



(주)에이스 로얄테크



鼎元光電科技股份有限公司  
TYNTEK CORPORATION



# *Lighting the New World*



*ACE Royal Tech Inc.*

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ACE Royal Tech Inc.





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ACE Royal Tech Inc.

# Company Profile



<b>Chairman</b>	<b>Bosco Foo (傅佩文)</b>
<b>Capital</b>	USD 110 million (Dec.,2010)
<b>Sales Revenue</b>	USD 153 million (2011 Forecast)
<b>Employees</b>	<b>950 (Taiwan)</b> <b>250 (Wuhan , China)</b>
<b>Locations</b>	<b>SBIP, Taiwan : Headquarters/R&amp;D Center/Silicon line</b> <b>Jhunan fab. Taiwan : LED and Silicon line</b> <b>Wuhan factory : chip process &amp; inspection</b> <b>Taipei, Taiwan : Applied Products Application</b>
<b>Capacity</b>	<b>3,800 million chips per month</b> ★ <b>LED: 1,800 million chips</b> ★ <b>Silicon device: 2,000 million</b>



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## Milestones

- |            |  |
|------------|--|
| 1987/04/04 | <b>Founded in SBIP, Hsinchu, Taiwan.</b>   |
| 1989/06/17 | <b>Technology transferred from Industrial Technology Research Institute .</b>      |
| 1997/08/28 | <b>Mass Production (Silicon device) .</b>  |
| 1998/11/25 | <b>ISO 9001 Certificated.</b>  |
| 1999/04/25 | <b>Jhunan factory operation .</b>  |
| 2000/09/11 | <b>Became GTSM Listed Companies Taiwan.</b>  |
| 2003/11/01 | <b>QS 9000 Certificated.</b>   |
| 2005/01/15 | <b>ISO 14001 &amp; OHSAS18001 Certificated.</b>                                    |
| 2006/11/15 | <b>TS16949 Certificated.</b>   |
| 2007/06/25 | <b>Wuhan factory operation .</b>   |
| 2008       | <b>Team up Applied Product Division to design LED lighting products</b>            |
| 2009/11/1  | <b>Acquire the silicon line in SBIP<br/>Mass Production LED lighting products.</b> |
| 2010       | <b>Achieving CE, E-Mark, UL, CUL certificate for LED lighting products.</b>        |

