

VAOPTO Company Profile



World-Class LED/Microgrid Manufacturing Facility

VAOPTO
www.vaopto.com

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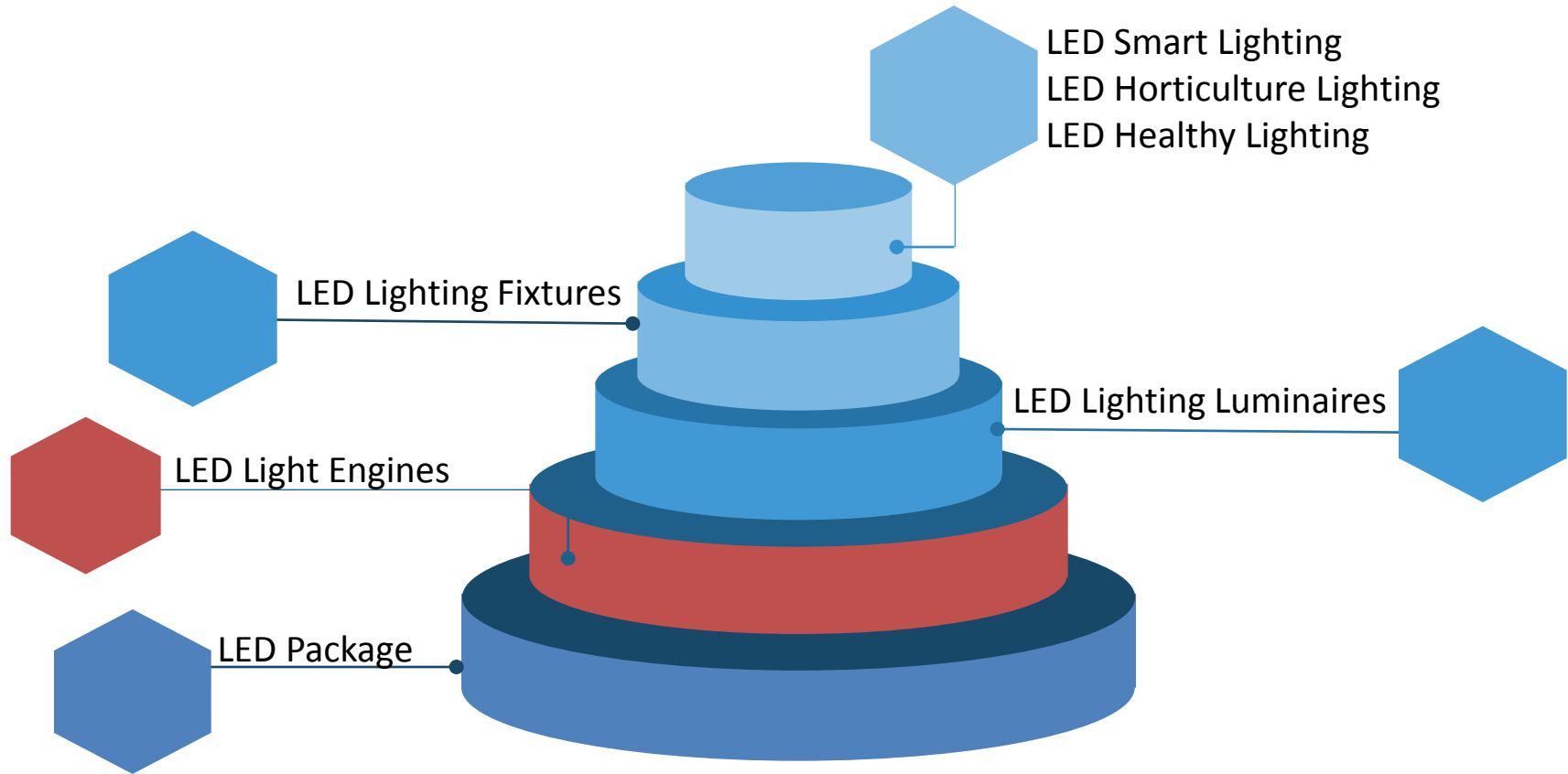
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About Us

- **VAOPTO** - is a leading "vertically integrated" manufacturer of standard and custom LED lighting products specializing in R&D, Design and Manufacturing of LED Chips, LED Packages, LED Light Engines and complete LED Light Fixtures.
 - > **Opened US office in 2005, Current office / Warehouse located in Las Vegas, Nevada**
 - > **Vertically-integrated-world class LED manufacturing facilities in China**
 - > **Certifications: ISO14001/ISO9001/TS16949/OHSAS1800/RoHS/FCC/BSCI/cULus/ETL/CSA**
 - > **LED Component and Lighting manufacturing for OEM/ODM customer products**
 - > **R&D support for customer LED lighting projects and custom product design**
 - > **Manufacturing of LEDs, light engines, and luminaires/fixtures**
 - > **Partnership: Energy Star, DLC**
 - > **Membership: IES, ALA, ISA**

