



# 3L ELECTRONIC GROUP HOLDINGS LIMITED

Professional Inductor & Transformer Manufacturer  
[www.3Lcoil.com](http://www.3Lcoil.com)





Established in **1977**



Customers **10,000+**

Domestic Offices **8**

Global Partners **15**



Production area **149,823 m<sup>2</sup>**



Annual production **2,460 Million**

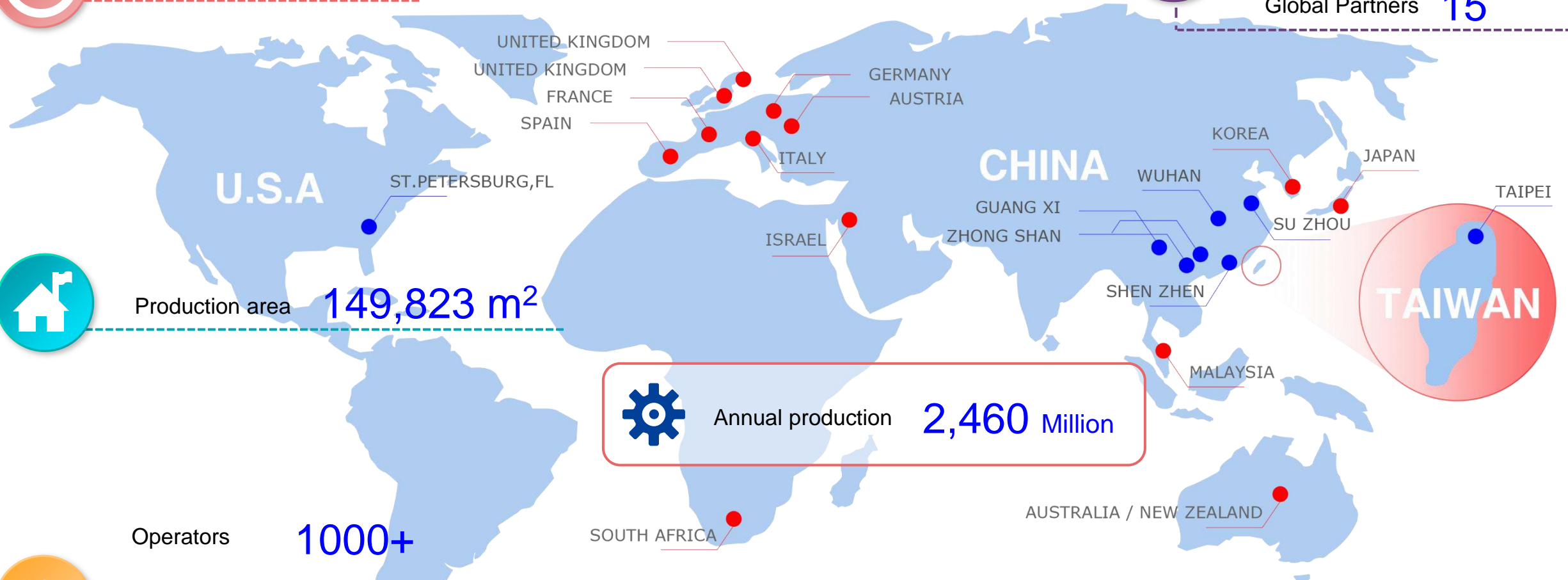


Operators **1000+**

Technical staff **220+**



Turnover 2022 **1,726 Million NTD**

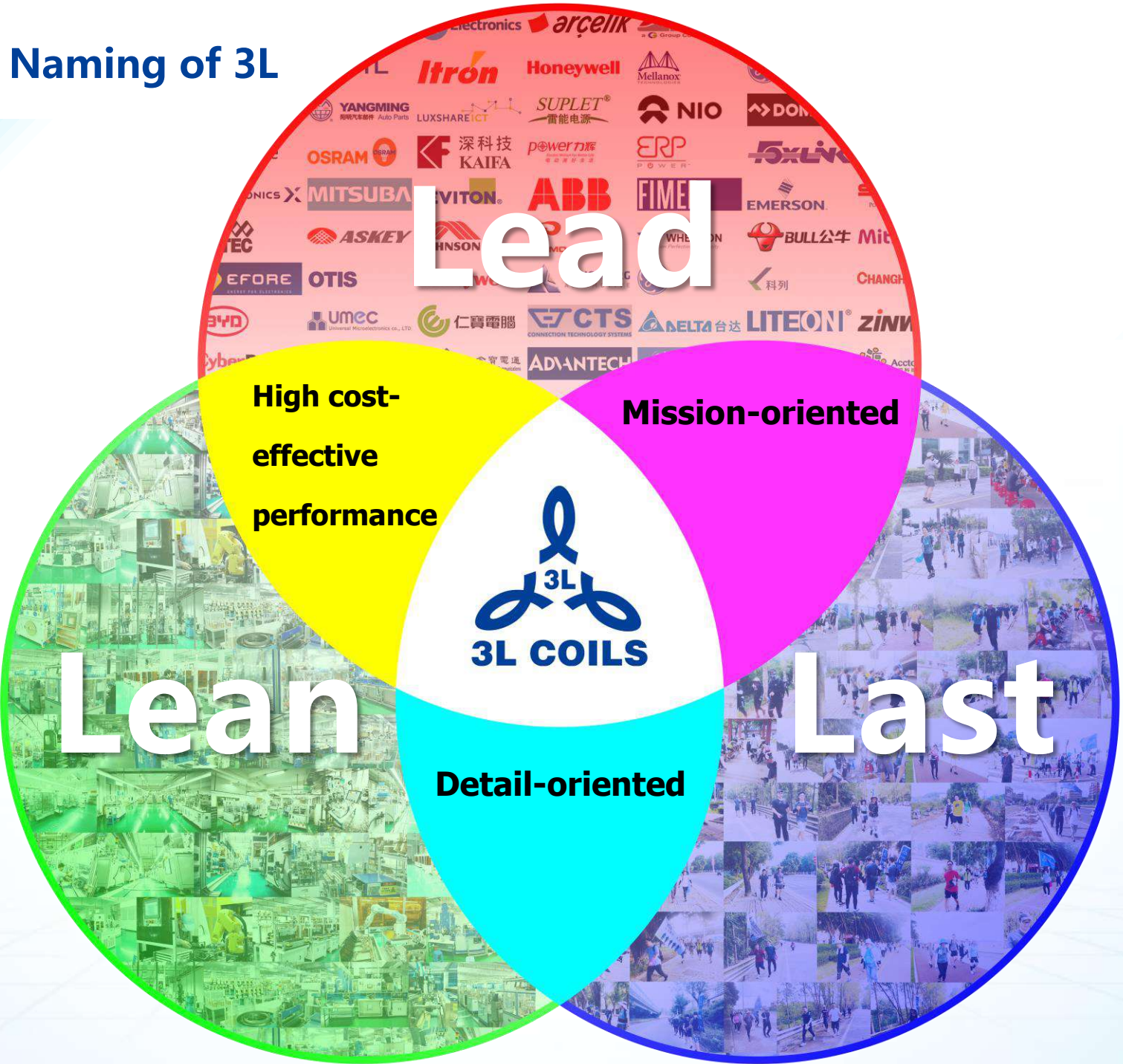




The Story on the Naming of 3L

3L =

LAST  
LEAN  
LEAD



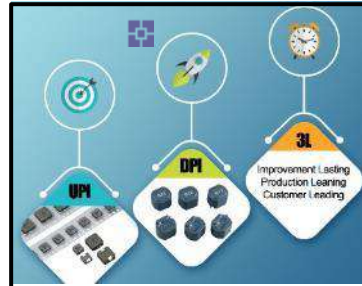
# MILESTONES



Establishment of the 1st Mainland China factory in Zhuhai, 3L Electronic (China) Ltd (3LM).



Establishment of 3L Electronic (Zhongshan) Corp. (3LF)



Completed mass production preparation for Iron Powders and UPI/DPI Molded Inductor; Approved by Texas Instrument and Flextronics & re-defined 3L.



In 2019, 3L start to build Nanning factory located in Guangxi and mass production begin on Nov, 2020. CNAS laboratory has been approved in Zhongshan 3L..



2-Hundred-kilometer trail walk, and 8-Hundred-kilometer biking strengthen the mind of company members.

1977

1989

1991

2002

2006

2009

2018

2020

2021

2022



Founding of 3L Electronic Corp. by Mr. Yung-Chi Liu and Y.T. Liu in Taipei, Taiwan.



