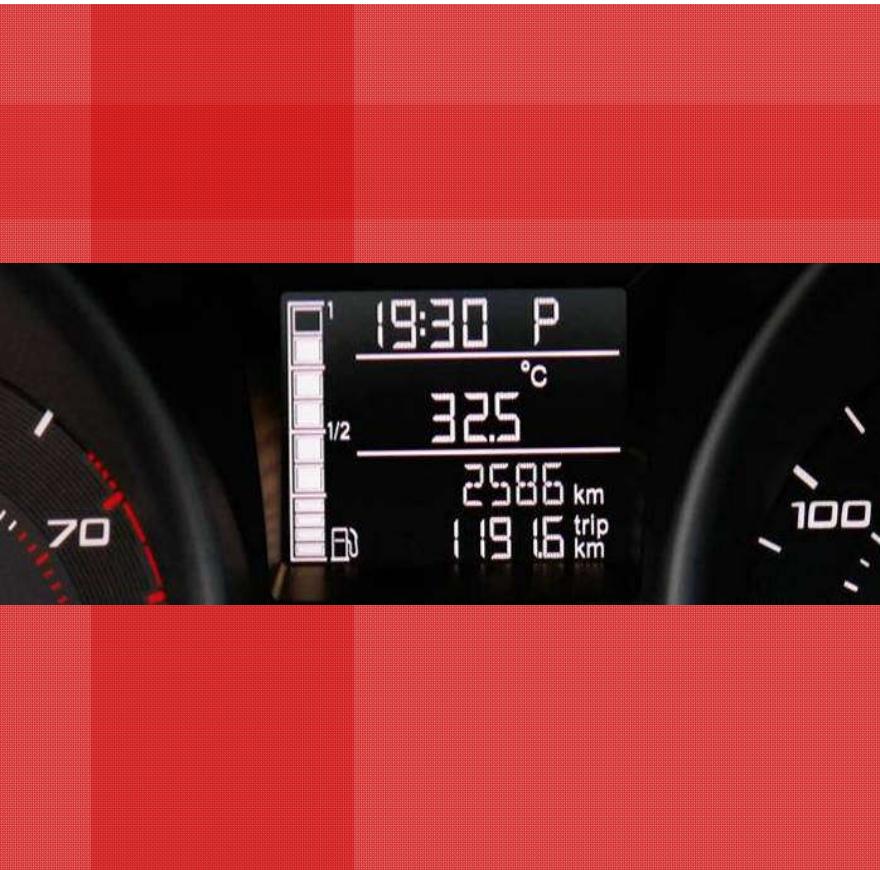




Unicorn



Unicorn Company Profile

2023.03.01



LCD Business History

Unicorn



1983

- Incorporated in HongKong.
- Started with LCD EOL & MOL business.

1998

Established 1st LCD front line.

2000

- Become one of Namtai group's subsidiary.
- Established 2nd LCD front line.

2002

Established 3rd LCD front line (automated)

2009

Merged with sister company became Zastron.

2011

- Established 4th LCD front line (automated)
- Outsourced LCD business to Unicorn.

2012

- Acquired LCD business from Zastron.
- Both hardware and software are originated from JIC.

