



# EMnex

2020. 10

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Home Page : <http://www.emnex.co.kr> Address ; Samsung 1-ro 3-gil, Hwaseong-si, Gyeonggi-do, Korea, 18448

EMnex : Next Electronics Manufacturing Service

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## 1. Company Summary

- EMNEX is specializing in the manufacture of electronic products that supply customers with best quality and service in the best condition with pleasant production environment.

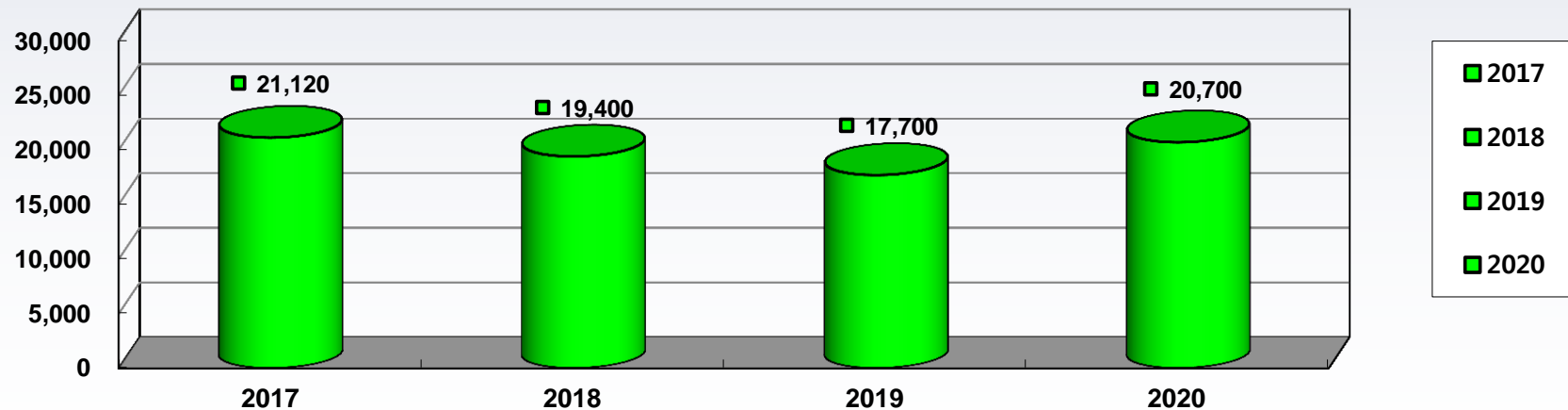


## Company Contents



- Address : Samsung 1-ro 3-gil, Hwaseong-si, Gyeonggi-do, Korea, 18448
- Number of employees : 87 people (Now a days)
- Representative : Young Wook Choi
- Business Status : Place\_2,600m<sup>2</sup>, Total floor space is 4,900m<sup>2</sup>  
New build start First basement level up to 4th aboveground Floors
- Turnover : '17yr: \$21.120,000, '18yr: \$19,400,000 '19yr: \$17,700,000 '20yr: \$20,700,000 (expected).
- Main Products : Controller (robot & elevator & railway vehicle), Driver (Servo, Stepping, inverter), X-RAY generator, sensor, Power electronics , Communication , Industrial Camera module .etc
- Home Page : [www.emnex.co.kr](http://www.emnex.co.kr)

(Unit : thousand , \$)





## EMNEX Partnership

### Industrial equipment



### Power Electronics & Defense



### Medical



### Others





## 2. Company History

- 1999 yr. Incorporation, Designated as a partner company of Samsung Electronics Co., Ltd. (Manufacturing and PCB Artwork)
- 2008 yr. Establishment of Research Institute (Attached)
- 2009 yr. Selected as a promising medium Company – by Gyeonggi-do Governor  
Selected as an INNOBIZ Company – Small and Medium Business Administration a director
- 2011yr. Enterence New building (2011, 10) basement 1<sup>st</sup>, aboveground floor 4<sup>th</sup> (Total floor space is 4,900m<sup>2</sup>)
- 2012 yr. EMNEX ... Change company name ( 2012, 10. 26 )
- 2013 yr. Parts and material specializing company – Ministry of Commerce, Industry and Energy  
Hyundai Rotem, PBA “A grade” Registered as a certified company (GQR-2015)
- 2014 yr. ERP SYSTEM operation.
- 2015 yr. Hanwha System (before, Samsung Thales), Registered as a defense industry company
- 2016 yr. Hanwha Techwin, QSA/ QPA Pass (quality)  
Factory registration ; PSE (Japan) , CCC (China), UL (U.S.A), CSA (Canada)
- 2018 yr, ISO 9001 Certification ( 2018 yr, SAI GLOBAL ), KSQ ISO9001
- 2019 yr, KSQ 9100 (AS 9100) Certification (2018 yr, KIWA KOREA) ,
- 2020 yr, SEMES SSQ Certification, LG Electronics, ROBOT businees, Registered as a certified company



## 3. Main Certification Status



[Research & Development Center]



[ ISO9001 certification ]



[ AS 9100 certification ]



[Promising Small and Medium Business]  
GyeongGi-Do Korea]



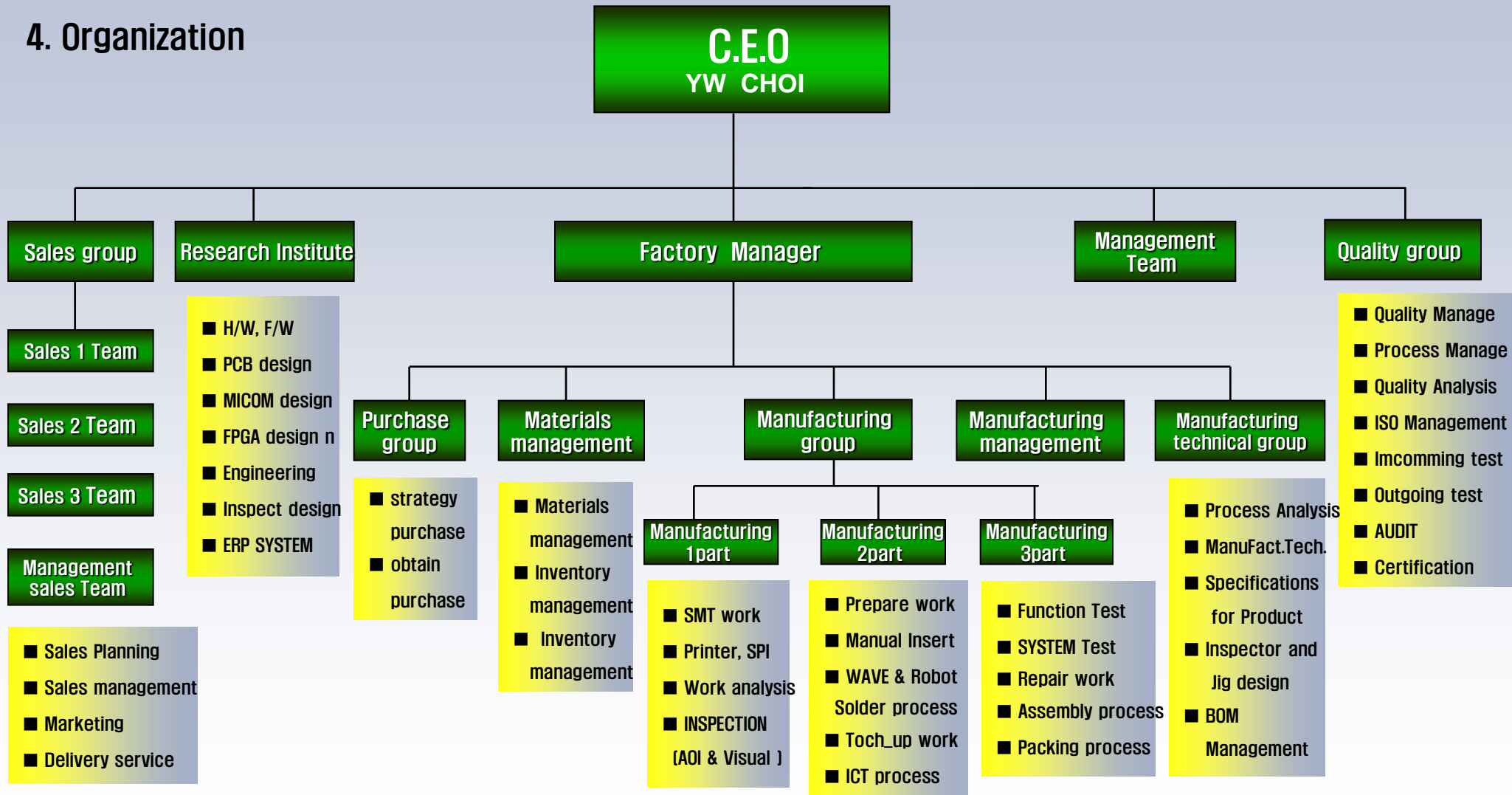
[ INNOBIZ COMPANY ]