Competitive Advantage with our Vertically-Integrated manufacturing capabilities



Manufacturing Facilities



Guangdong F4

Guangdong F1



Guangdong F2



Guangdong F3



LED Lighting Manufacturing Facilities - Introduction

- Since 2009
- Space: 80,000m²
- Workers: 800
- Capacity: 70KK units per year
- Turnover: \$80 million in 2023

Main customers

GE, Philips, Osram

LED Down Lights



LED Bulbs



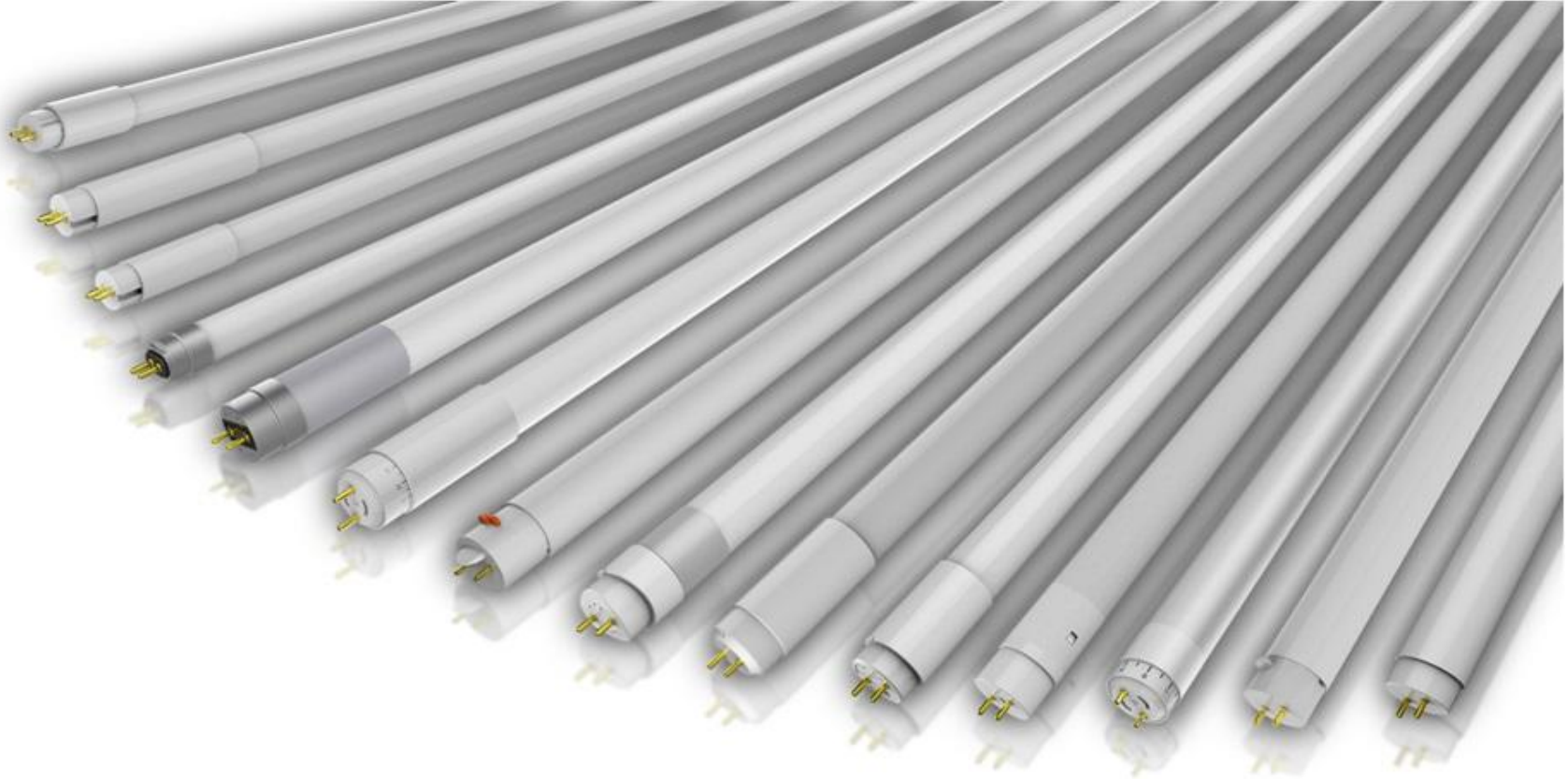
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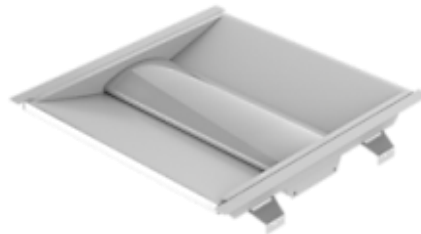
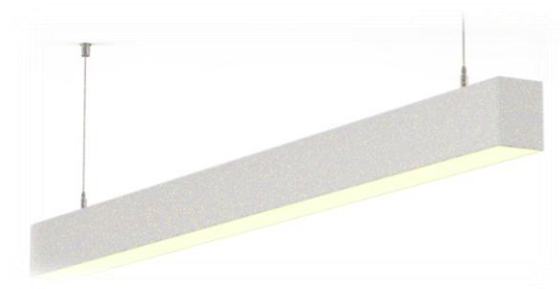
Main customers