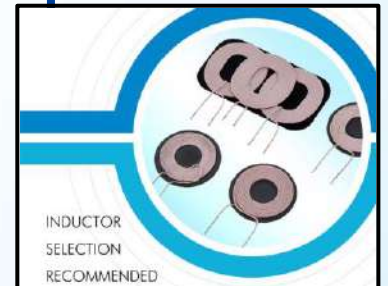
Establishment of 3L Electronic Corp. (U.S.A)(3LU) as North-America warehouse and logistic controlling center; Formation of 3L Global Co. (3LG) with G-TEP incorporated for handling North-America business.)



Building up a new plant of 40,000 M2 Henry Electronic. Corp. (3LQ).



In 2018, 3L finished the HPI 3456 production lines expanding successfully. Zhongshan 3L and Henry Factory have accomplished the solar development and reached the target of using the solar power as 30% of total energy consumption. Besides, automatic production line of mini transformers (EE4.4, EE5.0, UU5.0, EE8.3), wireless charging and automotive product has been put into use. New branch of Wuhan office was established in 2018.



Launch fastest customized automatic production lines for automotive wireless charging coil and other car products.



# CERTIFICATION

## Our Certificate



3L Electronic :  
CN12/30214.01



CN06/31122



HK05/01601.01



OBJY8.E339446



IECQ-H  
SGSCN09.0285



Henry Electronic :  
CN12/30214.02



# GROUP ORGANIZATION

3L Electronic Group Holdings Limited

3L Electronic CHN-Holdings Limited

3L Electronic Corp.

3L Global Co.

3L International  
Trading Limited

3L Electronic  
(Zhongshan) Co,  
Ltd.

Henry  
Electronic  
(Zhongshan) Co,  
Ltd.

Sanxin Electronic  
(Nanning)Co.,Ltd

3L Electronic  
(Wuhan) Co, Ltd.

3L Electronic  
(Nanning) Co, Ltd.

Zhongshan  
Sanle Electronic  
Limited

Meta 3  
Electronic Co.,  
Ltd.

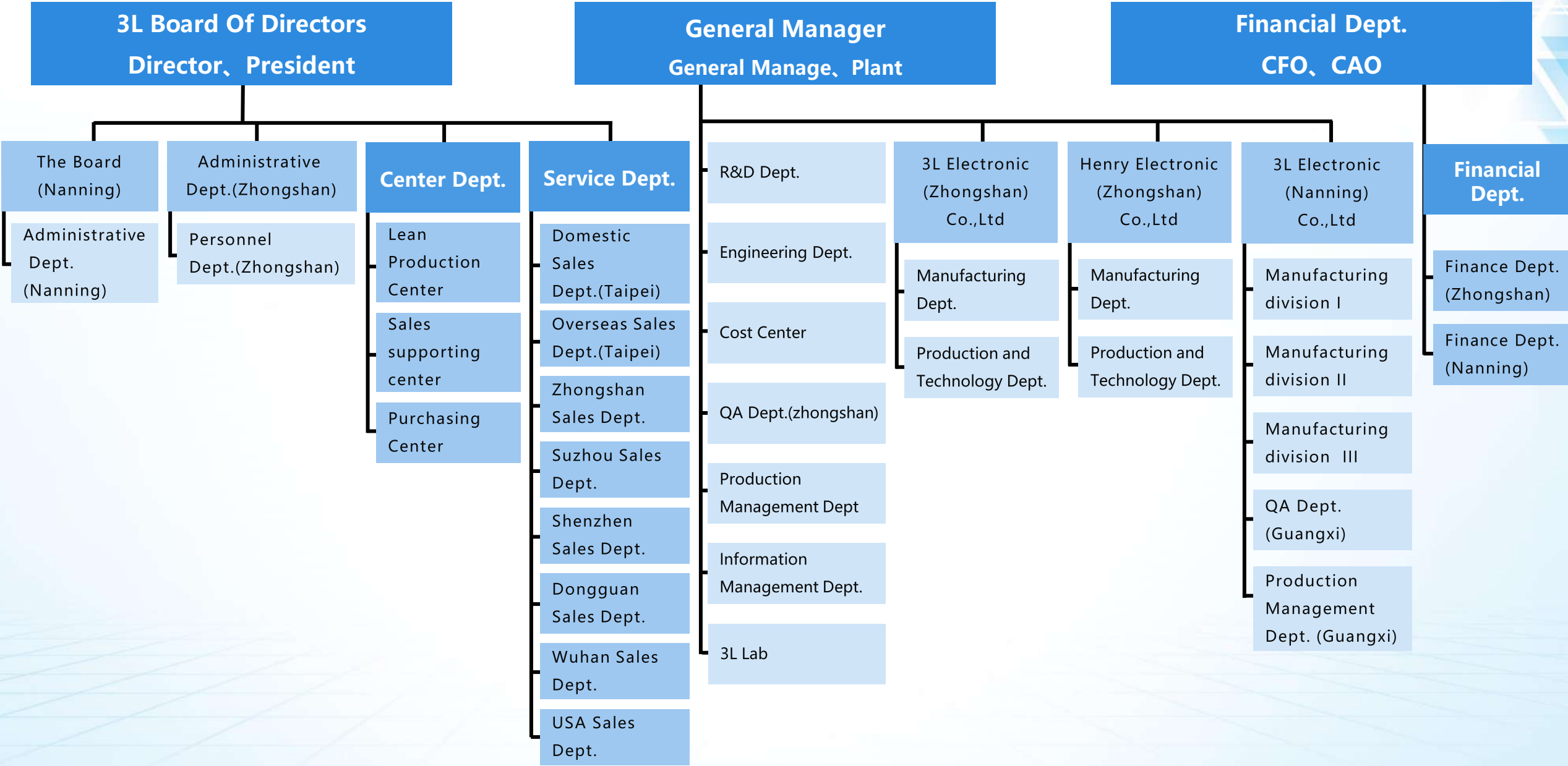
Shenzhen  
Sanren  
Electronics Co.,  
Ltd

Zhongshan  
Sanle Electronic  
Limited, Suzhou  
Branch

Zhongshan  
Sanle Electronic  
Limited, Shenzhen  
ranch

3L Electronic  
(Dongguan) Co, Ltd.

# ADMINISTRATIVE ORGANIZATION CHART



# SCALES

Number of employees, world wide:

Top Management: [17](#)

Design/FAE/R&D: [79](#)

Production Technique/Lean Center: [136](#)

Manufacturing: [1116](#)

Quality Control: [75](#)

Procurement: [14](#)

Prod. Planning/Warehouse: [53](#)

Sales Rep./Assistants: [61](#)

Finance/Accounting: [27](#)

HR/Education/Document Control: [10](#)

Logistics/Power Supply Management: [52](#)

**Total: 1640, Technical Staff %: 18%**

Operator #: 2008: 6000, 2013: 3000, 2016: 1500, Present: 1116

Statistical date: 2023/08



Total areas of Factory building/offices/warehouses :

Taipei office (3LT): [1,100 M<sup>2</sup>](#)

Zhongshan factory (3LF): [27,760 M<sup>2</sup>](#)

Henry and Sanle factory (3LQ/C): [40,000 M<sup>2</sup>](#)

Nanning New Factory (3LN, Planned): [71,833 M<sup>2</sup>](#)

3L Electronic (Wuhan) Co., Ltd.: [130 M<sup>2</sup>](#)

3L Electronic (Dongguan) Co., Ltd.: [51 M<sup>2</sup>](#)

Shenzhen Sanren Electronics Co., Ltd.: [109 M<sup>2</sup>](#)

Meta 3 Electronic Co., Ltd.: [20 M<sup>2</sup>](#)



# Zhongshan Factory

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- In December, 2000, Nanlang Construction Design Institute of Zhongshan finished the design chart for an area of 20,000 square meters and total construction area of 27,760 square meters. The factory was officially opened on Oct. 1st, 2002.
- The factory can hold a staff size of around 2,500.







