

# **Introduction Sumitomo Electric Interconnect Products (Hong Kong) Ltd.**

# 住友电工 电子事业部

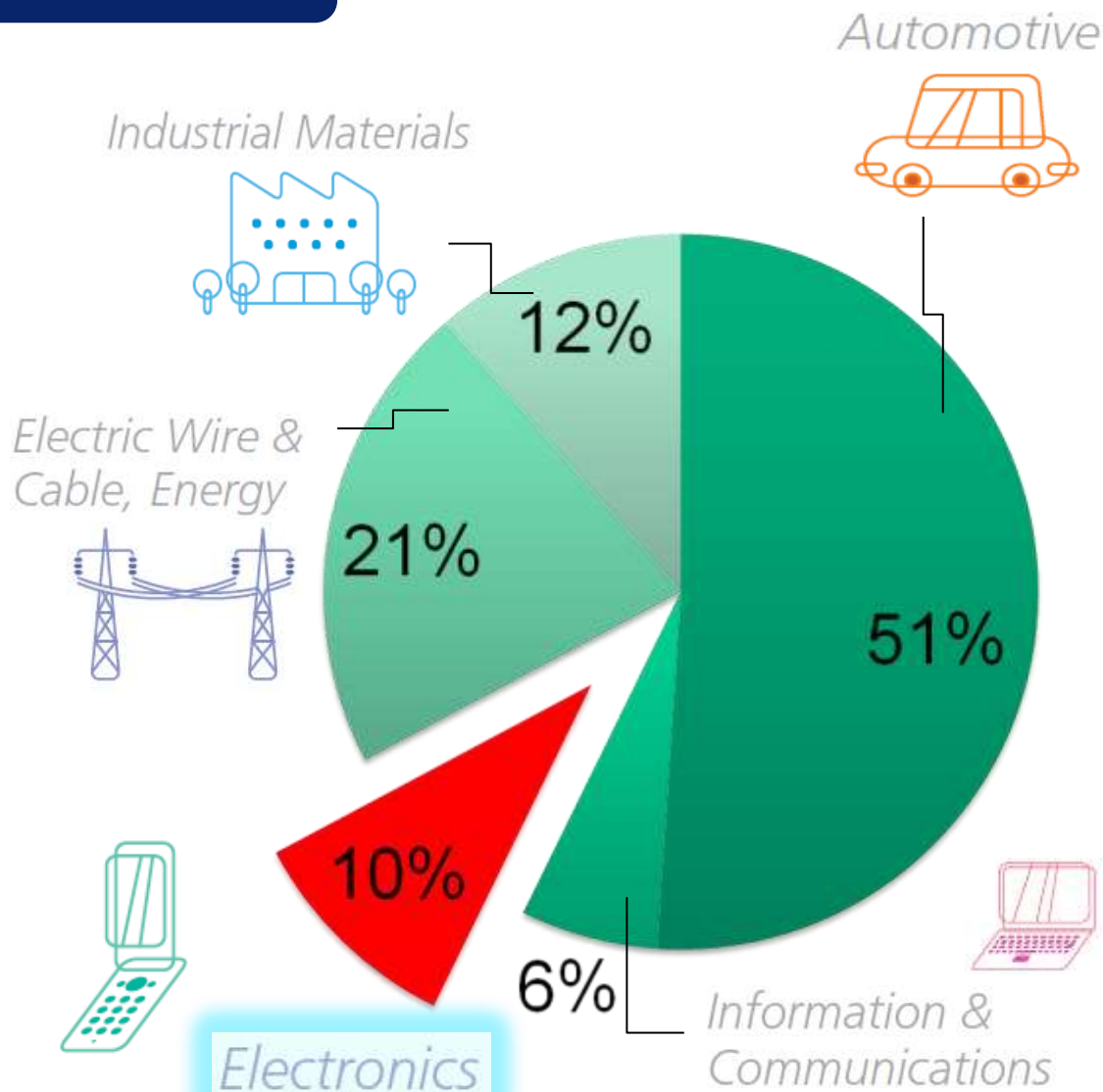
Confidential

## 住友电工

2,822  
Billion JPY

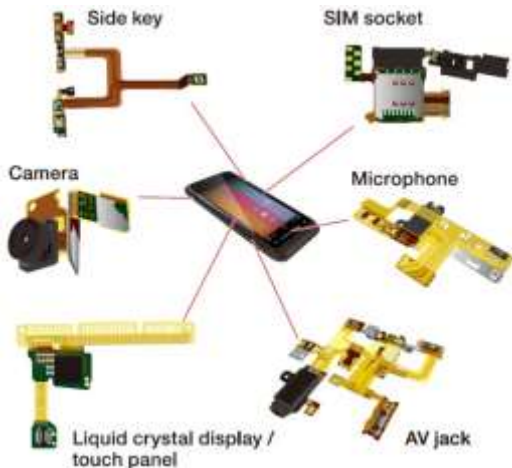
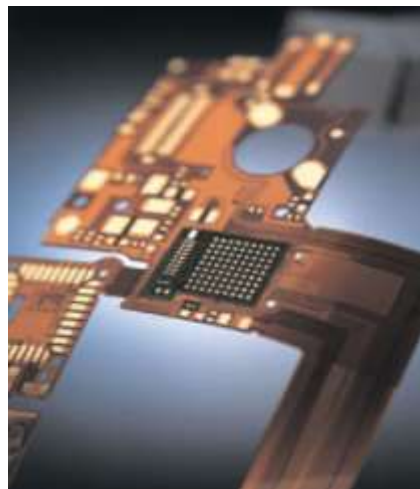
## 电子事业部

