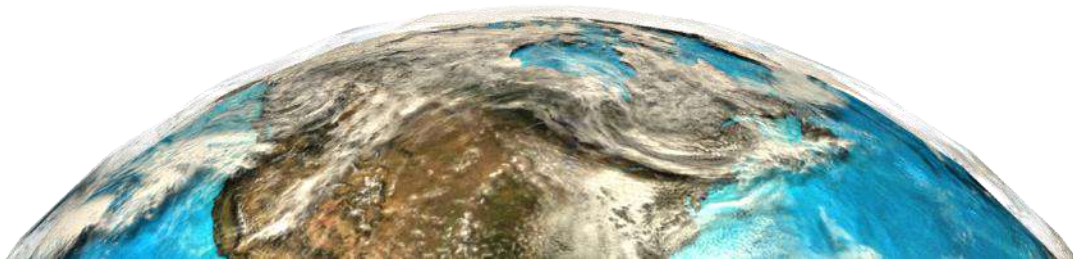


LINUO 力諾

Linuo Group

Sunshine and Health - Creating a Better Life



Content

CONTENT

PART 1 Overview

PART 2 Industries

PART 3 R&D

PART 4 CSR

LINUO 力諾

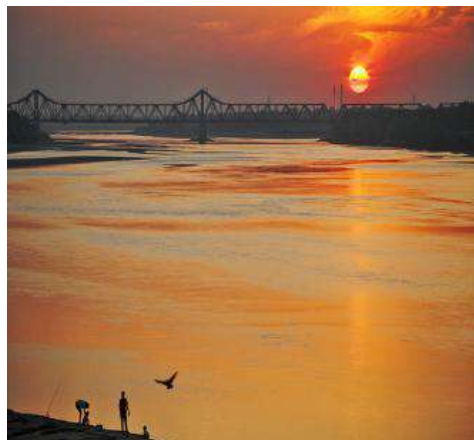


PART ONE

Overview



Shandong



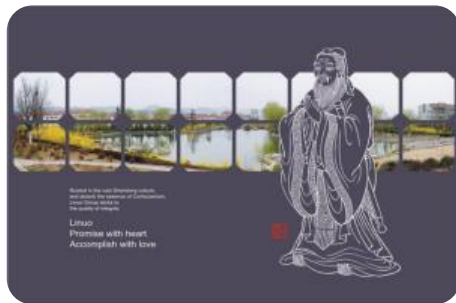
Shandong is rich in natural and human resources, and best represented by Mount Tai, the Yellow River and Confucius. Shandong's history and legacy have inspired Linuo Group to realize its entrepreneurial dream.

Jinan - Capital City of Shandong



Jinan is the City of Springs for its numerous sprouting springs.
Linuo Group started its business here 24 years ago.

Linuo Culture



- Confucian philosophy
- Integrity, trust & sincerity in business



- Harmony between industry and environment



- Responsible to clients, employees and shareholders

Where We Are

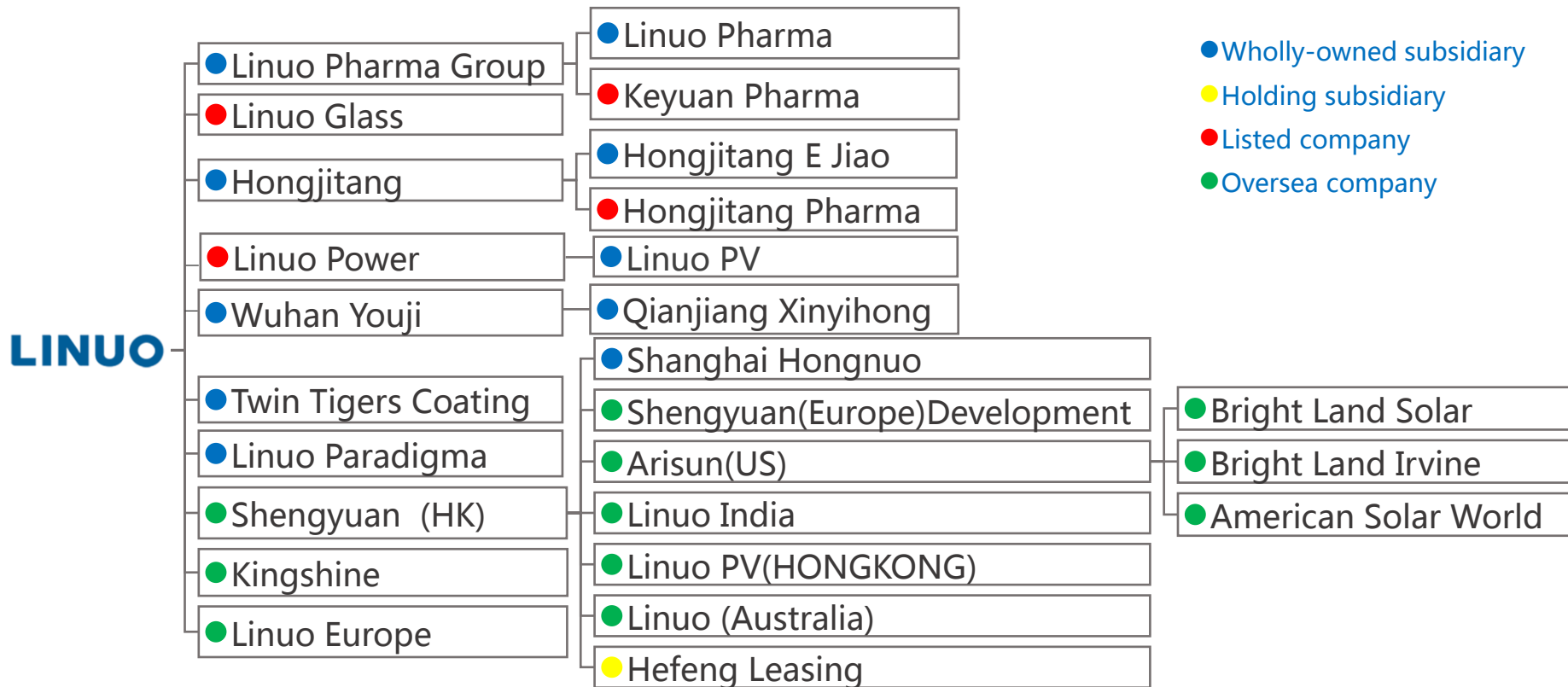


- 430km—Beijing
- 900km—Shanghai
- 20km—City Center
- 15km—International Airport
- 35km—High Speed Train Station