## Henry and Sanle Factory

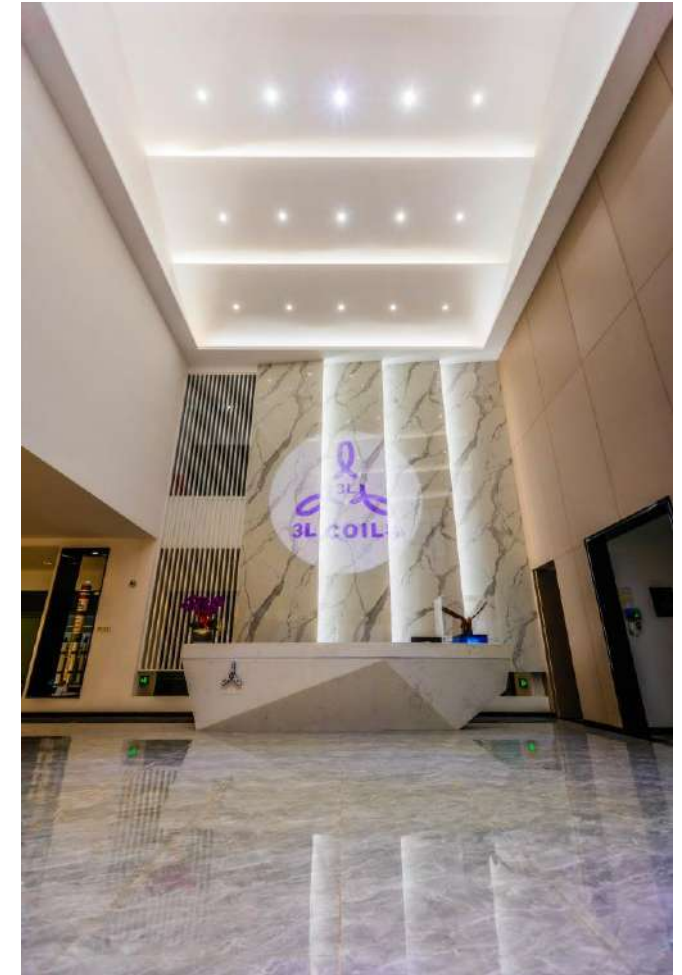
- In March, 2006, Nanlang Construction Design Institute of Zhongshan finished the design chart for an area of 26,900 square meters and total construction area of 39,800 square meters. The factory was officially opened on July 28th, 2007.
- The factory can hold a staff size of around 4,500.





# Nanning New Factory

- In 2019, new factory located in Nanning, Guangxi Province is started building, taking a floor area of 64,036.55 m<sup>2</sup> with total construction area of 71,833.36 m<sup>2</sup>,
- Officially opened in November 2020.

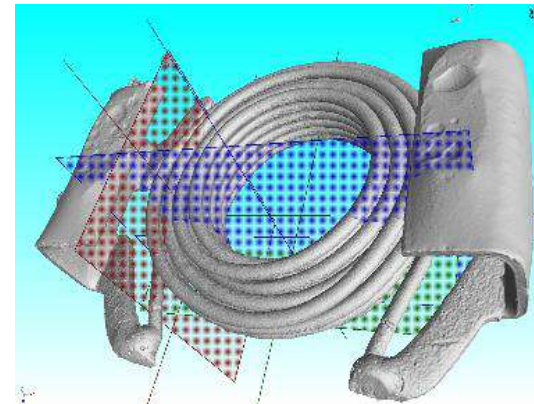




# 3D analysis system with high resolution



- 300mm large field pad detector with highest resolution reaching 0.5 $\mu$ m
- Large voltage: 150kv max
- 6-axis precision servo-control system



NDT(nondestructive testing)  
3D characherstic  
High resolution



Self-developed test chamber integrated of mutli test equipment  
Lowest temperature reaches -60 $^{\circ}$ C  
Labview development control program achieves automatic data collection



Desktop X-ray fluorescence coating thickness gauge  
Detectable element range:  
No.13 aluminum-No.12 Uranium 10 element can be analyzed in each layer



Korean SEC electronic Microscope  
60,000x MAX



Nikon 2.5D projector  
Max resolution reaches 0.1 $\mu$ m



Vector Network Analyzer  
Support frequency 5Hz~3 GHz/50 or  
Transfer/reflect or parameter S test



Automatic image measuring instrument  
Automatic zoom lens  
0.7~4.5X90mm working sight distance  
0.0005mm resolution ratio

# RELIABILITY LABORATORY

- ◆ On Aug 17th 2020, 3L lab was recognized by CNAS China National Accreditation Service for Conformity Assessment. Currently there are three people in 3L having authority to approve the CNAS test. More than 20 test items are accredited.



- ◆ 3L lab is divided into No.1 test room, No.2 test room, electrical characteristics testing area, mechanical stress testing area, corrosion testing area, reflowing area and document store, which are separated individually. 3L perform continuous monitor on environmental factor, such as energy, lighting, temperature and humidity, daily routine, safety and air. Within the lab, there are more than 50 pieces of testing equipment, among which environmental temperature chamber takes up 20 pieces, which mechanical stress testing machine takes up 3 pieces and testing measurement tool takes up around 30 pieces. All test equipment and device is standardized and adjusted by external agent.