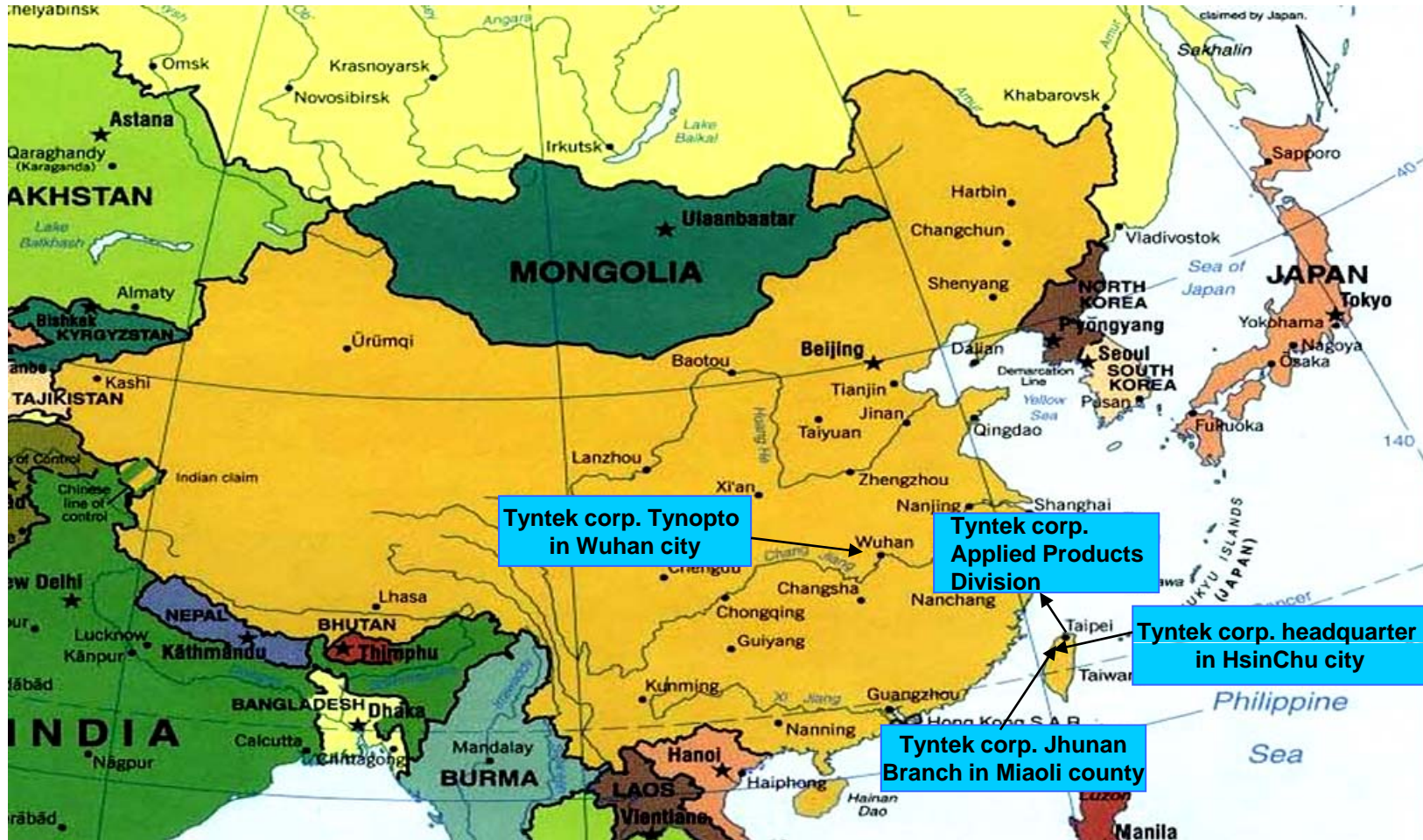




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# Factory Site Map



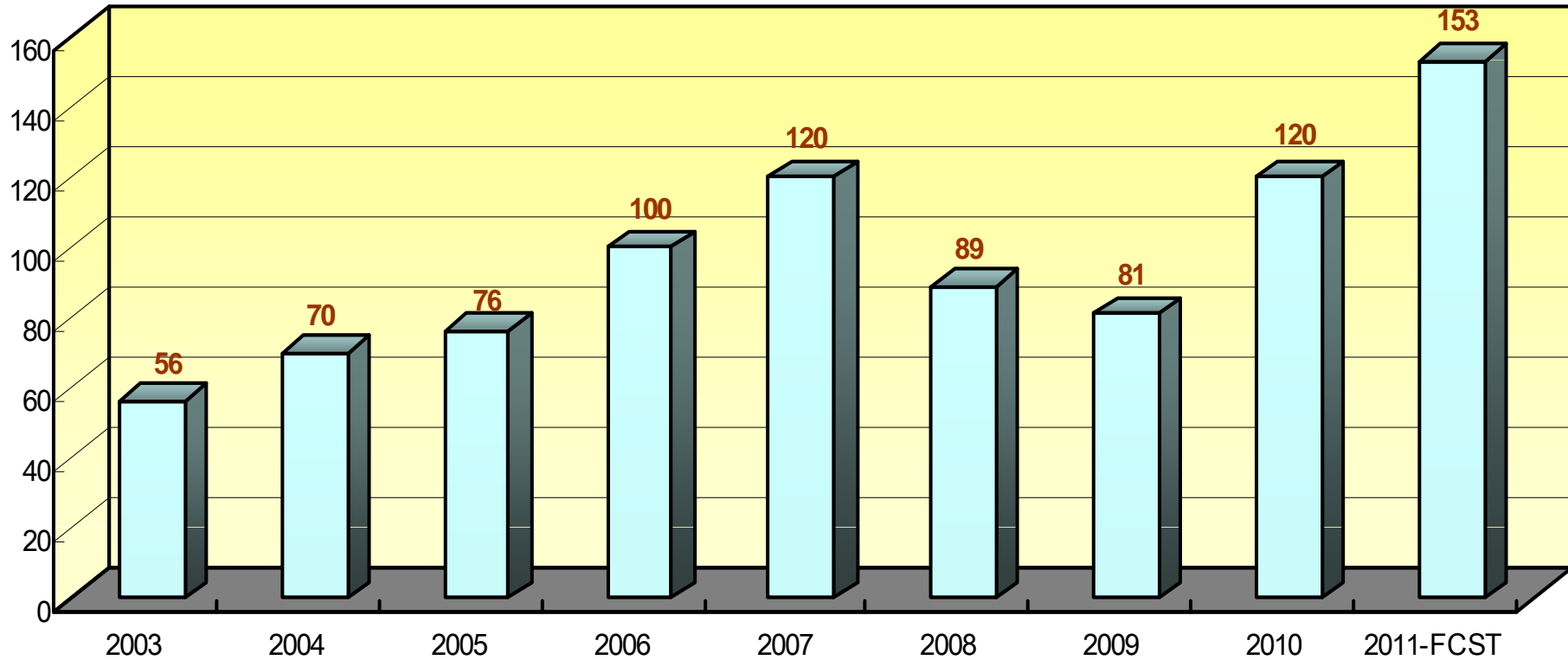


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# Financials- Annual Sales

Sales Revenue -USD (Million)



