

Monarch Modernization Solution

Comprehensive Professional Custom

BRANDS



Inovance **INOVANCE**

Promoter of China's industrial automation control and drive technology.

Founded in 2003 and headquartered in Shenzhen, with the production base located in Suzhou.

Products cover general automation, robots, new energy, rail transport, and industrial Internet.

Monarch **Monarch**

Wholly owned by Shenzhen Inovance Technology Co., Ltd., Suzhou MONARCH Control Technology Co., Ltd. was established in December 2003 to leverage Inovance's leading AC drive technologies and a team of professional talents to offer the elevator industry with a great variety of control and drive products. As at the end of April 2018, more than 1.5 million MONARCH integrated controllers had been put into service. In China, 1/4 of the elevators use MONARCH's control system.

MoBst **MoBst**

Shanghai MoBst Elevator Technology Co., Ltd. (hereinafter referred to as MoBst), which began operation in July 2013, is a joint venture of Inovance's Monarch and Shanghai Bst Electric Co., Ltd.

SERVICK NETWORK

Comprehensive | Efficient | Professional
Your reliable support



■ Company and subsidiaries

◆ Service points

Nation-wide warranty:
67 offices throughout China
271 authorized distributors
500 market expansion and service personnel
128 warranty service centers
5 regional spare part centers
24-hour response and 72-hour problem solving

WHY ELECTRICAL MODERNIZATION

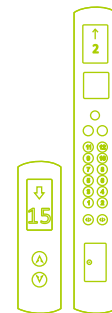
Electrical modernization VS complete modernization

Electrical modernization at a suitable time and complete modernization after the elevator is retired can both increase the efficiency of the elevator. However, electrical modernization is superior in:



Reduced damage to building

Electrical modernization only involves the electrical part of the elevator. Hall decoration remains intact since the jamb and sill are kept. It causes little damage to the building.



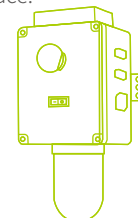
low cost

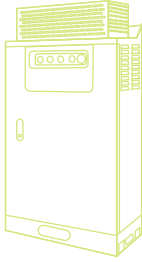
Normally, the customized electrical modernization solution only requires replacement of some of the electrical components. Even if you replace all the electrical components, the cost is still half that of complete modernization.



Targeted risk elimination

During electrical modernization, the elevator is analyzed from all aspects (such as frequency of use, purpose and features). Then the modernization is carried out based on the analytical results so as to improve the safety performance while allow the elevator to work at its own pace.





Fast construction

The elevator components are installed onsite. It normally takes 1 to 2 months to disassemble and re-assemble the elevator.

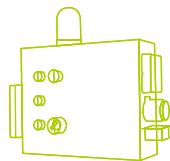
Monarch provides customized electrical modernization packages according to customer needs to finish the work in a few hours.



Architectural style protection

Old buildings are nostalgic memories, and so are their elevators. Electrical modernization keeps the memories alive by not changing the overall architectural styles. It means more than complete modernization does.

For example: The elevators in Shanghai Fairmont Peace Hotel are over 100 years old.



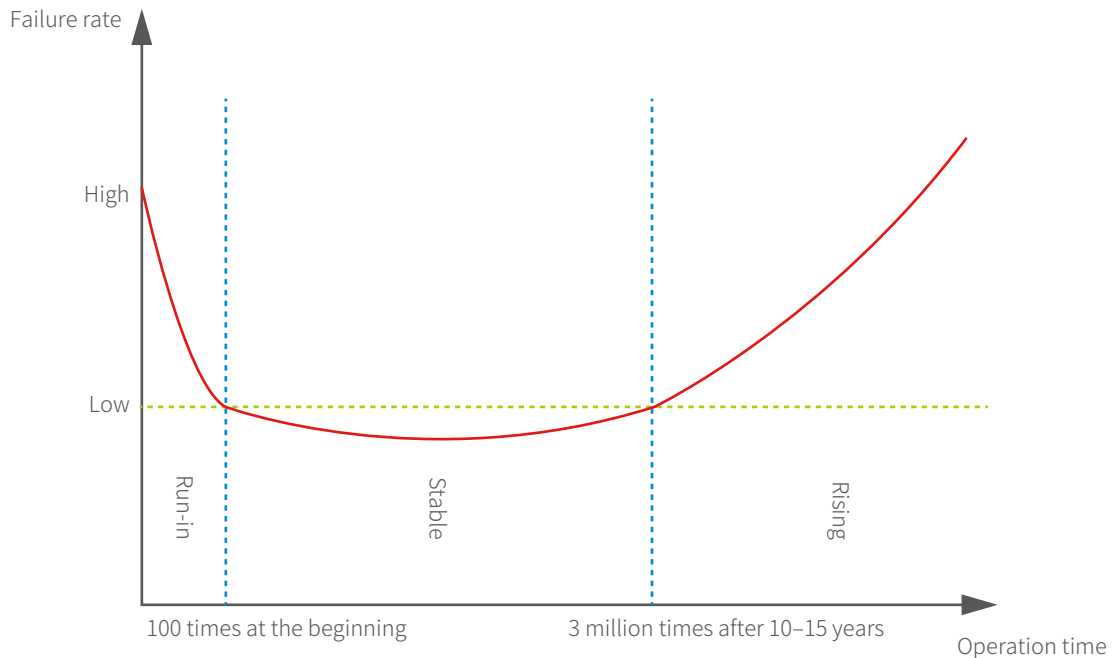
Resource saving

Energy saving is an important measure of how successful the modernization is. Monarch's solutions improve the performance of elevators and significantly decrease energy consumption. Moreover, resources are saved by reusing some of the old components which are still in good condition.