292  
Billion JPY



(As of FY2014)

Supporting advancement in the functions and performance of electronics



SUMITUBE®



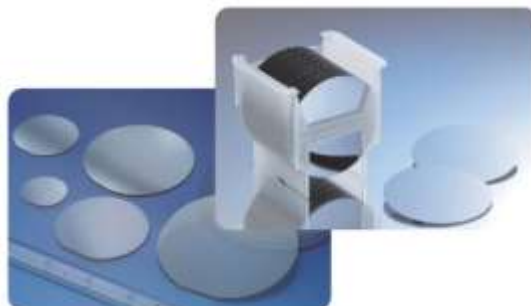
Polyimide Tube Rollers



Flexible Printed Circuits (FPC)



Thunderbolt Cables



Compound Semiconductors  
(Gallium Arsenide / Gallium Nitride / Indium Phosphide)

Ni Alloy Wires for Engine Spark Plugs



SUMI-CARD®

# Company Profile of SEPH

confidential

Name	Sumitomo Electric Interconnect Products (HK) Ltd.
Established	SEP 1995
Representative	Kazuto OGAWA (Managing Director)
Authorized Capital	HKD 648,000,000
Paid-in Capital	HKD 648,000,000
Employees	68 (as of JAN/2017)
Main Business	Selling and marketing of SEI Group's Product
Products	Wire (UL/Irrax/AVX Wire) and Cable (High-speed), CBA (MFCX), FFC, Tubes, FPC, Poreflon, Sumiflon, Magnesium Alloy, RGB Laser module, etc.
Sales office	SEPH-Taiwan, SSE-Shanghai/Shenzhen/ Beijing

# SEPH Handling Products

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Heat Resistance (ARX9, AVX)



ARX9



AVX



Medical harness

MFCX Harness



VR Cable



Thunderbolt™



SumiCard™

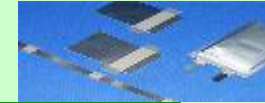


P0.5/Shield/HF



Steering Cable

Tab Lead



HF & Irrax™



LVCY



Shielded Wire

Cable Assembly

FFC/Tab Lead

Flexible HV



Wires & Cables

## SEPH Products

FPC

New Products

Sumiflon

Sumitube

SumiTube™

HDD FPC

FPC SMT

Poreflon™  
Module



Air-vent



Sumiflon

Mg Alloy



RGB Laser



Polyimide  
tube  
Roller



Irrax Tube



Irrax Sleeve



Mobile  
Phone  
FPC

# Sumitomo Electric

用『两个字』描述一下 SEPH 是销售什么的公司？

连接

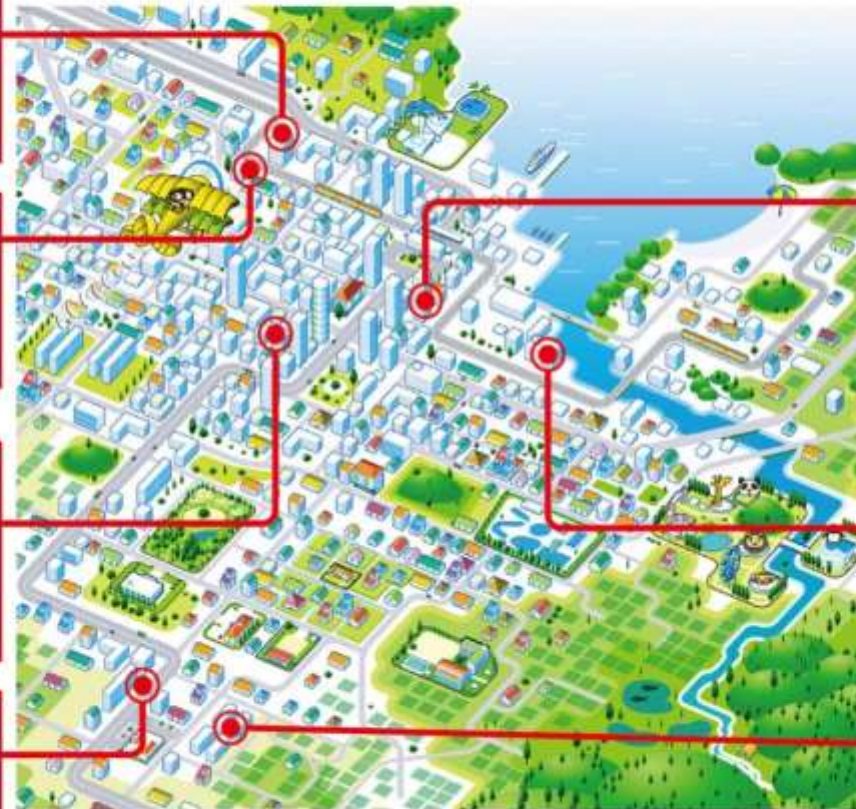
Connection

# 哪里会用到『连接』 — 我们的市场和客户

Confidential

## インフラ&産業機器 / 产业基盘及产业机器

総合配線材メーカーとしての素材開発力を活かし、新しい社会インフラに対するソリューションを提供  
作为综合配线材生产厂商发挥素材开发力,提供针对社会新产业基盘的解决方案。



