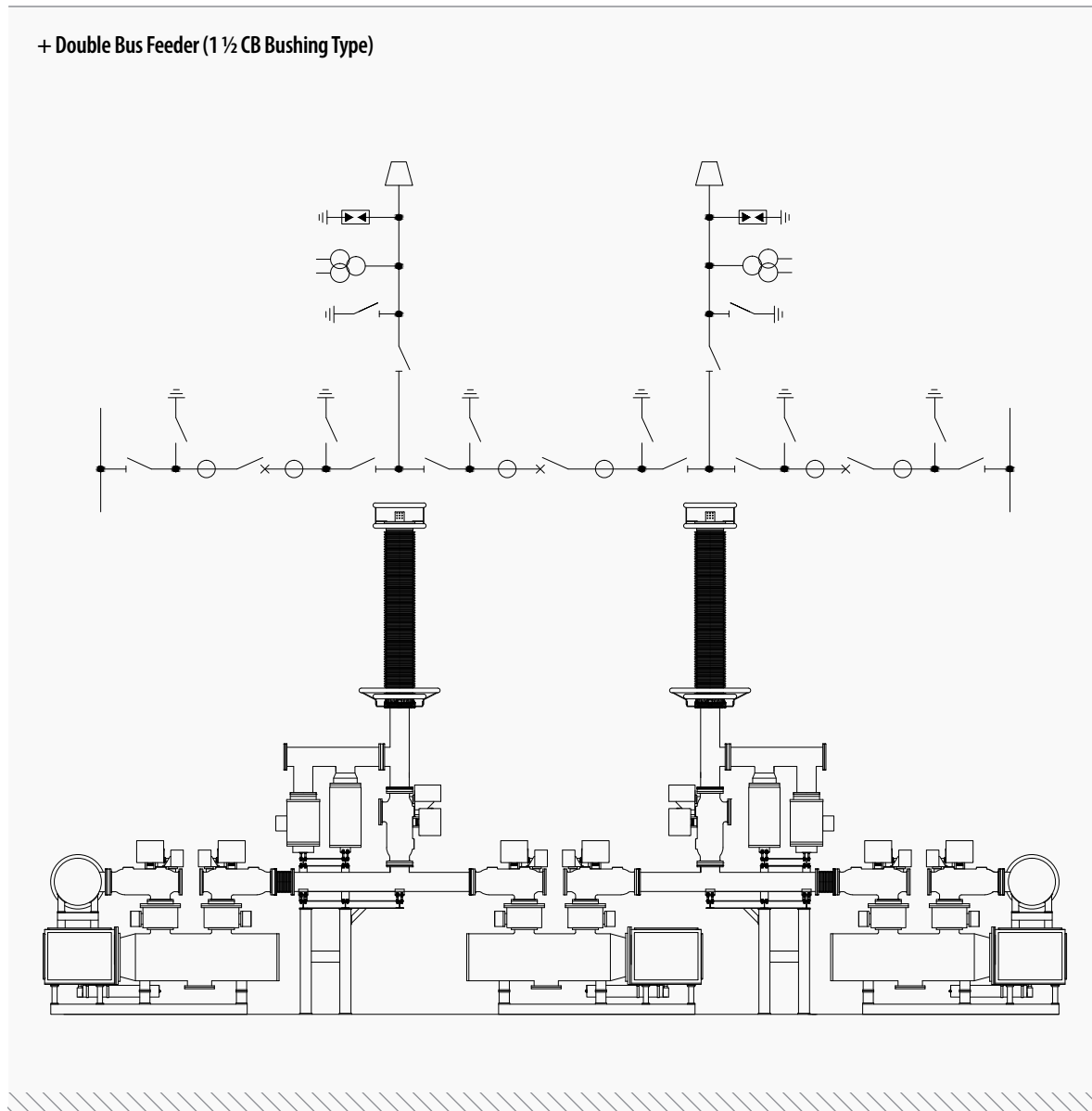
### 362kV GAS INSULATED SWITCHGEAR FOR 63kA EQUIPMENT

The ILJIN 362kV GIS features high availability and integrated technology in a compact design.