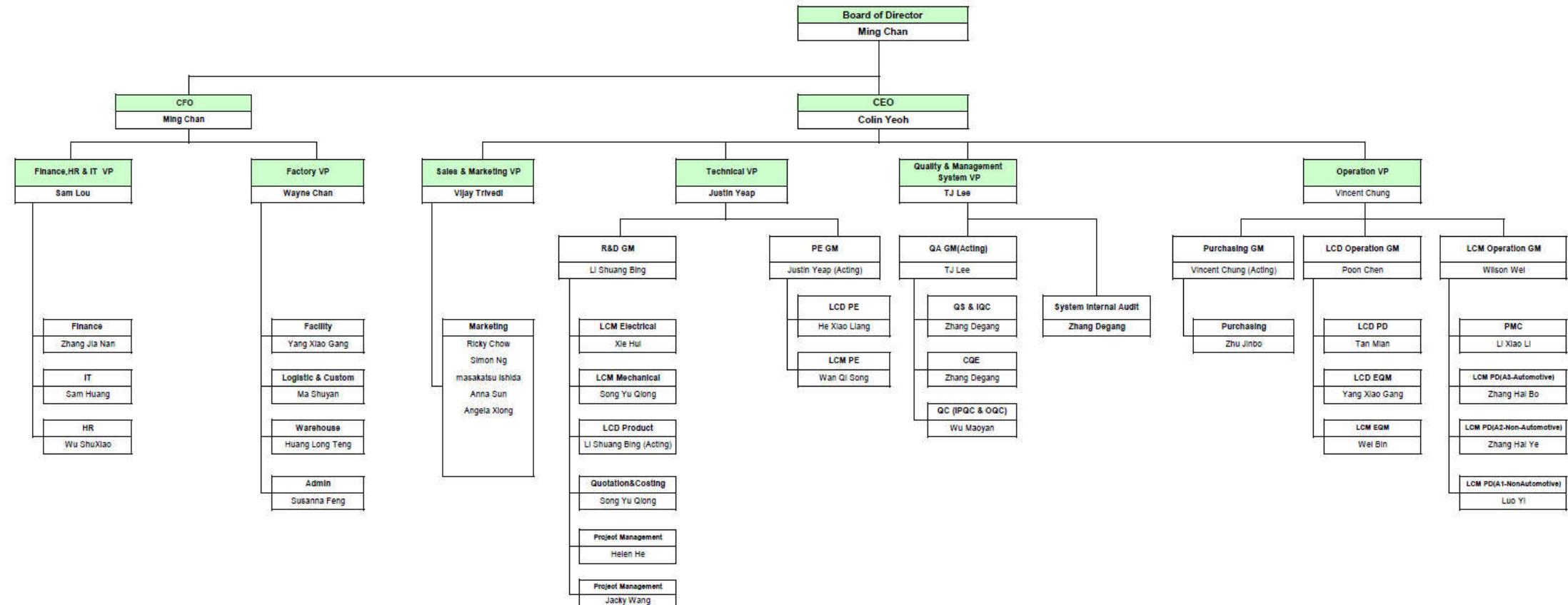
2013-2014

- Acquired TFT backend manufacturing equipment from Zastron.
- Started TFT EMS manufacturing activity.

39 years experience in LCD business!

Unicorn Organization Chart

Unicorn

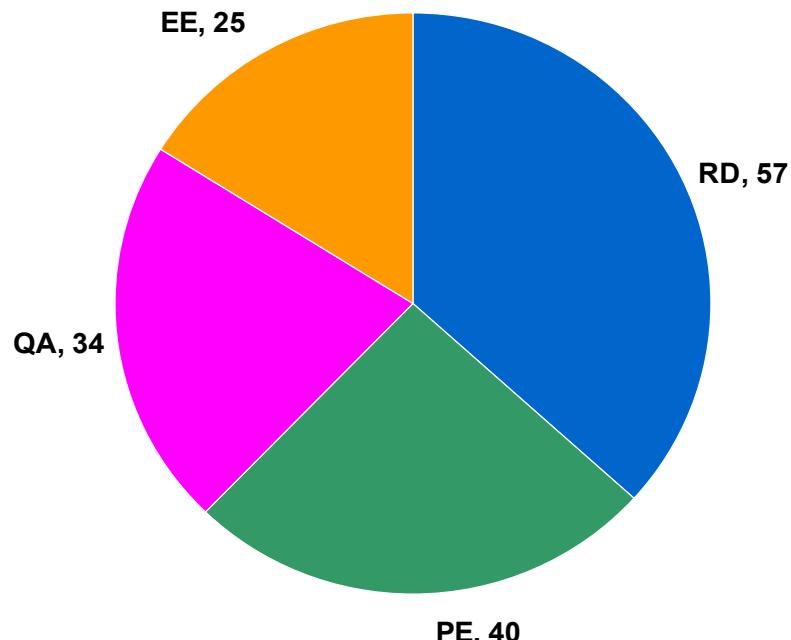


Employee (Q4 2022)

Unicorn

- Direct Labor 700
- Indirect Labor 300
- Total Labor 1,000

Technical team breakdown (Q4 2022)