# 哪里会用到『连接』 — 我们的市场和客户

Confidential

## デジタル家電 / 数码家电

機器、使用部位に応じて最適形状、高機能、高信頼性の配線材ソリューションを提供  
针对机器, 使用部位等的高嵌合度, 高机能, 高信赖性的特点提供配线材方案。



High Speed FFC  
TYPE III -SS



LCD TV



Digital Camera



Micro Flex Coaxial  
Harness



Copy Machine



Portable Game



Touch Pad FPC Assy



200°C Heat Resistant Wire



Game Box



FFC



# 哪里会用到『连接』— 我们的市场和客户

## モバイル&周辺機器 / 移动终端及周边产品

筐体の薄型化・軽量化・高密度化、信号高速化に対応する最適配線材 / モジュール化技術を提供  
针对框体的薄型化, 轻量化, 高密度化, 信号高速化提供最适合配线材 / 模块化技术



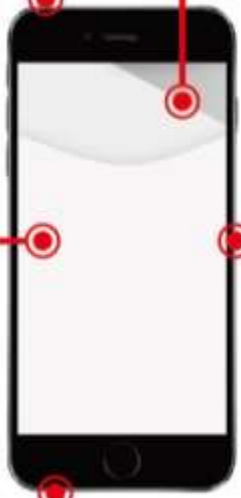
Micro Flex Coaxial Harness



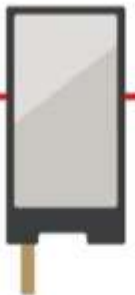
Tab Lead (For Battery)



Antenna FPC



Smartphone



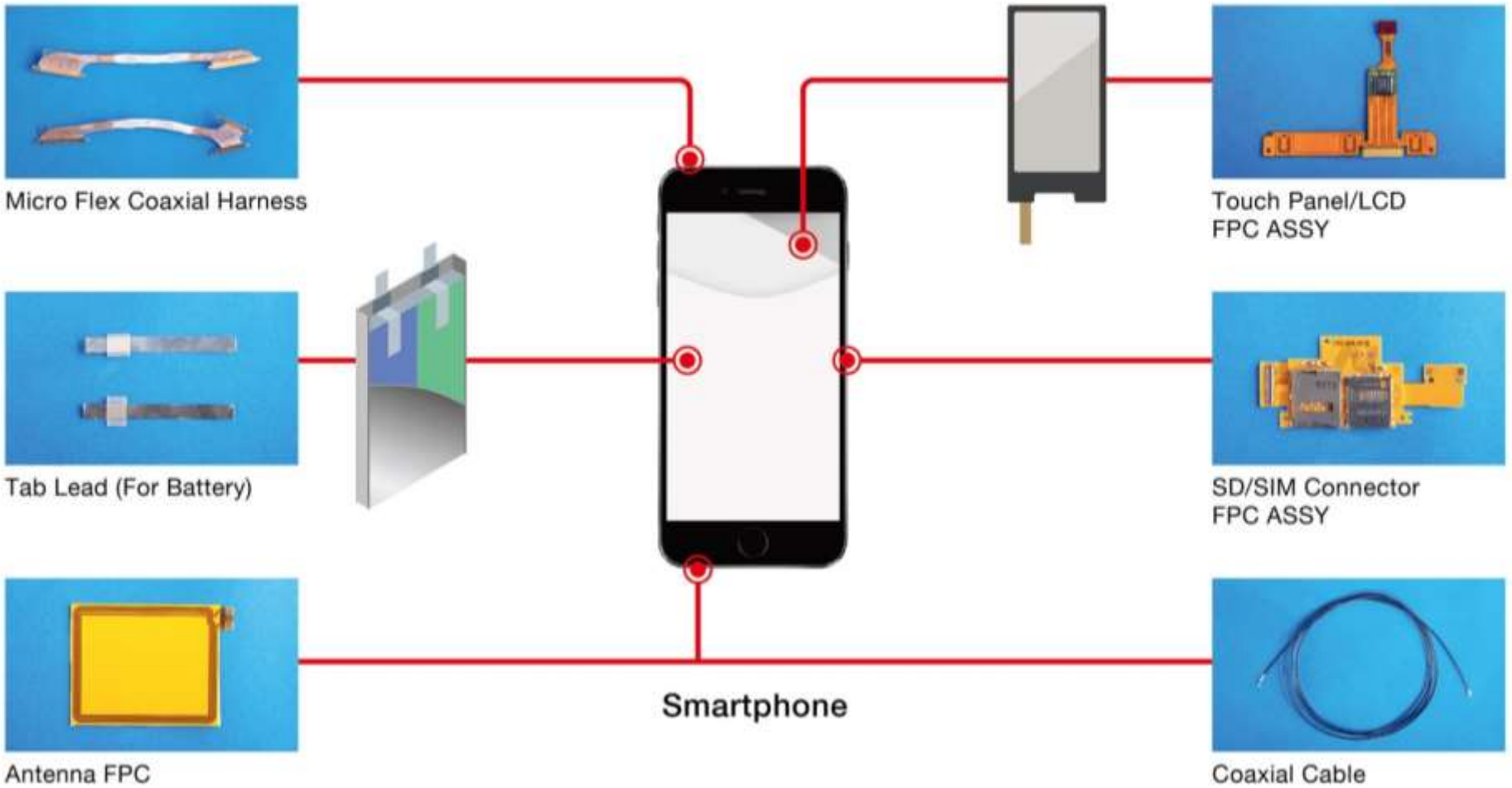
Touch Panel/LCD FPC ASSY



SD/SIM Connector FPC ASSY



Coaxial Cable



# 哪里会用到『连接』 — 我们的市场和客户

## モバイル&周辺機器 / 移动终端及周边产品

筐体の薄型化・軽量化・高密度化、信号高速化に対応する最適配線材 / モジュール化技術を提供  
针对框体的薄型化,轻量化,高密度化,信号高速化提供最合适配线材 / 模块化技术