Milestones



Organizational Structure



LINUO 力諾

Corporate Vision

Build a global brand with a durable reputation

Solar Energy



LINUO PV

Health

LINUO PHARMA
KEYUAN PHARMA
LINUO GLASS



Fine Chemicals



TWIN TIGERS COATINGS



WUHAN YOUJI

LINUO 力諾

Domestic Layout





Linuo Shanghai

668 Panlong
Road, Shanghai
Tel: 021-67000277



Linuo India

B-129, Ansa
Industrial Estate,
Saki Vihar Road,
Saki Naka, Andheri East
Mumbai
Tel: +918826748995



Linuo Europe GmbH



Linuo US

7 Vanderbilt.
Irvine. CA
92618
TEL: +1 949 588 6393
+1 949 588 6397



Linuo Shanghai
Headquarter
#1303, 738 Huaqing
Road, Qingpu, Shanghai
Tel: +86 21 69660125

Global Customers



PART TWO

Industries



Linuo Solar Energy



Linuo Paradigma

- Solar water heating
- Thermal energy



Linuo PV

- Monocrystalline cells
- Polycrystalline cells



Linuo Power

- Distributed power system
- Power plant operation
- Power Supply

Linuo Solar Energy



LINUO 力諾

Linuo Solar Energy

Tubes



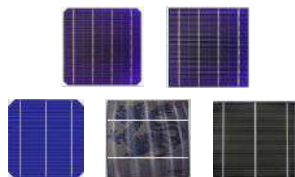
Heat pumps & collectors



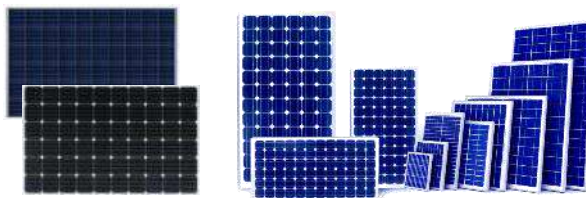
Thermal Projects



Cells



Modules



PV Project



LINUO 力諾

Linuo PV



- Founded in 2002
- Employees: 460
- Facilities : 2 Cell & 2 Module plants in Jinan
- Annual Capacity: Cells 1.2GW, Modules 1.2GW

Linuo PV

- Equipment from Germany, US, Italy, South Korea & China



DESPECH



RENA/SCHMID
KOMAX/CT-DIFFUSION



BACCINI



FORTIX



NINGXIA XN
SHENZHEN S.C

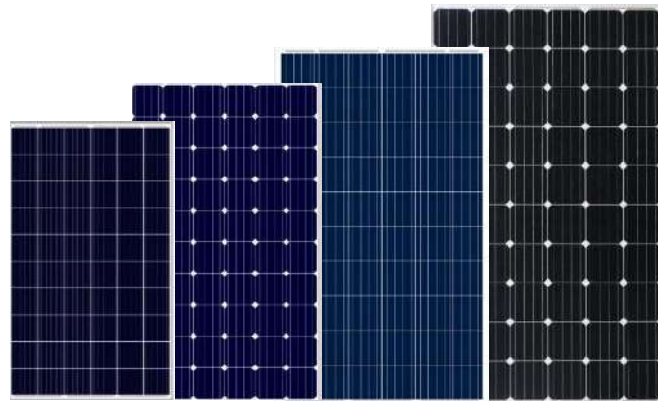
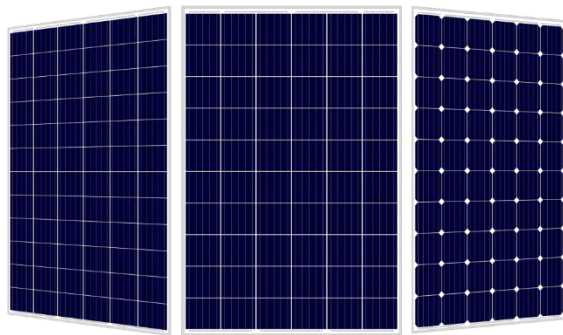
Linuo PV

- Full automation lines



Linuo PV

- Product portfolio of solar cells and solar modules



Linuo Power



- Established in 2002, Shandong, China
- Employees: 340
- Total Installations: 1.2 GW
- Ground-mounted Solar Power Plant
- Distributed PV Power Plant
- Off-grid PV Power Plant
- Building Integrated Photo-Voltaic
- Wholesale power licences

Linuo Power

- Design Partners



- Major Suppliers



Linuo Power

- Top 20 EPC Enterprises in China
- Top 20 Investment Enterprises



50MW solar plant in Yinan

Linuo Power

- Project references



50MW Solar plant in Delingha, Qinghai



20MW Solar plant in Hami, Xinjiang



10MW Solar plant in Shigatse, Tibet



324kW Solar plant in Jinan

Linuo Solar Energy

- Energy interconnection - Data monitoring
20000 points , 900 solar power plants



Linuo Paradigma



- Founded in 2001
- German technology, made in China
- Employees: 690
- Main business: air source heat pump , water heating, space heating & cooling solutions with solar energy, and other renewable energy resources