## Typical Arrangements

### + Double Bus Feeder (1 ½ CB Bushing Type)



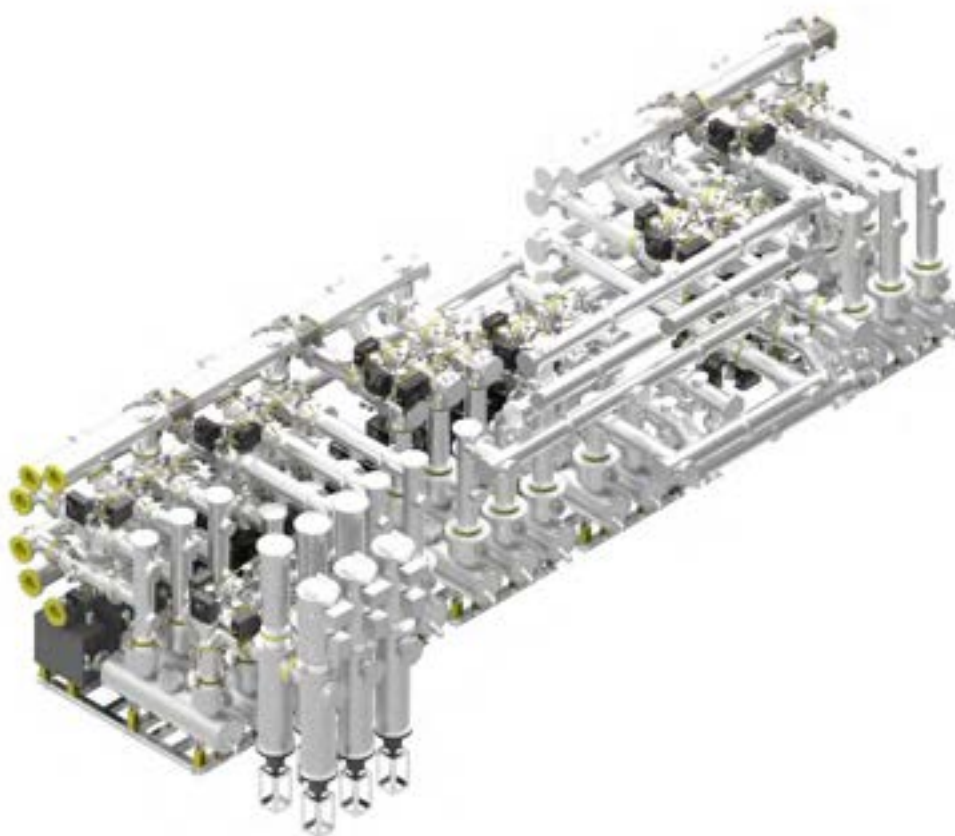
### 362kV GIS

- > GIS for indoor/outdoor substations
- > Reliable hydraulic mechanism for CB
- > Ingenious modular system

## Product Range

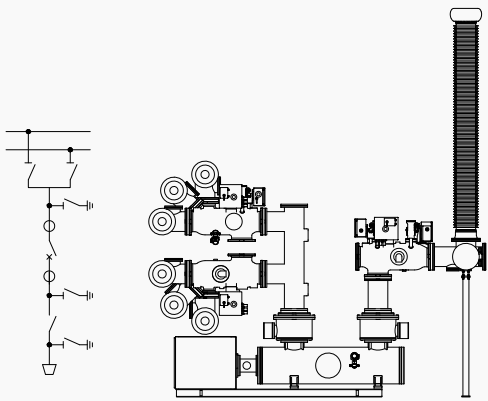
### 420kV GAS INSULATED SWITCHGEAR FOR 63kA EQUIPMENT

The ILJIN 420kV GIS features high availability and integrated technology in a compact design.

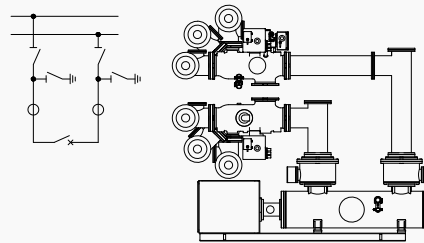


## Typical Arrangements

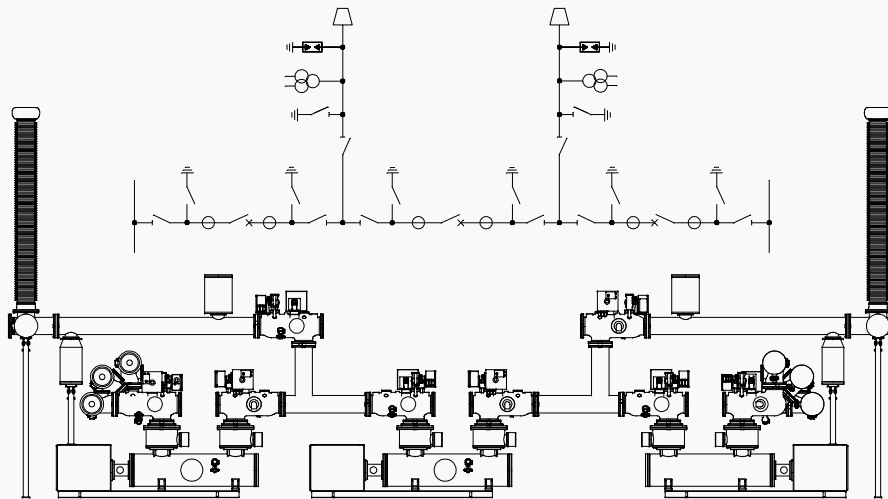
+ Transformer Bay (Double Bus Type)