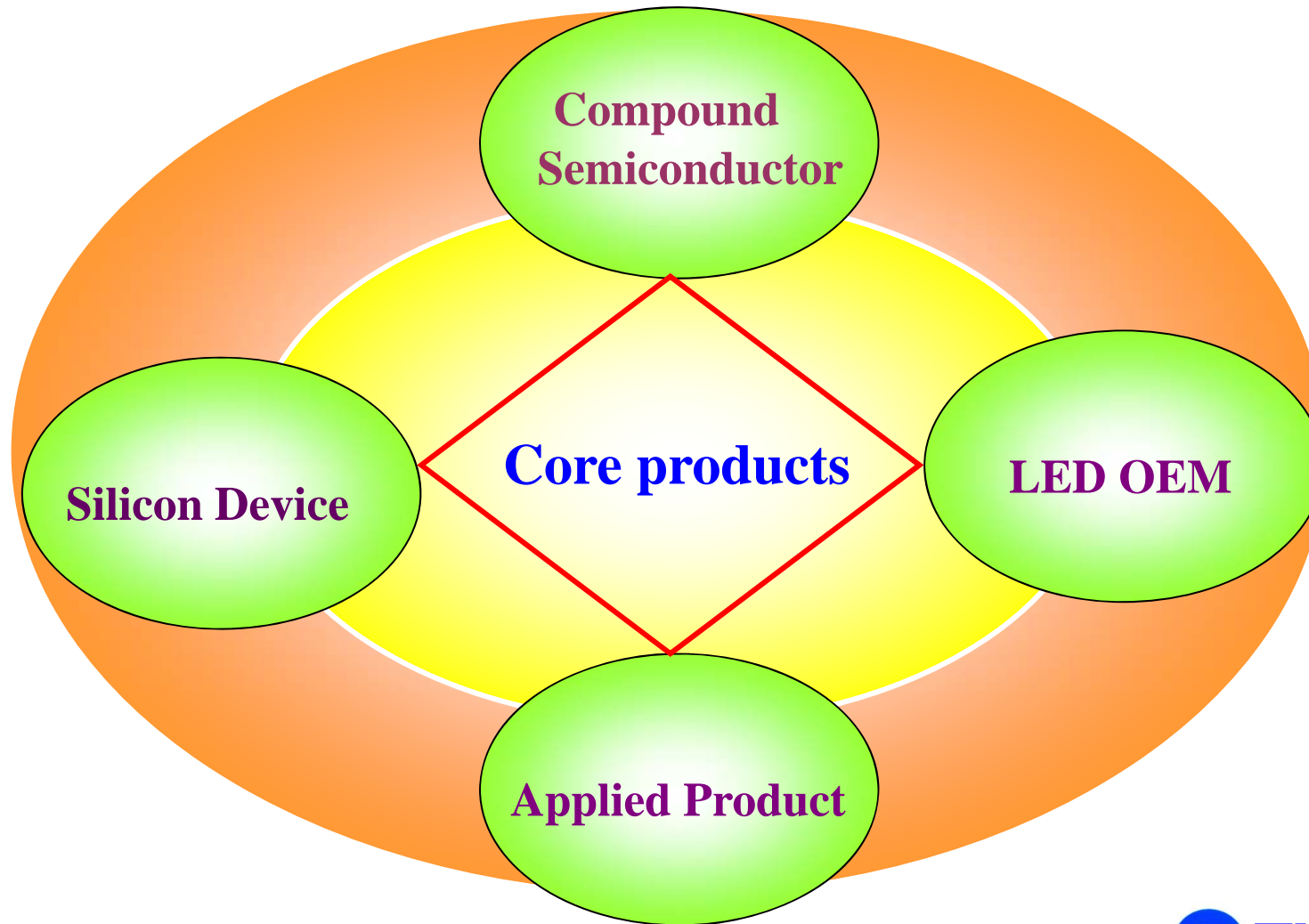


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About The Company

## Main Product Lines





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## *Compound Semiconductor*

### □ **VISIBLE**

- ❖ **GaP** Red, Green LED
- ❖ **GaAsP** Yellow, Orange, Red LED
- ❖ **AlGaAs** SH, DH, DDH high brightness Red LED
- ❖ **AlGaInP** Yellow Green, Yellow, Orange, Red, high brightness LED
- ❖ **AlGaInP** As-Type, Wafer Bonding Red , Yellow LED
- ❖ **InGaN** Blue, Green LED

### □ **INFRARED**

- ❖ **GaAs/GaAs** 940nm IRED LED
- ❖ **AlGaAs/GaAs** 940nm IRED LED
- ❖ **AlGaAs/AlGaAs** 730, 780, 830, 850, 870, 880(nm) , high power /speed IRED LED