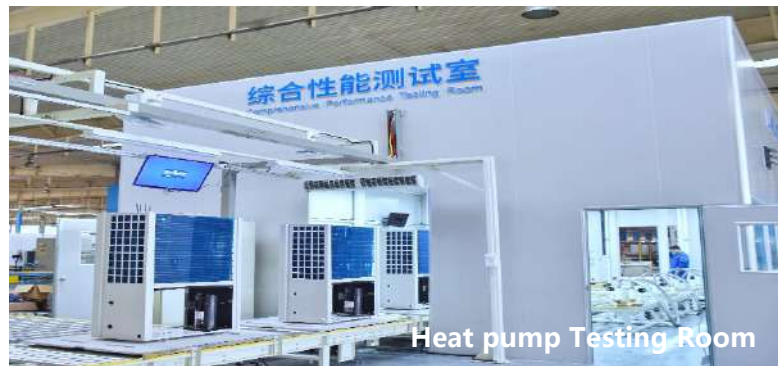
Linuo Paradigma

- Residential and Commercial solutions
- High-efficient and energy-saving water heating and space heating/cooling systems
- Solar systems, heat pumps, electric heaters and combined systems



Linuo Paradigma

- Workshops and laboratories



Linuo Paradigma

- Production capacity and market performance



- 50,000 commercial heat pumps per year
- 400,000 solar water heaters per year
- 264,000 solar collectors per year
- 6 million solar vacuum tubes per year

- Thousands of design projects every year
- National Industrial Base of Residence & Fabricated Building
- Demonstration Enterprise for 2017 Electric Heating Reform Project

- No. 2 in solar thermal industry in China
- No. 1 in commercial applications field
- Honor of 2018 Outstanding Brand of Chinese Heat Pump industry
- Exports to over 60 countries

Linuo Paradigma

- Testing center & research lab



LINUO 力諾

Solar Energy

- Certifications

Linuo Photovoltaics



Linuo Power



Linuo Paradigma



LINUO 力諾

Linuo Healthcare



**Hongjitang
Pharma**



**Hongjitang E
Jiao**

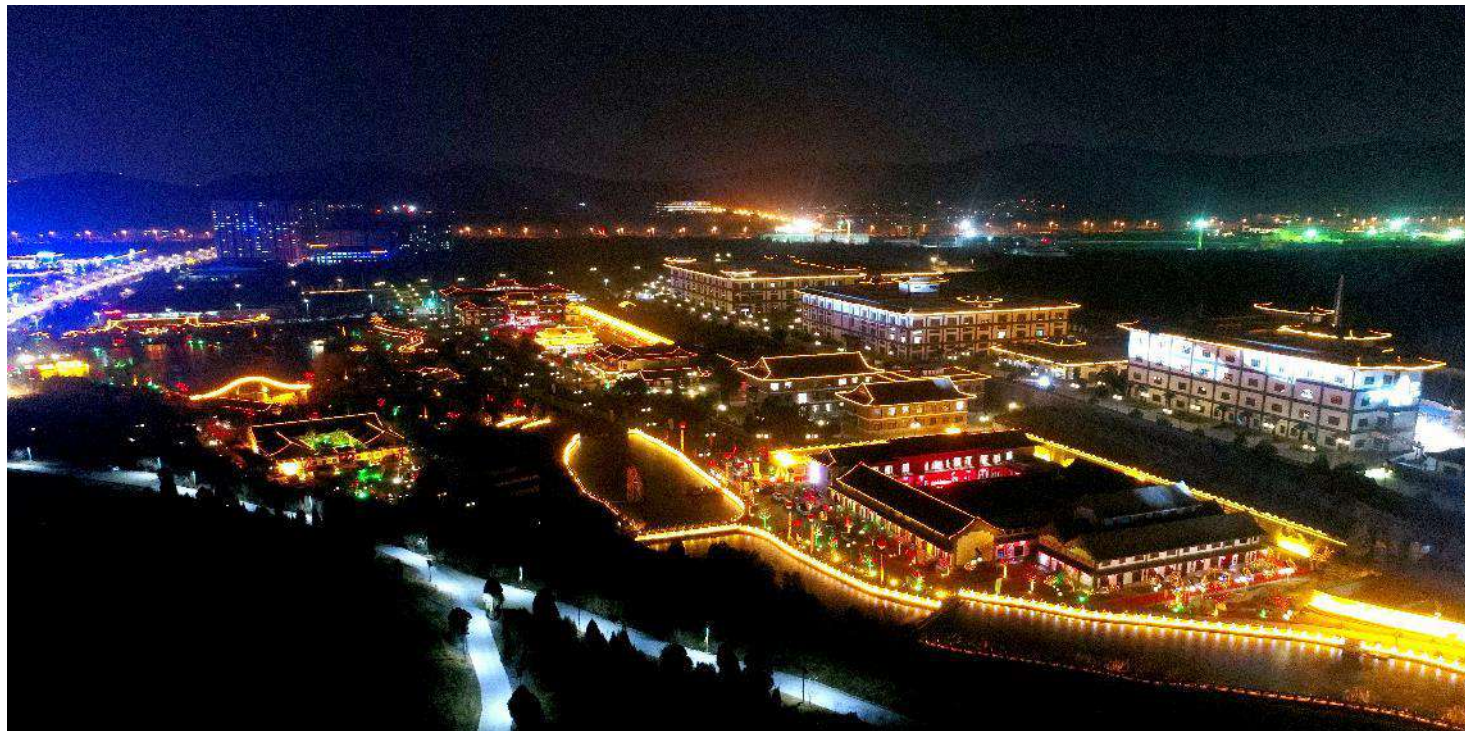
Linuo Healthcare



Linuo TCM industrial park is listed among :

- National scenic spots (AAA)
- Demonstration base for industrial tourism in Shandong