# FERRITE BASED SMT POWER CHOKE



## SMDV



## BDE

**SMW****BRI****BDR****SNR**

## SMTSDR



# SMTDRH

**SMTDRH**

## SMTCD



## SMTDR



## SMTSDR



## SMDCHGR/SMDFSR



## SMTPOQ

**SMTDRRI**

# SMTDRRI

**SMTDRRI**

## SMTDRS



## SMTDRRI



## SMTER

**SMTDRRI**

## SMTBW



# TRADITIONAL INDUCTOR



**EC**



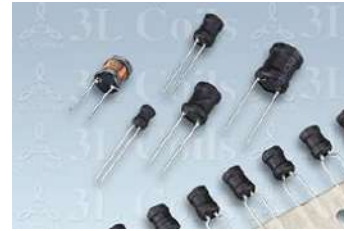
**VC**



**MF**



**FC**



**PK**



**PKB**



**MF**



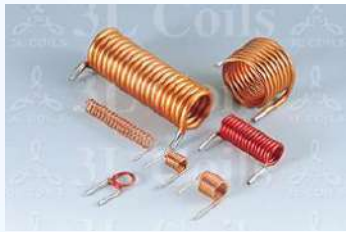
**FS**



**DR**



**DRH**



**SC**



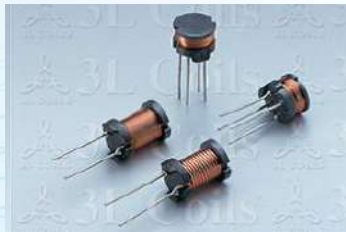
**WBRH/WBRID/WBR6H**



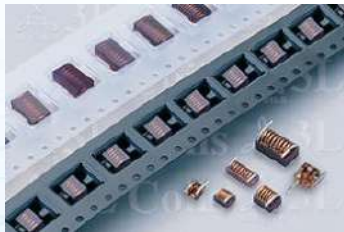
**TC/TBC/TBV/TBH**



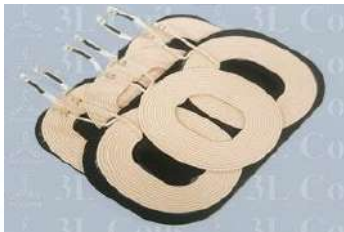
**TBC**



**PKS**



**SMTSC**



**WPT**

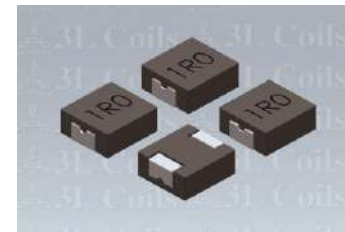
# MOLDED POWER CHOKE



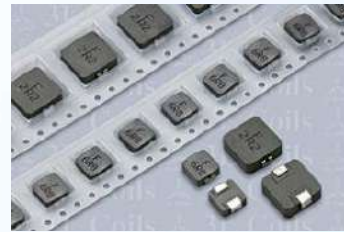
**HPI**



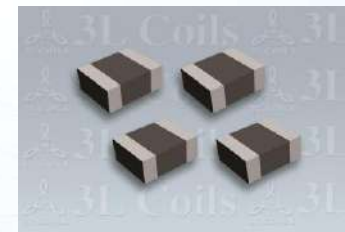
**HPIM**



**HPIF**



**UPIF**



**PHP**



**THP**



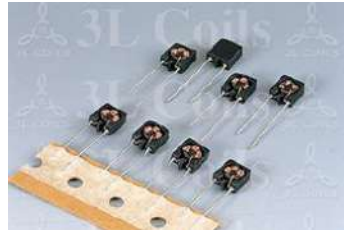
# COMMON MODE CHOKE



**SMDWCM**



**SMTLF**



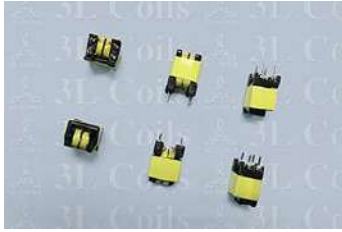
**TCT**



**LFD**



**SMTTC**



**UU5.0**



**LFT**



**ET/LFU/LFUT**

# CUSTOMIZED DESIGN



**SMTBW**



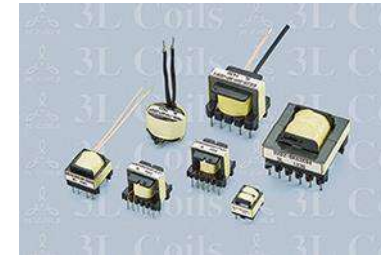
**SMTER15/SMTER19**



**PK3W**



**EE/EI/RM**



**EE/ER/PQ**



**PQ3415**



**PQ2020**



**EE16**



**EF20**



**RM6/RM8**



**EI22**



**POT1811**

# MULTILAYER



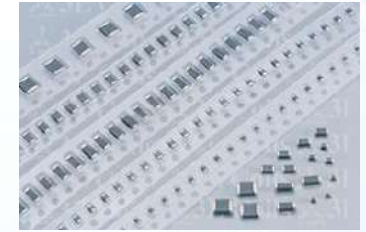
**SMC**



**SMBM5H**

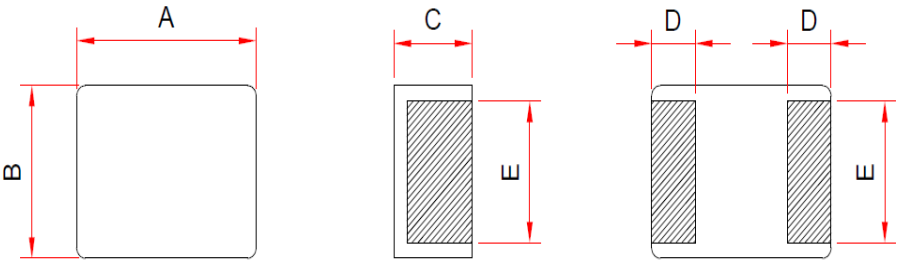
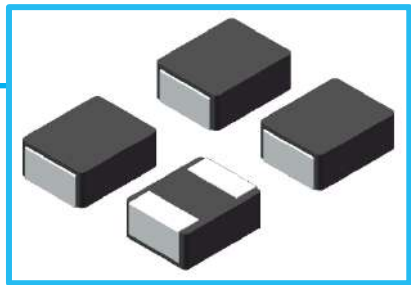


**SMB**



**SMB-A/SMB-P/SMI**

# L-shaped Plating Terminal Hot Press power inductors



**DSC, Camcorder**  
Camera Module  
Connectivity  
Battery / Power Supply  
Display Panel

**Smartphones /tablets  
wearable devices**  
Cellular  
Camera Module  
Connectivity  
Battery / Power Supply  
Display Panel  
Memory

**HDD, SSD and  
PC peripheral devices.**

CPU / MCU  
Connectivity  
Memory  
Display  
Sensor

**DC/DC  
converters**

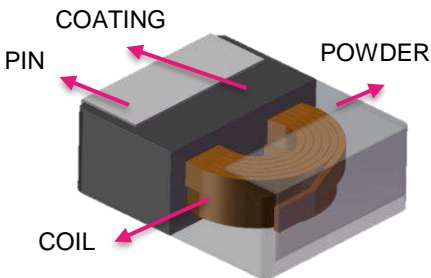
**APPLICATIONS**

**IVI**  
System LSI  
AMP  
Connectivity  
Display Panel  
Memory  
Sensor

|            | L x W (mm) | L (uH)   | I rms-Max(A) |
|------------|------------|----------|--------------|
| LHP201610P | 2.0 x 1.6  | 0.24~1.0 | 2.6~5.5      |
| LHP201612P |            | 0.47~2.2 | 1.6~4.2      |
| LHP252010P | 2.5 x 2.0  | 1.5~3.3  | 1.6~2.5      |
| LHP252012P |            | 0.47~3.3 | 1.6~4.6      |
| LHP322512  | 3.2 x 2.5  | 0.47~6.8 | 1.2~5.2      |
| LHP322520  |            | 1.0~2.2  | 2.6~4.0      |

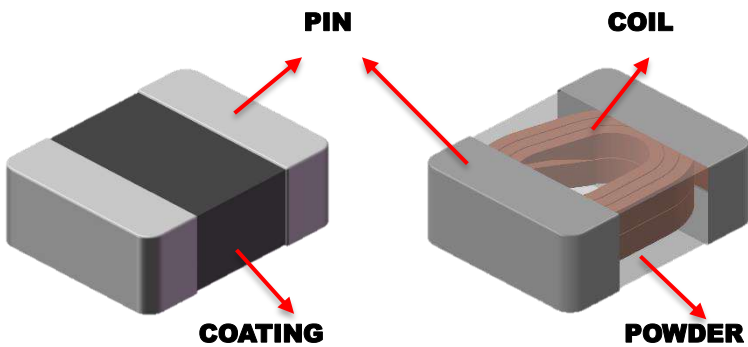
## DESCRIPTION

- ◆ **Miniaturized molding**
- ◆ **Higher saturation current**
- ◆ **Lower resistance**
- ◆ **Higher efficiency**
- ◆ **Higher cost effective**





# Hot Press power Inductors-PHP



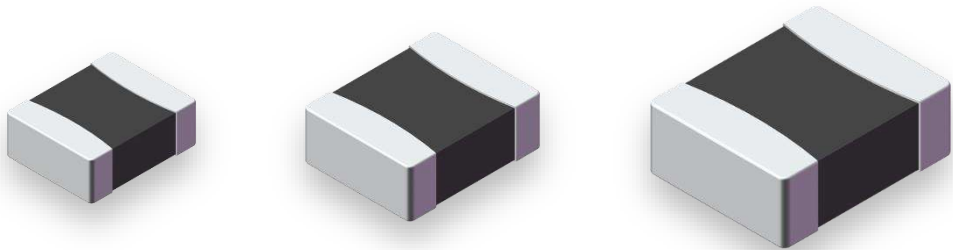
## PHP- Hot Pressed Choke (Plating Terminal)

|                    | L x W (mm) | Height-Max (mm) | L (uH)   |
|--------------------|------------|-----------------|----------|
| PHP/PHPM/APHP 2016 | 2.0x1.6    | 0.8/1.0/1.2     | 0.22~4.7 |
| PHP/PHPM/APHP 2520 | 2.5x2.0    | 1.0/1.2         | 0.22~10  |
| PHP/PHPM/APHP 3225 | 3.2x2.5    | 1.0/1.2/2.0     | 0.22~10  |

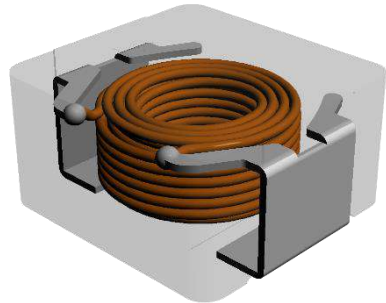
### APPLICATIONS






- ◆ The most reliable product with ultra-fine flat wire, optimal powder and advanced silver plating technology.
- ◆ A combination of hot press and cold press ensure the height tolerance within **±0.03mm**, current height is **0.8mm Max**.
- ◆ PHP series, Consumer (125°C)
- ◆ PHPM series, Automotive (125°C)
- ◆ APHP series, Automotive (155°C)



# Ultra high current SMT Power Inductors-UPI



| UPIAS/UIBS | UPIF/UIFS | UPIMFS/UPIMF  | UPIMBS/UPIMB  | AUPI  |
|------------|-----------|---|---|---|
| 125°C      | 125°C     | 125°C  | 125°C  | 155°C  |
| UPIAS/UIBS | UPIF/UIFS | UPIMF   | UPIMBS/UPIMB  | AUPI  |
| UPIAS0603  | UPIF0804  | UPIMFS0603  | UPIMBS0603  | AUPI0603  |
| UPIBS0603  | UPIF1004  | UPIMF0804   | UPIMB0804   | AUPI0604  |
|            | UPIF1707  | UPIMF1004   | UPIMB1004   | AUPI0804  |
|            | UPIF2213  | UPIMF1205   | UPIMB1205   | AUPI0854  |
| UPIA       | UIFS0603  | UPIMF1265   | UPIMB1265   | AUPI1004  |
|            |           | UPIMF1707   | UPIMB1707   | AUPI1005  |
| 125°C      |           |   |   | AUPI1054  |
| UPIA       |           |   |   | AUPI1205  |
| UPIA0603   |           |   |   | AUPI1265  |
| UPIA0604   |           |   |   | AUPI1707  |
| UPIA1004   |           |   |   |   |
| UPIA1005   |           |   |   |   |
| UPIA1203   |           |   |   |   |
| UPIA1205   |           |   |   |   |
| UPIA1207   |           |   |   |   |
|            |           |   | Automotive application  |   |
|            |           |   | Higher Operating Temperature  |   |