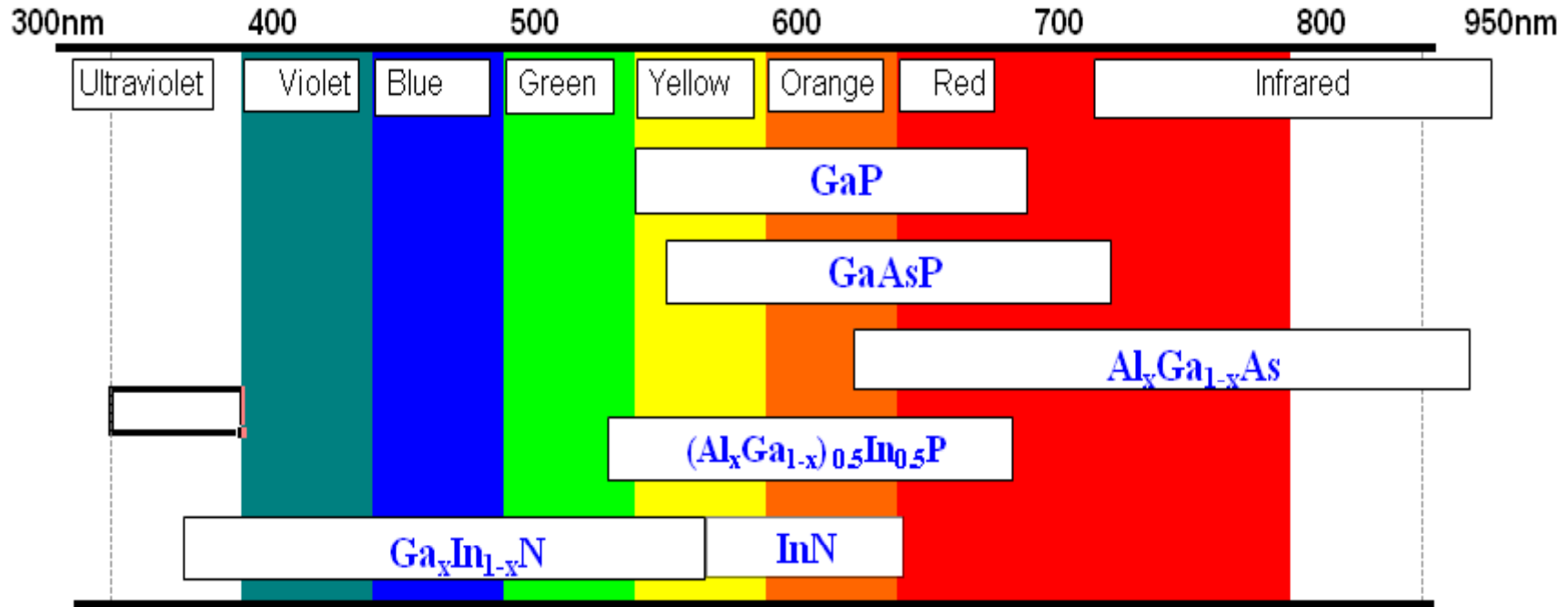




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# Spectrum of Compound Semiconductor





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## Visible Leds for GaP & GaAsP

NO	Material	Color	Type	Wd(nm)	Chip size(mil)	Main Application
1	GaP/GaP	Pure green	PG	556~564	10~11	Lamp, Display, SMD
		Standard green	SG	564~569	10~11	"
		Medium green	MG	567~571	8~12	"
		Yellow green (P-up)	YGU	568~575	7~14	Lamp, Display, SMD
		Yellow green (N-up)	YG	568~575	10~11	Back light
		Red	RD	610-630	8~11	Bi-color lamp Lamp, Display
2	GaAsP/ GaP	Yellow	HY	580~595	7~12, 14	Lamp, Display
		Soft orang	SO	600~615	8~12	"
		Orange	HO	614~626	8~12	"
		Red orange	HOD	622~633	7~12	Lamp, Display, Matrix



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## Visible Leds for AlGaAs red & AlGaInP

NO	Material	Color	Type	Wd(nm)	Chip size(mil)	Main Application
3	AlGaAs	Red	SR	635~648	8~11	Lamp,Display,Matrix
		Deep red	NR	640~660	8~11	Lamp,display
		Red	DR (N-up)	635~648	10~12	Lamp,Display,Matrix
		Red	DR (P-up)	635~648	10,11	Lamp,Display
		Red	UR	635~648	12,14	Lamp
		Red	URL	635~648	12,24,40	Lamp
4	AlGaInP/ GaAs	Yellow green (P-up)	YG	568~574	8~12	Lamp,Display,SMD
		Yellow	UY	585~593	8~12	"
		Amber	SO	600~610	8~12	"
		Red orange	UOL	620~626	8~12	"
		Red	SR	628~635	8~12	"
		Deep red	DR	635~645	8~12	Display, Photo link
5	AlGaInP/Si	Yellow (N-up)	UYH	585~595	9、12、15、20、 30、40、60	Lamp,Display,SMD
		Amber	SOH	600~610	12	"
		Red orange	UOH	620~627	9、12、15、20、 30、40、60	"
		Deep red	DRH	655~665(Wp)	12、40	Display, Photo link



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# InfraRed Chips

NO	Material	Color	Type	Wd(nm)	Chip size(mil)	Main Application
6	IR	GaAs/GaAs	IRG	940	9~12	Photo-coupler
		AlGaAs/GaAs	IRA	940	9~12,14,24,40	Remote control.
		AlGaAs/AlGaAs	IRP	850	10~14,16,24,40	Lamp
		AlGaAs/AlGaAs	IRS	870	12,14,16,	IrDA
		AlGaAs/AlGaAs	IRP (N-up)	880	11,13	Lamp



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## *Silicon Device*

➤ **Photo-Transistor (PT)**

Photo-coupler  
Photo-interrupter

➤ **Photo-Diode (PD)**

Standard Type for Remote controller  
High Speed / Sensitivity Type for IrDA

➤ **Zener-Diode (ZD)**

ESD Protection





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## Products of Silicon Device