GE, Philips, Osram

LED Lighting Manufacturing Facilities - LED T8



LED Lighting Manufacturing Facilities - LED Fixtures (Indoor)



LED Lighting Manufacturing Facilities - LED Fixtures (Outdoor)



LED Lighting Manufacturing Facilities- LED Smart Lights

Smart Lighting Products



Smart Building & Smart Home

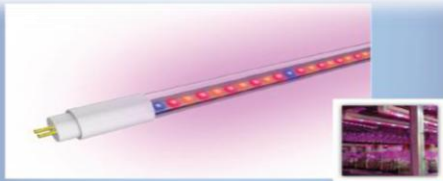
Smart Building Energy Management System



Smart Home Floor Plans (Lighting and Security)



LED Lighting Manufacturing Facilities- LED Horticulture Lights



LED T5



LED T8



LED TUBE KIT



LED TAPE LIGHT



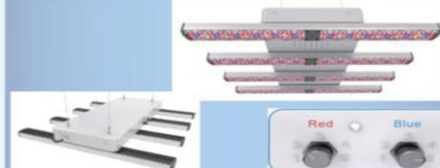
LED LINEAR BAR



**LED LINEAR BAR
KIT**



**LED LINEAR LIGHT
(DIMMABLE)**

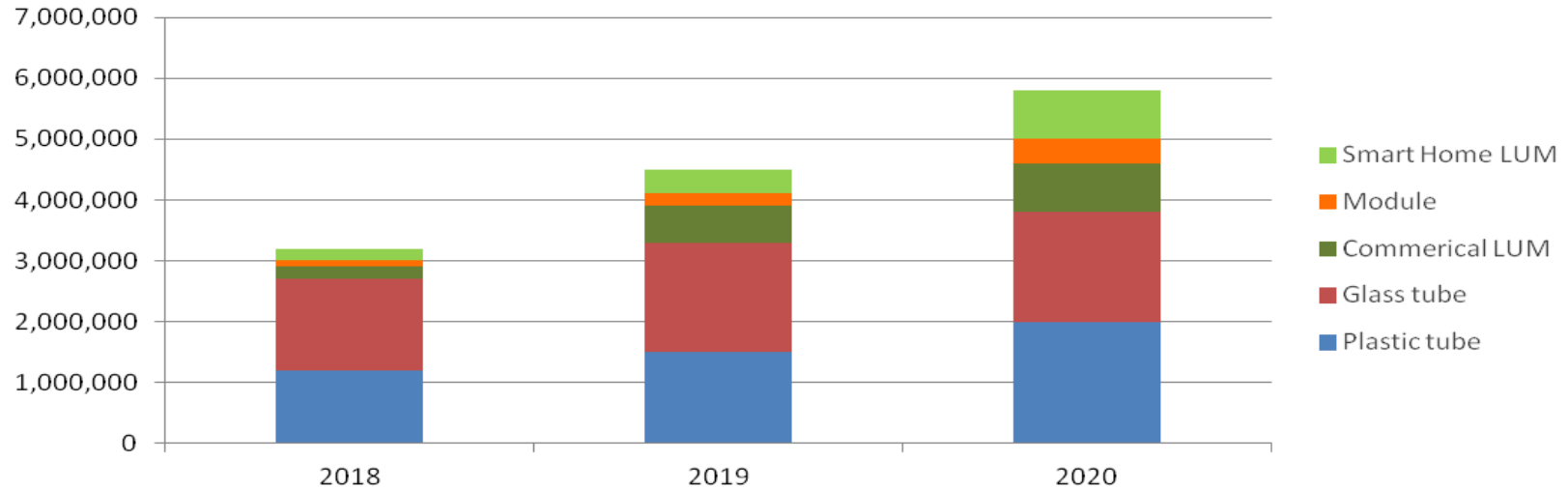


**LED LINEAR
FIXTURE KIT
(DIMMABLE)**

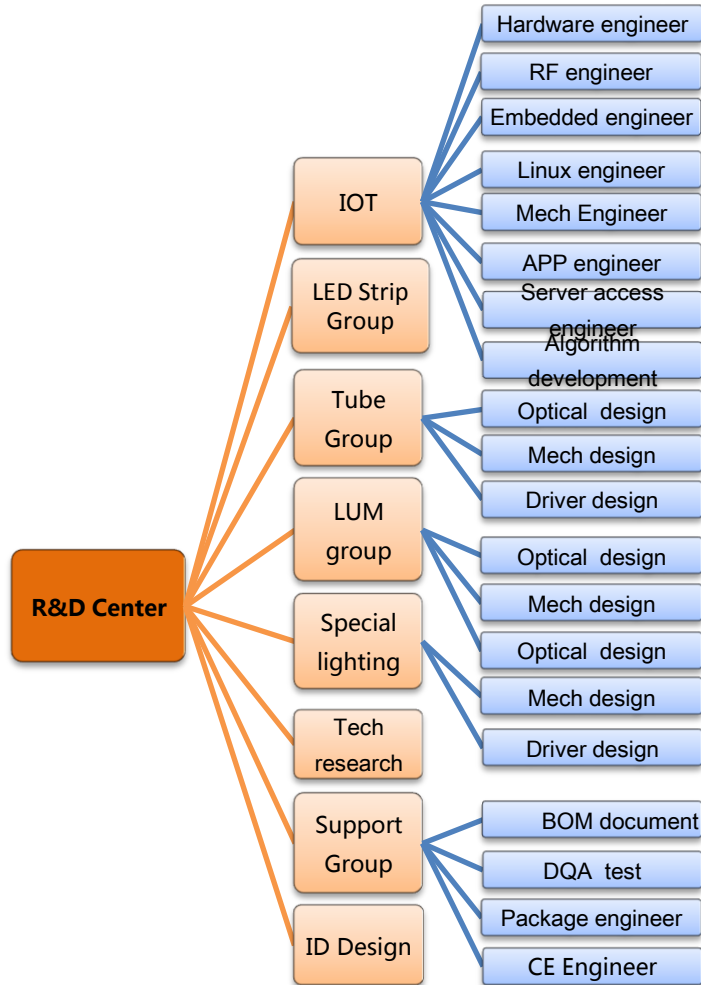


**LED AREA FIXTURE
(DRIVER on BOARD)**

LED Lighting Manufacturing Facilities - Capacity (Monthly)



| | Capacity (Units) | | |
|----------------|------------------|-----------|-----------|
| | 2021 | 2022 | 2023 |
| Plastic tube | 1,800,000 | 2,000,000 | 2,500,000 |
| Glass tube | 2,000,000 | 2,500,000 | 3,000,000 |
| Commercial LUM | 200,000 | 600,000 | 800,000 |
| Module | 100,000 | 200,000 | 400,000 |
| Smart home LUM | 200,000 | 400,000 | 800,000 |



LED Lighting Manufacturing Facilities - R&D

Totally 105 engineers in R&D Center :

- 13 people focus on LED Tube
- 20 people focus on LED Luminaires