# Advantage of Molded Inductor—Automatic production



8-axis winding machine



Laser paint stripping



Laser soldering



- ◆ All-automatic production
- ◆ High-speed production
- ◆ Reliable quality



All-automatic production line



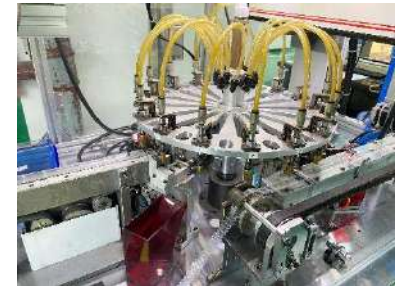
Multiple cavities molding machine with robot arm



Automatic frame-forming machine



Automatic inspecting machine



Automatic testing and packaging machine



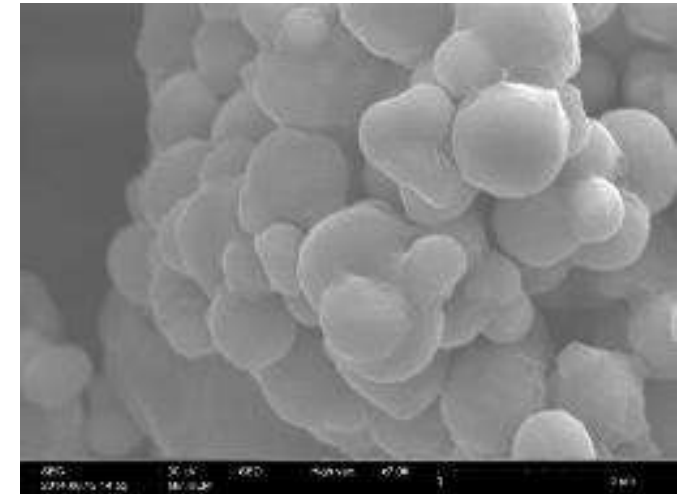
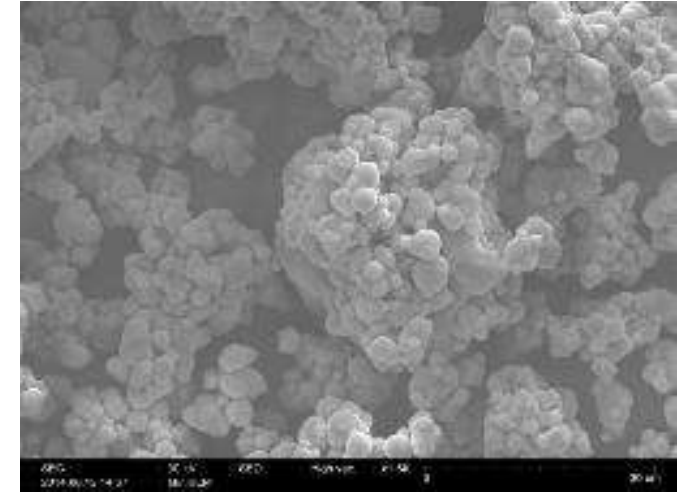
# Advantage of Molded Inductor—Powder

3L has self-developed powder formula and self-made powder for molded inductor.

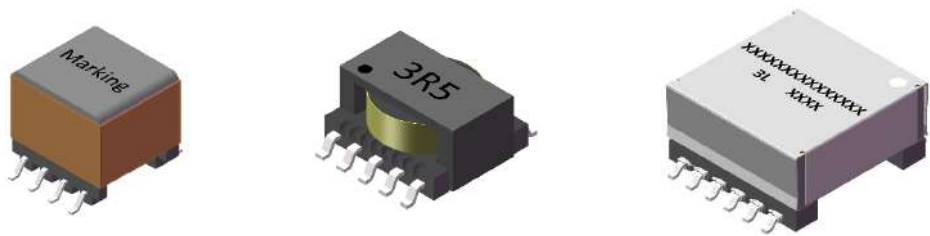
Ten years experience in powder formula researching and developing gives 3L strong powder support.

- ◆ Imported high quality iron powder
- ◆ High temperature epoxy formula
- ◆ Meet operating temperature of **-55~150 °C**

The most advanced mix process ensures the homogeneity and uniformity of powder coverage.

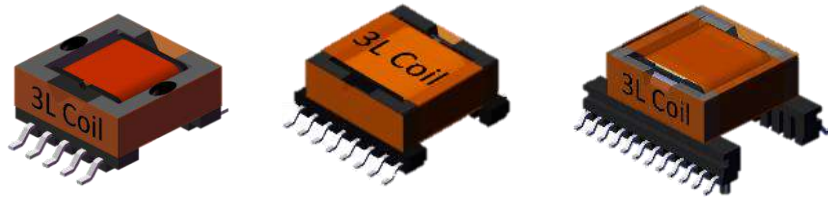


## SMTEP/SMTER/SMTEE/SMTEPC



| 3L P/N Series | L x W Max (mm) | Height Max (mm) | Pin distribution |
|---------------|----------------|-----------------|------------------|
| SMTEP10       | 15.5X12.5      | 10.5            | 4+4              |
| SMTER11.5     | 13.5X12.0      | 8.0             | 4+4              |
| SMTEE12.6     | 18.0X13.8      | 10.5            | 5+5              |
| SMTEE16       | 24.0X17.5      | 15.0            | 6+6              |
| SMTEPC13      | 17.5X14.5      | 8.5             | 5+/5             |

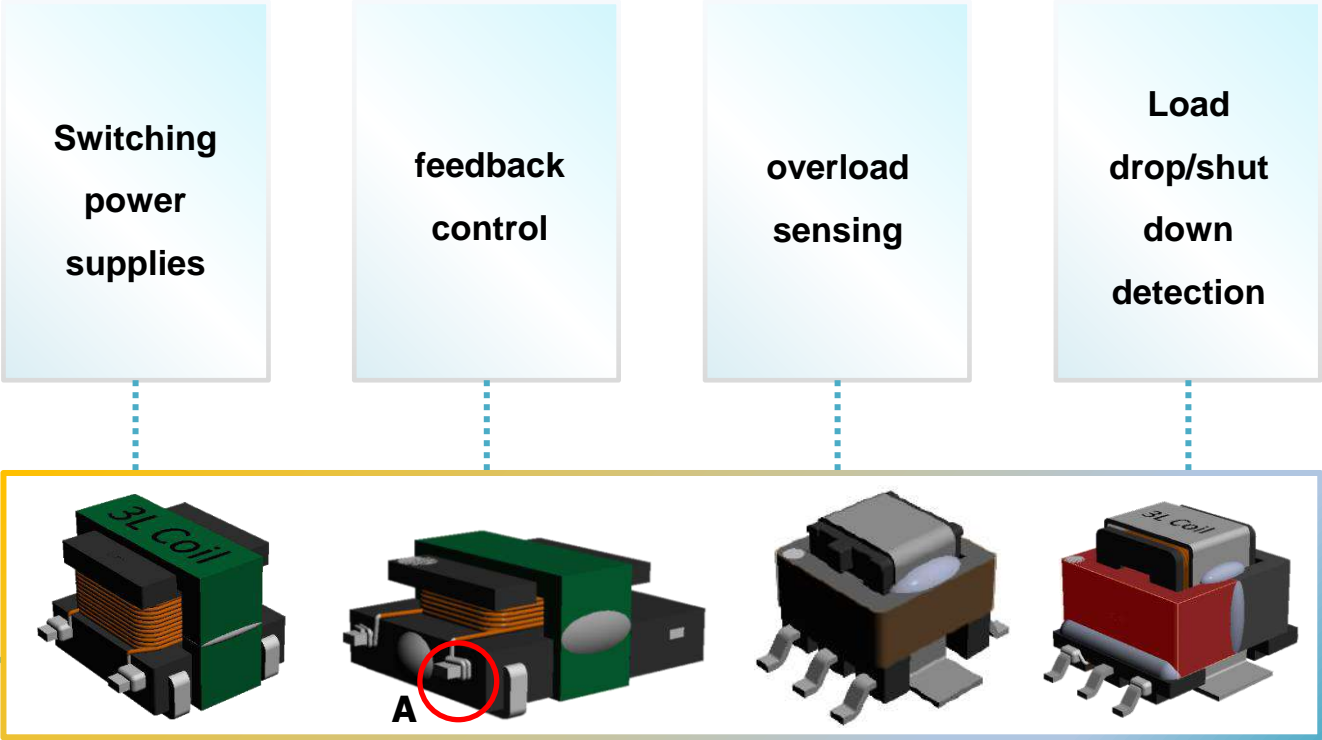
## SMTEFD15/20/25



| 3L P/N Series | L x W Max (mm) | Height Max (mm) | Pin distribution |
|---------------|----------------|-----------------|------------------|
| SMTEFD15      | 22.0x16.0      | 9.0             | 4+4/5+5/6+6      |
| SMTEFD20      | 29.5x24.5      | 12.5            | 5+5/8+8/12+12    |
| SMTEFD25      | 32.5X27.5      | 14.5            | 6+6              |