LED Assy FFC



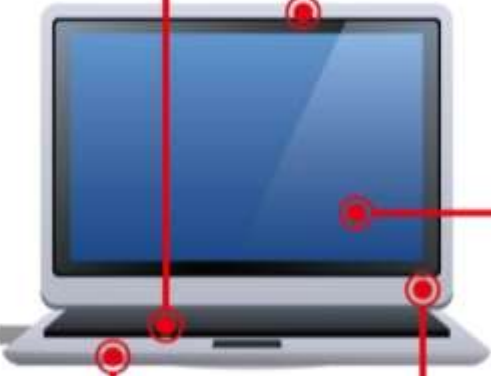
Mg Alloy



TypeC Harness



Smartphone



PC/Tablet



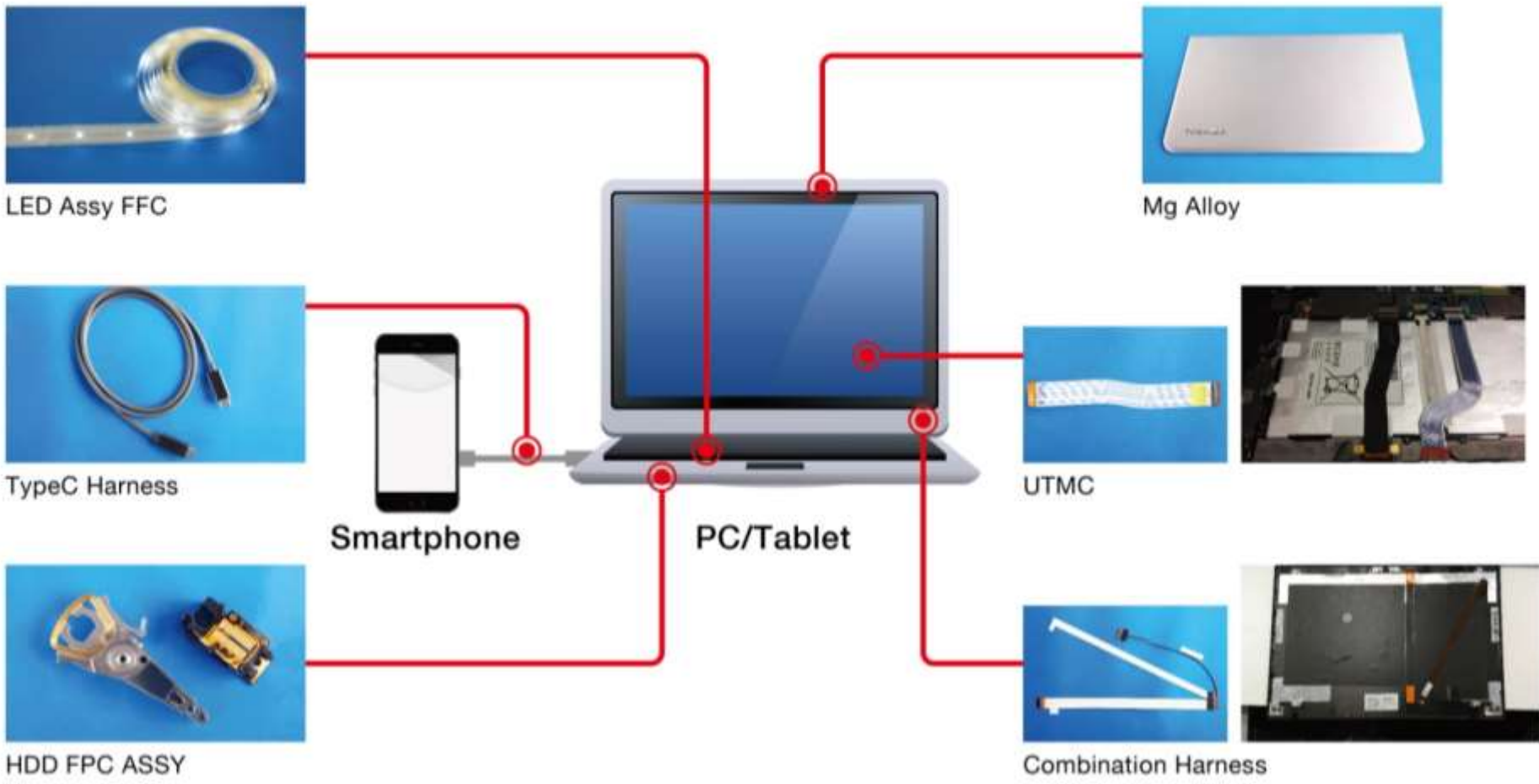
UTMC



HDD FPC ASSY



Combination Harness



# 哪里会用到『连接』— 我们的市场和客户

Confidential

## 自動車・鉄道車両・航空機分野

機械的強度、長期耐熱性、省スペース / 軽量化等のニーズにトータルソリューションを提供  
针对机械的高强度, 长期耐热性, 节省空间 / 轻量化等需求提供整合解决方案。