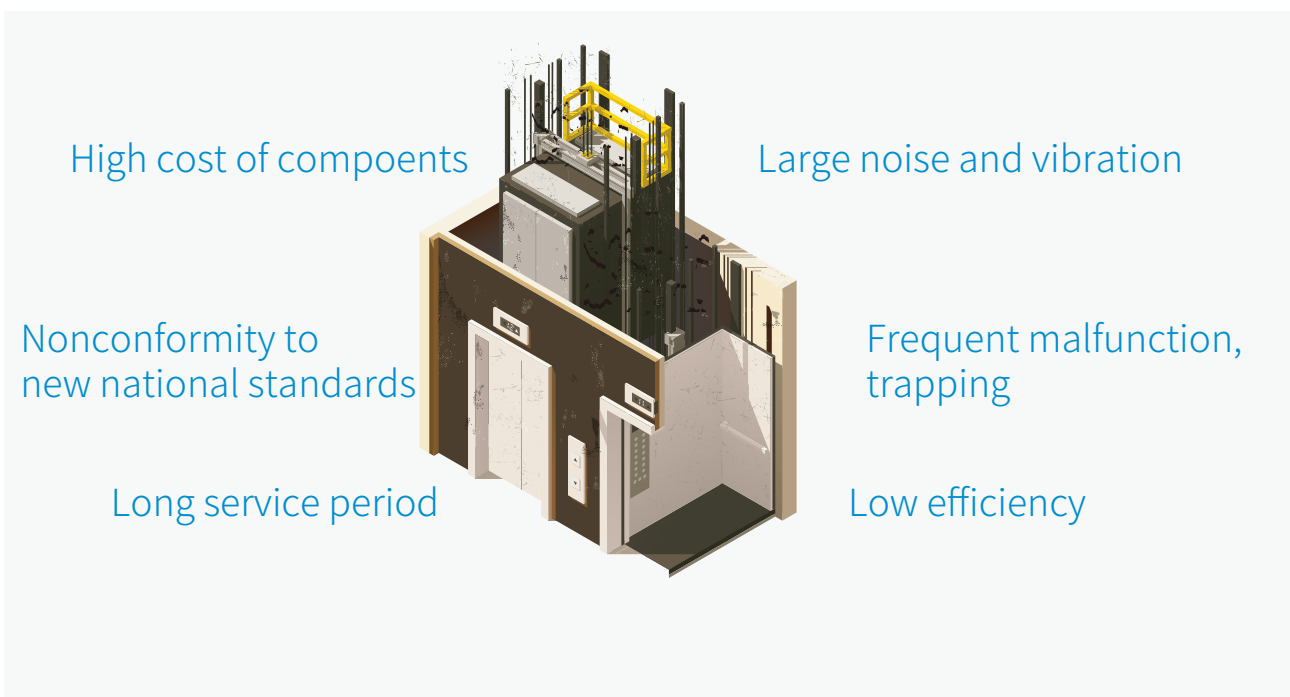


OLD ELEVATORS ARE DYING

Failure rate increases over the years



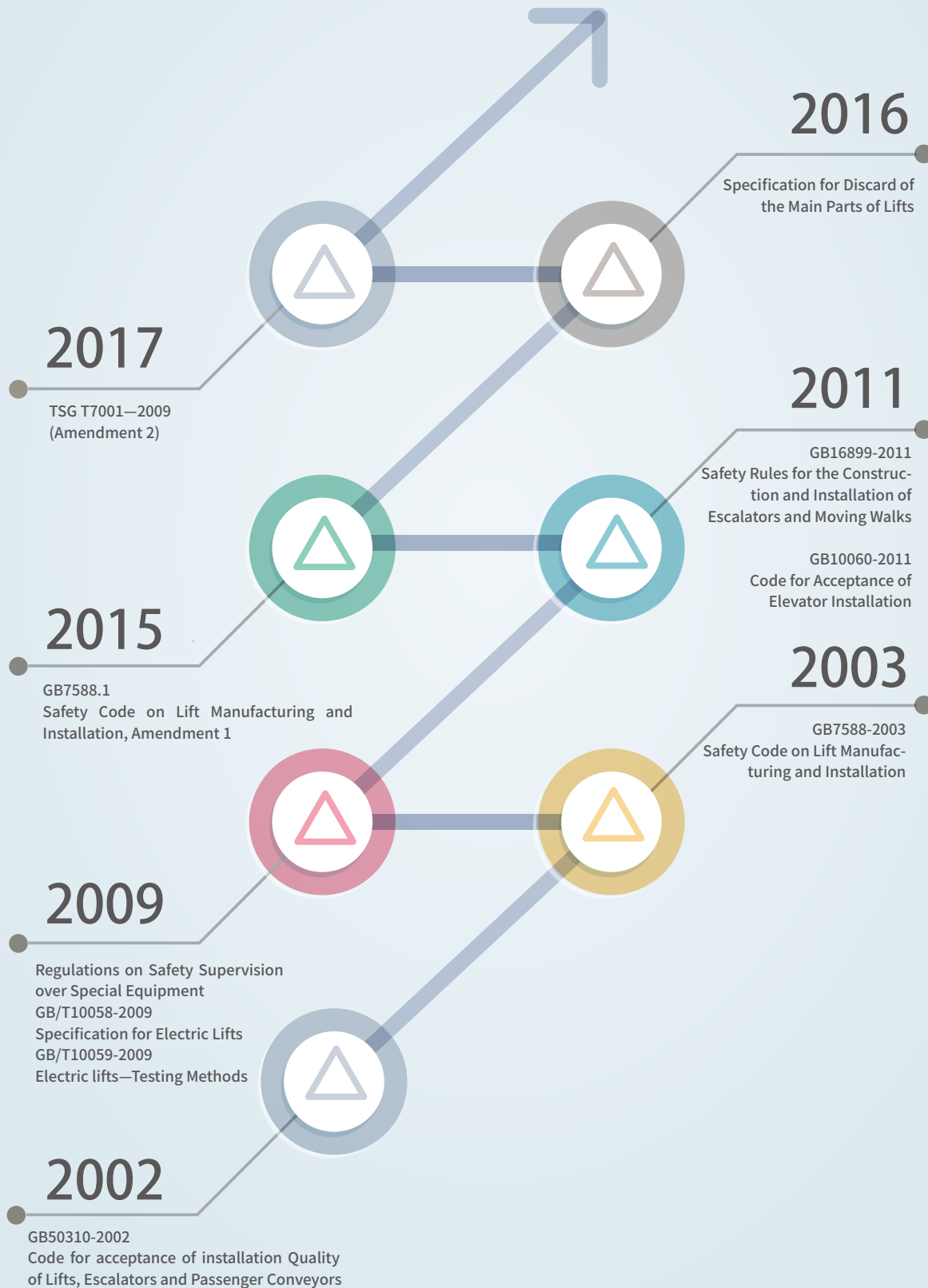
Modernization is top of the agenda



STRICTER REQUIREMENTS ON SAFETY

By far, elevator safety technology has seen several revolutions which directly led to the amendment of elevator related standards, laws and regulations.