Linuo Healthcare



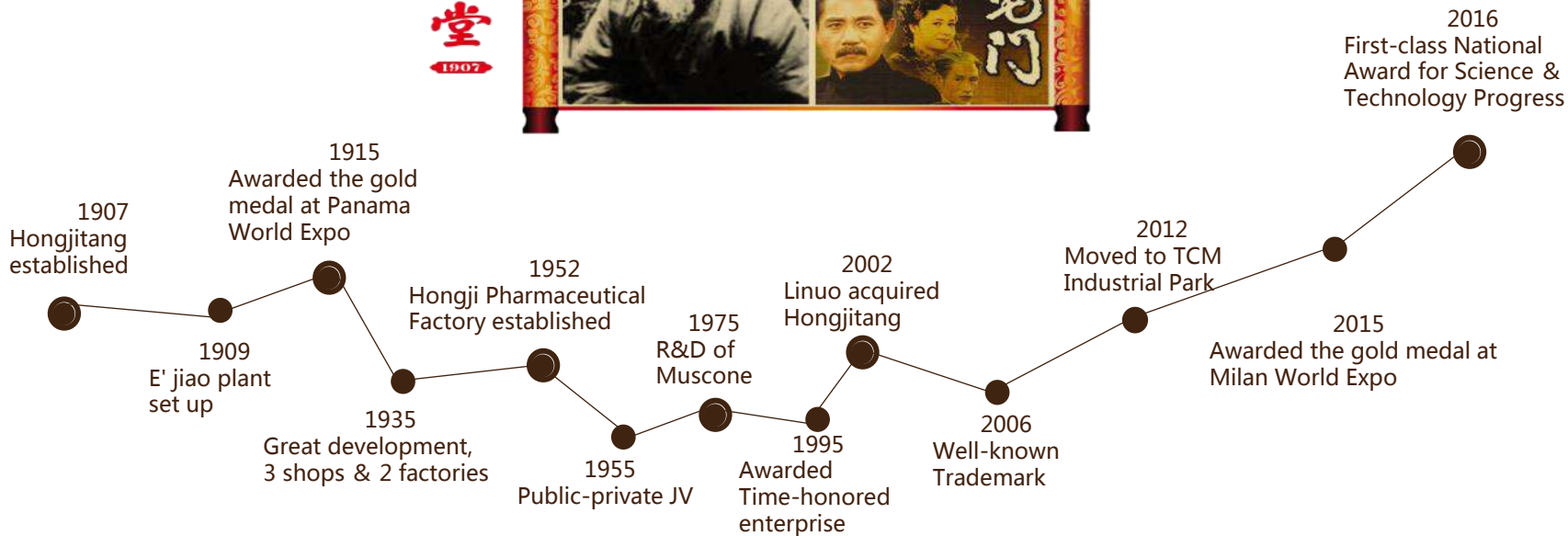
LINUO 力諾

Hongjitang Pharma

- Established in 1907
- Employees : 1000
- TCM products:
 - pediatric agents
 - cardiovascular agents
 - cerebrovascular agents
 - urologic agents etc.



Hongjitang Pharma



Hongjitang Pharma



● Hongjitang Research Institute



● Hongjitang TCM Clinic



● Hongjitang Museum

Hongjitang Pharma



LINUO 力諾

Hongjitang Pharma

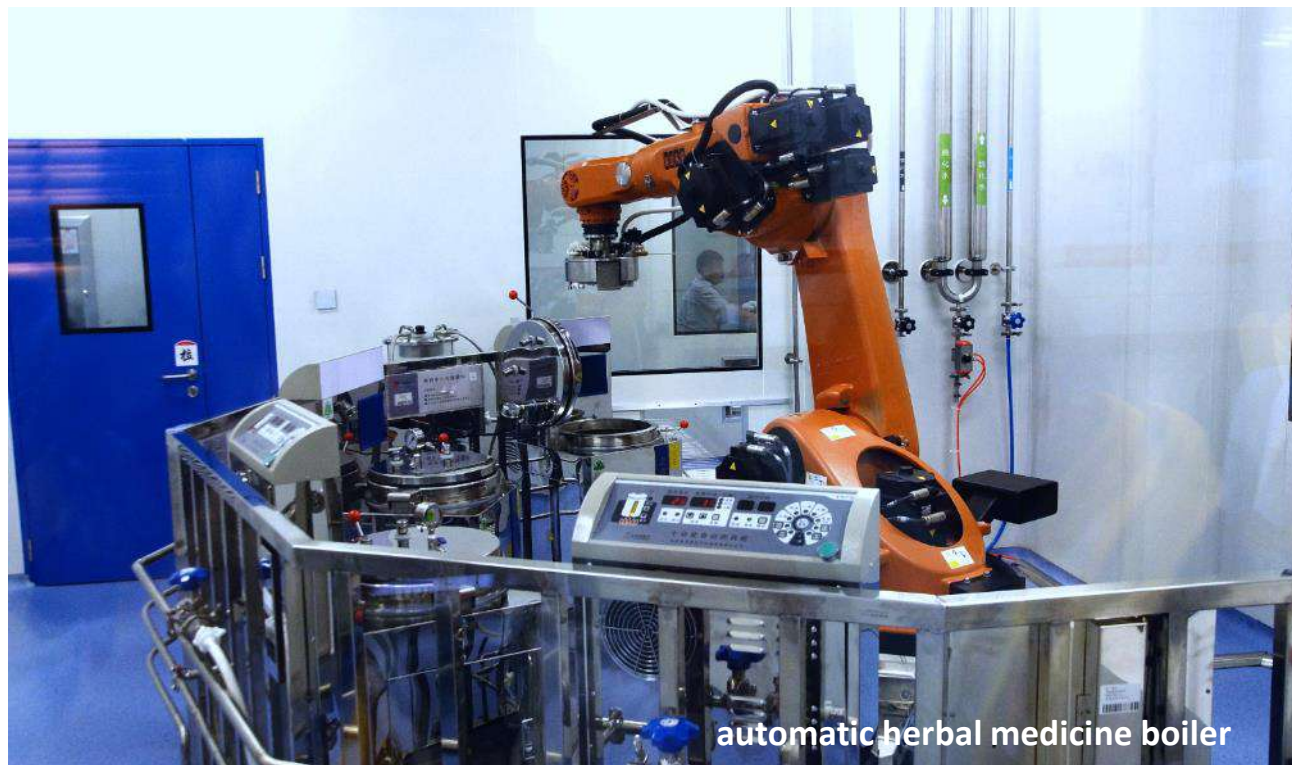


Yue Jingyu Museum



The wall of TCM historical culture
in Hongjitang

Hongjitang Pharma



automatic herbal medicine boiler



Hongjitang Pharma

- 6.1 billion tablets
- 1.2 billion capsules
- 2000 kg Muscone

Hongjitang Pharma

Product

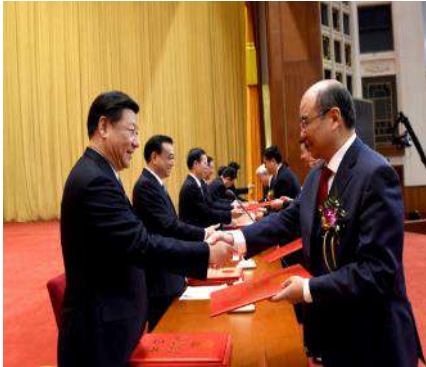
- 10 series of products
- 12 dosage forms
- 150 kinds of TCM