- 40 people focus on IOT
- 9 people focus on Special Lighting
- 8 people focus on LED Strip
- 5 people focus on Tech Research
- 10 people focus on Support Function

LED Lighting Manufacturing Facilities - Production Line



SMT Automatic transfer machine
/Automatic Solder Paste Machine



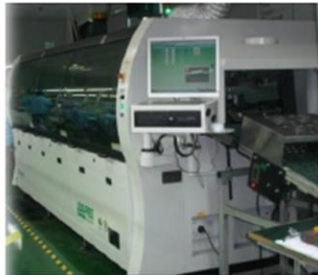
SMT Mounter



LED Automatic transfer machine



Reflow soldering machine



Wave-soldering machine



Automatic cut
machine



Automatic mixture ratio
dispenser machine



Automatic PSU test device



Laser marking
device

LED Lighting Manufacturing Facilities - Production Line



Full-automatic SMT
facilities



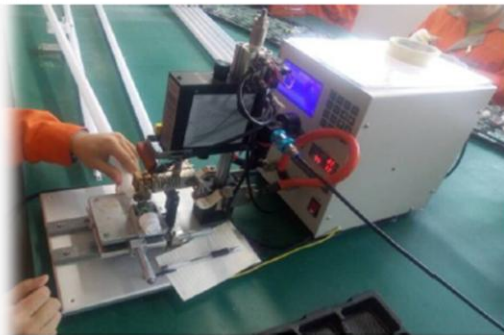
Wave-soldering machine



Automatic PSU test
device



Automatic board
cutting machine



Pulse hot press welding
machine



Laser marking device



Glue dispenser device for glass
tube

LED Lighting Manufacturing Facilities - Production Line



LED Lighting Manufacturing Facilities - Production Line



SMT Lines



Assembling Lines



Facilities



Aging Area

LED Lighting Manufacturing Facilities - Quality Control



LED Lighting Manufacturing Facilities - Quality Control



GO-2000A LED Light intensity
distribution test machine



HAAS 2000 fast LED optical
spectrum analyzer 2.5M



HAAS 1200 Photometric
Integrating Sphere



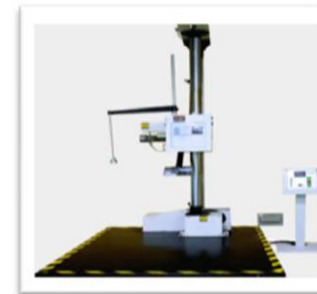
Constant temperature
and constant humidity box