# Current Transformers-EE4.4 / EE4.6 / EE5.0 / EE8.3



| EE4.4      |                   |
|------------|-------------------|
| Size(mm)   | 4.7 X 3.65 X 3.55 |
| L(mH)      | 0.033~2.0         |
| Current(A) | 7                 |

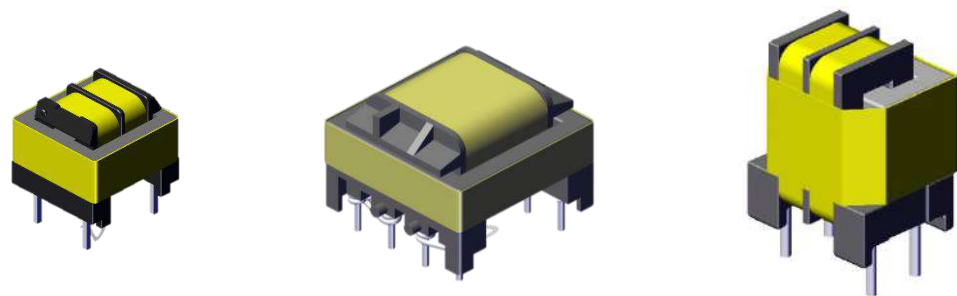
| EE4.6      |                 |
|------------|-----------------|
| Size(mm)   | 7.2 X 5.2 X 2.8 |
| L(mH)      | 0.042~3.0       |
| Current(A) | 9               |

| EE5.0      |                 |
|------------|-----------------|
| Size(mm)   | 7.2 X 5.2 X 2.8 |
| L(mH)      | 0.042~3.0       |
| Current(A) | 10              |

| EE8.3      |                |
|------------|----------------|
| Size(mm)   | 12.5 X 9.5 X 7 |
| L(mH)      | 0.15~20        |
| Current(A) | 15             |

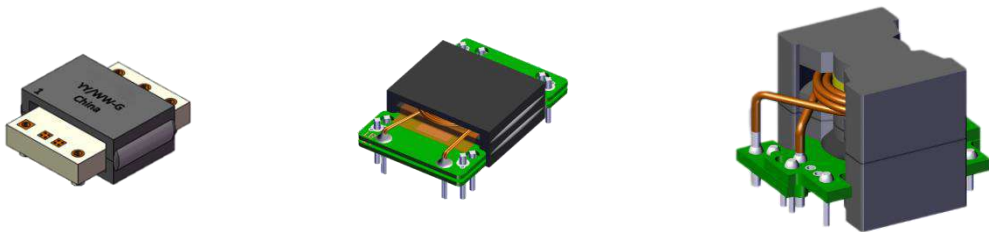
# Transformer

## UU5.0/EE10/EE16/EF16



| 3L P/N Series | L x W Max (mm) | Height Max (mm) | Ae (mm <sup>2</sup> ) |
|---------------|----------------|-----------------|-----------------------|
| UU5.0         | 9.5X8.0        | 13.0            | 11.0                  |
| EE8.3         | 9.5x8.85       | 9.5             | 8.0                   |
| EE10          | 14.0X12.0      | 12.0            | 12.0                  |
| EE16/EF16     | 17.0X14.0      | 14.0            | 19.5                  |

## SMTER/SMTEI/PQ50



| 3L P/N Series                                 | L x W Max (mm <sup>2</sup> ) | Outer Power (W) | Weight(g) |
|---|------------------------------|-----------------|-----------|
| SMTER   | 288-504                      | 5-35W           | 4.12-9.5  |
| SMTEI   | 288-530                      | 5-50W           | 4.5-10    |
| PQ50  | 600                          | 500W            | 60        |
| We can customize according your requirements. |                              |                 |           |

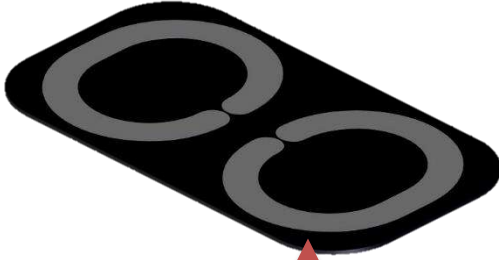


# WIRELESS CHARGING COIL

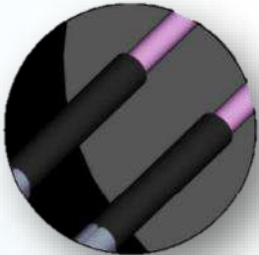
Insulation treatment of core



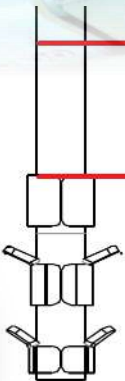
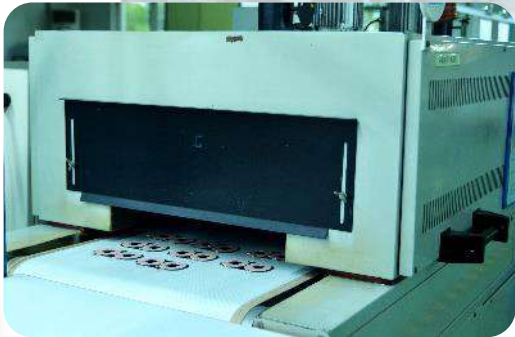
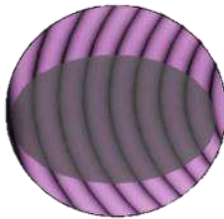
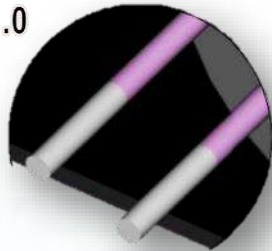
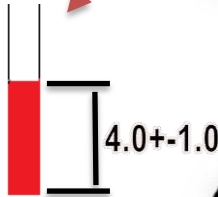
Better strengthening coil  
and high temperature  
stability with silica gel