Timeline of national standards



Bring new life to old elevators

Safe · Comfortable · Energy-saving · Smart ·

Comfortable

Quiet | Smooth | Elegant

Safe

Quality assured

Monarch

In China,

1 in 4 elevators use Monarch integrated controllers.

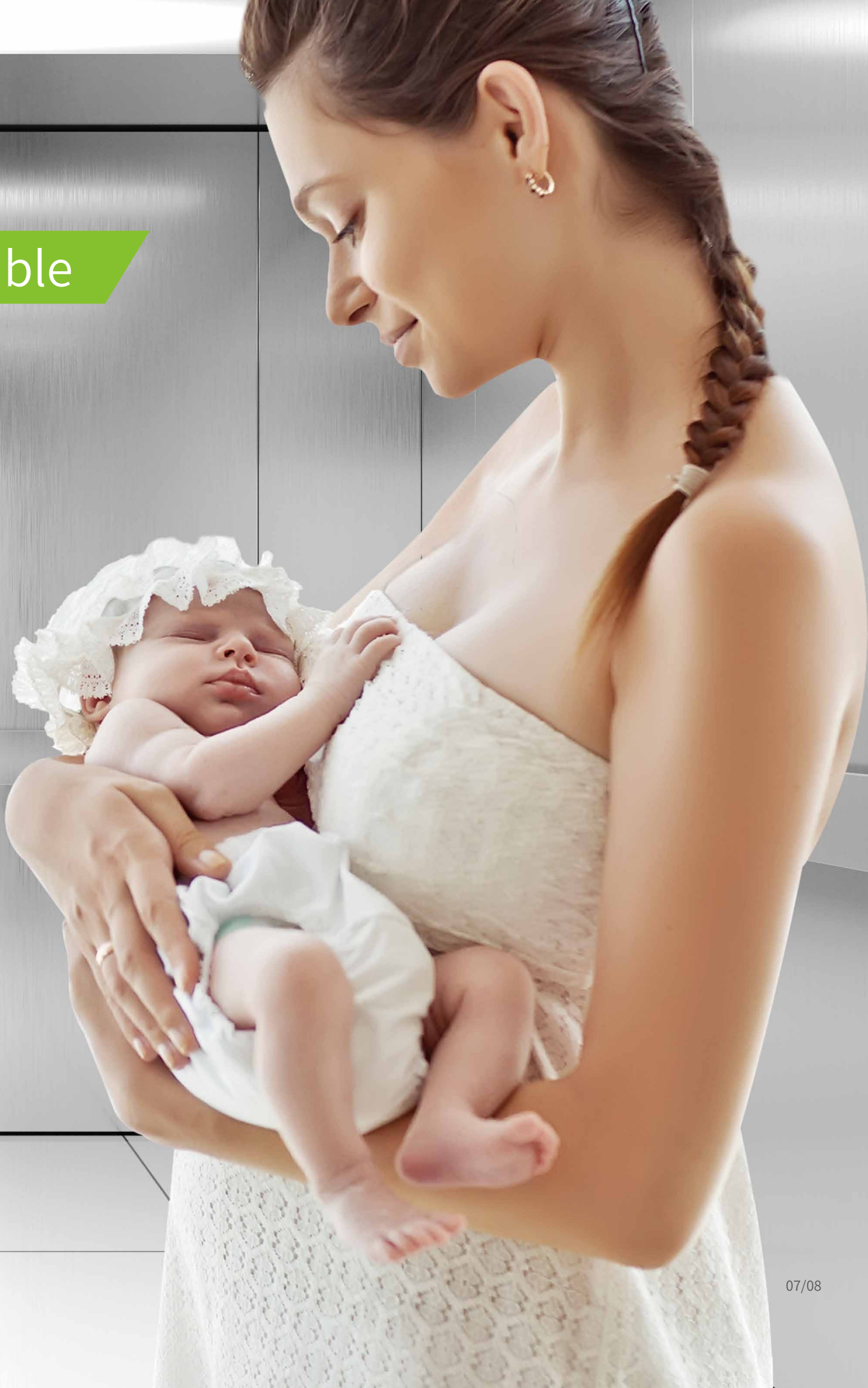
In the world,

Monarch ranks first in annual shipment and ownership.

New inspection standard complied

The modernized products, which fully comply with new standards, bring safety to a new level.