- 1, T:-40°C ~ 150 °C
- 2, RH:20% ~ 98%



High Temperature Box/PHH201

T:20°C ~ 300 °C



ESD Tester

- 1, contact, indirect, air discharge test
- 2, testing range: - 30KV ~ 30KV

LED Lighting Manufacturing Facilities - Quality Control



Water Resistance test/
TMJ-9710A

Waterproof test : IPX1~IPX6



Intelligent torque tester

0 ~ 10N.m



Cold and hot impact

T : 20°C ~ 150 °C



Vibration Test

Frequency : 20Hz ~ 3000Hz
Amplitude : 25mm

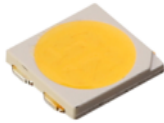
Test items :

- High low temperature storage
- Cold and hot impact work
- Oscillation test
- Drop test
- Salt spraying test
- ESD test
- ON/OFF test
- Hot and humid test
- Aging test
- EMC
- DQA
- LED packaging test

LED Component Manufacturing Facilities

| Since | 2000 |
|--|---------------------------|
| Registered Capital | US\$120 M |
| Workers | 3000 |
| Main Products | LEDs LED Light Engines |
| Public in China (Private Ownership) | 2010 |
| Business Revenue Y2023 | US\$700 M |

Products – LED Components



SMD LED



LAMP LED



IR/IRM



LED Light Bar



High power LED



Chip LED



Lighting LED



Flash light LED



Back light LED



Round LED



Rectangle LED



Flat head LED



Bio-color LED



Piranha LED



IRM LED



IE/PD/PT



Photo Interrupter



Reflective Sensor

Side entering type Light Bar

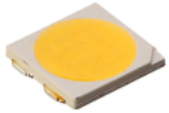


Direct type solution Light Bar



LED Components Manufacturing Facilities- Capacity

2000KK
/M



SMD LED

300KK
/M



Lamp LED

200KK
/M



IR/IRM

15KK
/M



LED Light Bar

LED Components Manufacturing Facilities

Technology Advantages with LED component manufacturing



LED Component Manufacturing Facilities

Management System Certificate

The Company strictly implements ISO9001, TS16949, QC080000, ISO14001, OHS18001, and other integration management systems(certified by Intertek);

Products comply with RoHS/REACH/HF product environmental requirements (Test by SGS)

LED Component Manufacturing Facilities

Well-known LED professional Testing laboratory

TUV Authorized Lab

UL Authorized Lab

Chinese National Top Lab



Product Certificates



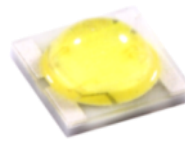
LM80
certificates



2835



5730



3535



3014



3527



4014

EN60825-1 / EN62471/ TR62778 Certificate

We currently produce 160 type of SMD and, Lamp products per **EN60825-1 / EN62471/ TR62778** testing

2017 First company to pass UL certification for LED component manufacturing



With high standard design, best quality product, VAOPTO has received many certificates covering quality, safety, environment etc., and has market approvals for the, Automotive market, LED display market, and LED lighting market, worldwide

LED Component Manufacturing Facilities

Advanced technologies

1. WIFI Intelligent Dimming
2. ZigBee Intelligent Dimming
3. Bluetooth Intelligent Dimming
4. Wireless Locating technology
5. Intelligent Streetlamp control system

Power Line Communication/ZigBee System Schematic



LED Component Manufacturing Facilities

High Volume Production



LED Component Manufacturing Facilities

SMD Die Bonding Workshop



Lamp Die Bonding Workshop



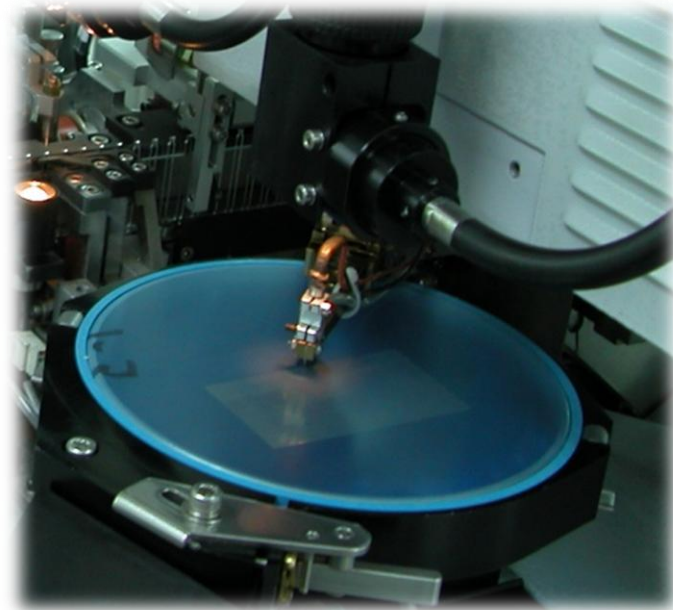
Fully automated operation equipment, Singapore import, It is the most advanced equipment in the field of Die Bonding