Angle Sensor FPC



Pressure Sensor FPC



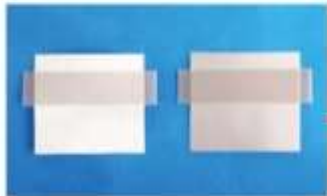
Audio/Navi FFC



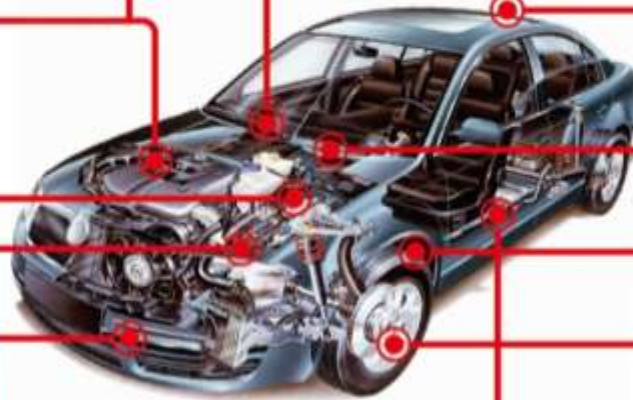
USB Harness



Coaxial Cable



Tab Lead



Sumitube 02



Millimeter Wave Radar FPC/FFC



EV/HEV High Voltage Wire



Irrax Tape VZL



Wheel Speed Sensor Cable



Sumitube SA3

# 哪里会用到『连接』— 我们的市场和客户

## 自動車・鉄道車両・航空機分野

日・米・欧での実績を活かした配線部材でソリューションを提供  
通过发挥日,美,欧的产品实绩提供配线部材的解决方案。



Flexible Wire for railway vehicle



Sumi TAG



Sumitube STS



Irrax Sleeve SNHM



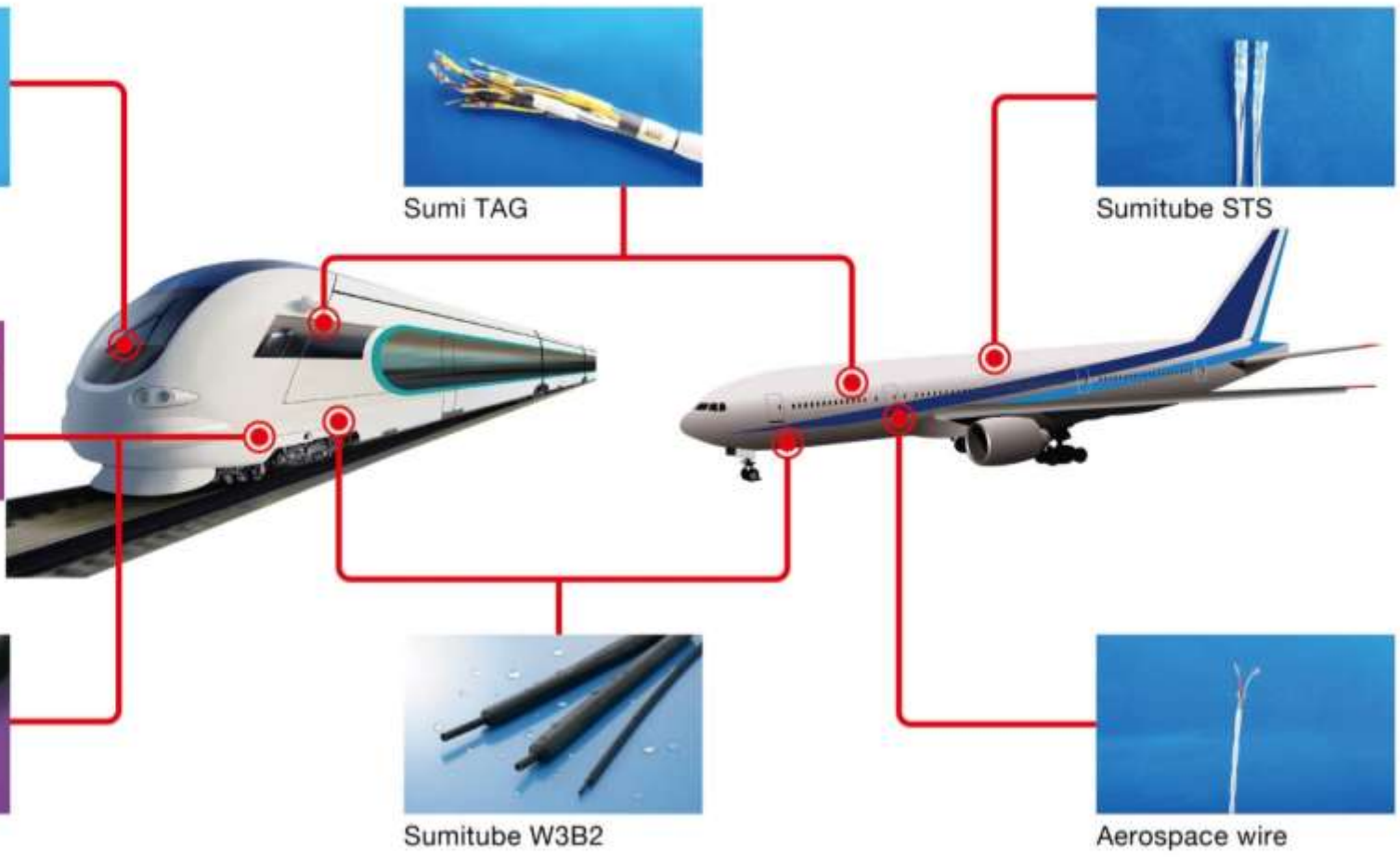
Irrax Tube NHR



Sumitube W3B2



Aerospace wire



# 住友电工电子事业部 — 我们的『连接』产品



绝缘电线

缠绕屏蔽线

同轴电缆

汽车电线、仪器电线

信息仪器电线

扁平化组件产品  
(FFC、极耳等)

Thunderbolt 电缆