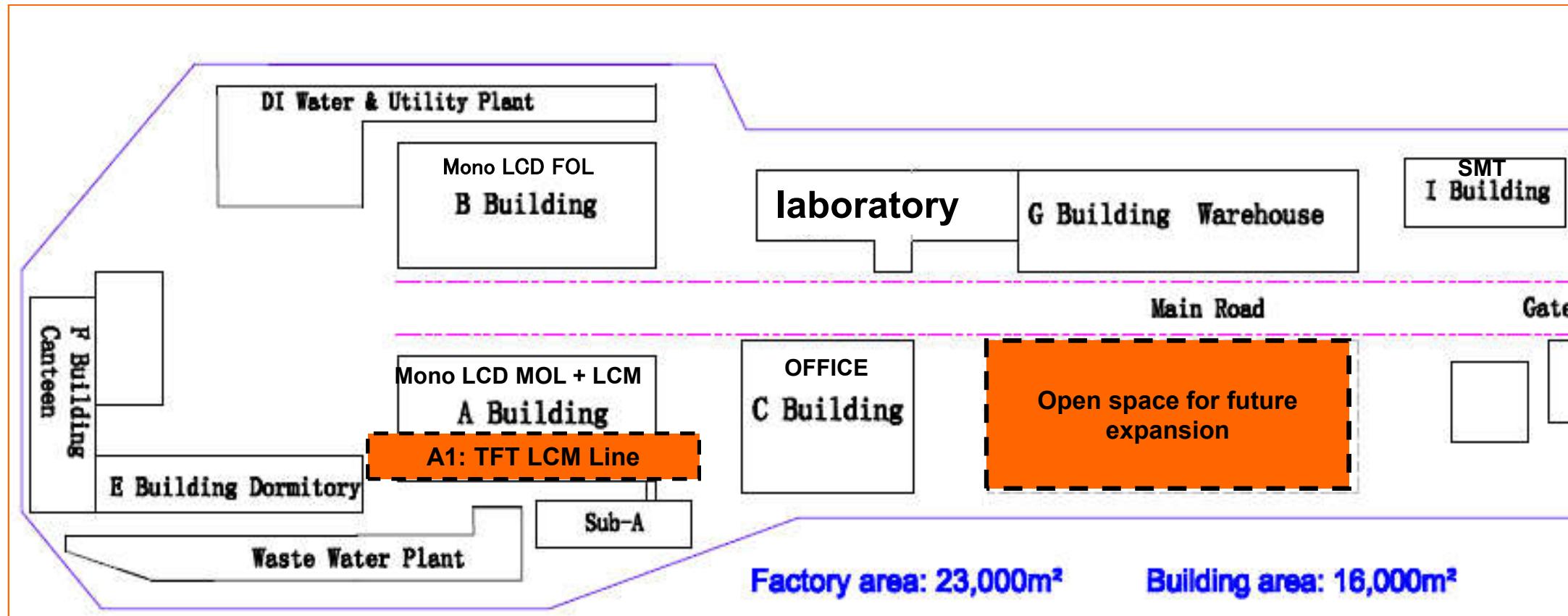
Location

Unicorn



Factory Layout

Unicorn



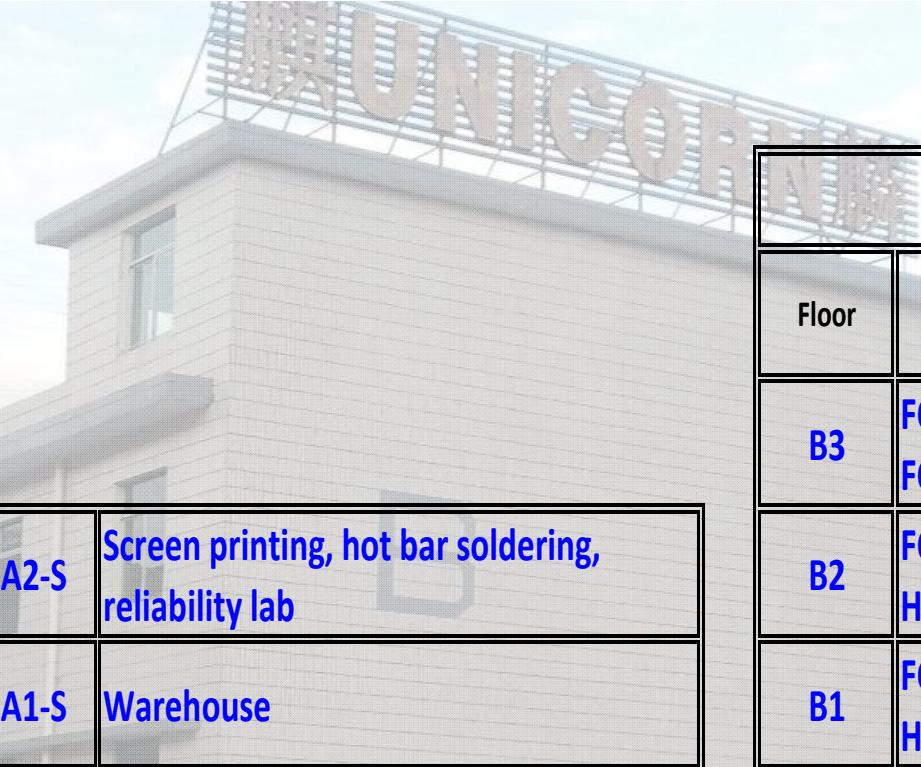
Remarks:

- 2013 – 2014 – Planned investment for expansion of TFT backend manufacturing + LCM manufacturing. Purchased total of 15 production lines from Zastron.
 - Step1: 2013 Q4 ~ 2014 Q1 – A1 setup appox. 4 production lines for TFT LCM backend and LCM assembly.
 - Step2: 2016 – Setup additional capacities for TFT / monochrome backend manufacturing in planned new Building D with additional 11 LCM production lines subject to business growth.