+ Bus Coupler (Double Bus Type)



+ Double Bus Feeder (1 ½ CB Bushing Type)



## 420kV GIS

- > GIS for indoor/outdoor substations
- > Reliable Motor Spring mechanism for CB
- > Ingenious modular system



## Testing

ILJIN has the newest test equipment and the ability to perform type tests and routine tests to comply with IEC and ANSI standards.



### TYPE TESTS(KERI/KEMA)

1. Dielectric tests
2. Radio interference voltage (RIV) tests
3. Temperature rise tests
4. Main circuit resistance measurement
5. Short-time and peak withstand current tests
6. Verification of making and breaking capacities
7. Mechanical operation tests
8. Verification of the degree of protection for auxiliary circuits and moving parts
9. Enclosure proof tests
10. Weatherproofing tests
11. Internal arc fault tests
12. Thermal stability tests
13. Operational tests at temperature limits
14. Gas tightness tests

### ROUTINE TESTS

1. Power-frequency voltage tests on the main circuit
2. Dielectric tests on auxiliary and control circuits
3. Main circuit resistance measurement
4. Partial discharge measurement
5. Enclosure pressure tests
6. Gas tightness tests
7. Mechanical operation tests
8. Auxiliary electrical device tests
9. Wiring verification



# Quality Assurance

ILJIN Electric promises trust in products and services provided based on continuous R&D and excellent quality competitiveness. We are doing our best to obtain test certification according to international standards such as KERI and KEMA test certification to satisfy customer's detailed requirements, relevant standards, and national standards including quality, environment, and safety and health certification systems.