<b>IC</b>	Amplifier	Amplifier (External R)		P. Logic (N/C & N/O)
		Z.C. Triac (600V)	Z.C. Triac (800V)	
<b>Thyristor</b>	Triac (600V)	Triac (800V)		Triac (1000V)
	Low Volt.(3V)	High Volt. (50V)		
	Low Cj ( 2pf)	Low Cj (1pf)	Extra Low Cj (0.5pf)	
<b>ZD</b>	Power (5W)	Ultra Thin ZD	ZD Submount	Flip ZD Submount
	Ambient (620nm)	Ambient (550nm)	IR Only PT	
	Small Size (18mil)	Small Size (16mil)	Small Size (14mil)	
<b>PT/DLT</b>	High Volt. (140V)	H.T. PT (105C)	H.S. PT (10M)	H.S. DLT (1M)
	H.S. PD (1M)	H.S. PD (4M)	H.S. PD (10M)	H.S. PD (16M)
	Ambient (620nm)	Ambient (550nm)	Band Pass PD	Low Cross Talk PD
<b>PD</b>	RGB PD	Sunlight PD	RGB Ratio PD	340 UV PD



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## Applications of Silicon Device

<b>IC</b>	Linear Amplifier	Photo Interrupter	Photo Coupler	
<b>Thyristor</b>	AC Photo Coupler	AC Photo Interrupter		
<b>ZD</b>	ESD Protection	Leakage Detection	Voltage Regulation	Surge Protection
	Optical encoder	RGB controller	Ambient Detection	
<b>PT/DLT</b>	Photo Interrupter	Photo Switch	Photo Coupler	Touch Panel
	RGB controller	UV Detection	Position Detection	Optical Encoder
<b>PD</b>	IR Remote Controller	Smoke Detection	IrDA	LD Monitor



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## *Capacity of Silicon Device*

- Front End Equipment Capacity :
  - ❖ 45 kpcs/m(4"/5"wafer)
  
- Back End Equipment Capacity :
  - ❖ 60kpcs/m (4"/5"/6" wafer )
  
- Testing Equipment Capacity :
  - ❖ 2,000kk/m ( Chip )





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## LED OEM Operation Center

	Process Station & Capacity		Capability
1	Grinding (15000 pcs/M)	Wafer Size	2" Wafers
		Thickness	90 um (minimum)
2	Laser Dicing (15000 pcs/M)	Cutting Depth	18 ~ 30 um
		Die Size	7 mil~ 40 mil(big)
3	Mapping (400 KK/M)	Testing Condition	Vf ; IV ; Po ; WLD ; WLP ; IR ; Vz
		Max Current	1000 mA
4	Sorting (600 KK/M)	Wafer Size	4" (after expansion)
		Ring Diameter	6" (outer diameter)
		Die Size	8 mil ~ 40 mil (probably 200um ~ 1000um)
5	Visual Inspection(400KK/M)		By Customer's Specification



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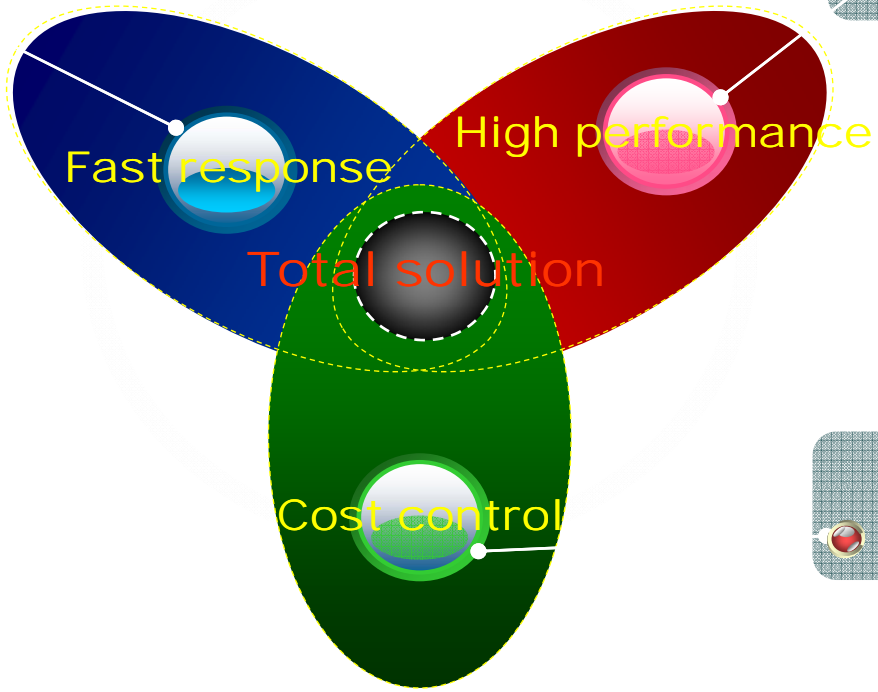


About The Company

# Applied Product --TYNTEK Advantage

Design and manufacture Ability of key Components of LED lighting

Integration between professions



Innovation capability



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## *Technology for Lighting Design*

- ❖ **Design utilizing optical reflection to meet the related photometric requirement.**
- ❖ **Mechanical structure is simple with cost-effective and the convex is unnecessary.**
- ❖ **Using high efficiency LED with low power consumption to accomplish the photometric requirement.**