Durable



ENERGY SAVING

Efficiency

Direct travel ride

Efficiency increased by 5-10%

Frequency conversion

6th generation IGBT with low energy consumption

Small impact current at startup

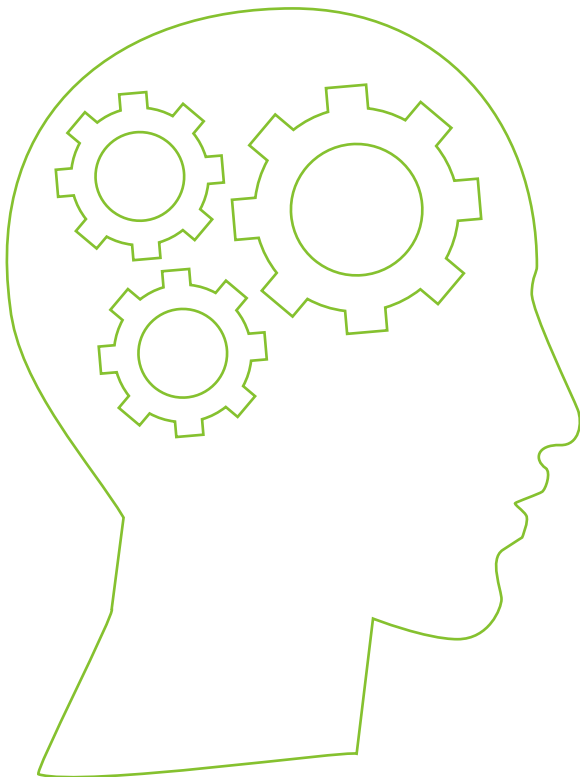
Synchronization

Efficient mechanical drive with synchronous motors

40—50% more efficient than asynchronous motors

Feedback

Power regeneration provides extra energy to daily consumption in the building



INTELLIGENT

Real-time monitoring

One-button rescue

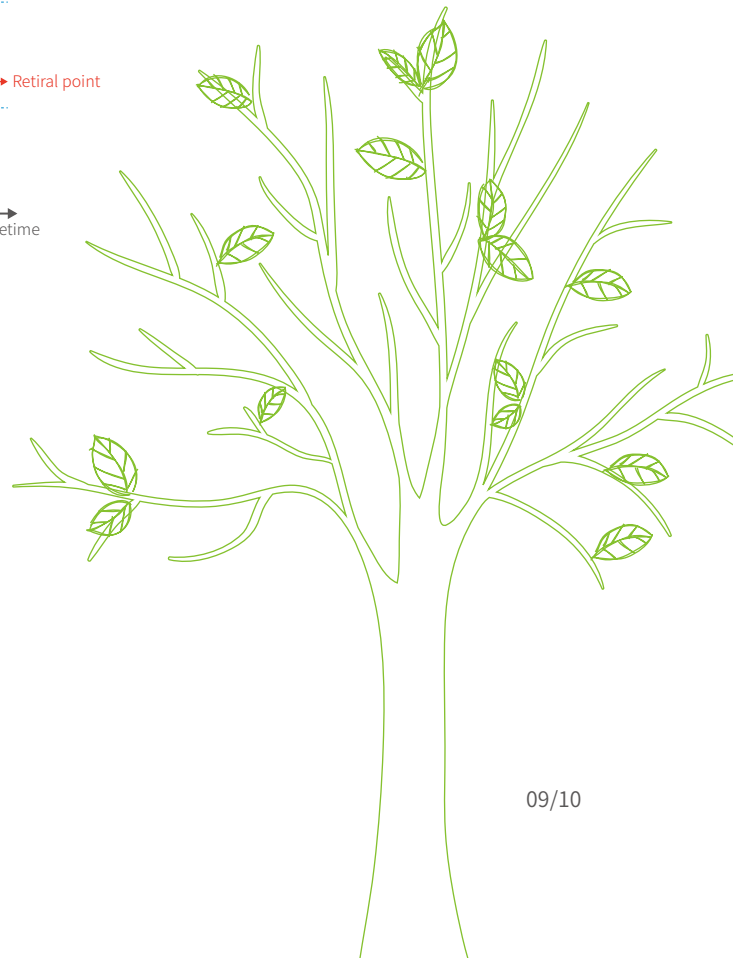
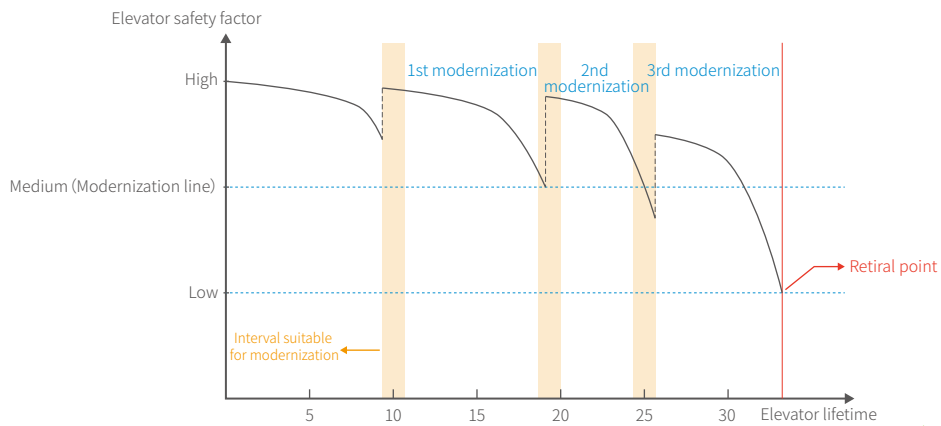
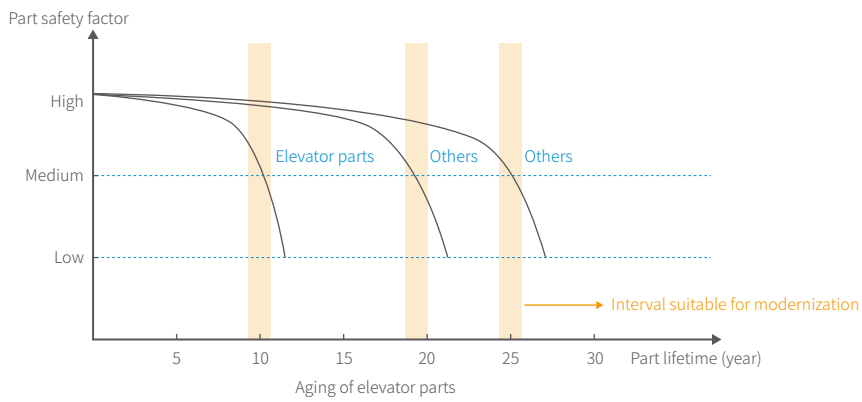
Intelligent trapping detection