[Parts and material specializing company]



## 4. Organization



## 5. Main manufacturing items

### Controller & Driver for Industry

#### ■ Robot controller series for Industrial (30 items)

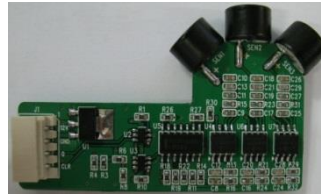


EMNEX is equipped from Samsung Electronics Co., Ltd (SEC), Samsung Display Co., Ltd. (SDC) with controller and 4 axis servo pack, 6-axis controller, AGV controller, Jetting Driver, etc... (PBA and SET products)

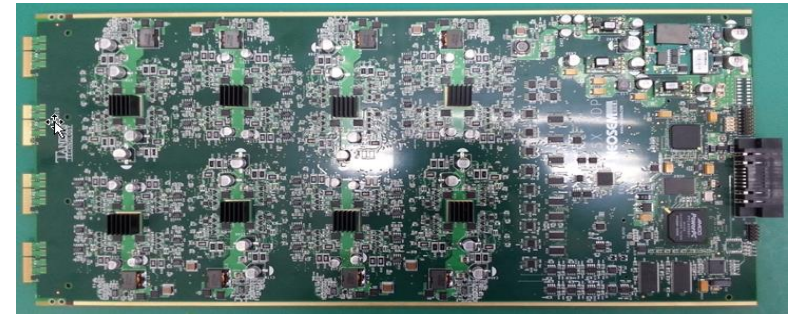
### Application



■ Motor driver and AGV controller etc..



■ InkJet system & for display and Test B'D etc for Semiconductor



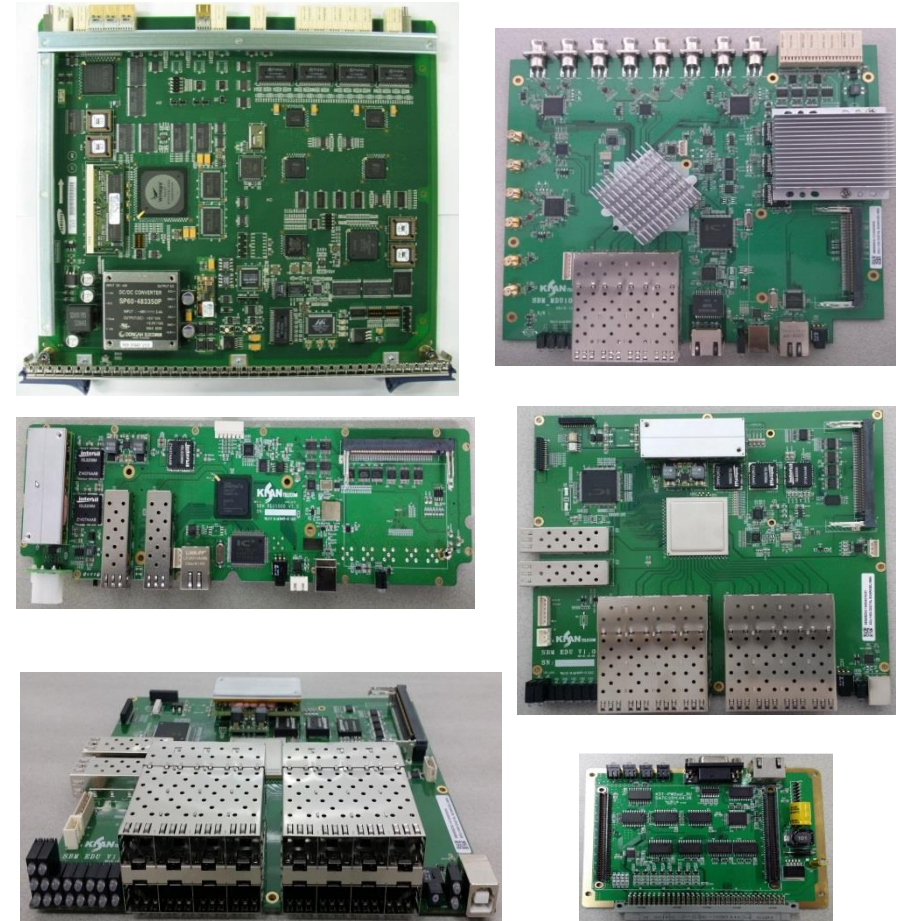


## ■ Elevator controller and Railway vehicle control B'D



## Communication

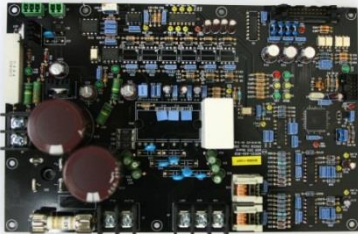
### ■ Optical transmission switching B'D for LTE



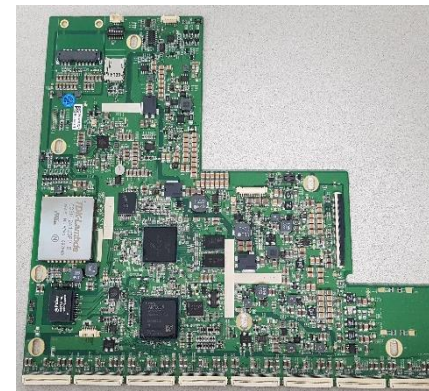


## Medical

### ■ X-RAY generator and Sensor B'D



### ■ Battery Management System (BMS) and Medical Measure B'D

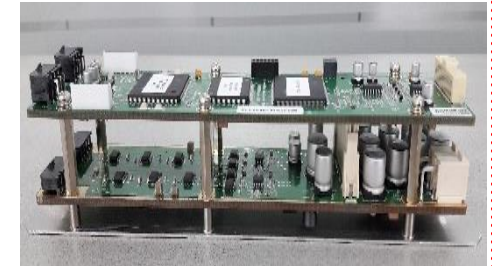
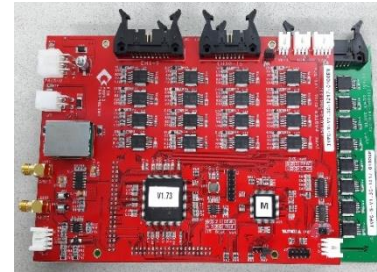
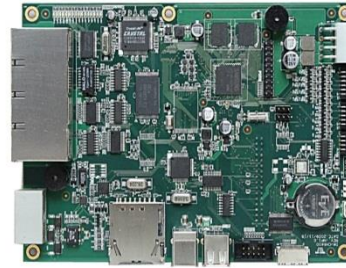




## Other

### ■ Power control System and Laser detector

### ■ Industrial camera modules, SMT, AOI, SPI controller, etc...





## 6. Manufacturing place

### Material warehouse



■ SMT Line (4 Line)

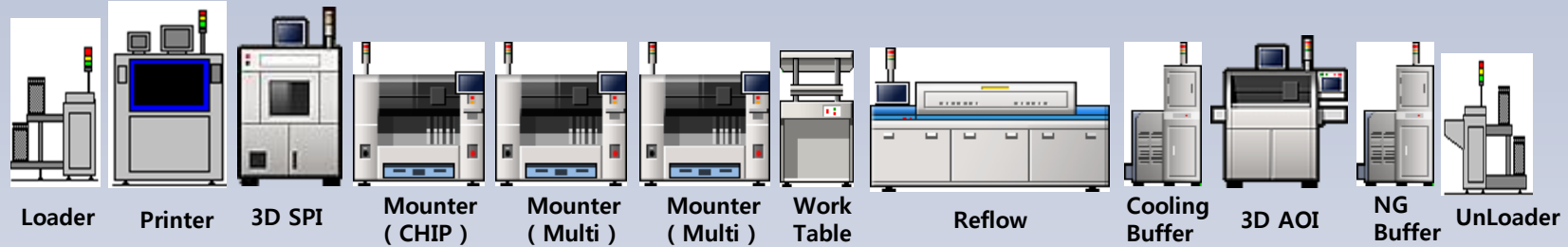
For PB\_Free (ROHS)