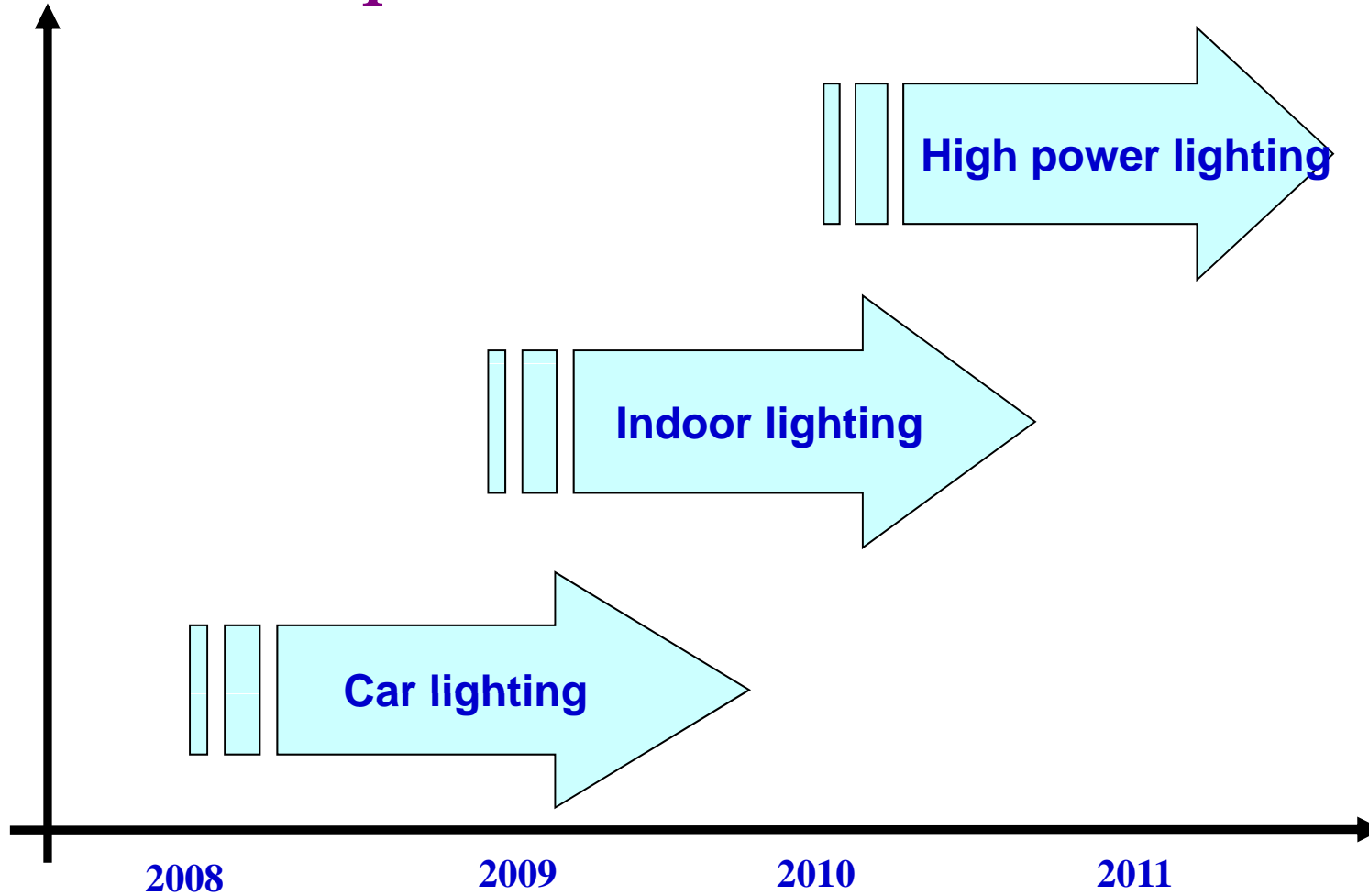


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# Product Roadmap





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About The Company

# LED Car Lighting



Cabinet Lamp



Turn signal for motorbike



Tail lamp



Turn signal for motorbike



Tail lamp



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## *LED Car Lighting*



**Fog Lamp**



**Bicycle Head Light**



**Daytime Running Lamp**



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# LED Lighting Product



MR16



T8 tube



Light Bulb



Jewelry Lamp





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## *LED Lighting Product*



AR111



Down light



AR111





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## LED Lighting Product



High Bay

Modular Streetlight



Flood Light