Expansion of Manufacturing Capacities & Capabilities

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Block A	
Floor	Manufacturing Process
A4	MOL
A3	LCM 3 (Dedicated automotive line)
A2	LCM 2
A1	LCM 1 (include TFT-LCM)



Block B	
Floor	Manufacturing Process
B3	FOL (C-line): Patterning processes FOL (D-line): Patterning processes
B2	FOL (C-line): Alignment → Coupling → Heatpress processes
B1	FOL (D-line): Alignment → Coupling → Heatpress processes

Block C	
Floor	Description
C2	Office
C1	Office

Remarks -

- Investment of USD 5 mill for TFT –LCM production line set up in 2013
- A 1 F Q4 2013 – setup 4 lines for TFT OEM (from Scribing)
- TFT-LCM line include : Clean Room, Scriber, Toray COG Bonding machine(x5), FOG Bonding machine, Aging Chamber, Washing Machine, Measurement Equipment, etc..

Equipment

Unicorn

FOL ITO Cleaning



FOL Developing



Inner Offset Printing



LC Filling



Irregular Scribing



Equipment

Unicorn

Fully-Auto COG Bonder, Toray FG2500



Fully-Auto COG Bonder, Toray CL2000



Fully-Auto COG Bonder, Panasonic TBX



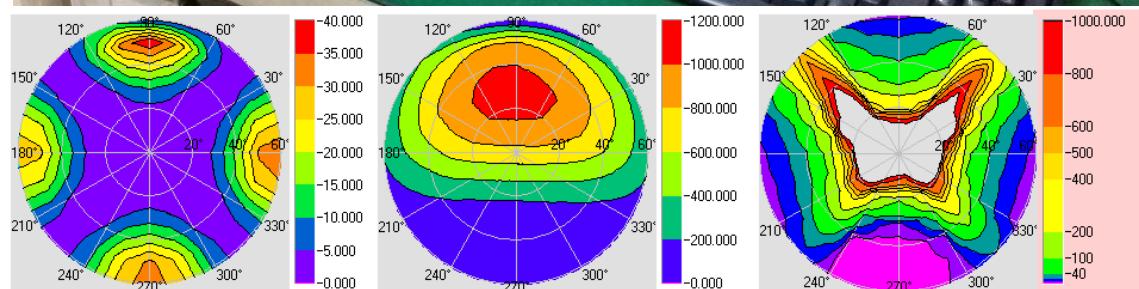
Fully-Auto COG+FOG Bonder, Comwin CYAC650



Validation Equipment

Unicorn

Autronic, DMS501



Otsuka, Photal LCD-5200



Aging Test



Name	Test Item	Capacity	Application
Walk-in Aging Test Room	<ul style="list-style-type: none"> -High temperature agint test -High temperature and high humidity aging test 	<ul style="list-style-type: none"> -The total number of equipment: 6 sets -Temp. range: RT~85°C -Humidity range: ≥90%RH -Total capacity 540K pcs/ month 	 <ul style="list-style-type: none"> -Applied for high temperature or high temperature humidity burn-in test. -Inspect the product display function in room temperature after aging test.
Transparent Window Aging Test Cabinet	<ul style="list-style-type: none"> -High temperature agint test -High temperature and high humidity aging test 	<ul style="list-style-type: none"> -The total number of equipment: 6 set -Temp. range: RT~100°C -Humidity range: ≥90%RH -Total capacity 230K pcs/ month 	 <ul style="list-style-type: none"> -Applied for high temperature or high temperature/humidity burn-in test. -Inspect the product display function in high temperature condition.

Reliability Test



Unicorn

Name	Test Item	Capacity	Application
Climate Environment Reliability Test Chamber	<ul style="list-style-type: none"> -High temperature test -Low temperature test -Thermal cycling test -High temperature and high humidity test -Programmable temperature/humidity cycling test -Thermal shock test 	<p>-The total number of equipment: 11 sets</p> <p>-Temp. range: -40°C~150°C</p> <p>-Humidity range: ≥90%RH</p> 	<p>-Applied for temperature climate environment reliability test.</p>
Electrostatic Discharge Generator	-ESD Test	<p>-The total number of equipment: 1 set</p> <p>-Output voltage range: ±0.2kV~±30kV</p> 	<p>-Applied for IEC61000-4-2 ISO10605</p>

Reliability Test



Unicorn

Name	Test Item	Capacity	Application
Single Sine Electric Vibration Test System	-Packaging vibration test	<ul style="list-style-type: none">-The total number of equipment: 1 sets-Frequency range: 5Hz~4500Hz-Max Acceleration:60G,-Max amplitude:25mm,-Max velocity:1.1m/s	 <ul style="list-style-type: none">-Applied for packaging single sine vibration test.