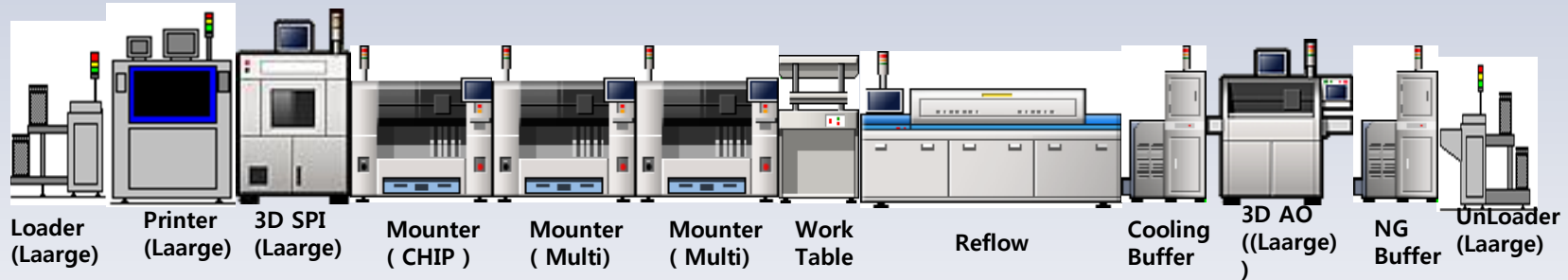


## SMT Line configuration

### (1) A\_Line (Standard, FULL)



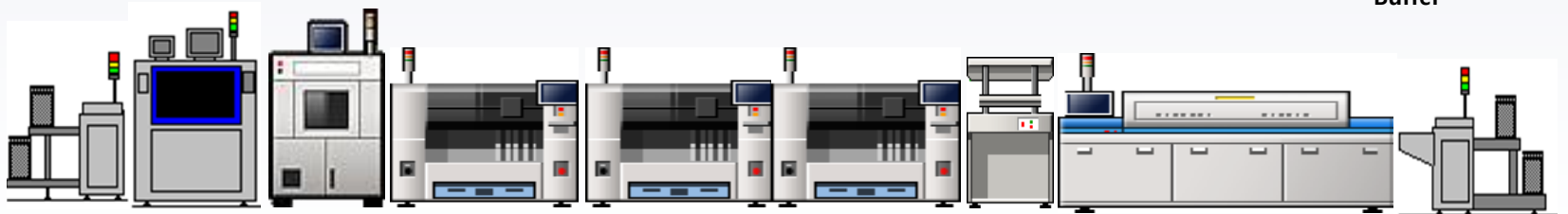
### (2) B\_Line (Larged Full type)



### (3) C\_Line (Standard, FULL)



### (4) D\_Line (Standard type)





■ Manual Insert Line ( DIP 4 Line )

For Lead\_Free



■ TEST Line



■ TEST Line



■ TEST Line



■ Quality Management



< Micro Inspection >

■ Selective Robot Soldering Line



■ Pointer Robot soldering



■ Ceiling type humidifying system



■ Squeegee blade washer and inspector



■ X-RAY inspection M/C



■ PBA water washing M/C and Deionized(D/I) water maker





■ Coating system Line



■ Customer Line



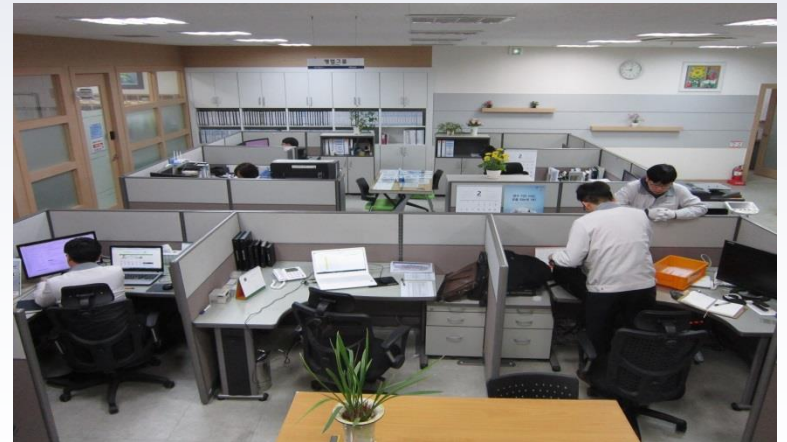
■ Small Clean Room



■ Flying Probe ICT Tester



■ Sales Office





## EMNEX ERP SYSTEM construct and Usage (example) \_ EMNEX own code system of establishing.

EMNEX ERP SYSTEM - PURCHASE ORDER PROGRAM

Order List:

입고일자	입고번호	입고명
2014-11-01	C104-0015-00	NEC, UPD
2014-11-27	C183-0025-00	MAXX, MR
2014-11-27	C209-0075-07	AVX, TXD
2014-11-27	C206-0055-00	BOURNS, 3
2014-11-27	C065-0000-09	DEC, 1.56E
2014-11-27	C084-0010-09	TOSHIBA
2014-11-27	C084-0030-09	TOSHIBA
2014-11-27	C094-0030-09	TL, 9074H
2014-11-26	C094-0000-09	NOV, 744C
2014-11-26	C106-0000-09	ATMEL, A1
2014-11-26	C220-0000-09	ARCO, M04
2014-11-26	C235-0010-09	BOURNS, 3
2014-11-26	C251-0030-09	LAKEVIEW
2014-11-25	C204-0120-09	SANYOVAR
2014-11-24	C141-0000-09	HANAH, LF
2014-11-24	C130-0000-09	KPS, ALP1
2014-11-24	C356-0000-09	TYCO, RTI
2014-11-23	C382-0180-09	BULL, 8536
2014-11-23	C382-0200-09	BULL, 8536
2014-11-22	C486-0000-09	MINILOG
2014-11-21	C209-0030-09	ANTISTAT
2014-11-21	C330-0010-01	ANY, 동진
2014-11-19	C330-0010-06	FASTTECH
2014-11-18	C378-0000-07	ANY, ASAT
2014-11-18	C379-0000-04	BOMC, 7C
2014-11-17	C186-0055-07	TL, THG2E
2014-11-15	C086-0110-07	Phone Co

Order Details (C104-0015-00):

입고일자	입고번호	입고명	수량	단위	가격	총액
2014-11-27	C104-0015-00	NEC, UPD	20	개	1,100,000	22,000,000
2014-11-27	C183-0025-00	MAXX, MR	20	개	1,100,000	22,000,000
2014-11-27	C209-0075-07	AVX, TXD	20	개	1,100,000	22,000,000
2014-11-27	C206-0055-00	BOURNS, 3	20	개	1,100,000	22,000,000
2014-11-27	C065-0000-09	DEC, 1.56E	20	개	1,100,000	22,000,000
2014-11-27	C084-0010-09	TOSHIBA	20	개	1,100,000	22,000,000
2014-11-27	C084-0030-09	TOSHIBA	20	개	1,100,000	22,000,000
2014-11-27	C094-0030-09	TL, 9074H	20	개	1,100,000	22,000,000
2014-11-26	C094-0000-09	NOV, 744C	20	개	1,100,000	22,000,000
2014-11-26	C106-0000-09	ATMEL, A1	20	개	1,100,000	22,000,000
2014-11-26	C220-0000-09	ARCO, M04	20	개	1,100,000	22,000,000
2014-11-26	C235-0010-09	BOURNS, 3	20	개	1,100,000	22,000,000
2014-11-26	C251-0030-09	LAKEVIEW	20	개	1,100,000	22,000,000
2014-11-25	C204-0120-09	SANYOVAR	20	개	1,100,000	22,000,000
2014-11-24	C141-0000-09	HANAH, LF	20	개	1,100,000	22,000,000
2014-11-24	C130-0000-09	KPS, ALP1	20	개	1,100,000	22,000,000
2014-11-24	C356-0000-09	TYCO, RTI	20	개	1,100,000	22,000,000
2014-11-23	C382-0180-09	BULL, 8536	20	개	1,100,000	22,000,000
2014-11-23	C382-0200-09	BULL, 8536	20	개	1,100,000	22,000,000
2014-11-22	C486-0000-09	MINILOG	20	개	1,100,000	22,000,000
2014-11-21	C209-0030-09	ANTISTAT	20	개	1,100,000	22,000,000
2014-11-21	C330-0010-01	ANY, 동진	20	개	1,100,000	22,000,000
2014-11-19	C330-0010-06	FASTTECH	20	개	1,100,000	22,000,000
2014-11-18	C378-0000-07	ANY, ASAT	20	개	1,100,000	22,000,000
2014-11-18	C379-0000-04	BOMC, 7C	20	개	1,100,000	22,000,000
2014-11-17	C186-0055-07	TL, THG2E	20	개	1,100,000	22,000,000
2014-11-15	C086-0110-07	Phone Co	20	개	1,100,000	22,000,000

(EX. Purchase order program)

(EX. Materials management program)

(EX. Quality Management program)

(EX. Manufacturing technology program)

EMNEX ERP SYSTEM - MANUFACTURING TECHNOLOGY PROGRAM

Material List:

입고일자	입고번호	입고명	수량	단위	가격	총액
2014-11-27	C104-0015-00	NEC, UPD	20	개	1,100,000	22,000,000
2014-11-27	C183-0025-00	MAXX, MR	20	개	1,100,000	22,000,000
2014-11-27	C209-0075-07	AVX, TXD	20	개	1,100,000	22,000,000
2014-11-27	C206-0055-00	BOURNS, 3	20	개	1,100,000	22,000,000
2014-11-27	C065-0000-09	DEC, 1.56E	20	개	1,100,000	22,000,000
2014-11-27	C084-0010-09	TOSHIBA	20	개	1,100,000	22,000,000
2014-11-27	C084-0030-09	TOSHIBA	20	개	1,100,000	22,000,000
2014-11-27	C094-0030-09	TL, 9074H	20	개	1,100,000	22,000,000
2014-11-26	C094-0000-09	NOV, 744C	20	개	1,100,000	22,000,000
2014-11-26	C106-0000-09	ATMEL, A1	20	개	1,100,000	22,000,000
2014-11-26	C220-0000-09	ARCO, M04	20	개	1,100,000	22,000,000
2014-11-26	C235-0010-09	BOURNS, 3	20	개	1,100,000	22,000,000
2014-11-26	C251-0030-09	LAKEVIEW	20	개	1,100,000	22,000,000
2014-11-25	C204-0120-09	SANYOVAR	20	개	1,100,000	22,000,000
2014-11-24	C141-0000-09	HANAH, LF	20	개	1,100,000	22,000,000
2014-11-24	C130-0000-09	KPS, ALP1	20	개	1,100,000	22,000,000
2014-11-24	C356-0000-09	TYCO, RTI	20	개	1,100,000	22,000,000
2014-11-23	C382-0180-09	BULL, 8536	20	개	1,100,000	22,000,000
2014-11-23	C382-0200-09	BULL, 8536	20	개	1,100,000	22,000,000
2014-11-22	C486-0000-09	MINILOG	20	개	1,100,000	22,000,000
2014-11-21	C209-0030-09	ANTISTAT	20	개	1,100,000	22,000,000
2014-11-21	C330-0010-01	ANY, 동진	20	개	1,100,000	22,000,000
2014-11-19	C330-0010-06	FASTTECH	20	개	1,100,000	22,000,000
2014-11-18	C378-0000-07	ANY, ASAT	20	개	1,100,000	22,000,000
2014-11-18	C379-0000-04	BOMC, 7C	20	개	1,100,000	22,000,000
2014-11-17	C186-0055-07	TL, THG2E	20	개	1,100,000	22,000,000
2014-11-15	C086-0110-07	Phone Co	20	개	1,100,000	22,000,000

Manufacturing Order List:

입고일자	입고번호	입고명	수량	단위	가격	총액
2014-11-27	C104-0015-00	NEC, UPD	20	개	1,100,000	22,000,000
2014-11-27	C183-0025-00	MAXX, MR	20	개	1,100,000	22,000,000
2014-11-27	C209-0075-07	AVX, TXD	20	개	1,100,000	22,000,000
2014-11-27	C206-0055-00	BOURNS, 3	20	개	1,100,000	22,000,000
2014-11-27	C065-0000-09	DEC, 1.56E	20	개	1,100,000	22,000,000
2014-11-27	C084-0010-09	TOSHIBA	20	개	1,100,000	22,000,000
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2014-11-26	C106-0000-09	ATMEL, A1	20	개	1,100,000	22,000,000
2014-11-26	C220-0000-09	ARCO, M04	20	개	1,100,000	22,000,000
2014-11-26	C235-0010-09	BOURNS, 3	20	개	1,100,000	22,000,000
2014-11-26	C251-0030-09	LAKEVIEW	20	개	1,100,000	22,000,000
2014-11-25	C204-0120-09	SANYOVAR	20	개	1,100,000	22,000,000
2014-11-24	C141-0000-09	HANAH, LF	20	개	1,100,000	22,000,000
2014-11-24	C130-0000-09	KPS, ALP1	20	개	1,100,000	22,000,000
2014-11-24	C356-0000-09	TYCO, RTI	20	개	1,100,000	22,000,000
2014-11-23	C382-0180-09	BULL, 8536	20	개	1,100,000	22,000,000
2014-11-23	C382-0200-09	BULL, 8536	20	개	1,100,000	22,000,000
2014-11-22	C486-0000-09	MINILOG	20	개	1,100,000	22,000,000
2014-11-21	C209-0030-09	ANTISTAT	20	개	1,100,000	22,000,000
2014-11-21	C330-0010-01	ANY, 동진	20	개	1,100,000	22,000,000
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2014-11-18	C378-0000-07	ANY, ASAT	20	개	1,100,000	22,000,000
2014-11-18	C379-0000-04	BOMC, 7C	20	개	1,100,000	22,000,000
2014-11-17	C186-0055-07	TL, THG2E	20	개	1,100,000	22,000,000
2014-11-15	C086-0110-07	Phone Co	20	개	1,100,000	22,000,000

## 7. Major Manufacturing Facilities

[1/2]

Division	Equipment name	Number	Equipment Maker	Etc.. (SPEC)
SMT Line (4 Line)	Standard type mounter (SMT)	4	Hanwha Techwin	SM471 (2 units), SM411 (2 units)
	Multi type mounter (SMT)	8	Hanwha Techwin	SM482 (7 units), SM421 (1 units)
	SCREEN Printer	4	Tenryu Seiki (Japan), Sj Tech	TSP-1200, TSP-600, TSP-550 , HP-850S
	Reflow M/C	4	Heller Korea	Heller MK1810III(4 units), RoHS
	Solder cream checker (3D SPI)	4	Ko Young Technology	Aspire-3 (3D SPI) 1 unit, KY8020-2L [3 units],
	Vision inspector (Included 3D AOI)	5	Ko Young Technology, MASS (Japan)	Zenith (3D AOI _In-Line) (3 Units), HDL_650 [2 units]
	Router	1	MS Tech	DPL-T (PCB cutting)
	Nitrogen generator (N2)	2	Kyultron	N2 GENERATOR ( 2 Set)
	Ceiling injection Humidification system	25	Sell Ricoh	HU-CONSTM System, Humidity maintenance, Installation all the field
	Etc., equipment	24	NC Master, viscometer, squeegee blade washer, squeegee blade tester, Mask washer, LCR Meter system, etc	
IMT (Dip) Line (Auto Soldering) (4 Line)	Auto Soldering Machine	4	Shin Myung	SAS-620 (2units), SAS600 (2 units)
	PCB washer	1	Aqueous (USA)	Pure water maker (DI WATER) and PCB washer
	ICT M/C	2	OKANO(Japan), Samsung Electronics Co.	AT-01 (2 units)
Robot Soldering Line (1 Line)	Selective Robot Soldering	2	InterSelect (Germany)	2 port (Used fuel, Non fuel possible)
	Pointer Robot soldering	1	MEIKO TECH (Japan)	1 point Robot soldering machine
Test / Assembly / Packaging Line	Function Cell Line	10	self-production	Inspection / Simple assembly process
	ROOM for set assembly and Inspection.	6	Customer room	Specified customers room
Automatic coating system (1 Line)	3 Conformal Coated System	1	PVA (USA)	3 Conformal Coated Robot System
	Reflow M/C	1	Heller Korea	7 zone reflow

Division	Equipment name	Number	Equipment Maker	Etc.. (SPEC) [2/2]
Materials warehouse	Baking OVEN	1	Byum jin	Bare PCB dryer
	Micro Dry	6	Seli Richo	Main material dehumidifier
	High speed dehumidifier	7	Seli Richo	Main material dehumidifier (After opening rapidity dehumidification function)
	Vaccum Packaging	1	JS pac	Vacuum packaging equipment
Inspector & Environmental equipment	X-RAY inspection M/C	1	SEC	X-EYE 51000F
	Flying Probe ICT Tester	1	EMERIX	
	Microscope Inspector	1	SOME TECH	CAMSCOPE
	40 times magnifying microscope system	4	Sehyun Trading	Attach to Monitor function, capture possible
	Radiation measuring instrument	1	SEC	
	Thermal shock tester	1	Byum jin	-20~80 ° c (Medium Chamber)
	Pressure tester	2	Dae Kwang	Withstanding voltage tester
	Digital tensile strength meter	1	Yu Yu	Soldering removable test (component)
	Large high temperature chamber	1	ALL THREE	0 °C - 80 °C [ 400 x 300 x 250cm ]
	Forced convection Oven (PCB)	2	Byum jin, Core Tech	Max 250 °C [ per 0.2 °C ]
	Thermo-hygrostat	6	Kiturami ( Heating Cooling/Dehumidification )	PVU 50T7P1 (6 unit), Lage Type ( 120 m <sup>2</sup> )
	Static Tester	2	Shinhan High Tech	ESC-670 (Shoe Tester)
	Ion blower	16	DIT	For the removal of static electricity (2P, 3P)
Clean Room	Small clean room	1	Clean Booth – Class 1,000, HEPA FILTER ( 1492 x 572 x 75T )	
Other measuring instruments	Measuring instrument and etc..	60	BGA REWORK equipment, Calibrator, label printer, AC, DC POWER,, Analog Tester, Oscilloscope, illuminometer, surface resistance meter, reel counter, static test (HANDY), etc...	