Fault risk alarm

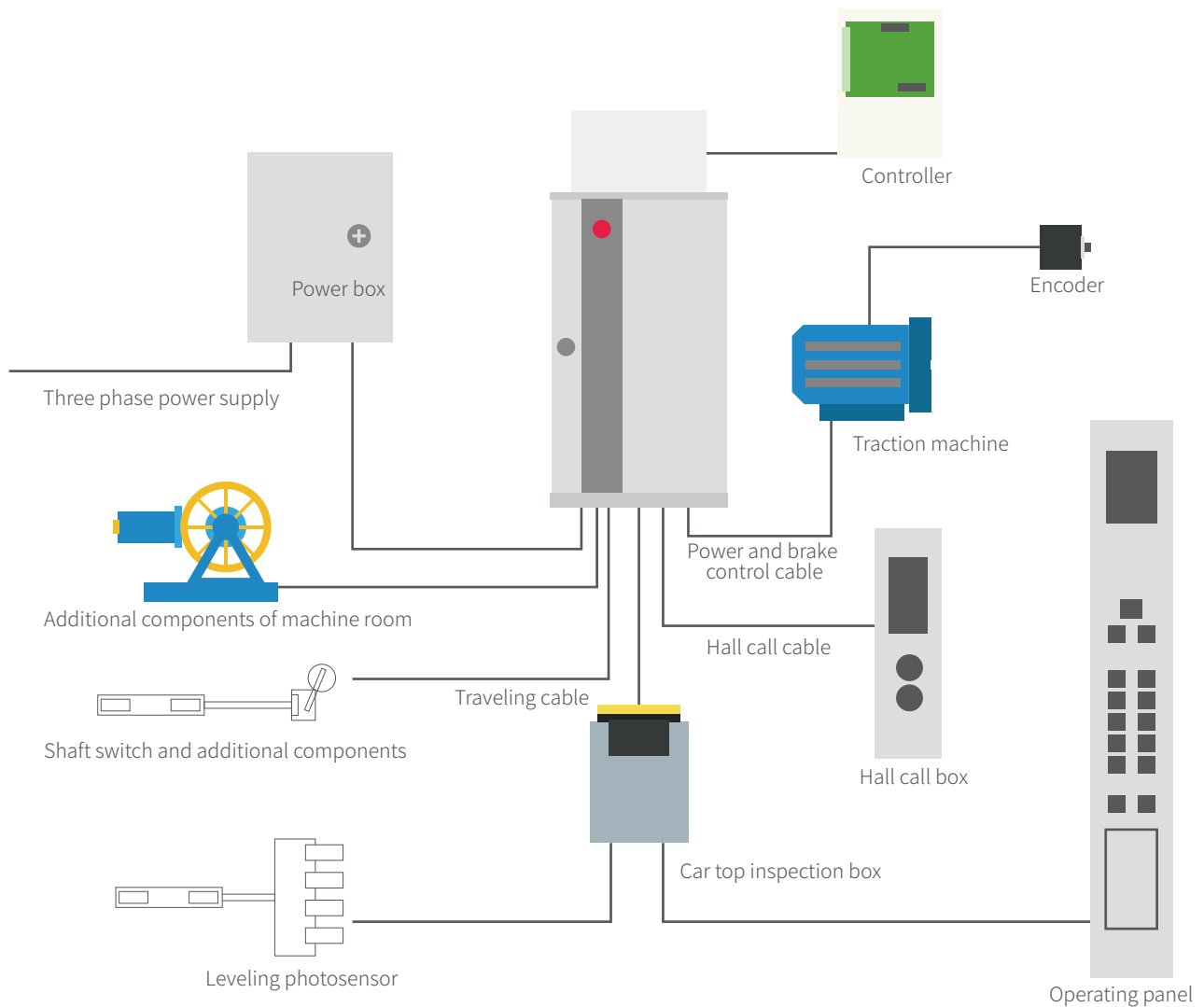
Accident risk alarm

DURABLE

Modernization extends the lifetime of the elevator



CONTROL SYSTEM



Stable

- ▶ 500,000 devices in use
- ▶ Over 10-year service life
- ▶ Top market share

Economic

- ▶ Independent intellectual property rights
- ▶ Combination of drive and control
- ▶ Highly integrated bus

Easy

- ▶ Easy commissioning
- ▶ Car commissioning supported
- ▶ Accurate fault locating

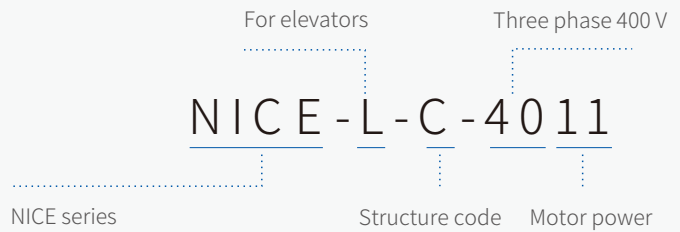
Safe

- ▶ Elevator status check
- ▶ Redundancy

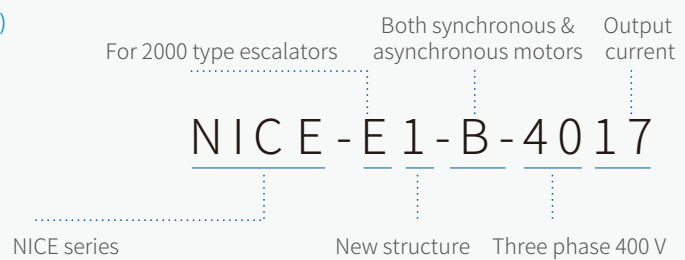
INTEGRATED CONTROLLERS



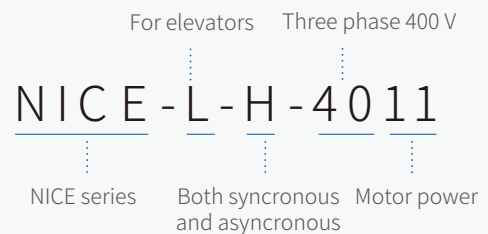
NICE3000 (serial communication)