Unicorn's Commitment

(Dedicated Quality Control)



AOI for Display Inspection

- ✓ 2 high resolution camera system
- ✓ Max detection area: 160x130mm
- ✓ Detection resolution: down to 0.13mm
- ✓ Detectable defects: additional or missing segment, black/white dot defects, line defects, uneven contrast.
- ✓ Set to over-reject and manually confirmed by inspector to ensure no escapee to customers.
- ✓ Already implemented in Mass production since Q3 2012.

Quality System

Unicorn



CERTIFICATE

Management system as per

ISO 9001 : 2015

(idt GB/T 19001-2016)

In accordance with TUV NORD CERT procedures, it is hereby certified that

Unicorn Electronic (Shenzhen) Company Limited

No.214 of AnLan Road, Resident Committee of Xiahu Community, ZhangKengJing Village, GuanHu Street, LongHua District, 518110, Shenzhen City, Guangdong Province, P. R. China

Unified Social Credit Code: 91440300818902487G

applies a management system in line with the above standard for the following scope

Design and Manufacturing of LCD & LCM Products

Certificate Registration No. 44 100 1884 0012

Audit Report No. 2.5-9465/2021

Valid from 2021-01-21

Valid until 2024-01-21

Initial Certification 2018-01-21

Certification Body
at TUV NORD CERT GmbH

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits. Only when the certified organization accepts regular surveillance audits and successfully passes the audit, can the certificate continue to be effective. Validity can be verified at the official Website of Certification and Accreditation Administration of the People's Republic of China: www.cnca.gov.cn

TÜV NORD CERT GmbH Langemarckstrasse 20 45141 Essen www.tuev-nord-cert.com



ISO9001

Unicorn Electronic (Shenzhen) Co Ltd



ISO14001



IATF16949



Production Capacity (Monochrome LCD & LCM)



Pinning

Pinning process

500k pcs/mth



LCD

14"x16" mother glass

2 automated lines

4.0kk pcs/mth

(based on avg. 2 inch diagonal display)