## 8. Manufacturing Operations Plan

Content		2020 yr.	2021 yr.	2022 yr.	The present
Equipment and Line operation	SMT Line (4 Line)	<ul style="list-style-type: none"> <li>● SMT, 4 Line operate</li> <li>● 1 Shifts</li> </ul>	<ul style="list-style-type: none"> <li>● SMT 5 Line review</li> <li>● 2 Shifts review</li> </ul>	<ul style="list-style-type: none"> <li>● SMT 6 Line review</li> <li>● 2 Shifts operate</li> </ul>	1) A, D Line ; Standard type 2) B, C Line : Large type
	DIP Line (4 Line)_ Wave	<ul style="list-style-type: none"> <li>● 4 Line operate</li> <li>● Pb (2) , Pb free (2)</li> </ul>	<ul style="list-style-type: none"> <li>● 4 Line review</li> <li>● Pb (2) , Pb free (2)</li> </ul>	<ul style="list-style-type: none"> <li>● 4 Line review</li> <li>● Pb (2) , Pb free (2)</li> </ul>	1) A, B Line : Pb Line 2) C, D Line ; Pb Free (ROHS)
	Robot Solder Line (1 Line )	<ul style="list-style-type: none"> <li>● 1 Line operate</li> <li>● Selective (2), Pointer (1)</li> </ul>	<ul style="list-style-type: none"> <li>● 2 Line review</li> <li>● Selective (4), Pointer (1)</li> </ul>	<ul style="list-style-type: none"> <li>● 2 Line operate</li> <li>● Selective (4), Pointer (1)</li> </ul>	1) Robot solder line operation 2) All used for Pb/ Pb Free
	Function Cell Line (10 Line)	<ul style="list-style-type: none"> <li>● Function 10 Cell Line</li> <li>● Test &amp; Repair room</li> </ul>	<ul style="list-style-type: none"> <li>● Function 14 Line</li> </ul>	<ul style="list-style-type: none"> <li>● Function 17 Line</li> </ul>	1) Function design 2) Repair room (BGA Reball)
	Set test & assembly (6)	<ul style="list-style-type: none"> <li>● Customer set room (6) [ Set test &amp; assembly ]</li> </ul>	<ul style="list-style-type: none"> <li>● Customer set room (9) [ Set test &amp; assembly ]</li> </ul>	<ul style="list-style-type: none"> <li>● Customer set room (9) [ Set test &amp; assembly ]</li> </ul>	Customer set room (6) (space : 120 m <sup>2</sup> )
	Automatic coating line	<ul style="list-style-type: none"> <li>● Auto coating system [ 1 Line ]</li> </ul>	<ul style="list-style-type: none"> <li>● Auto coating system [ 1 Line ]</li> </ul>	<ul style="list-style-type: none"> <li>● Auto coating system [ 1 Line ]</li> </ul>	3 Conformal Coated Robot System
Man power operation	Manufacturing	45	50	55	
	Purchase / Materials	4/ 6 (10)	10	10	
	Quality / Manufactuein Management	7/ 2 (9)	10	10	
	Manufacturing technology (Eng.)	6	7	8	
Total operation manpower		70	77	83	

## 9. Quality Process

### ■ Quality improvement 150 Operation

#### Quality improvement 150 Operation

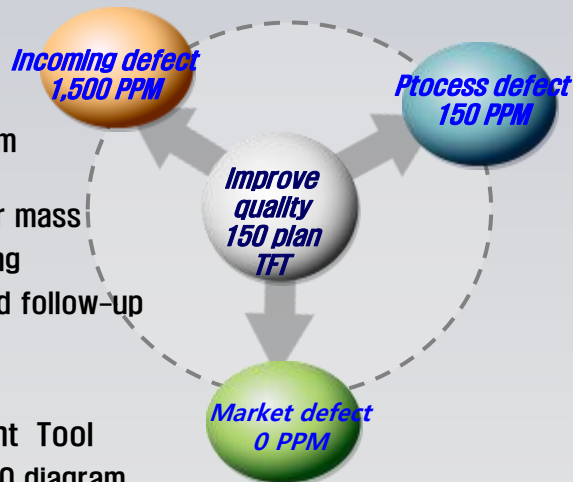
- market defect zero
- process defect 150ppm
- incoming defect 1,500ppm

- New customers and after mass production. Strengthening preventives activities and follow-up mass production

- Analysis & Improvement Tool
  - type analysis – PARETO diagram
  - Trend management – PPM management chart

- Way of Activity

- Weekly quality meeting : Every Tuesday
- Progress check meeting : Monthly
- Progress report : Monthly



### ■ Quality improvement strategy

- Customers require, Quality is 'zero defect' levels.

→ There is no defect in LOT but in case of one critical defect, require quality improvement report.

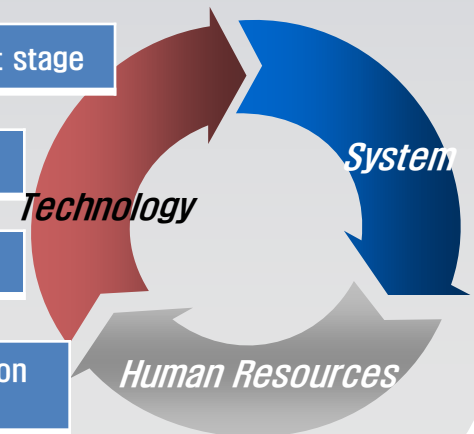
→ In order to meet customer demand rather than simple 'Reduction of defects' requires uniform manufacturing.

1. Improve quality in development stage

2. Improve manufacturing quality

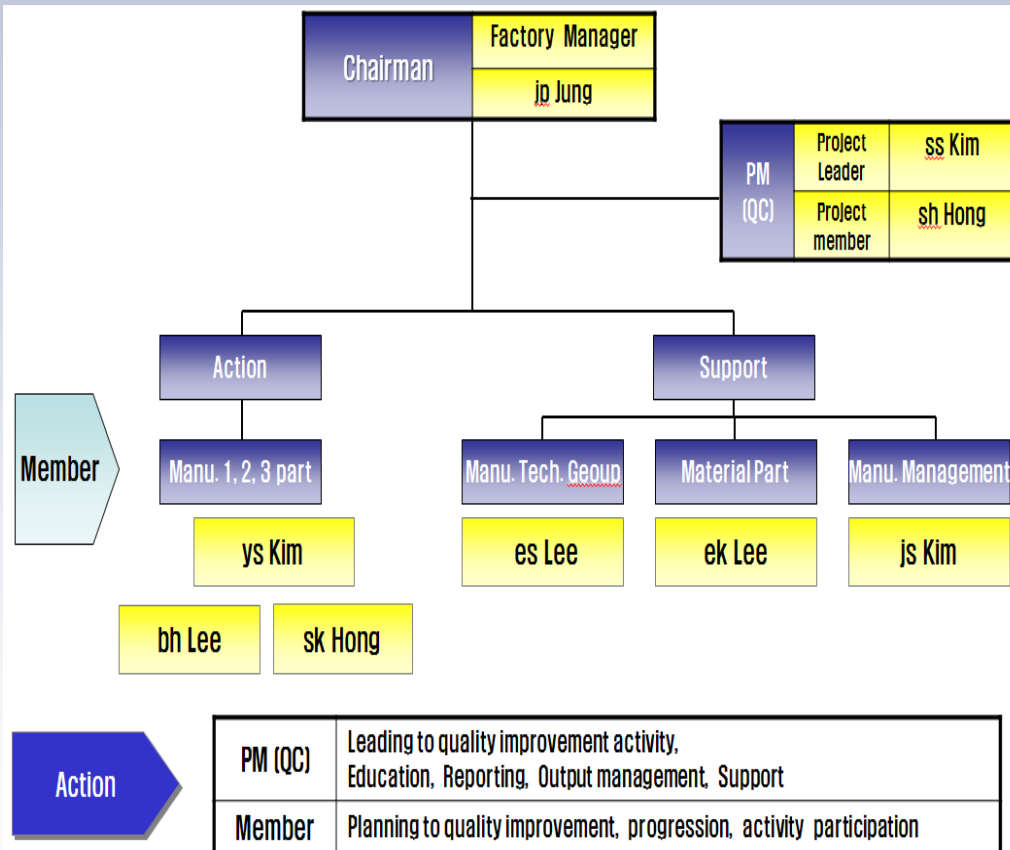
3. Customer quality satisfaction

4. One Team (strength cooperation among the members)





## Quality Improvement Promotion Organization



## Quality improvement plan

### Development ~ Initial products quality stabilization

#### Initial quality stabilization of manufacturing products

- The time transfer production, Check the history and Issue point
- Share Issue point in development stage [quality, manu. technology, 1/2/3 part]
- When launching of new model products, Concentration for process quality