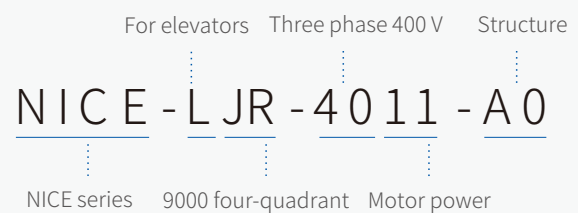
NICE2000 (escalator)



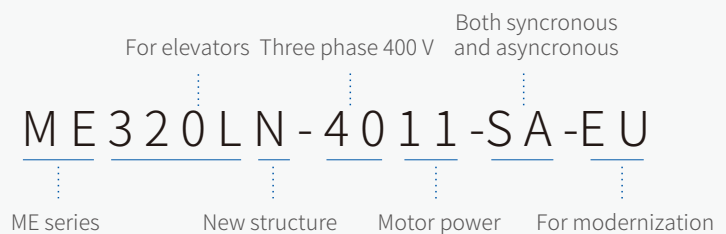
NICE1000 (parallel communication)



NICE9000 (four-quadrant)



ME320 (elevator)



CONTROL CABINET

Modular design, pipelined production

- ▶ High quality — Fool-proof connection reduces potential fault risk by 80%
- ▶ High efficiency — Pipelined production ensures 7 cabinets per day per person
- ▶ High capacity — Easy duplication of pipelined process
- ▶ Qualified customization — Customization process is reviewed by professional teams

Plug-in type connection

- ▶ Machine crimping
- ▶ Minimized field installation work

Diversified cabinets adaptable to most field conditions

Second generation

Cabinet type Contactor type Voltage Power

N I C E - C B 1 - B - A L 2 - 4 F 1 5

NICE series controller Model Interface board type Controller model



With machine room



Machine-room-less

Third generation

Cabinet type

Voltage

Power

NICE3000-B-4015-A

NICE3000 integrated controller

Model



With machine room



Machine-room-less

Villa elevator

For villa elevators

Rated current

NICE9000-V-2010

NICE9000 integrated controller

Voltage



DISPLAYS

MBT-COP-A



MBT-HOP-AB



MBT-COP-D



MBT-HOP-X/MBT-HOP-Y



MBT-COP-K

MBT-HOP-B/MBT-HOP-C



MBT-COP-L

MBT-HOP-W



DISPLAYS

MBT-COP-N



MBT-COP-T



MBT-FIRE-A/ MBT-LOCK-A



MBT-LOCK-B



MCTC-HCB-H

MCTC-HCB-V1

MCTC-HCB-T3



BUTTONS



MA003 (flat without braille)
MA004 (flat with braille)



MA005 (flat without braille)
MA006 (flat with braille)



MA011 (convex without braille)
MA012 (convex with braille)



MA051 (flat without braille)
MA052 (flat with braille)

CABLES

Certificates



DNV (ISO9001) , 3C, UL, CE, RoHS certified.

Unique features:

- Prefabricated plug-in cable
Prefabricated plug-in cable harnesses enables easy and quick cabling
- Custom modular design
Automatic generation of cable combinations according to orders offers more applications
- Wide coverage
Cables for the machine room, car, shaft electrics and control cabinet.

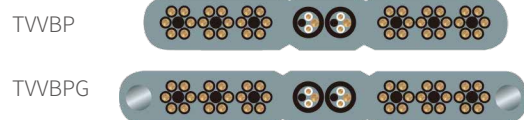
Core products:

Prefabricated cables

RWV RVVP round PVC elevator control cable



TWBP TWBPG flat PVC elevator control cable



Machine Room Cables	Car Cables	Shaft Cables	Traveling Cables
Power supply cables	Door operator cables	Elevator call cables	Traveling cables
Motor cables	Car door lock cables	Slow-down and limit switch cables	Steel-core traveling cables
Speed governor cables	Safety gear cables	Hall door lock cables	Video traveling cable
Speed governor release cables	Door zone cables	Shaft safety cables	Steel-core video traveling cable
Brake power supply cables	Car top intercom cables	Pit intercom cables	
Brake detection cables	Arrival gong cables	Shaft lighting cables	
Manual winding wheel cable	Car fan cables	Pit safety cables	
Traction machine temperature control and detection cables	Car lighting cables	Backup cables	
Parallel cables	Load cell switch cable		
	Operating box cables		

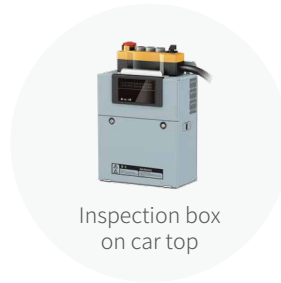
CABINETS



Power box
in machine room



Inspection box
on car top



Inspection box
on car top



Emergency box
in pit

OPTIONAL PARTS



Intercom system
(up to 64 calls)



Photoelectric switch



Shaft switch



Brake release power supply



Auto rescue device (ARD)



Voice annunciator

ENCODERS

Sine-Cosine encoder

Compatible with the installation method of the ERN1387 encoder



Incremental hub-shaft encoder

Hole diameter: $\phi 30$, $\phi 40$, $\phi 42$, $\phi 45$, $\phi 50$, and any customized diameter.
Voltage: DC 10-30 V



Explosion-proof incremental encoder

Protection class: IP65



Advantages of Weton encoders

- For hollow shafts whose diameters are below 62 mm (except standard products), they can be processed as required to meet the replacement requirements.
- For solid shafts, a flexible connector can be used to achieve different diameters.
- Cone shafts can be changed to straight shafts.
- A locking ring is used to replace the keyway shaft.
- The connect piece can also meet customers' requirements.