COG

20+ automated COG bonders

Toray / Panasonic

3.5kk pcs/mth



FOG

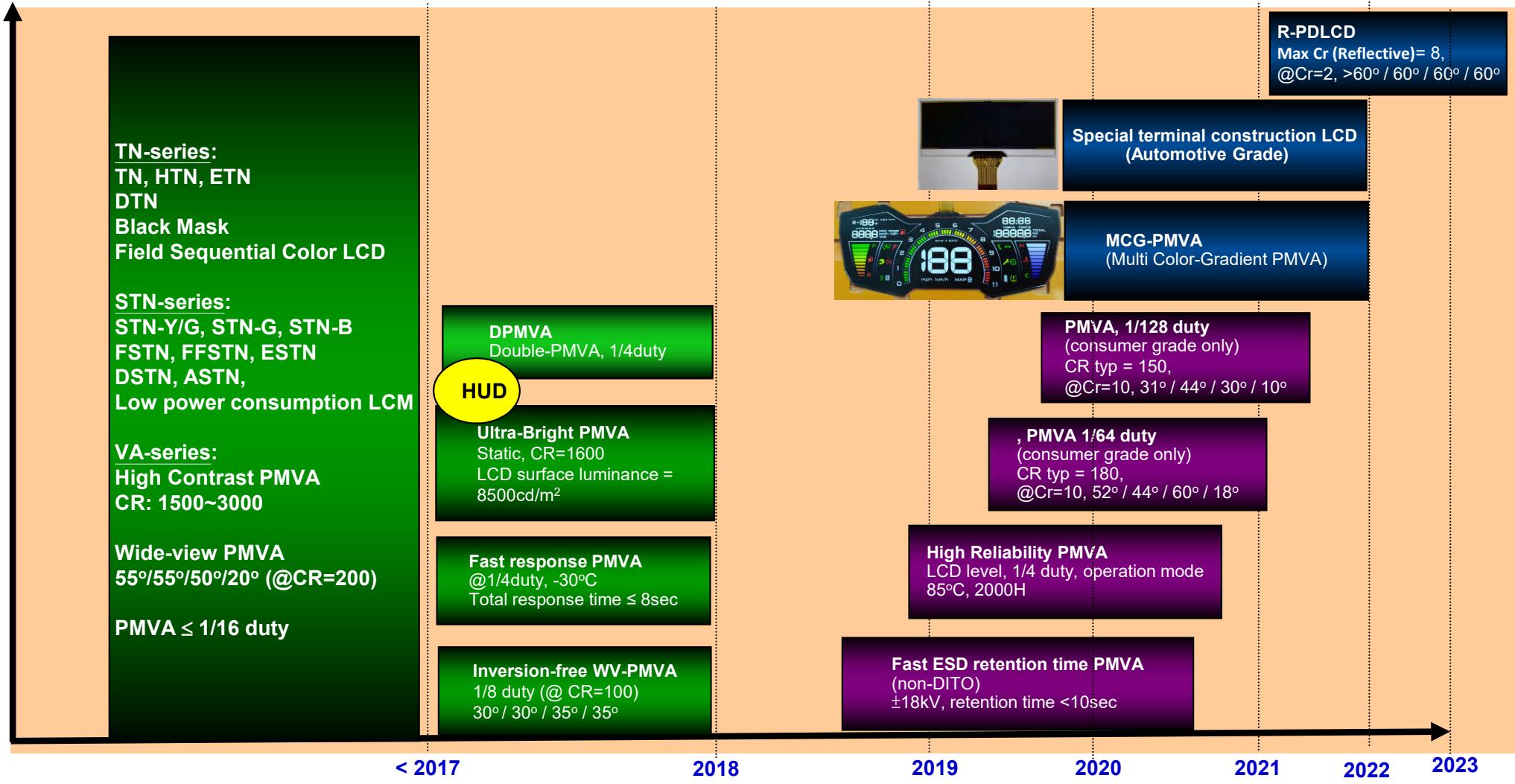
FPC/TAB/ COF/HSC bonding on LCD

Semi-auto bonders

3.5kk pcs/mth

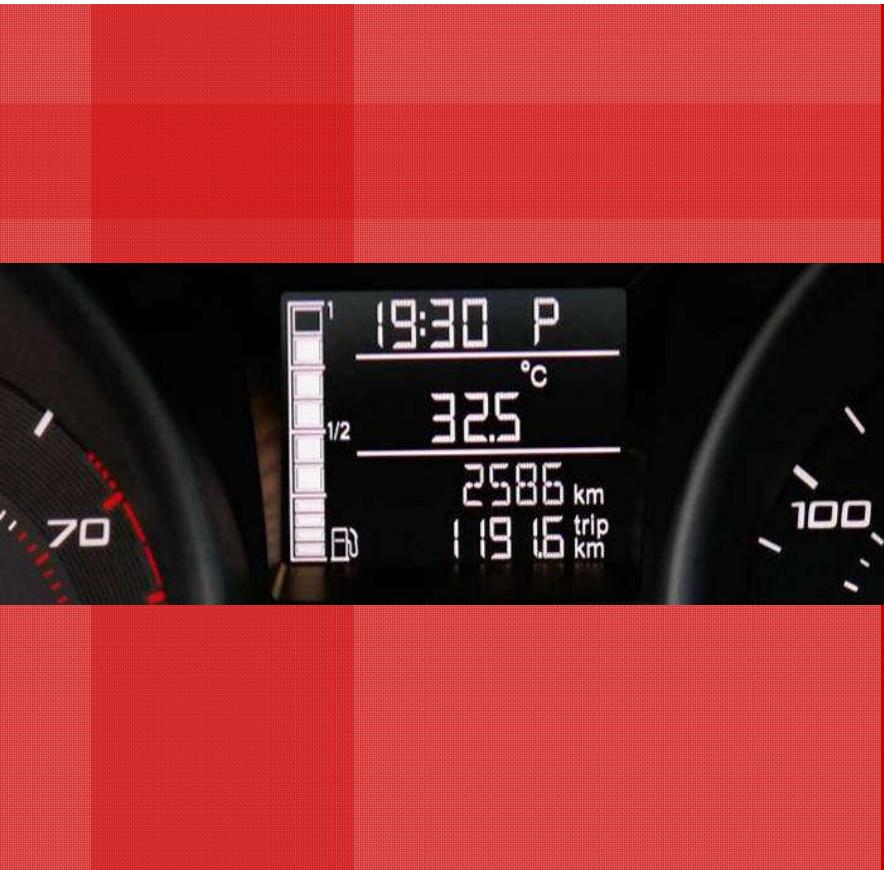
Product Technology Roadmap

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Unicorn



Reference Customers

Customer Reference



Telecommunication



Panasonic

vtech

uniden

Alcatel-Lucent

SIEMENS

UNIFY

AGFEO
einfach | perfekt | kommunizieren

NEC

Automotive



Continental
The Future in Motion

HOSIDEN

YAZAKI

STANLEY

MAGNETI
MARELLI

• A P T I V •

METHODE ELECTRONICS, INC.