Low Bay

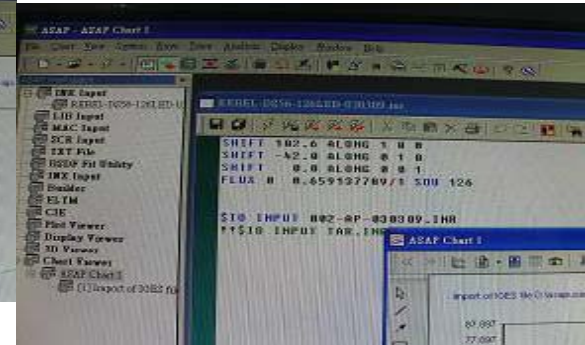
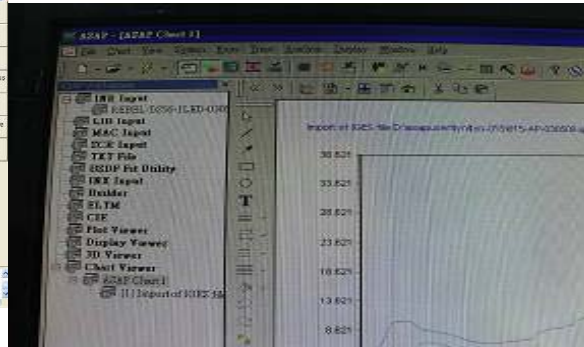
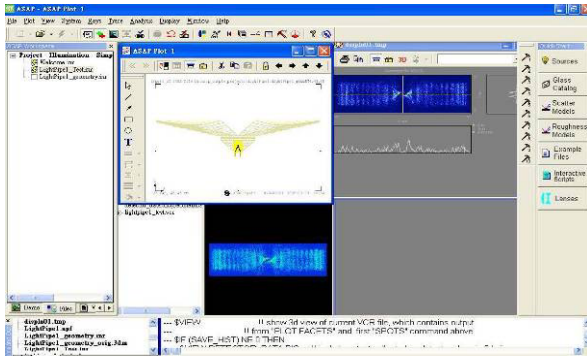


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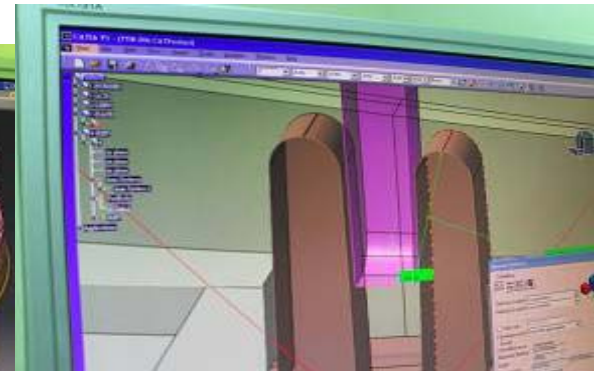
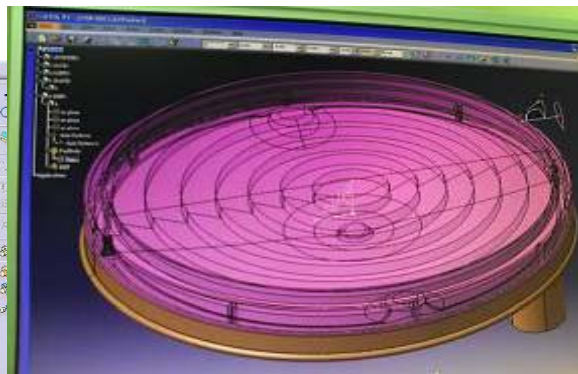
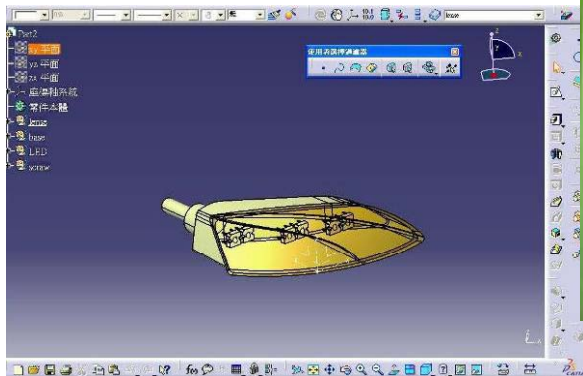


# Facilities \_ Software

## ASAP



## CATIA

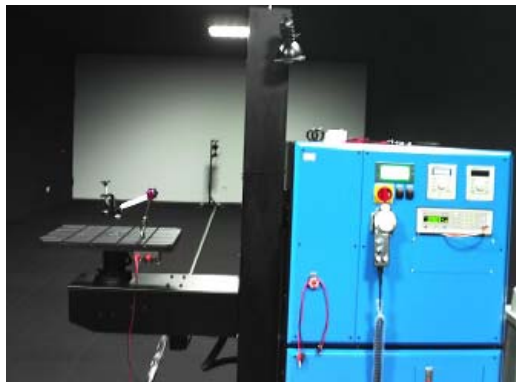




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# Facilities \_ Hardware





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*Patent*



Turning signal\_Europe



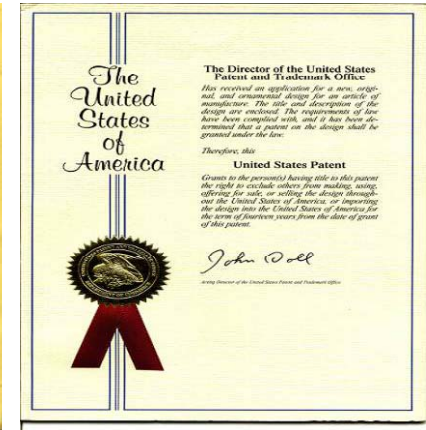
AR11\_Europe



Light Bulb\_Europe



Light Bulb\_Japan



MR16\_USA



Turning Signal\_USA





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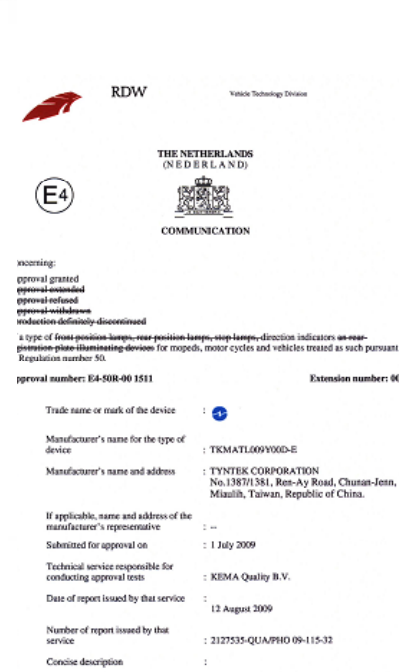
# Certificate