MODERNIZED ELEVATORS

Elevators that have been modernized

Brand	Model
Mitsubishi	SP-VV, SP-VF, GPS-CR, GPS-I, GPS- II , GPS-III, HOPE- I HOPE- II , KPM, SG-VF
Hitachi	GVF, GVF- II , GVF-III, YPVF, HGP, NPX, UAX, NPM
Toshiba	CV55, CV60, CV100, CV150, CV160, CV180, CV190, CV320, CV330
Otis	TOEC30, TOEC40, TOEC60, SPEC90, SKY, STAR, GEN2, 5000, 3100, 3200
Sigma	SI210, DI1, HVP, DL1, DLS, NEW-DSS
Kone	Monospace, minispace
Schindler	MB-DS, 300P, 300C-MMR
Thyssenkrupp	TE-E, TE-HP, TE-GL1

ME320 AC drive replacement

Alternative Brand	Compatible Control Board
SIEI	F5021
Yaskawa	BL2000, BL3000
Fuji	WP3200, WP3100
KEB	MP708A, B, C
Siemens	ALCB2
Thyssenkrupp	MC1, MC2, etc.
Others	

TYPICAL CASES

Disc motor

Scope

This solution applies to disc motors. The encoder is installed at the edge of the traction wheel and synchronized rotation is achieved with a friction wheel.

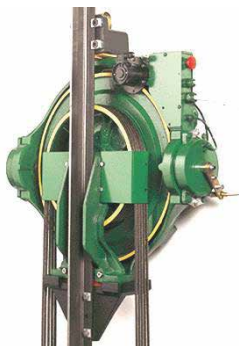
Conditions

Brand	Kone
Traction machine model	MX10
Rated elevator speed	1.75 m/s
Rated load	800
Parameters of traction machine	Rated power: 10.1 KW
	Rated voltage: 245 V
	Rated current: 33.4 A
	Rated frequency: 23.2 Hz

Configuration

Name	Model	Quantity	Remarks
Control cabinet	NICE-CW1-B-AL4-4F15	1	Used with dedicated PG-D1 card software
Car operating panel	MBT-COP-K	1	Dedicated one-piece operating panel, customizable si
Hall call box	MBT-HOP-B	18	No bottom box
Firefighting box	MBT-FIRE-A	1	
Inspection box on car top	MBT-PIB-A1	1	Dedicated inspection box on car top
Emergency stop box in pit	MBT-PSB-A1	1	
Photoelectric switch bracket	HC-GDZJ-MX	1	Dedicated accessories
Light shield assembly	HC-ZG-MX	1	Dedicated accessories
Z signal photoelectric switch	HC-GD-Z-MX	1	Dedicated accessories
Encoder for Kone modernization	HT-BMQ-MX	1	Dedicated accessories

Photos



High-voltage traction machines

Scope

This configuration applies to traction machines whose rated voltage is over 460 V. As the mains power supply is 380 V, a NICE9000 integrated controller is used for controllable rectification to raise the bus voltage to meet the requirements of the traction machine.

Conditions

Brand	Otis GEN2 high-voltage steel belt elevator
Traction machine model	DAA20220AJ
Rated elevator speed	1.0 m/s
Rated load	1000 KG
Parameters of traction machine	Rated power: 6.7 KW
	Rated voltage: 513 V
	Rated current: 8.8 A
	Rated frequency: 16 Hz

Configuration

Name	Model	Quantity	Remarks
Control cabinet	NICE-CW1-B-AL4-4F15	1	NICE9000 customized
Car operating panel	MBT-COP-A	1	Customizable size
Hall call box	MBT-HOP-B	18	
Firefighting box	MBT-FIRE-A	1	
Inspection box on car top	MBT-PIB-A1	1	
Emergency stop box in pit	MBT-PSB-A1	1	
Reactor		1	Other accessories
Magnet ring		2	Other accessories

Photos



Low-voltage traction machines

Scope

This configuration applies to early generation low-voltage traction machines of Japanese brands, such as Mitsubishi, Toshiba, and Hitachi. As the output voltage of the AC drive is controllable, you only need to set the motor rated voltage in Group F1 parameters the same as that on the nameplate.

Due to the low voltage of the traction machine, the power of the integrated controller must be greater than the traction machine.

Conditions

Brand	Toshiba CV60
Traction machine model	TM40
Rated elevator speed	1.5 m/s
Rated load	1000 KG
Parameters of traction machine	Rated power: 13 KW
	Rated voltage: 170 V
	Rated current: 57 A
	Rated frequency: 33.3 Hz

Configuration

Name	Model	Quantity	Remarks
Control cabinet	NICE-CW1-B-AL4-4F30	1	
Car operating panel	MBT-COP-A	1	
Hall call box	MBT-HOP-B	18	
Firefighting box	MBT-FIRE-A	1	
Inspection box on car top	MBT-PIB-A1	1	
Emergency stop box in pit	MBT-PSB-A1	1	

Photos



Steel belt traction machines

Scope

Some European manufacturers equip traction machines with steel belts, such as the Schindler 3300AP. As for such elevators, you should first determine if it has an asynchronous or a synchronous motor. This can be told from the model code of the traction machine: an initial letter “F” indicates that it is an asynchronous motor, and an initial letter “P” indicates that it is a synchronous motor. The traction machine in question is FMB130-4B512, which has an asynchronous motor.

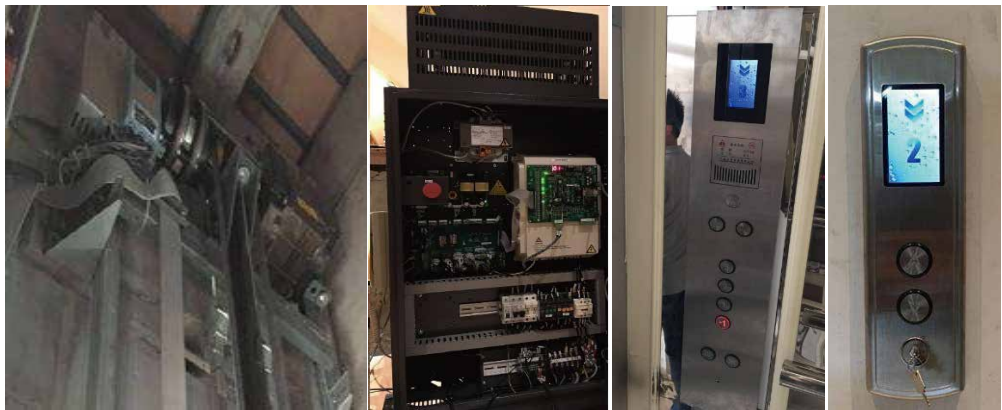
Conditions

Brand	Schindler 3300AP
Traction machine model	FMB130-4B512
Rated elevator speed	0.5 m/s
Rated load	535 KG
Parameters of traction machine	Rated power: 4.6 KW
	Rated voltage: 340 V
	Rated current: 12.5 A
	Rated frequency: 16 Hz