LED Component Manufacturing Facilities

IRM Die Bonding Workshop



Die Bonding machine



LED Component Manufacturing Facilities

SMD Wire Bonding Workshop



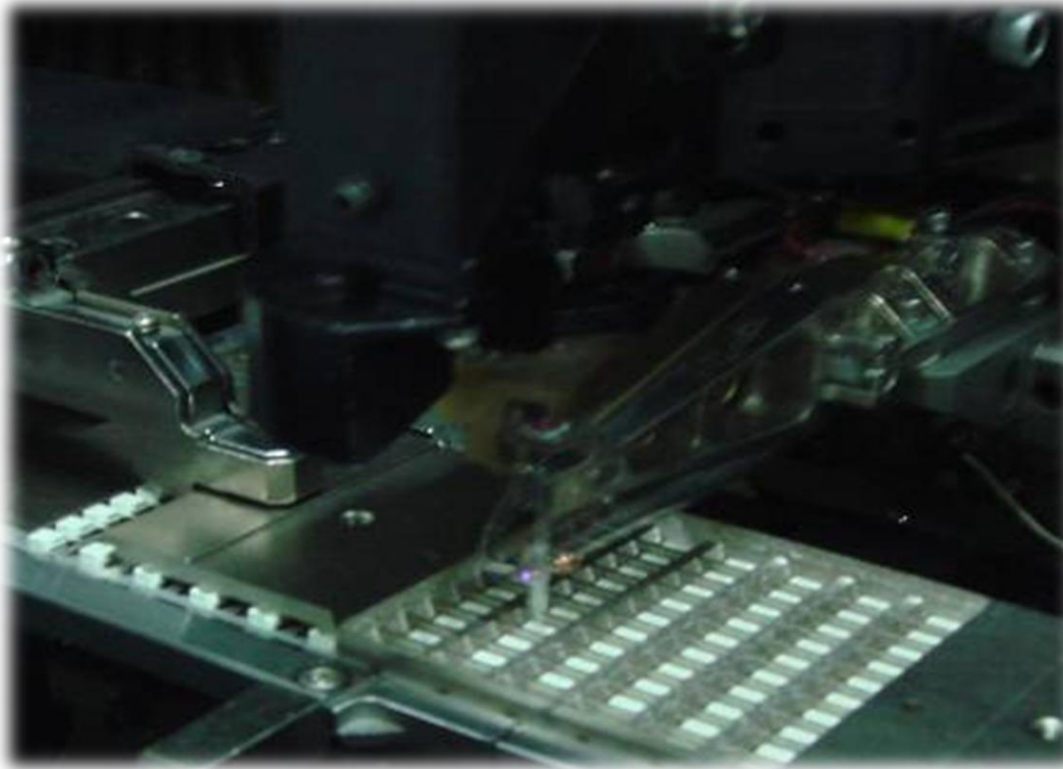
LAMP Wire Bonding Workshop



Fully automated operation equipment, Singapore import, It is the most advanced equipment in the field of Wire bonding

LED Component Manufacturing Facilities

Wire Bonding Machine



LED Component Manufacturing Facilities

ispa Glue ditching Workshop



Glue dispatching machine



Fully automated operation equipment, Japan import, It is the most advanced equipment in the field of Glue dispatching

LED Component Manufacturing Facilities

Baking



The purpose of baking the led diode is to make sure that the glue on the surface is dry before it goes into the next work flow.

LED Component Manufacturing Facilities

Stripping the led diode from the support



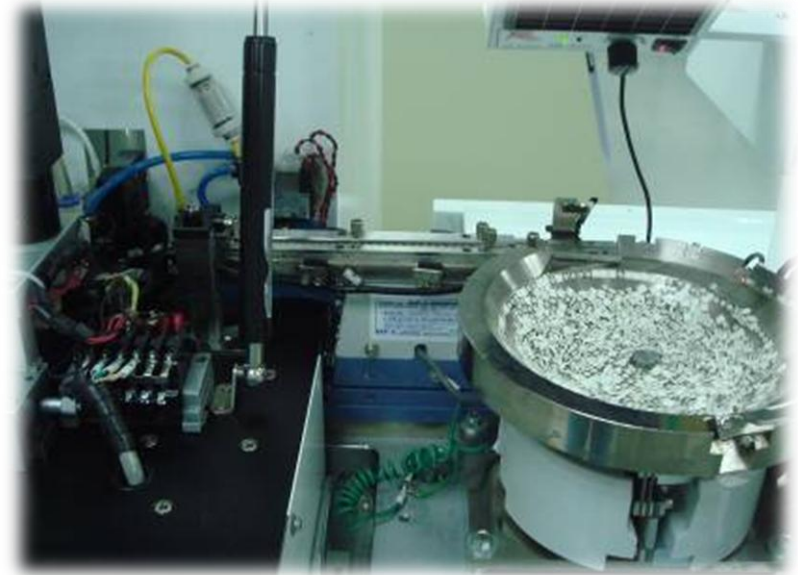
The purpose of step 5 is to make each led diode into smaller support base so that they can be easily cut down on the next work flow.