### Manufacturing quality stabilization

#### Improve process quality

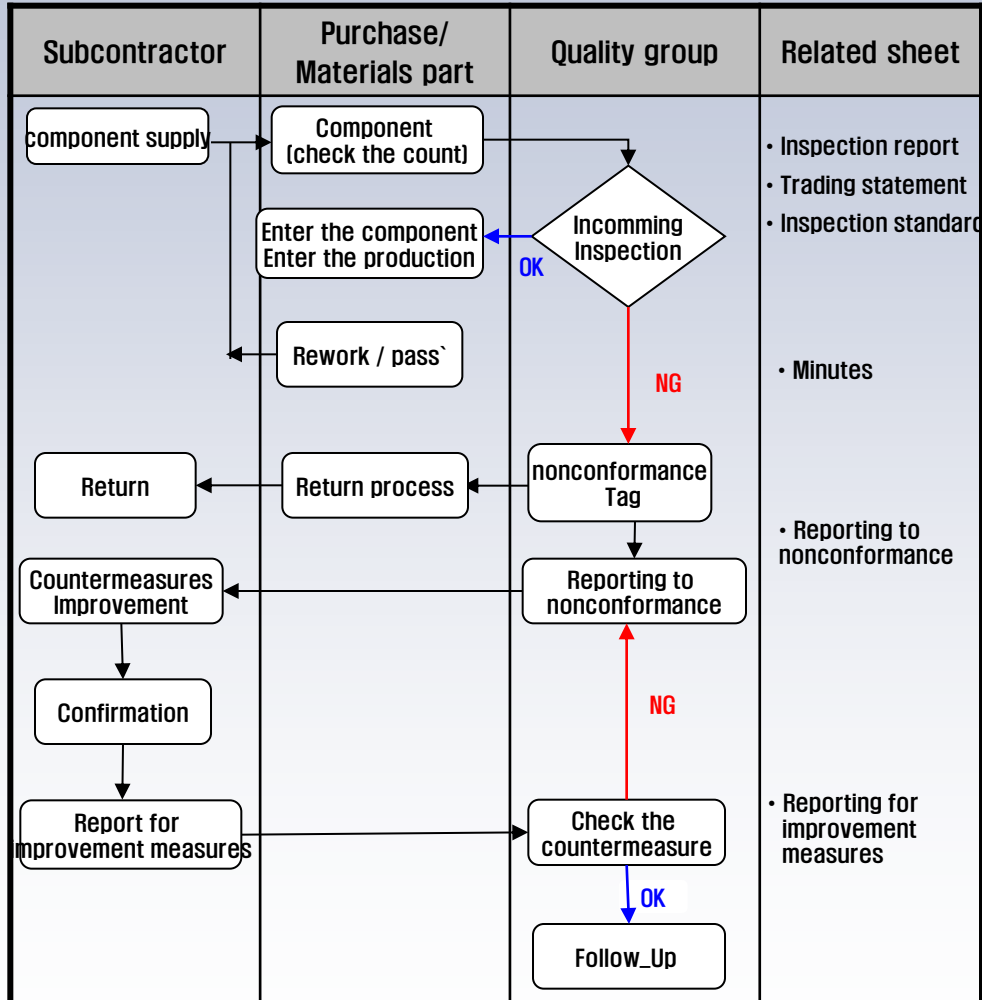
- Establish countermeasure to recurrence prevention from worst defect analysis
  - Establish countermeasure after analysis, of the defect of operator error
- ① Operator quality awareness    ② Check the system  
③ Operation environment (3-way 5S)    ④ Operator's body, psychological state

### Customer Satisfaction

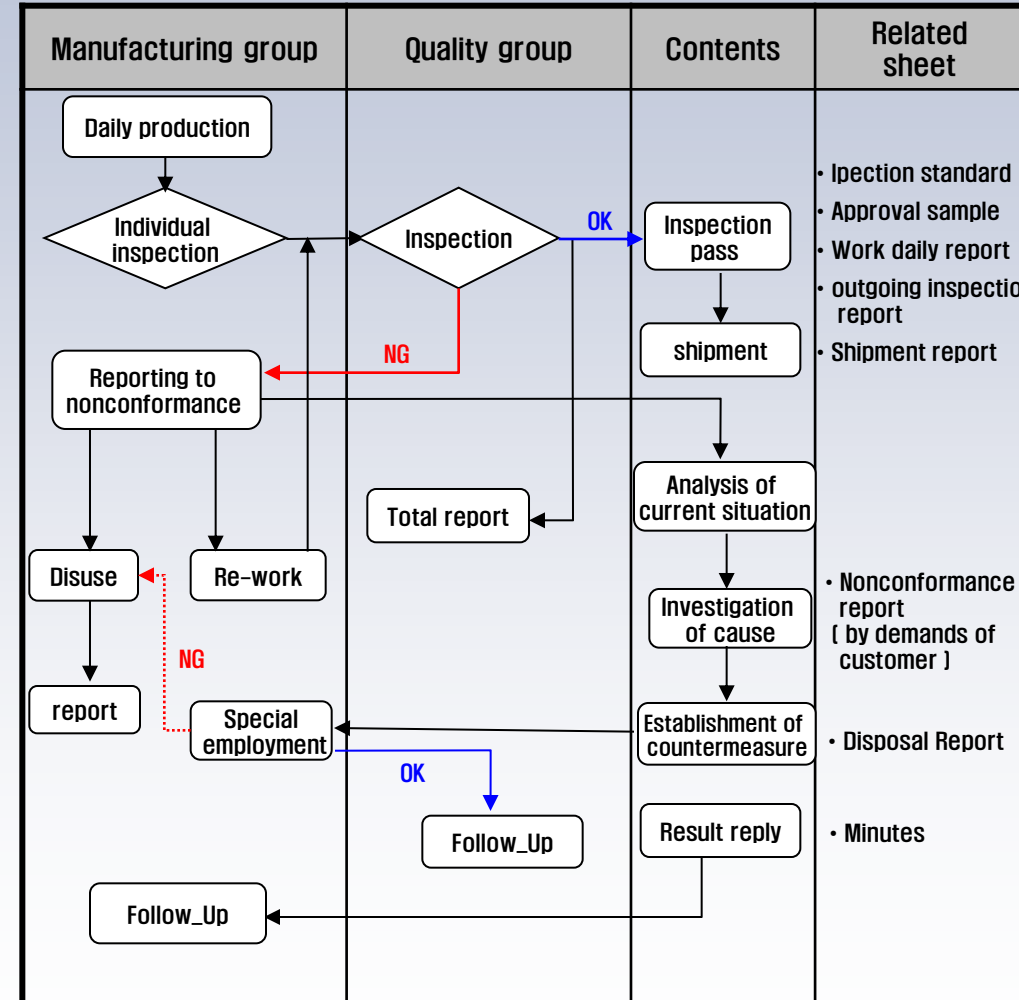
#### Establish a customer satisfaction process

- Establishing a plan and improve problems by surveying customer satisfaction.
- Establishing quality differentiation plan to applied to manufacturing line
- Establishing 3-way 5S operation plan to maintain manufacturing line need to ask the customer .