LINUO 力諾

Hongjitang Pharma

- Synthetic Muscone: a product with social and environmental value



- Muscone in TCM for more than 2000 years
- Efficacy: promotes blood circulation
- Used in 295 TCM products

Synthetic Muscone :

- First-class National Science & Technology Progress Award
- Saves destruction of 2.5 million musk deer every year



Hongjitang Pharma



Hongjitang Pharma



Hongjitang E Jiao



- Gold medal awarded at Panama Expo in 1915
- Employees : 260
- Capacity: 50 tons of E Jiao and 160 tons of E Jiao related food products

Hongjitang E Jiao

Product portfolio of E Jiao series

E Jiao



宏济堂阿胶
独创「九提九炙」炼胶工艺
非物质文化遗产「百年品牌，遵古炮制」

E Jiao Slices



宏济堂牌阿胶片
手工古法 遵地药材 至真至纯



阿胶固元糕
滋养益气 软糯甘爽 即食便捷



阿胶山楂
消食健脾 即食便捷

Instant E Jiao Cake

E Jiao Haws

LINUO 力諾

Hongjitang E Jiao was awarded Gold Medal at Panama Expo in 1915



Hongjitang E Jiao



Linuo Healthcare



**Linuo
Pharma**



**Keyuan
Pharma**



**Linuo
Technical Glass**

Linuo Healthcare

- Keyuan Pharma & Linuo Pharma
- Employees : 600
- API & Finished Dosage Forms



Linuo Pharma

Linuo Pharma

- 2 billion tablets
- 100 million capsules
- 10 million ointments
- 10 million aerosols



Linuo Pharma

- Product categories: tablet, capsule, aerosol and paste

Product portfolio:

- Cardiovascular agents
- Hypoglycemic agents
- Antidepressants
- Antipyretics



Keyuan Pharma



Keyuan Pharma



- Founded in August 2002.
- Focus on the development, manufacture and marketing of Active Pharmaceutical Ingredients (APIs).
- Factory covers an area of 132,000 square meters.



Keyuan Pharma

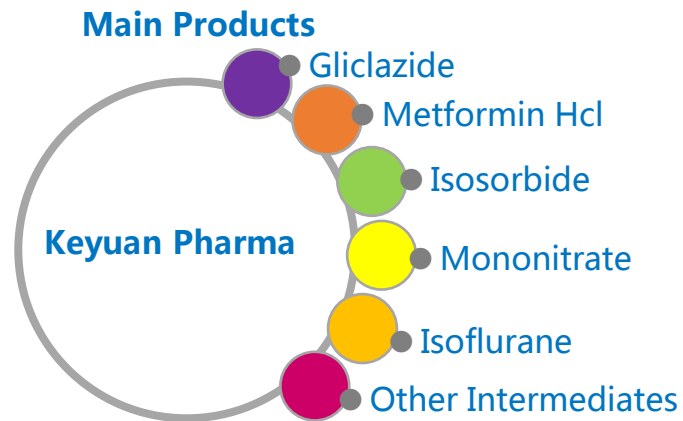


Manufacturer :

- Anti-diabetic series
- Cardiovascular series
- Inhalational anesthetics
- Capacity: 7000 tons

Keyuan Pharma

Anti-diabetes Cardiovascular Drugs Anesthetic CRO
CMO



Keyuan Pharma

Bromination

Chlorination

Condensation

Hydrolysis

Rearrangement

Cyclization

Reduction

Nitration

Chiral resolution and asymmetric synthesis

Fractional distillation

IR heated reaction

Ion-exchange column

Micronization



Keyuan Pharma



- Workshop has a design capacity of 6000 T/Y
- Automated workshop



Keyuan Pharma – pilot workshop



- Design & construction follow the standards of FDA and EU GMP
- Automatic packaging line for anti-diabetic API

Keyuan Pharma - pilot workshop



- 1700 m², multi-purpose facilities being operated in compliance with cGMP
- A complete set of equipment fit for versatile organic reactions
- Clean room with 30 L, 100 L and 500 L independent production lines
- R&D support, process scale up and improvement, small scale manufacturing
- Incubator of new products and new technology

Keyuan Pharma

- R&D - The new lab



Keyuan Pharma

- Quality Assurance System



- Two products has been approved by US FDA
- Two products have filed DMF with US FDA
- SFDA GMP certificates for all API products
- 2 COS (EDQM) certificates
- Japanese PMDA GMP certificate (2010.11)

Keyuan Pharma

● Certifications



FDA



PMDA



KFDA



CEP



LINUO 力諾



GMP



CEP

Keyuan Pharma

- **GMP Inspections:**

- Certifications received after GMP inspections from the following authorities
- US FDA 2015 (first time) 、 2018 (second time)
- China FDA: periodic inspections, last inspection in 2014
- Korea MFDS 2013
- Japan PMDA 2010

- **Site audits from major international customers:**

- 2017: 55 audits (customers from EU, US, UK, India, Japan, etc.)
- 2016: 49 audits (customers from USA, UK, Italy, France, Spain, etc.)
- 2015: 60 audits (customers from USA, Ukraine, India, Israel, etc.)
- 2014: 35 audits (customers from France, USA, Germany, etc.)