LED Component Manufacturing Facilities

SMD Sorting Workshop



Sorting machines



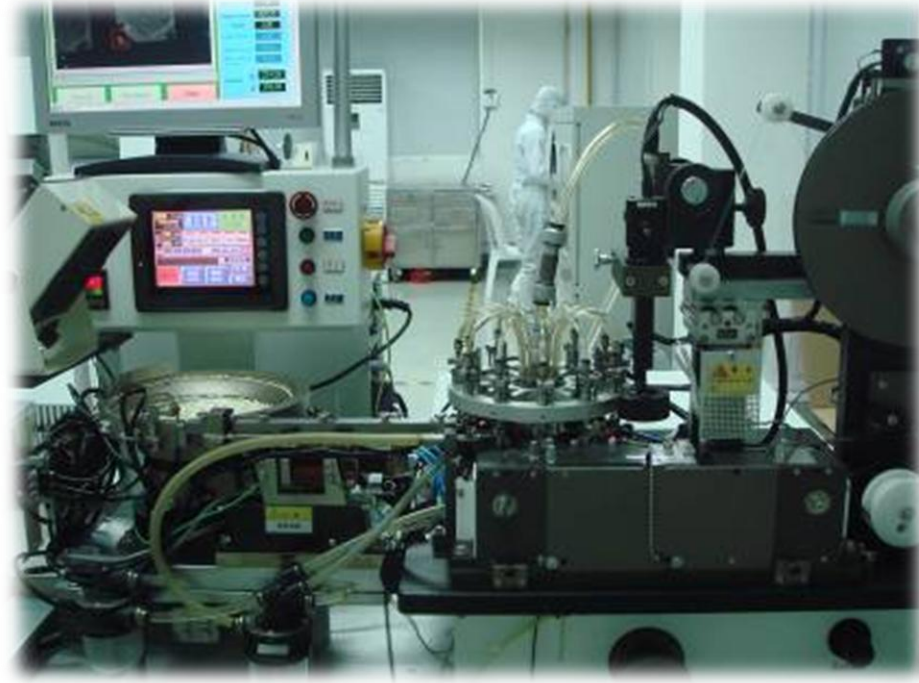
Fully automated operation equipment, Japan import, It is the most advanced equipment in the field of Sorting

LED Component Manufacturing Facilities

Taping Workshop



Taping machine



Fully automated operation equipment, Japan import, with high efficiency and good stability