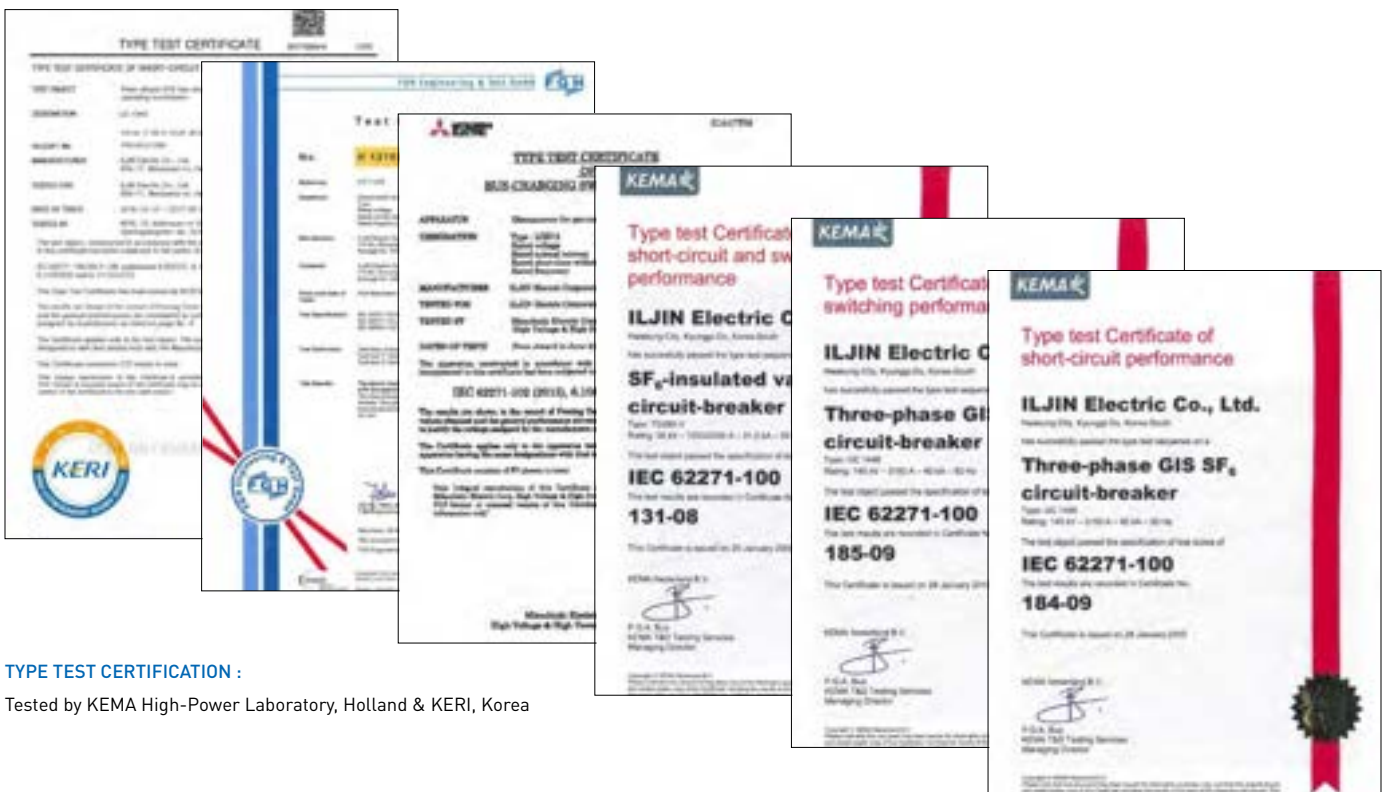
KS Q ISO 9001:2015 / ISO 9001:2015



KS I ISO 14001:2015 / ISO 14001:2015



KS Q ISO 45001:2018 / ISO 45001:2018



**TYPE TEST CERTIFICATION :**

Tested by KEMA High-Power Laboratory, Holland & KERI, Korea

# ILJIN Electric Global Network

## Seoul Sales Office

07789, 15, Magokjunang 14-ro,  
Gangseo-gu, Seoul, Korea  
Tel) +82-2-3777-8372

## Manufacturing Plant

### Hwaseong 1st Plant (Headquarters, Switchgear)

905-17, Mannyeon-ro, Hwaseong-si,  
Gyeonggi-do, 445-380, Korea  
Tel) +82-31-220-0500

### Hwaseong 2nd Plant (Power Cable)

905-64, Mannyeon-ro, Hwaseong-si,  
Gyeonggi-do, 445-380, Korea  
Tel) +82-31-220-0900

### Hongseong Plant (Transformer & GIS)

467, Sandan-ro, Galsan-myeon, Hongseong-gun,  
Chungnam-do, 350-852, Korea  
Tel) +82-41-413-3000

### Ansan Plant (SCR)

14 Block, 21, Neungan-ro, Danwon-gu, Ansan-si,  
Gyeonggi-do, 425-100, Korea  
Tel) +82-31-8085-7711



• Head Office



• Hwaseong 1<sup>st</sup> Plant



• Hwaseong 2<sup>nd</sup> Plant



### Overseas Branch Offices

#### Singapore Branch Office

8 Boon Lay Way, #09-05 Tradehub 21,  
Singapore 609964  
Tel) +65-6659-0624  
E-Mail) billy@iljin.co.kr

#### Saudi Arabia Branch Office (Riyadh)

Al Imam Saud Bin Abdulaziz,  
Rd - Al Nuzha, Riyadh, Kingdom of Saudi Arabia  
Tel) +966-11-499-2344  
E-Mail) daniel.park@iljin.co.kr

#### Kuwait Branch Office

Block 4, Street 402, House No.4,  
Egalia, Kuwait  
E-Mail) uhm@iljin.co.kr

### Overseas Subsidiary

#### ILJIN Electric USA, Inc.

15995 N. Barkers Landing Rd, Suite 310,  
Houston, Texas 77079  
Tel) +1-832-300-3339  
E-Mail) yongju.shin@iljin.co.kr



• Hongseong Plant



• Ansan Plant



• ILJIN Industry complex



**ILJIN ELECTRIC CO., LTD. HEAVY ELECTRIC DIVISION**

<b>Seoul office</b>	07789, 15, Magokjunang 14-ro, Gangseo-gu, Seoul, Korea	Tel: 82-2-3777-8372 Fax: 82-2-707-9778
<b>Hwaeseong Factory (H.Q)</b>	18365, 905-17, Mannyeon-ro, Hwaseong-si, Gyeonggi-do, Korea	Tel: 82-31-220-0500 Fax: 82-41-631-9860
<b>Hongseong Factory</b>	32200, 99, Sandan-ro 388 beon-gil, Galsan-myeon, Hongseong-gun, Chungcheongnam-do	Tel: 82-41-413-3252 Fax: 82-41-631-9860
<b>Website</b>	<a href="http://www.iljinelectric.co.kr">www.iljinelectric.co.kr</a>	
<b>ILJIN Family</b>	ILJIN Electric / ILJIN Diamond / ILJIN Materials / ILJIN Display / ILJIN Steel / ILJIN Unisco / ILJIN Hysolus / Alpinion Medical Systems	