Light Bulb



Turning Signal\_Nederland



Carbinet\_Nederland



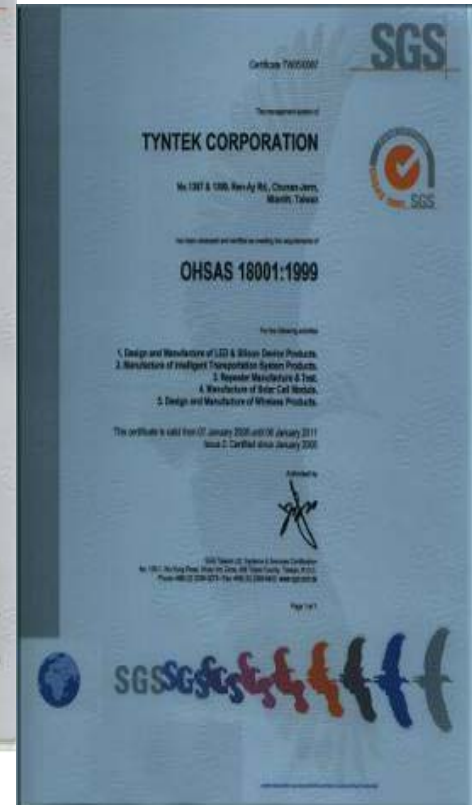
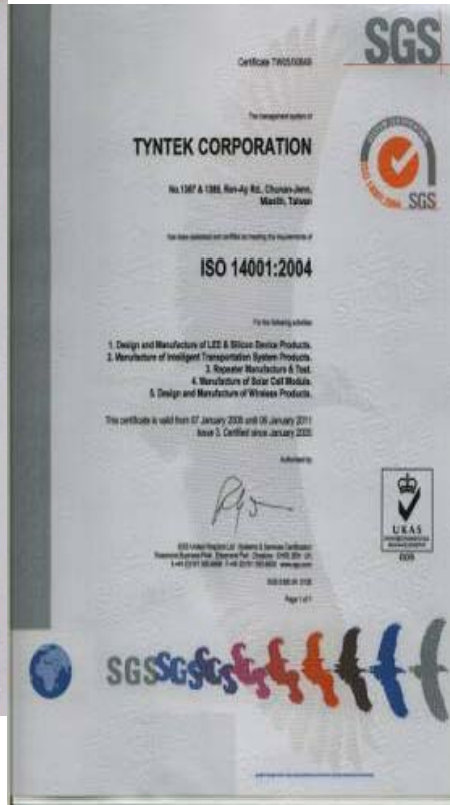
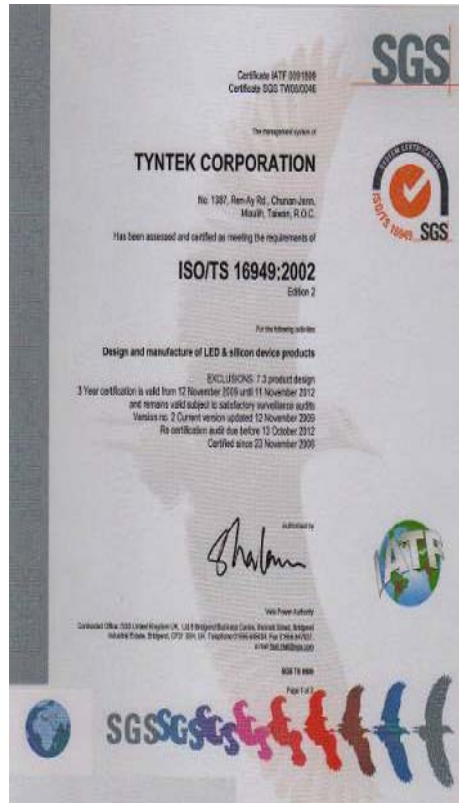
Fog Lamp\_AMECA





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# Quality System





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## *Strength of Tyntek*

### **❑ Wide Range Opto-Electronic Products**

- ❖ LEDs & Si Devices
- ❖ Total product solution

### **❑ High Volume Production Capability**

- ❖ 3800 million pcs chips/month
- ❖ Flexibility in manufacturing

### **❑ Good Quality**

- ❖ ISO 9001 & QS9000 & ISO 14001 and TS-16949 Approved system
- ❖ Products with conformable quality



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## *Strength of Tyntek*

### **❑ Resources Integration**

- ❖ Ensure customers always get what they need

### **❑ Strong Developing & Engineering Capacity**

- ❖ Well educated & experienced engineers
- ❖ Cooperate with R&D institutes & universities
- ❖ Customized products





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*Thank You for Your Time !*



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