柔性印刷电路 (FPC)

布线材料



布线保护套管



电镀，合金线材



半导体



耐磨部件



PTFE材料



镁合金

# 车载 FPC 的应用

## Sensor

- Oil pressure
- Pressure sensor
- Touch sensor



Oil endurance

High temperature

High voltage

## Reliability

### Design freedom

Easy assembly

- ▷ **connection**
- ▷ **function**
- ▷ **small space**

Flex Rigid

3D forming

White color

- safety equipment
- steering switch
- head up display

## Power train

Low  $\epsilon r$ , Low  $\tan \delta$  3D forming

- Li-ion battery
- ECU



## Antenna Radar

- Milli-meter wave radar



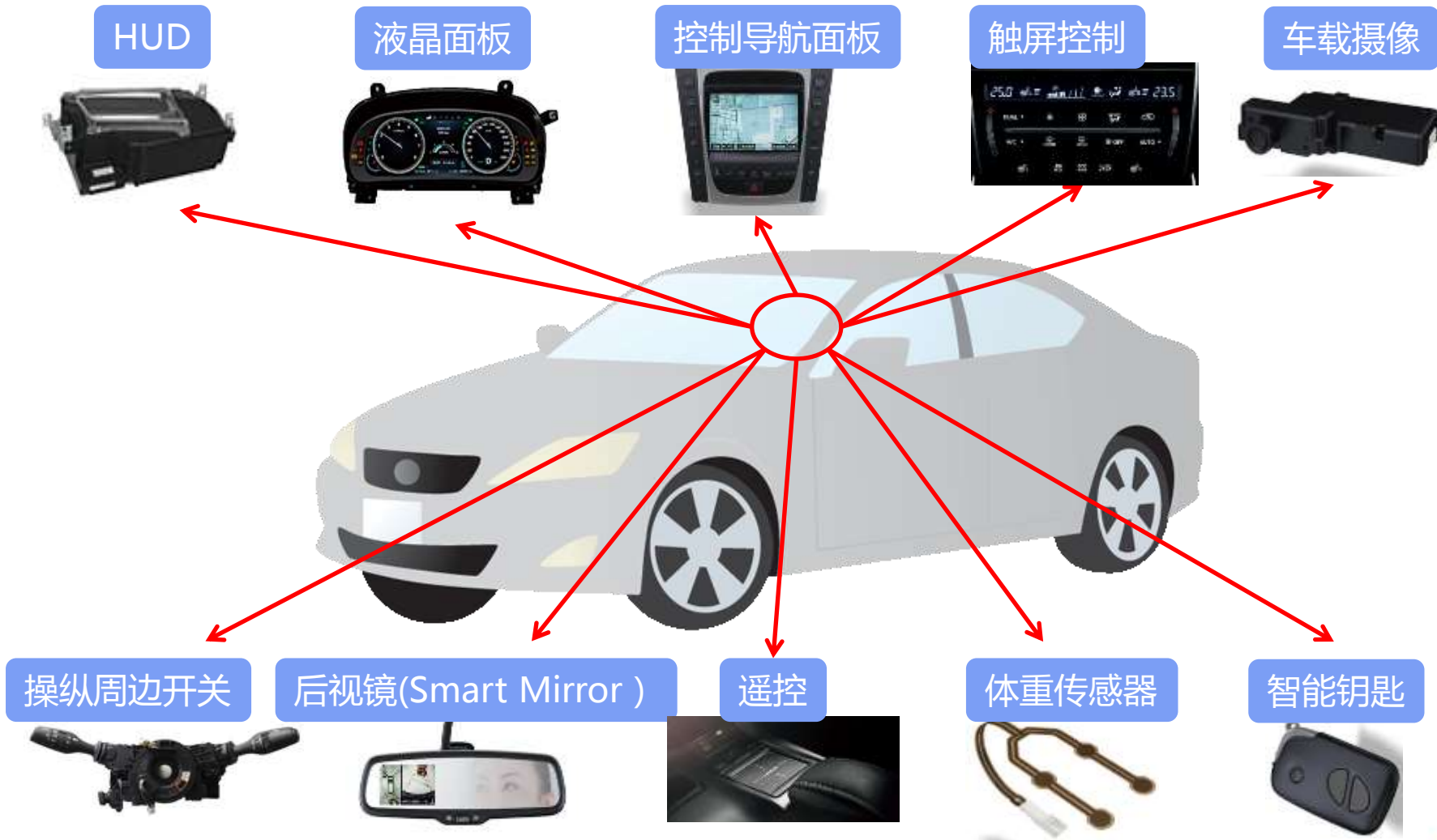
## Lighting

- DRL
- Side indicators
- Rear combination



# 车载 FPC 搭载案例(箱内)

Confidential



# 车载 FPC 搭载案例(箱外)

传感器(压力传感, 转角传感等)