Configuration

Name	Model	Quantity	Remarks
Control cabinet	NICE-CW1-B-AL4-4F30	1	
Operating panel	MBT-COP-A	1	
Hall call box	MBT-HOP-B	18	
Inspection box on car top (220 V)	MBT-FIRE-A	1	
Emergency stop box in pit(220 V)	MBT-PIB-A1	1	
Emergency stop switch box	MBT-PSB-A1		
5-way intercom			

Photos



DRIVE REPLACEMENT

Scope

This configuration applies to the control mode of control board + AC drive. A modernization dedicated ME320 AC drive can be used to replace the old drive.

Conditions

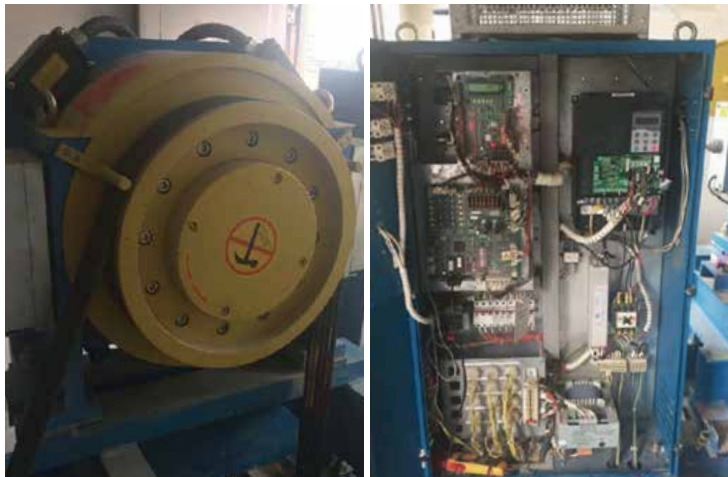
Brand	Xizi Otis
Drive to be replaced	SIEI
Traction machine model	GETM3.0
Parameters of traction machine	Rated power: 6 KW
	Rated voltage: 290 V
	Rated current: 16 A
	Rated frequency: 19 Hz

Configuration

Name	Model	Quantity	Remarks
Elevator drive	ME320LN-4011-SA	1	Elevator drive
PG card	MCTC-PG-C3	1	Select accoring to the field requirements for frequency division

Note: The ME320-EU AC drive supports one-button setting and is able to seamlessly replace different brands of AC drives under the conditions where multiple elevator types coexist. It also supports multi-speed and analog. The PG card supports open-collector and differential frequency division output.

Photos



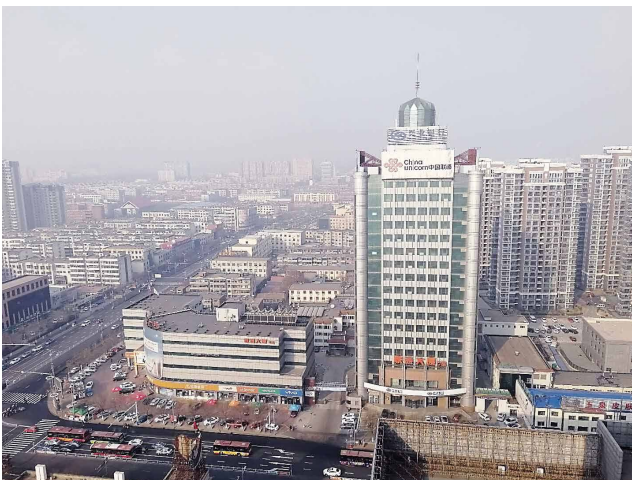
MODERNIZATION PROJECTS



State Grid



Chongqing Fortune Mall



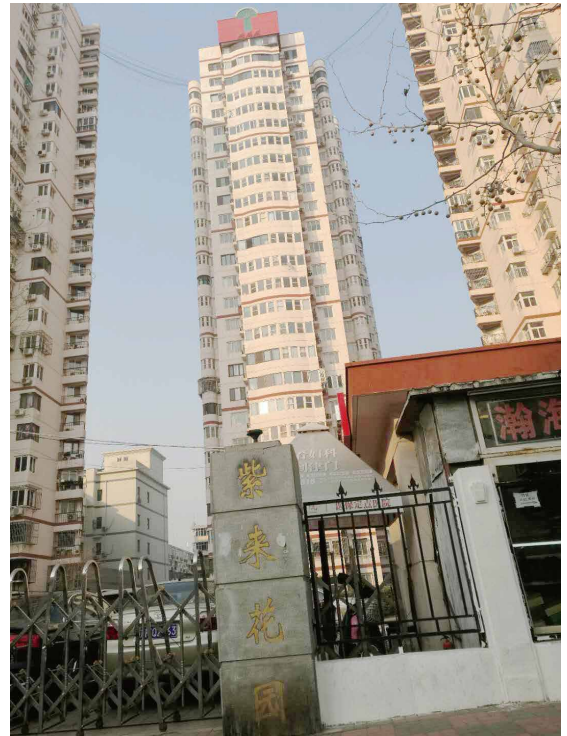
China Unicom, Changzhou



China Mobile, Chongqing



Langqing Plaza, Chongqing



Zilai Huayuan residential district,
Tianjin



Shuxiangyuan residential district,
Tianjin



Beilu Xinju
residential district

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