## Incomming Inspection Process

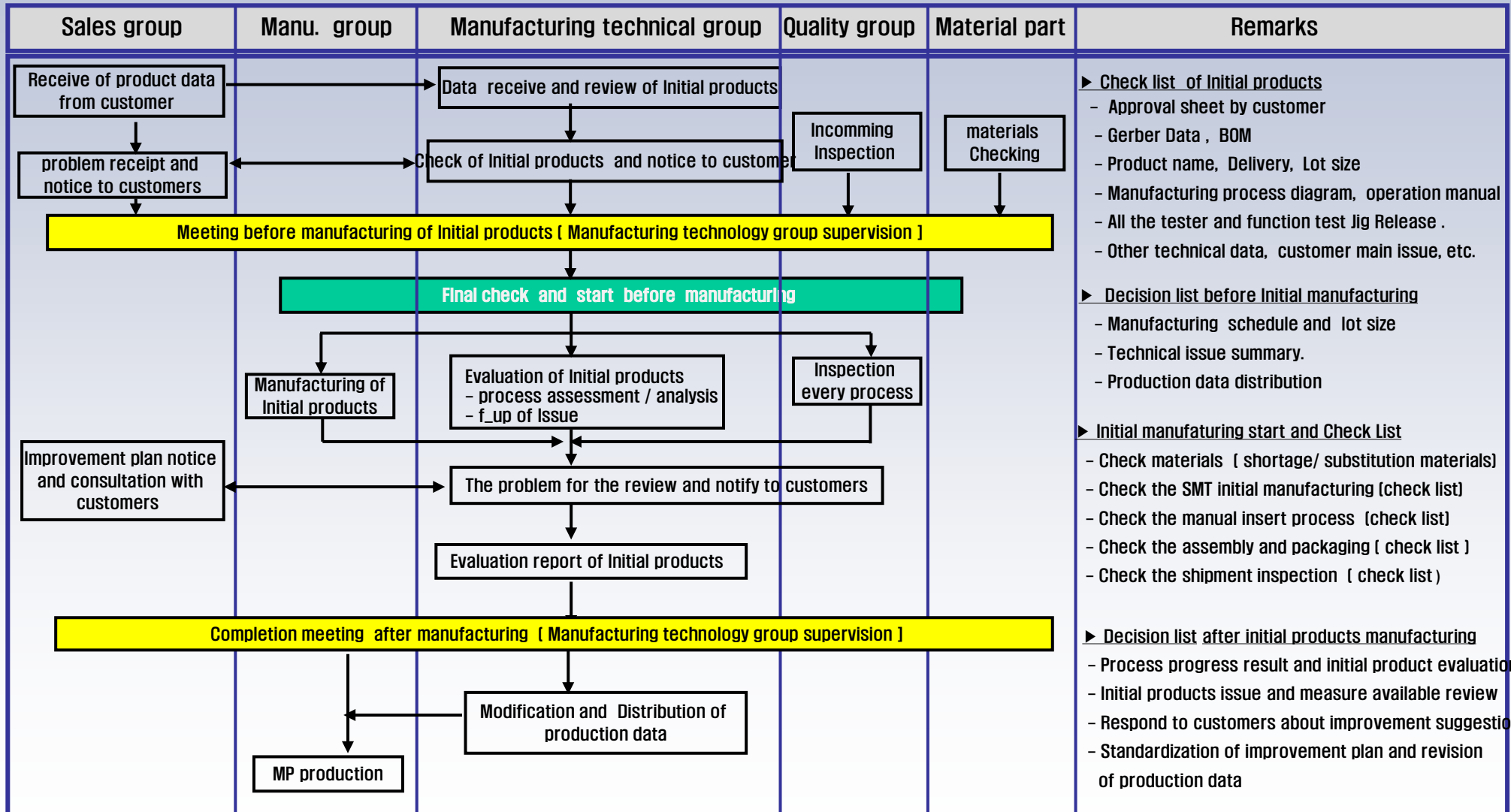


## Outgoing Inspection Process





## Quality process of Initial products



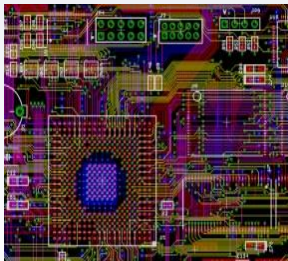
## Check sheet for process flow (every lot)

Ray Affiliate of SAMSUNG				공정이동관리표				용 질		승 인	
모델명		ALPHA_MCU		LOT수		160		납사양		유연납	
구 분		시작 일시		종료 일시		LOT수		불량수		폐기	
공정명		완료 일시		시작(분)		검사수		자주 검사 확인			
자재 불출		2014. 11. 12		12:18:50 ~ 19:10		150		이진호			
S M T						150		조영준			
SMT조도용 검사 (비전+육안)		12. 18:50				150		장영준			
A O I 검사		11. 13 08:20		10:05		150		조영준			
SMT VISUAL		11. 13 10:40		12:05		150		이진호			
수 상		11. 15. 15:45		10:05		150		이진호			
후 작 업		11. 16 09:20		11:15		150		전영준			
수상 VISUAL		11/19 14:40		19:00		150		이진호			
조 립											
기능 검사		11/19 08:40		11:00		150		이진호			
포장 검사		11/19 11:40		12:00		150		김창준			
1) 불량내역 : U10, U11 : Vendor 확인할 것 (2014.07 초도생산 시, 오삽발생) MCU모델 ▶ C151-0035-63, SPIEX, SP3232EEA-L 2) 로터리를 주의 !!! 고객사 검사 지그 특성으로 인해 TLP185사용불가 (고객사 검토중) ▶ TLP181 or LTV-3567로한 사용 할 것!!! (한정, 각기에서 Saturation Voltage가 0.2V 이상으로 나옴 경우에만 Pass 되지만, 그 이상으로 나옴 경우엔 Pass가 Fail 되어 한자의 부작할 상황이 발생함)											
구분		공정 문제점 및 개선 요구사항								작성자	
자재 불출		PCB : 160 EA REV. ( 1.00 )								이진호	
S M T		A line								조영준	
SMT VISUAL		U10, U11 오삽(MAXIM)				U10, U11 앞쪽(SPIEX)				장영준 (11/16)	
수 상											
후 작 업											
수상 VISUAL											
검 사											
포 장											
출 하 검사											

## Check sheet for Initial products

주  한티기술		초도품 성적서		신규 생산		용 질		승 인	
검사일자		2014-11-26		11월 26일		11월 26일			
모델명		HTMC502J-MVB-Rev.B		LOT수		46		납사양	
고객사		한티기술		Line		B-Line		검사자	
								김상준	
NO		Check 사항		OK		NG		비고	
1		기술변경 및 생산자료 (PL, 작업지도서) 최신VER 확인		○				VER: ( HTMC502J-MVB-Rev.B )	
2		PCB 외관불량(패턴 벗겨짐, 뒀, 오염) 없을 것		○					
3		PCB 피팅설 마크, Guide V-Cut 누락 없을 것		○					
4		PCB 극성 Silk Print 오류 없을 것		○					
5		SPI 과납, 소납, 틀어짐 등 없을 것		○					
6		부품 미출 시 고객사 승인 여부 확인		○		○			
7		부품 Package 오류 없을 것		○					
8		부품 Spec 오류 없을 것		○					
9		SMT 미삽 이상 없을 것		○				23핀 (TOP - R1,R17,R31,R53,R54, R55,R56,R57,R58,R62,R64,R66, BOTTOM - C40,R83,R84,R85,R89,R90, R93,R101,R106,R108,R111)	
10		SMT 오삽(핀더검사) 이상 없을 것		○					
11		SMT 역삽(극성) 이상 없을 것		○					
12		PCB 랜드 대비 자재 Package 오류 없을 것 (납땜 상태)		○					
13		마스크 개구부 사이즈 대비 랜드 오류 없을 것		○					
14		핸들링(수합) 실장 POINT 이상 없을 것 (중점관리 POINT)		○					
15		컨베이어 통과 후 PSR 벗겨짐, 오염등 PCB상태 이상없을 것		○					
16		BGA 오삽, 역삽, 미삽, 들뜸 등 없을 것		○				XC3S1400AN-4FGG676I (U4) AT91SAM9260B-CU (U5)	
17		BGA 외관상태 (땀문 및 IC 갈라짐) 이상 없을 것		○				XC3S1400AN-4FGG676I (U4) AT91SAM9260B-CU (U5)	
18		QFP 부위 소납, 소트, 납땜불성 이상 없을 것		○		○			
19		Oscillator 극성 이상 없을 것		○				SCO-103A 24MHz, 3.3VDC (OSC1)	
20		LED 점등, 색상, 납땜 상태 이상 없을 것		○				SSC-GR101 ; Green (LD1,LD2,LD3,LD4,LD5,LD6,LD7,LD8)	
21		부품 리드 부식 없을 것 -> 존재 시 냉면 여부 확인		○					
22		매거진 간섭으로 인한 PCB 파손 없을 것		○					
23		HEADER PIN 부품 리드 평탄도 이상 없을 것(냉면 확인)		○				A2-6PA-2.54-DSA 2.54mm (HD1) A2-2PA-2.54-DSA 2.54mm (HD2) A1-20PA-2.54DSA 2.54mm (HD3)	
중점관리항목 (고객사 요구사항)		2. 유사 부품 주의. TP578601DCQ [Ref] U2] TP578618DCQ [Ref] U1]							
NO		문제점		임시조치		개선 요청사항		담당자	
1		AT91SAM9260B-CU (U5)		Mouser 실물 확인후 실장 진행		정품소재 인지 확인 필요.		김상준	
2		Crystal SSP-T7-F, 32.768KHz (XT1)		사급자재		현품표 부착 및 용량값등 정확한 정보 기입 요청.		김상준	

## 10. Design & Technology



### ● PCB artwork (design)

- ☐ NX7/ NX70/ NX700 PLC PCB ARTWORK
- ☐ ROBOT Controller PCB ARTWORK
- ☐ Servo Driver PCB ARTWORK
- ☐ OLED Encapsulation Inkjet driver (SG1024)
- ☐ LCD Encapsulation Inkjet driver ( V1, V2, V3)
- ☐ Elevator controller board
- ☐ SMART GLASS Controller