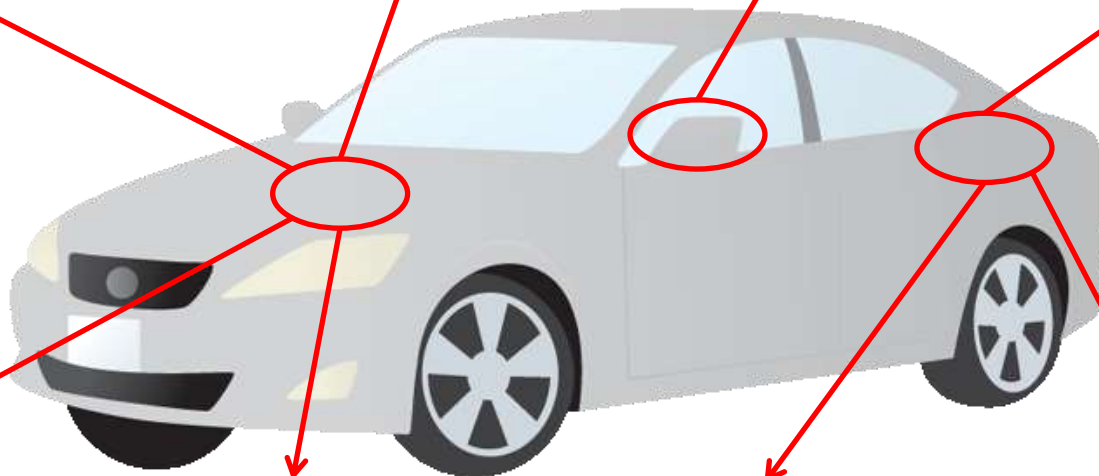
传动装置



侧镜



电池



防冲撞止雷达



装饰灯 (DRL)



变频设备



尾灯





# Micro-coax 極細同轴电缆

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## <sup>TM</sup> MFCX : Micro Flex Coaxial Cable



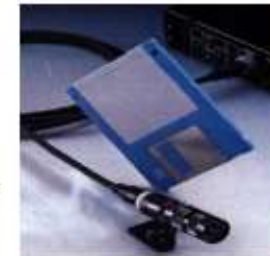
# History of Micro-coax Applications

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**Produced since 1984**

- Ultrasound Diagnostics
- Medical/Industrial Endoscopes
- Miniature CCD Camera



**Produced since 1998**

- Notebook PC
- Digital Camera



**Produced since 2003**

- Mobile Phone



**Produced since 2011**

- HDMI, Thunderbolt



**Produced since 2016**

- VR(HDMI+USB), Drone



# VR 向极细线束电线

# VR HMD的障碍?

目前



只有住友可以解决各位所面临的问题

- 我们拥有**世界上最轻、柔软度最好的**线缆;
- 我们在VR接口端是最大的线缆和线束生产厂家;
- 我们的业务覆盖了日本、美国、欧洲和大中华圈;

# 极细线缆

一般 VR 线材

-- 都是散线在进行连接.....





VS

住友电工极细 VR  
接口线材示例:




# Transmission Speed of Various Interfaces


## Communication

**USB**  

Version	Speed
1.0	12 Mbps
1.1	
2.0	480 Mbps
3.0	5 Gbps
3.1 Gen1	
3.1 Gen2	


**PCI express** 

Version	Speed
1.0 (Gen1)	2.5 Gbps
2.0 (Gen2)	5 Gbps
3.0 (Gen3)	8 Gbps
4.0 (Gen4)	10 Gbps


**Thunderbolt** 

Version	Speed
1	10 Gbps 5 Gbps x 2 lanes
2	20 Gbps 10 Gbps x 2 lanes
3	40 Gbps 20 Gbps x 2 lanes

## Display

**HDMI** 

Version	Speed
1.0	1.65 Gbps / lane 3 lanes(4.95 Gbps) + Clock
1.1	
1.2	
1.2a	3.4 Gbps / lane 3 lanes(10.2 Gbps) + Clock
1.3	
1.3a	
1.4a	6 Gbps / lane 3 lanes(18 Gbps) + Clock
2.0	
2.0a	

**DisplayPort** 

Version	Speed
1.0	2.7 Gbps / lane
1.2	5.4 Gbps / lane
1.3	8.1 Gbps / lane
1.4a	

### Speed required for Display [Gbps]

Number of Pixels	Frame Rate	Sampling		
		8 bit	10 bit	12 bit
2K 1,920 x 1,080	60 Hz	3.0	3.7	4.5
	90 Hz	4.5	5.6	6.7
	120 Hz	6.0	7.5	9.0
4K 3,840 x 2,160	60 Hz	11.9	14.9	17.9
	90 Hz	17.9	22.4	26.9
	120 Hz	23.9	29.9	35.8
8K 7,680 x 4,320	60 Hz	47.8	59.7	71.7
	90 Hz	71.7	89.6	107.5
	120 Hz	95.6	119.4	143.3