Linuo Glass



- Leading borosilicate glassware exporter
- Chief drafter of national standard
- 1000 employees
- Pharmaceutical packaging & lighting glass

LINUO 力諾

Linuo Glass

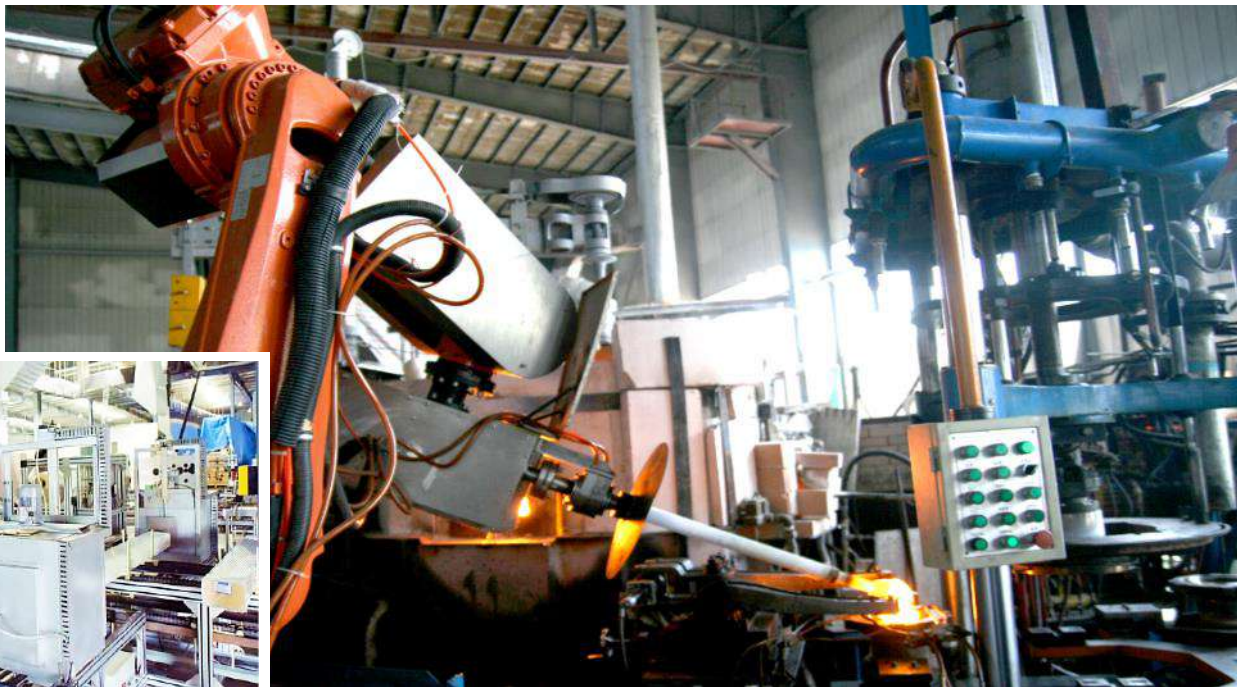


- Vice Chairman of China Pharmaceutical Packaging Association
- Vice Chairman of China National Association For Glass Industry
- Vice Chairman of China National Glass Instrument Standardization Technical Committee
- Primary drafter of several national standards
- Outstanding Contribution Enterprise in Chinese pharmaceutical packaging industry

Linuo Glass

Production capacity

- Pharmaceutical Glass:
2.2 billion units
- Borosilicate Glass:
64 million units
- Lighting Glass:
31 million units



Linuo Glass

Pharmaceutical Glass

- Tubes
- Ampoules
- Vials



Heat resistant Glass

- Heat resistant crispers
- Microwave glass trays
- Heat-resistant glassware



Lighting Glass

- Lighting glass bulbs
- Lighting glass tubing and rods



Linuo Glass



PHILIPS



OSRAM



Galanz 格兰仕



美的 Midea



LINUO 力諾

Linuo Glass



LINUO 力諾

Linuo Fine Chemicals in Wuhan

Twin Tigers Coatings & Wuhan Youji



LINUO 力諾

Chemical Industry Park in Wuhan



Twin Tigers



- Industrial leader in environmental friendly coatings
- Founded in 1928 & acquired by Linuo Group
- Employees : 350
- Automotive coatings, protective coatings, coil coatings & resin

Twin Tigers



Establishment of the brand "Flying Bear"



Public-private JV

Wuhan Twin Tigers Coatings Co., Ltd. established



Linuo acquired Wuhan Twin Tigers Group

National Post-doctoral Technology Research Center



Linuo Group Wuhan Campus built

1928 1945 1956 1980 1992 1996 2001 2004 2006 2011 2012 2015

Renamed as "Twin Tigers"

Wuhan Twin Tigers Coatings established

First IPO company of China coatings industry

Key high-tech enterprise of National Torch Plan

Top Ten Chinese Industrial Painting Enterprises

Moved to Wuhan Chemical Park

Twin Tigers



Twin Tigers



Production capacity

- Industry coatings: 40000 T
- Automotive coatings: 25000 T
- Coil coatings: 15000 T
- Resin: 30000 T