### ● Inspection equipment and function jig

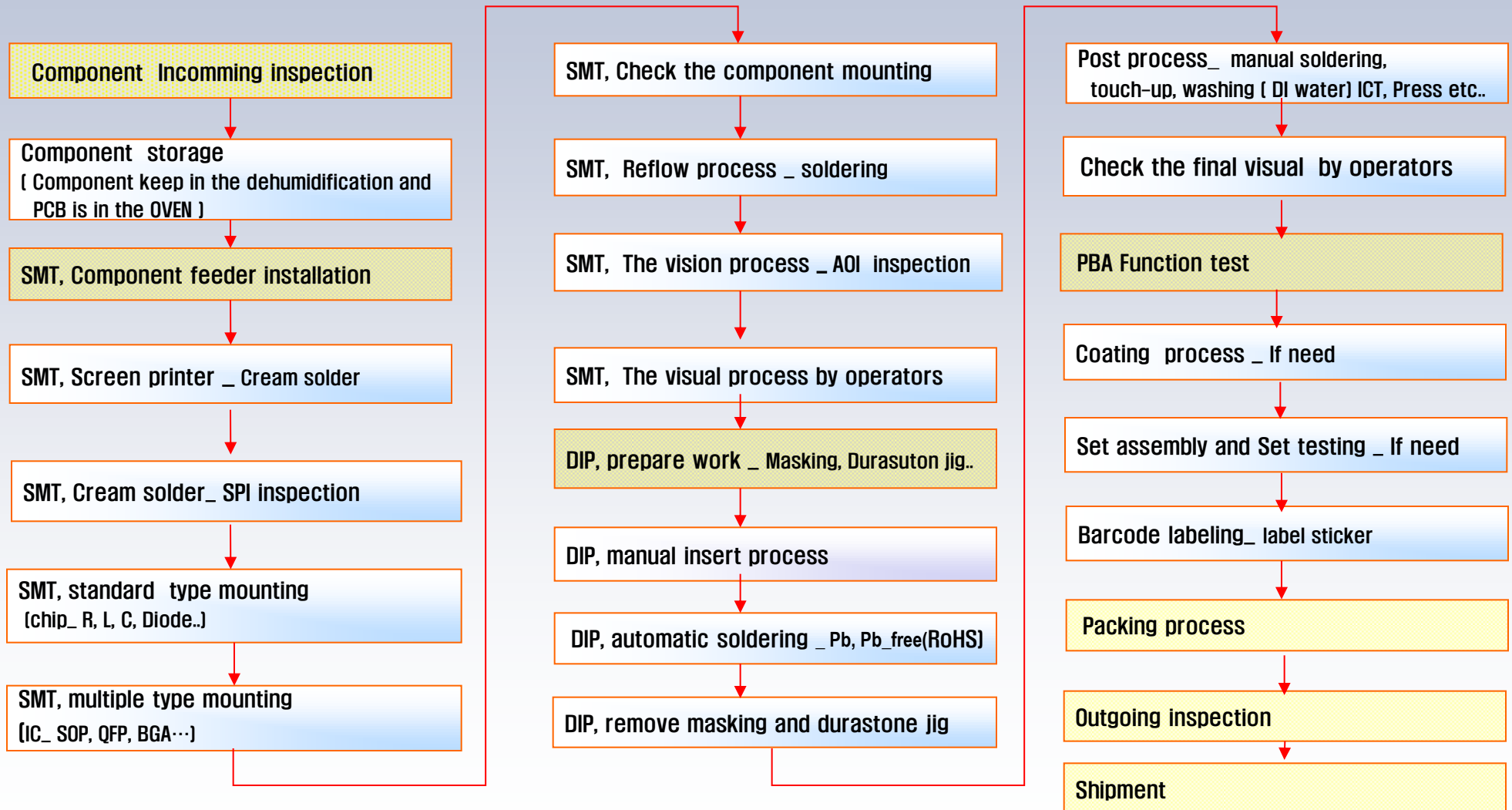
- ☐ PLC positioning module inspection equipment
- ☐ Firmware download Jig design
- ☐ Inkjet driver function jig design
- ☐ Elevator controller function jig design
- ☐ LED Power mass production process jig design

### ● Plan and Engineering (technology)

- ☐ NX70/ NX700 PLC Engineering and CE/ UL approval
- ☐ I/O ASIC Development (circuit -> FPGA -> ASIC)
- ☐ Ultrasonic docking control module development.
- ☐ EtherCAT I/F & SERCOS module engineering
- ☐ Phase control B'D engineering
- ☐ AGV control system engineering
- ☐ Laser detector control system engineering
- ☐ Ultrasound Docking B'D development.
- ☐ OLED Inkjet driver ( SG1024 driver ) engineering
- ☐ LCD Inkjet driver ( Jet driver V1, V2 ) engineering
- ☐ OLED Inkjet driver ( Jet driver V3 ) engineering
- ☐ Elevator controller board development.
- ☐ SMART GLASS Controller development.
- ☐ LED Power module development.
- ☐ OLED KM Driver (KM V1,V2,V3) engineering
- ☐ Pulse DC Generator development .
- ☐ etc .....

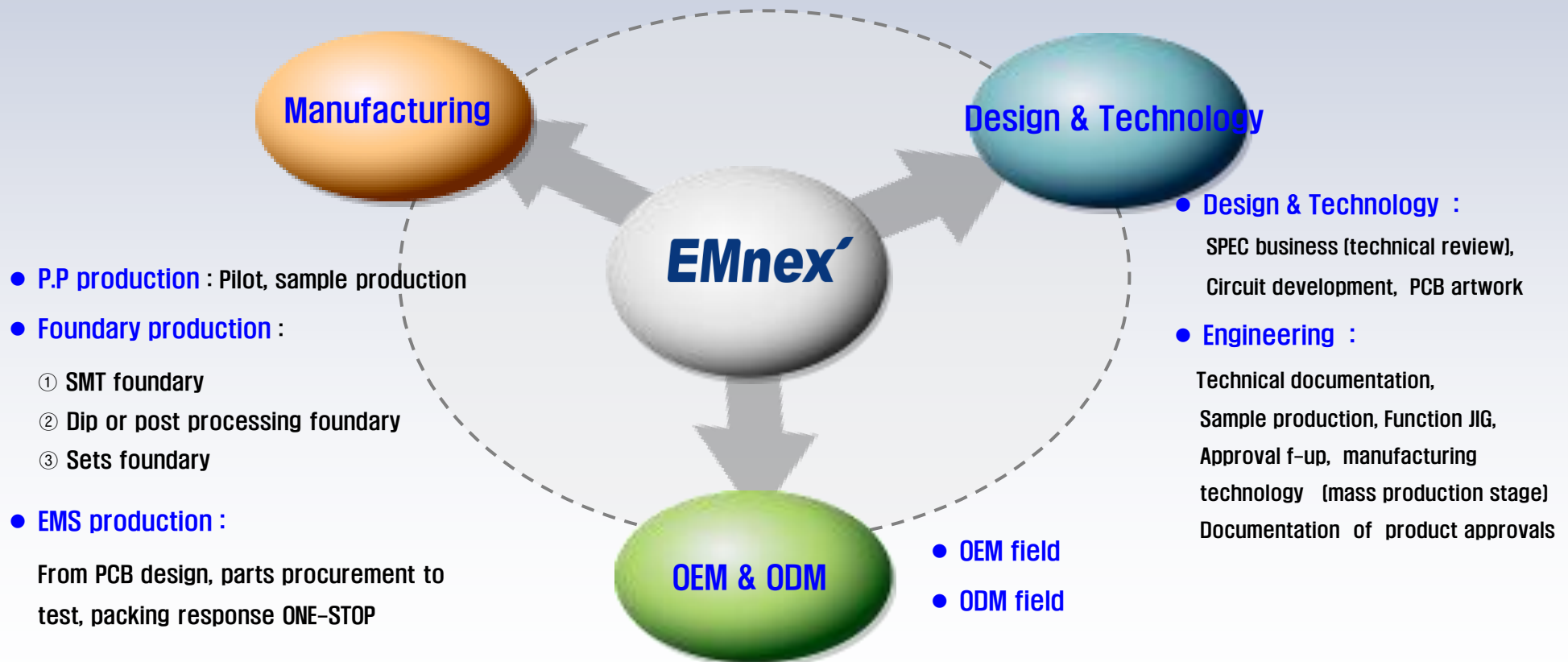


## 11. Manufacturing process diagram



## 12. EMNEX Business

EMNEX is capable of handling PCB artwork, parts purchase, assembly (SMT\_ DIP process), testing, set assembly, packaging, and it supports from small lot production to mass production as below.



■ etc.. ( subsidiary facility )

3<sup>rd</sup> rest ground



Cafeteria



Table tennis court



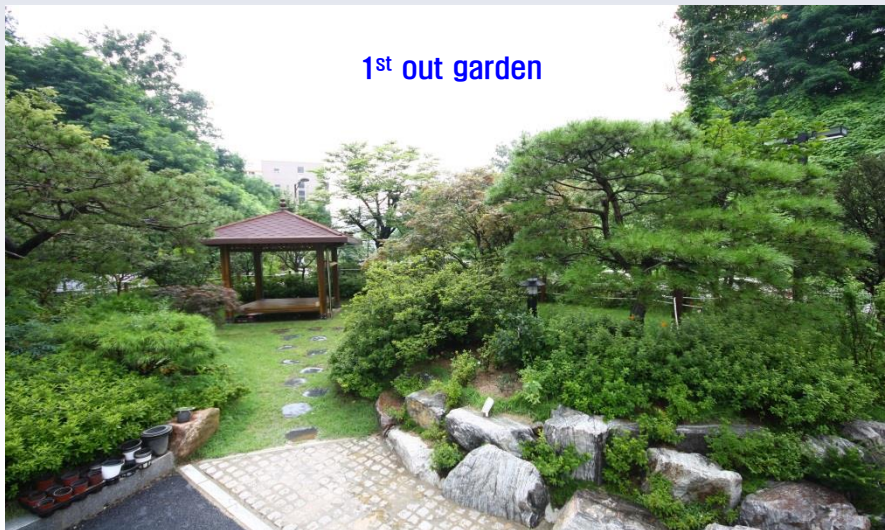
Place of education



Women's rounge









# Thank you!