Visteon

S&T Motiv

Industrial/Consumer Electronics



CASIO

SONY

POLAR

GROUPE
ATLANTIC

SENNHEISER

VAILLANT GROUP

B/S/H/

itron

BOSCH

ZOJIRUSHI

Office Automation



Canon

brother

RICOH

FUJI xerox

wacom

FUNAI

Customer Reference

(Telecommunication – cordless phone)

Unicorn

Panasonic®



uniden



vtech



Customer Reference

(Telecommunication – IP phone)

Unicorn

SIEMENS



Alcatel•Lucent



AGFEO

einfach | perfekt | kommunizieren



Customer Reference

(Consumer Electronics)

Unicorn

CASIO®



POLAR®



SENNHEISER



Reference Projects



Oven
4.3", 480x272 TFT-LCM



DJ Mixer
4.3", 480x272 TFT-LCM



Alcatel-Lucent 

IP Phone
3.5", 320x240 TFT-LCM

Reference Projects

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Panasonic
ideas for life

Phone
1.77", 128x160 TFT-LCM



brother[®]

Printer
1.77", 128x160 TFT-LCM

Reference End Customers (Automotive)

Unicorn



Unicorn

Remarks:

Unicorn is in OEM partnership for Stanley, supplying LCD/LCM to Japan & Korea automotive customers (Honda, Toyota, Mazda, Nissan)

Reference Customer & Application

(Instrument Cluster)



Unicorn



STANLEY S&T Motiv



Reference Customer & Application

(Instrument Cluster)



Unicorn



1/132 duty ASTN



Reference Customer & Application

(Climate Control)

Unicorn



DELPHI





Unicorn



TFT Backend LCM Production Line

2022.12.22



A1TFT LCM Production Line



2014-09-01 15:52



2014-09-01 15:53



2014-09-01 14:20



2014-09-01 14:18

A1F Production Line

CF Scribing

TFT Scribing

Ishiyama Full Automatic Polarizer Attachment Machine



Panel	CT(sec)	Work time			Time capacity (pcs/H)	Day capacity (pcs/D)	Monthly capacity (pcs/M)
		Days per monthly (D)	Time per day (H)	Utilization rate (%)			
3"	2.5	26	20	90%	1296	25920	673920
6"	3.0	26	20	90%	1080	21600	561600
8"	4.0	26	20	90%	810	16200	421200