PIN insulation process



Dimension control of 3-5mm  
6 pin precision solder

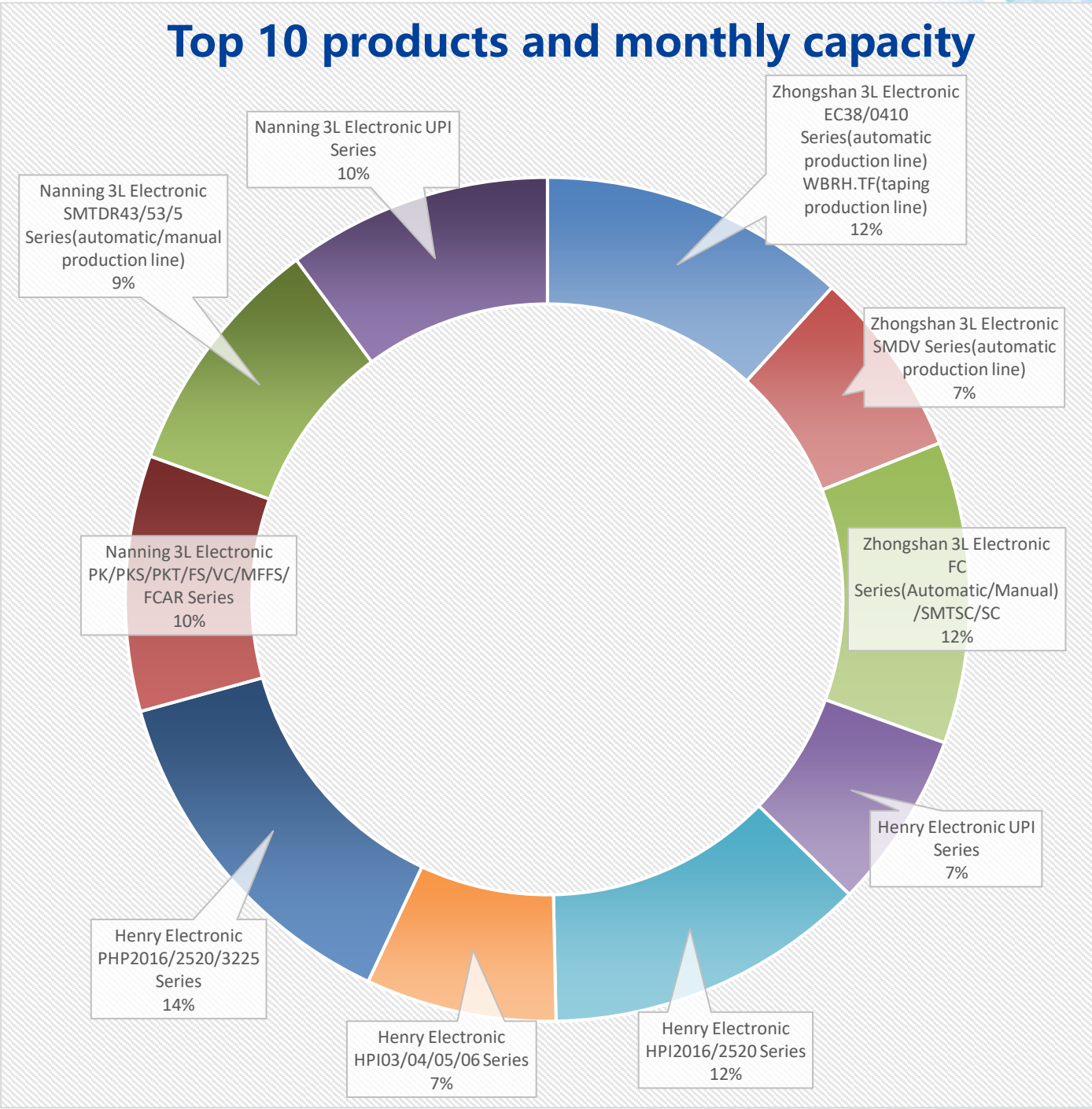


Hard length control 6mm MAX  
after soldering

Pins add terminals to make  
them better fixed to PCB

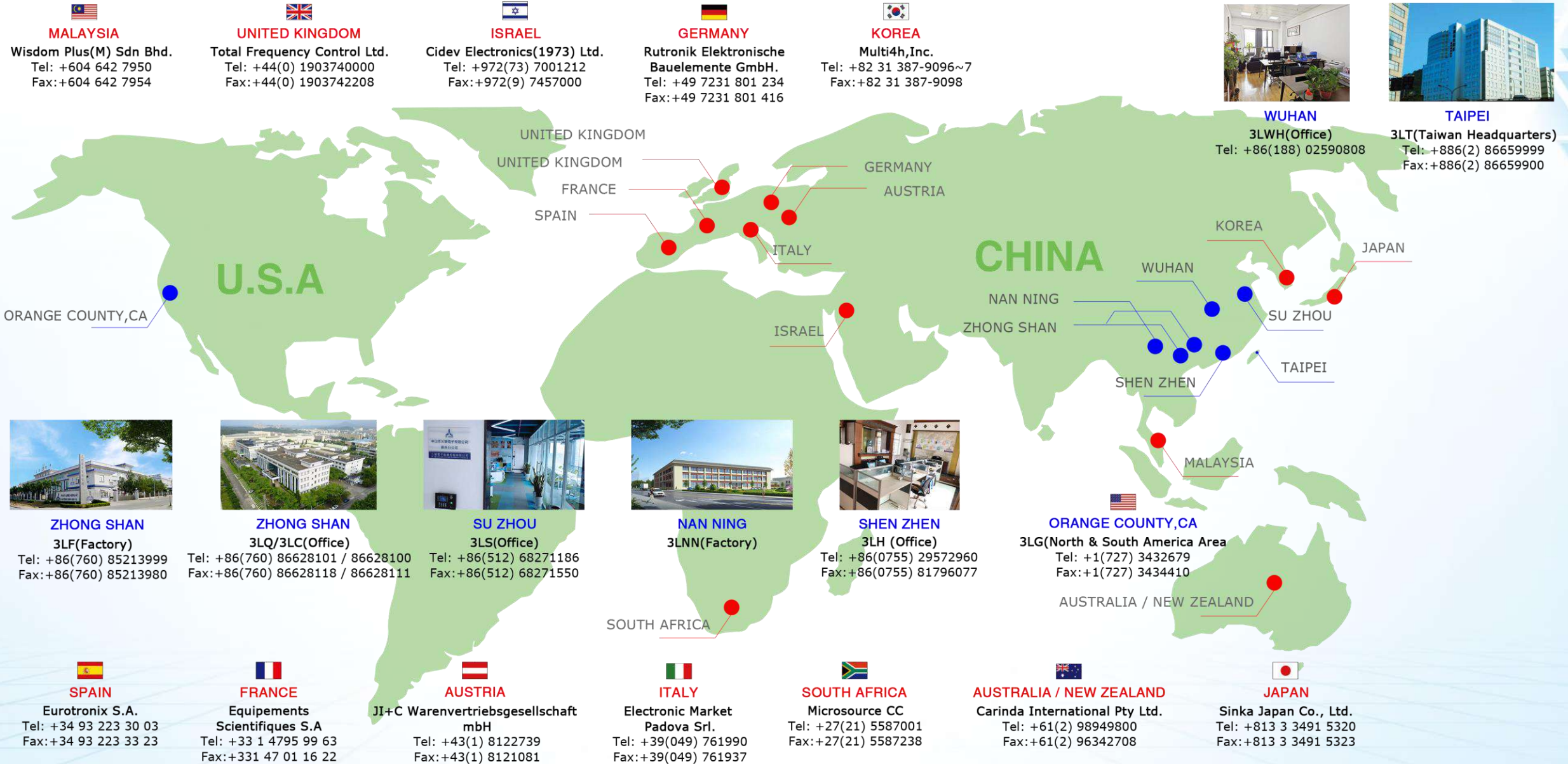


| Production Facility     | Product  | Capacity/M (PCS) |
|-------------------------|--|------------------|
| Zhongshan 3L Electronic | BRI/BDE/BDR Series(automatic production line)                                  | 5,544,964        |
| Zhongshan 3L Electronic | SMTSDR Series(automatic production line)                                       | 12,587,946       |
| Zhongshan 3L Electronic | EC38/0410 Series(automatic production line)<br>WBRH.TF(taping production line) | 24,720,429       |
| Zhongshan 3L Electronic | SMTBW/SMTER/SMTEI Series( with flattened wire)                                 | 487,500          |
| Zhongshan 3L Electronic | WPT Series(multiple coils/single coil/RX)                                      | 1,397,036        |
| Zhongshan 3L Electronic | TC Series/LFT/LFU Series(manual production)                                    | 377,454          |
| Zhongshan 3L Electronic | SMDV Series(automatic production line)   | 15,104,143       |
| Zhongshan 3L Electronic | FC Series(Automatic/Manual)<br>SMTSC/SC  | 24,283,629       |
| Zhongshan 3L Electronic | UU5.0/EE8.3/EE4.2-6.3 Series(small size)                                       | 2,005,714        |
| Zhongshan 3L Electronic | SMTLF/SMTTC/SMBM5H<br>SMTDR75/SMTBLRID/EPCSMTLF632 Series                      | 2,970,536        |
| Henry Electronic        | UPI Series   | 13,291,200       |
| Henry Electronic        | HPI2016/2520 Series  | 25,948,929       |
| Henry Electronic        | HPI03/04/05/06 Series  | 15,343,714       |
| Henry Electronic        | PHP2016/2520/3225 Series   | 28,860,000       |
| Nanning 3L Electronic   | PK/PKS/PKT/FS/VC<br>MFFS/FCAR Series   | 20,564,143       |
| Nanning 3L Electronic   | EF16/EP13 Transformer(automatic/manual production line)                        | 1,599,724        |
| Nanning 3L Electronic   | SMTDR43/53/5 Series(automatic/manual production line)                          | 19,653,214       |
| Zhongshan+Nanning       | SMTDRH/DRS/DRRI Series( including WPT Series)                                  | 2,831,786        |
| Nanning 3L Electronic   | SMTLF SMD Series/ET Series   | 1,392,857        |
| Nanning 3L Electronic   | TC/TBC/LF/SI Series  | 5,772,857        |
| Nanning 3L Electronic   | UPI Series   | 21,286,200       |