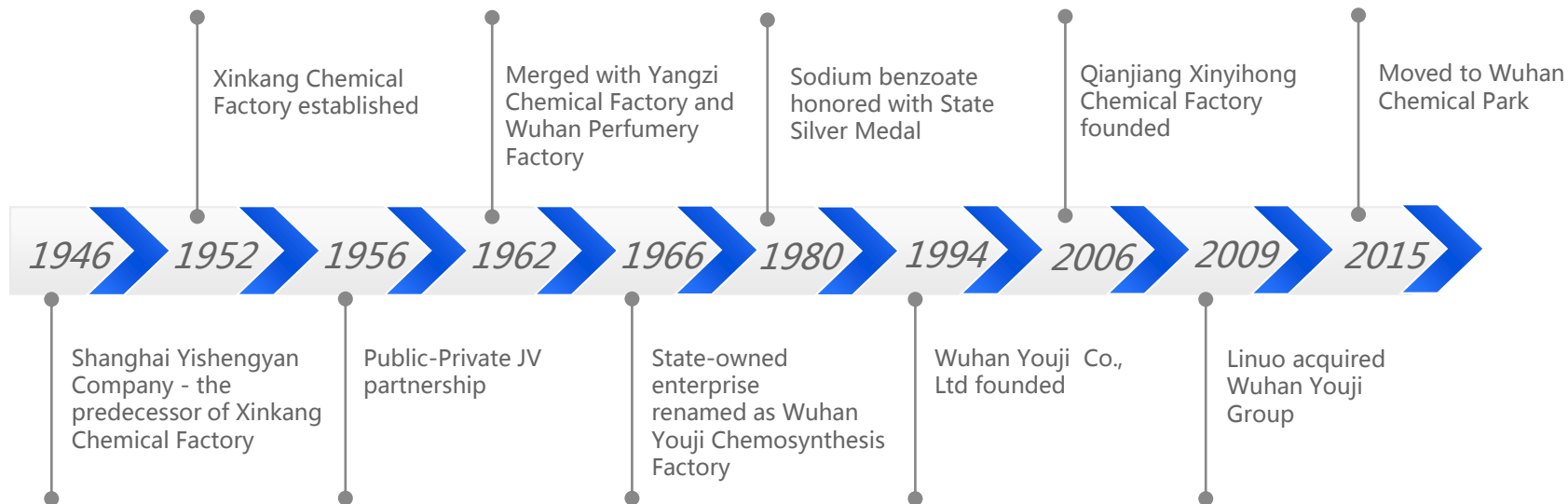
LINUO 力諾

Wuhan Youji



LINUO 力諾

Wuhan Youji



Wuhan Youji



- Established in 1946. Now wholly-owned by Linuo group with 680 employees
- Top 2 global manufacturer of sodium benzoate
- Benzoic acid - 2nd in global market share
- Medical grade products: sodium benzoate & benzoic acid
- The largest benzoic acid facilities in the world: annual capacity of 100,000 MT and a purity quotient over 99.5%

Wuhan Youji



SMALL ELEMENTS, BIG WORLD
合成元素 创新万物

THREE PRODUCT CATEGORIES

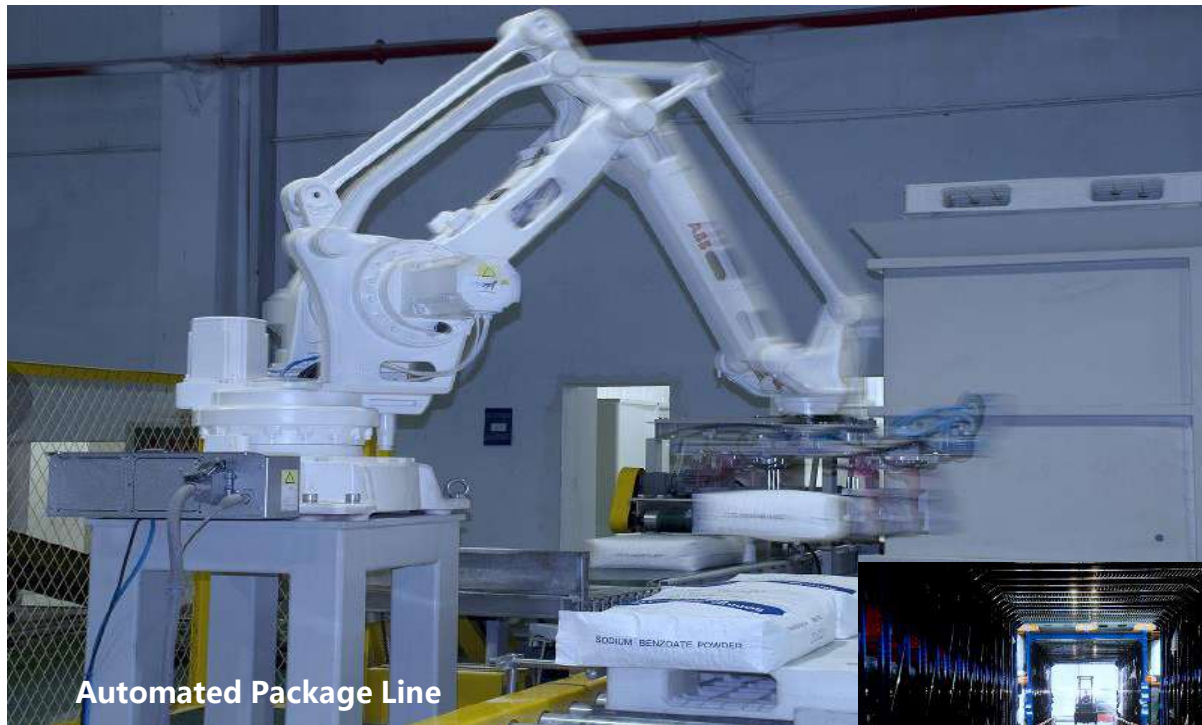
- Toluene oxidation: benzoic acid, sodium benzoate
- Toluene chloride: benzyl chloride, benzyl alcohol
- Other fine chemicals



Wuhan Youji



GMP workshop



Automated Package Line



Warehouse

Wuhan Youji



Inspection center



Our new plant



Control center



Our new plant

Wuhan Youji

- Qianjiang Plant



Wuhan Youji

- Certifications



Wuhan Youji

- Qualified Supplier To



Fine Chemicals

- Certifications

Twin Tigers



ISO14001



China
Environmental
Labelling



ISO9001



China
Compulsory
Certification



ISO16949

Wuhan Youji



ISO9002



ISO9001



ISO22000



International
Halal
Certification
Authority



Australian
Standard
Certification



European Food
Additives
Quality System



Food Safety
System
Certification
22000

PART THREE

R&D

R&D Centers

- Science and technology innovation platforms : 26
- National level innovation platforms: 3