LED Component Manufacturing Facilities

LED Lighting SMT Line - Solder paste painting



LED Component Manufacturing Facilities

LED Lighting SMT Line



LED Diode Soldering



LED Component Manufacturing Facilities

LED Lighting SMT Line



LED Component Manufacturing Facilities

LED Lighting SMT Line



LED Component Manufacturing Facilities

LED Lighting SMT Line

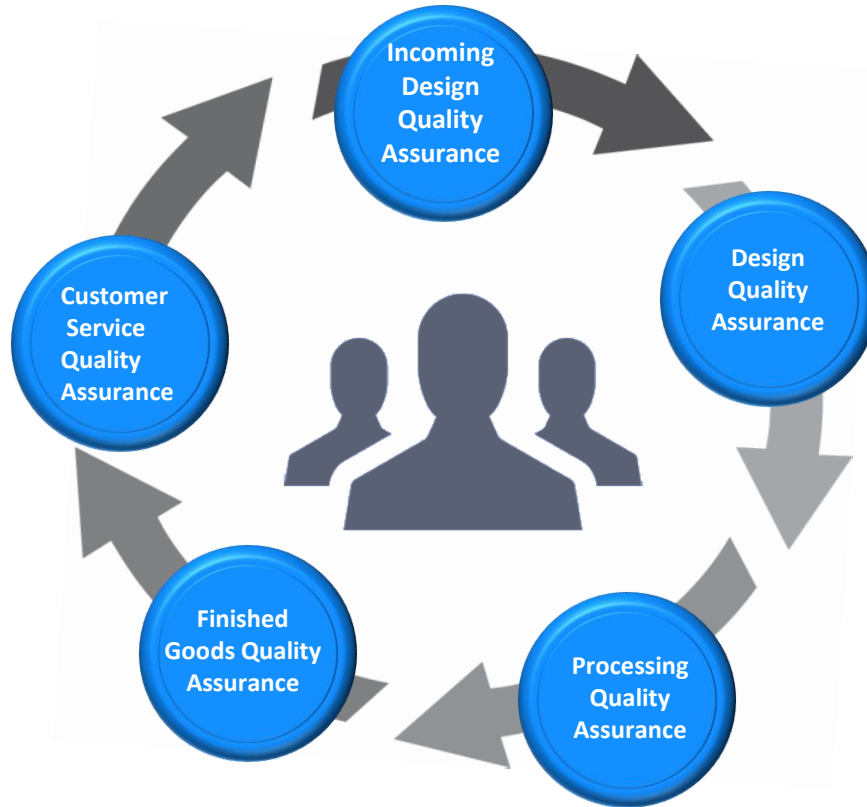


LED Component Manufacturing Facilities



Quality Control

Quality Control

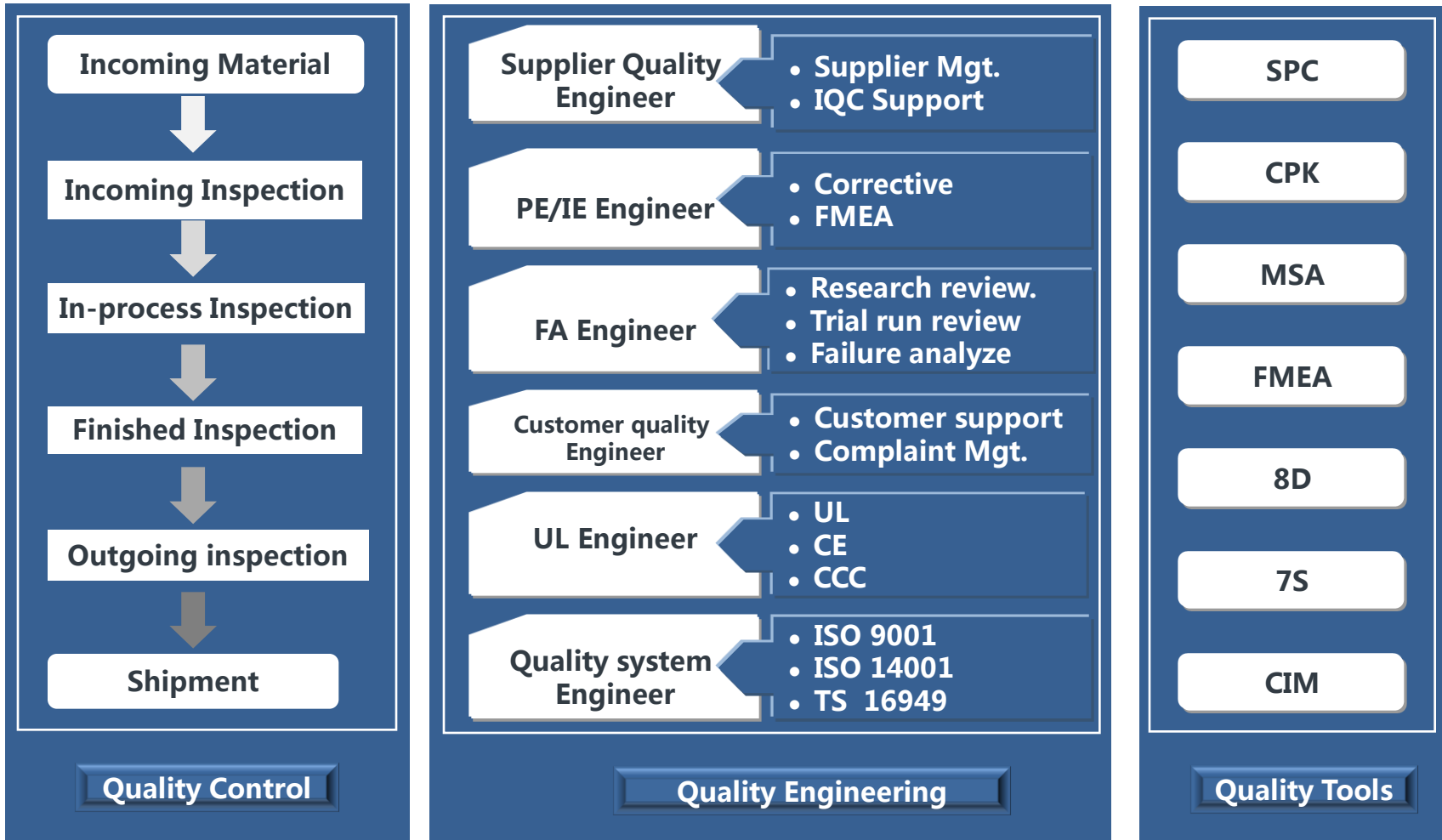


With our vertically integrated manufacturing capabilities for Development, Design, and Manufacturing we can provide, quality control for all phases of production for customer products.

Leading led components and lighting fixtures manufacturer
www.vaopto.com



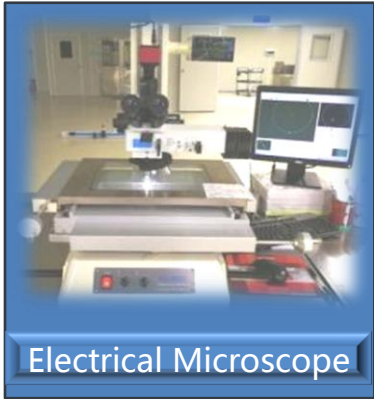
Quality control



Quality Control



Quality Control



All testing instruments and equipment involved in LED industry have been covered

Thank You for your interest in VAOPTO.
We look forward to supporting your
LED product requirements.