# 3L ELECTRONICS GLOBAL SALES NETWORK



# CUSTOMER APPLICATIONS

**EV, Automobile & Motorcycle**  
**26%**



**Server/ PC/ Laptop/ Pad/ Cellular phone/ Smart TV**  
**14%**



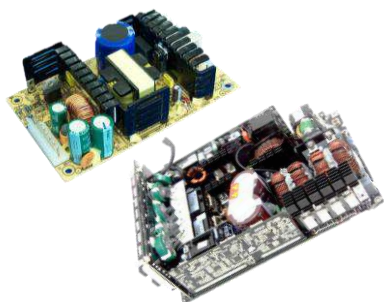
**Adapter / Power supply**  
**13%**



**Wireless Charger**  
**10%**



**DC-DC Converter Module/ PMIC**  
**10%**



**Telecom/Network Wireless Communication**  
**8%**



**Smart Home and Security**  
**7%**



**Consumer Accessories**  
**7%**

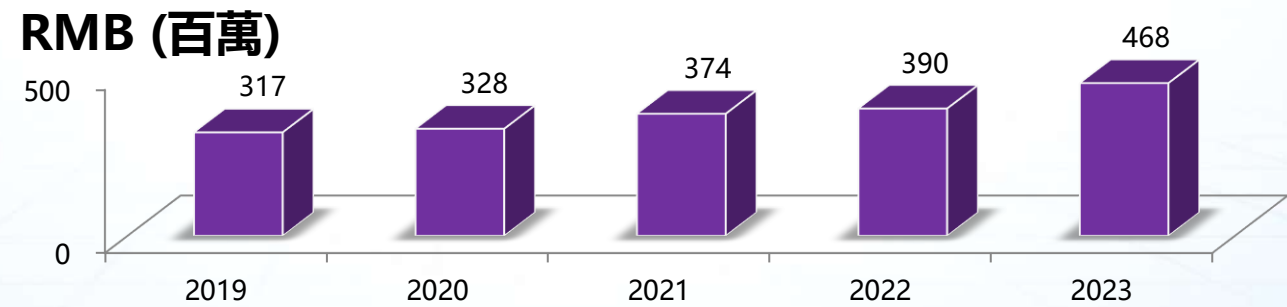
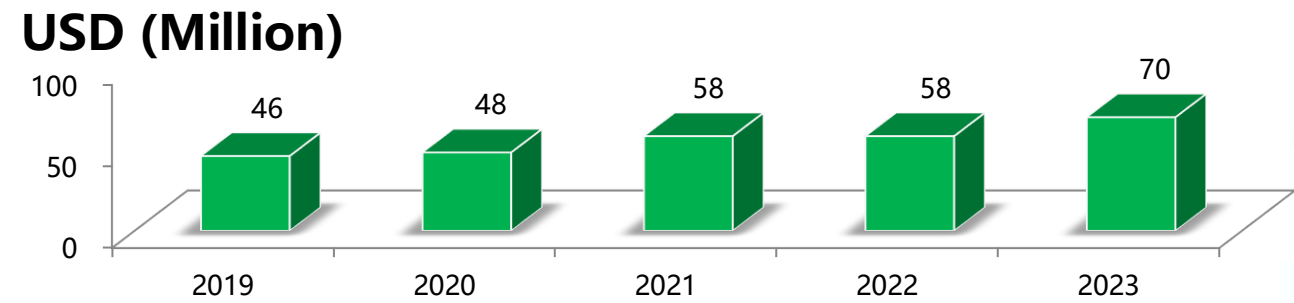
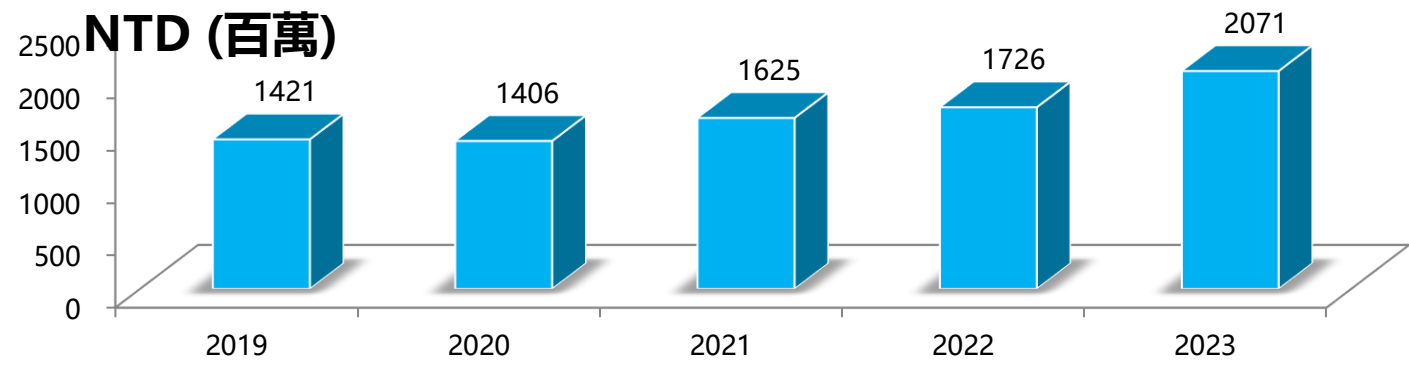


**EV Charger, Energy Storage, Solar**  
**5%**





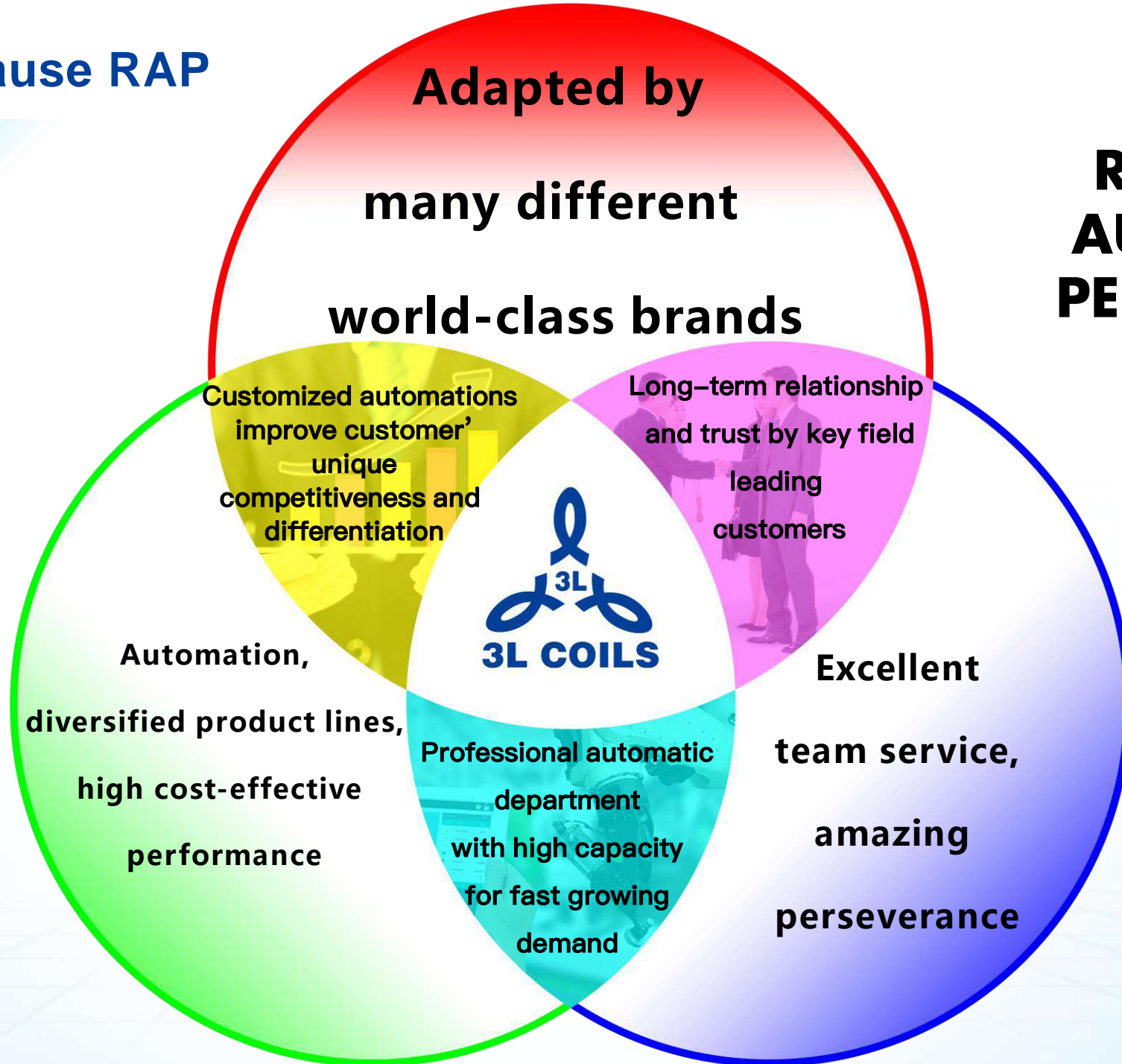
# SALES PERFORMANCE



Why 3L? Because RAP

**3L =**

**REPUTATION  
AUTOMATION  
PERSEVERANCE**





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