R&D Laboratories



R&D Laboratories



Hongjitang



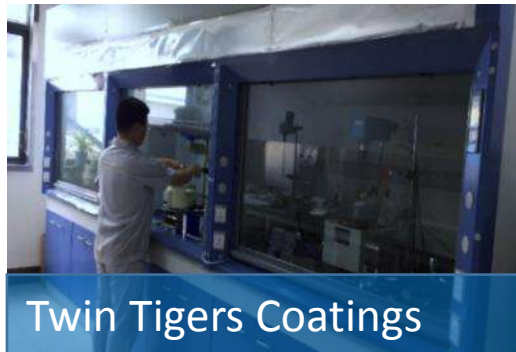
Hongjitang



Hongjitang



Twintigers



Twin Tigers Coatings



Keyuan Pharma

Quality Management System

- **QMS certificates:**

GMP、FDA、EDQM,
ISO22000、ISO9001、
ISO18001、ISO15378、
ISO17025 (CNAS) 、
TS16949

- **Qualified supplier for:**

PHILIPS、WK、UL、
KEYMARK、IBC、COCA
COLA、PEPSI、P&G

- **QM tool:**

SPC、MSA、FMEA、APQP、
PPAP



Environmental Protection Management



- Certified by environmental agencies
- Continual update of environmental equipment
- Thorough treatment of discharged pollutants (waste water station, VOC devices)
- Complete record of monitoring & sample testing
- Emergency response team

Research Partners



The University of
New South Wales



Technical University
of Denmark



Indian Institute of
Technology MUMBAI



National University
of Singapore



Universität Stuttgart

University of
Stuttgart



National Chemical
Laboratory India

Research Partners



上海交通大学
SHANGHAI JIAO TONG UNIVERSITY

Shanghai Jiaotong University



哈尔滨工业大学
International Student Center Harbin Institute of Technology

Harbin Institute of
Technology



Zhejiang University



清华大学
Tsinghua University



中國藥科學大學

China Pharmaceutical
University



中国医学科学院
Chinese Academy
of Medical Sciences



中科院大连化物所
Dalian Institute of
Chemical Physics



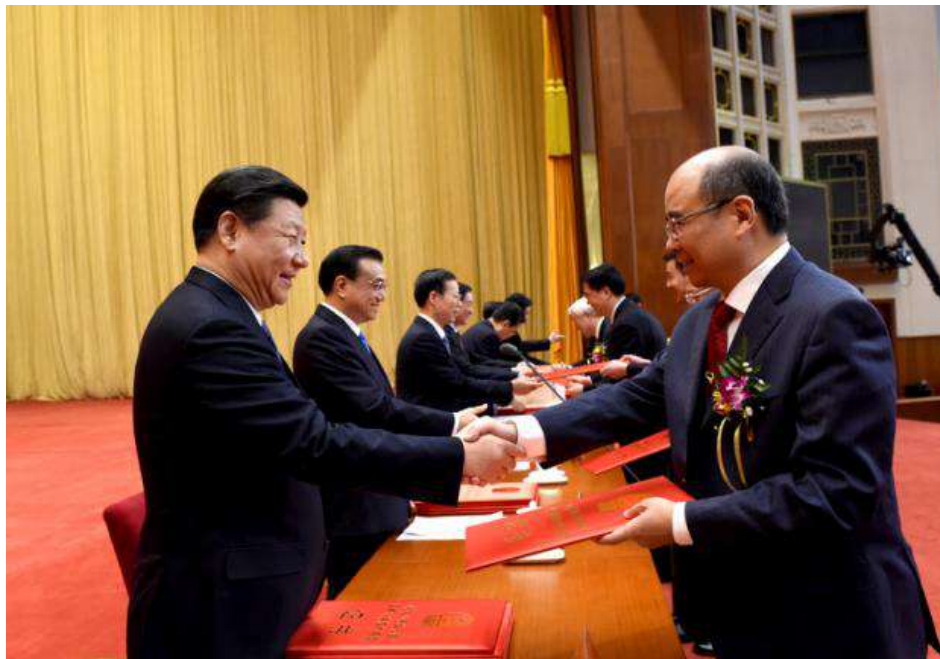
山东中医药大学
Shandong Traditional
Chinese Medicine
University



山东省中医药研究院
Shandong Institute of
traditional Chinese
medicine

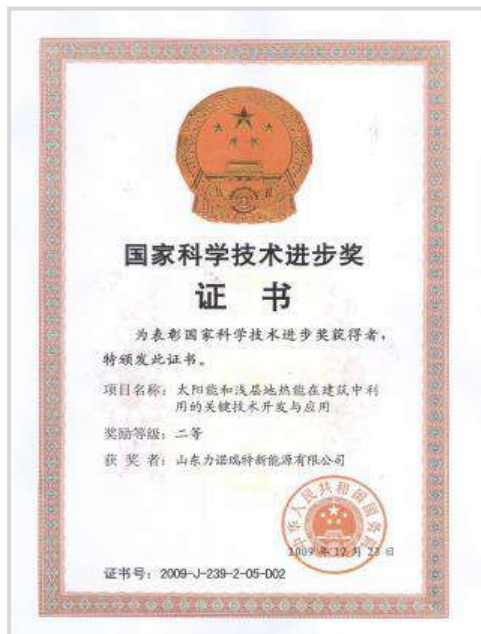
Honours

Synthetic muscone: First-class National Science & Technology Progress Award



Honours

Heat pump technology: Second-class National Science & Technology Progress Award



Innovation

We are

- National Enterprise Technical Centre (国家认定企业技术中心)
- Jinan Solar Industry Base in National Torch Plan (国家火炬计划济南太阳能特色产业基地)
- National Residential Industrialization Base (国家住宅产业化基地)

We have 663 Patents

- 576 patents in solar energy industry
- 37 patents in healthcare sector
- 27 patents in fine chemicals technologies
- 23 patents in technical glass innovation



PART FOUR

CSR



Charity



Linuo Headquarter



LINUO 力諾

Linuo Headquarter



LINUO 力諾

Linuo Smart Campus



LINUO 力諾

Linuo Cultural Square



LINUO 力諾

Hongjitang TCM Industrial Park in Jinan



Hongjitang TCM Industrial Park in Jinan



Chemical Industry Park in Wuhan



Solar PV Industrial Park in Shanghai



Technical Glass Industrial Park in Jinan



LINUO 力諾

Linuo Technology Park in Jinan



Thank You



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LINUO 力諾

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