A1TFT LCM Production Line

Unicorn



COG



FOG

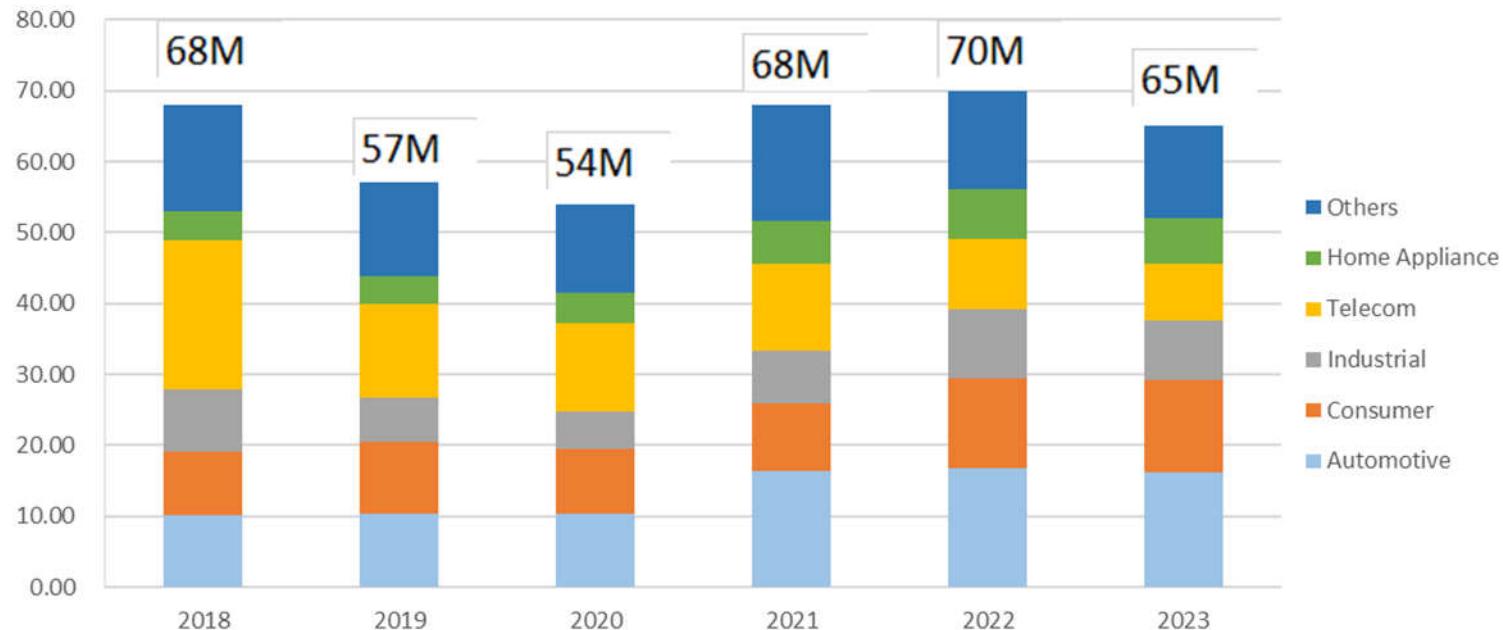


Post FOG Process

Unicorn Sales Revenue(USD)



Unicorn Sales Revenue From Yr 2018 to Yr 2023~By Application



By Category	2018	2019	2020	2021	2022	2023
Year	2018	2019	2020	2021	2022	2023
Application	% of sales	% of Budget				
Automotive	15%	18%	19%	24%	24%	25%
Consumer	13%	18%	17%	14%	18%	20%
Industrial	13%	11%	10%	11%	14%	13%
Telecom	31%	23%	23%	18%	14%	12%
Home Appliance	6%	7%	8%	9%	10%	10%
Others	22%	23%	23%	24%	20%	20%

Key Summary

Unicorn

Service & Support

Highly experienced engineering staffs in operation, QA and R&D to provide best services & solutions in LCD/ LCM customization.

Competitive Cost at Better Quality:

Automated processes and control leading towards:

- ✓ higher efficiency
- ✓ competitive manufacturing cost
- ✓ at a better quality

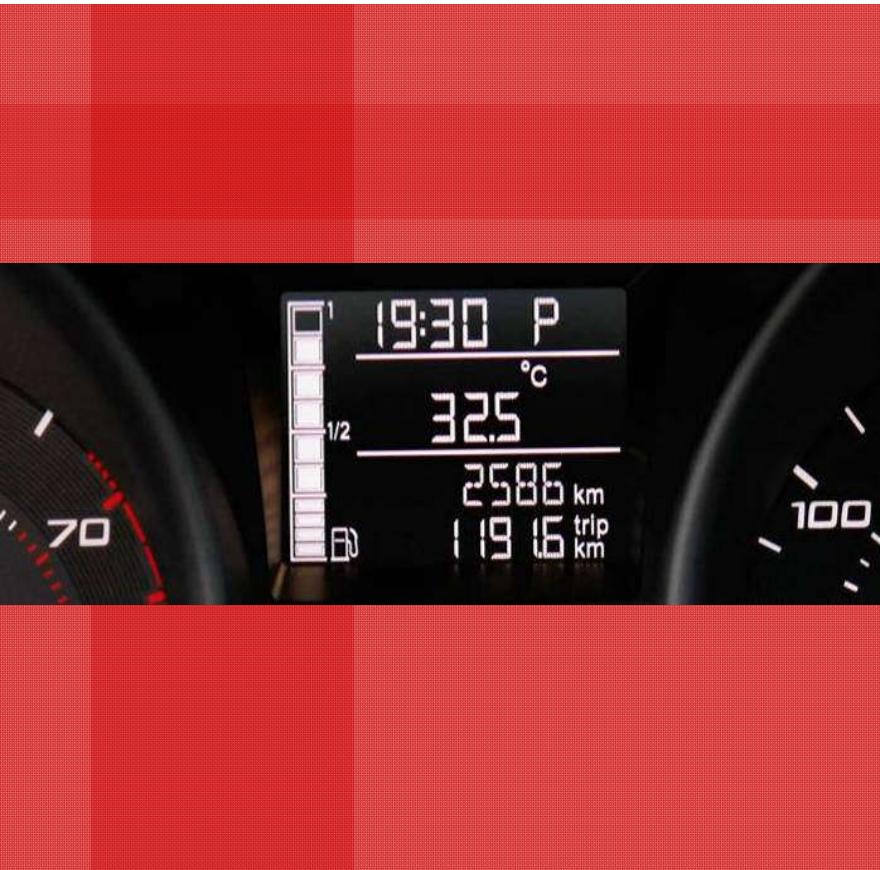
Technology Upgrade & Development:

Continuous technology development to meet full scope monochrome display demand for next 10 years:

- ✓ Automotive displays
- ✓ Vertical alignment displays
- ✓ High resolution STN displays.



Unicorn



Thank You !