DP1.4a x 2 lanes

HDMI1.4

# 照射产品阵容

- **Sumitube<sup>®</sup>** : 薄壁 热收缩套管
- **Irrax<sup>®</sup> Sleeve** : 厚壁 热收缩套管
- **Irrax<sup>®</sup> Tube** : 耐热套管 (非收缩)
- **Irrax<sup>®</sup> Tape** : 胶黏 耐热胶带

## 产品用途案例

- ◆ 电气绝缘
- ◆ 机械的保护、张力缓和。
- ◆ 防水保护、灌装封口
- ◆ 防腐蚀保护
- ◆ 隔热保护

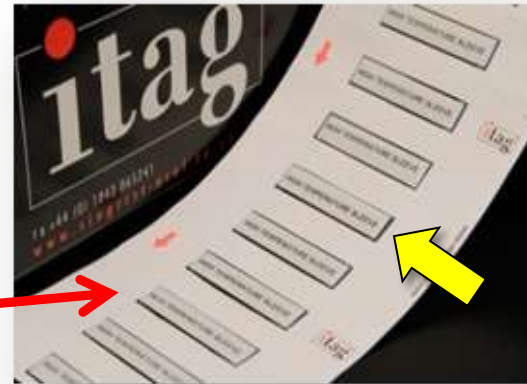


# 印字产品 SUMITAG

Confidential



- ◆ 在 SUMITUBE 上进行印字。
- ◆ 在 套管、标签纸、电缆标签上面也可以印字
- ◆ 印字机，印色带，SumiLabel 软件（打印系统）



套管



便签



标签





# SumiTag Product Groups

Printers: Double-sided, single-sided and mini printers available.  
 打印机：可提供双面，单面和小型打印机。

## Wire Markers 电线标签

Single or Double Sided  
单面或双面

- Military Spec. 军事规范
- Zero Halogen 零卤素
- Low Smoke LFH 低烟 LFH
- Diesel Resistant 耐柴油
- High Temperature 高温



## Cable Markers 电缆标记

Tie-on for large cables  
搭配上大电缆

- Military Spec. 军事规范
- Zero Halogen 零卤素
- Low Smoke LFH 低烟 LFH
- Diesel Resistant 耐柴油
- High Temperature 高温



## Panel Markers 面板标记

Adhesive backed  
粘合剂背衬

- Commercial Grade 商业级
- Low Smoke LFH 低烟 LFH
- Military Spec. 军事规范。



# Applications 用途

Confidential

*Anywhere where there is a cable!*  
在任何地方都會找到電纜！



## Aerospace/Aviation

Aircraft, airlines, avionic products, satellite and space.



## Military/Defence

Land, sea and air military vehicles/craft, weapon systems, radio communications.



## Rail

Mass transit, rolling stock, track and signalling equipment.



## Communications

Global carriers, infrastructure equipment, telecom manufacturers and network providers.



## Electronics

Component, PCB and control panel manufacturers.



## Marine

Commercial, industrial and military vessels.



## Medical

Equipment, materials, hospital infrastructure.



## Power/Utilities

Oil & gas, generation and control equipment, offshore renewable energy, water.



**Magnesium alloy  
az91D sheet**  
**鎂合金  
AZ91D板材**

**比其他鎂合金  
強 1.5 倍**

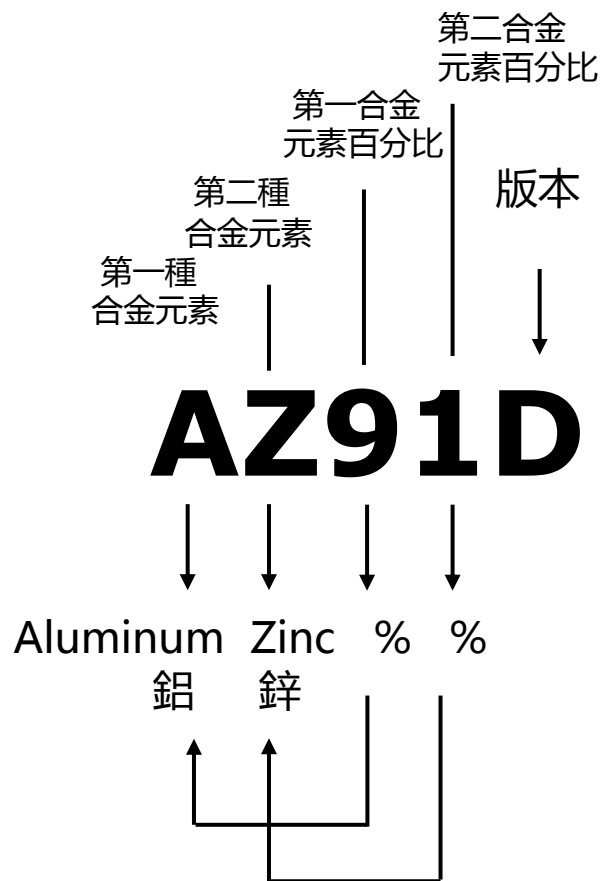


# Marking of Magnesium Alloys

## 鎂合金的標誌

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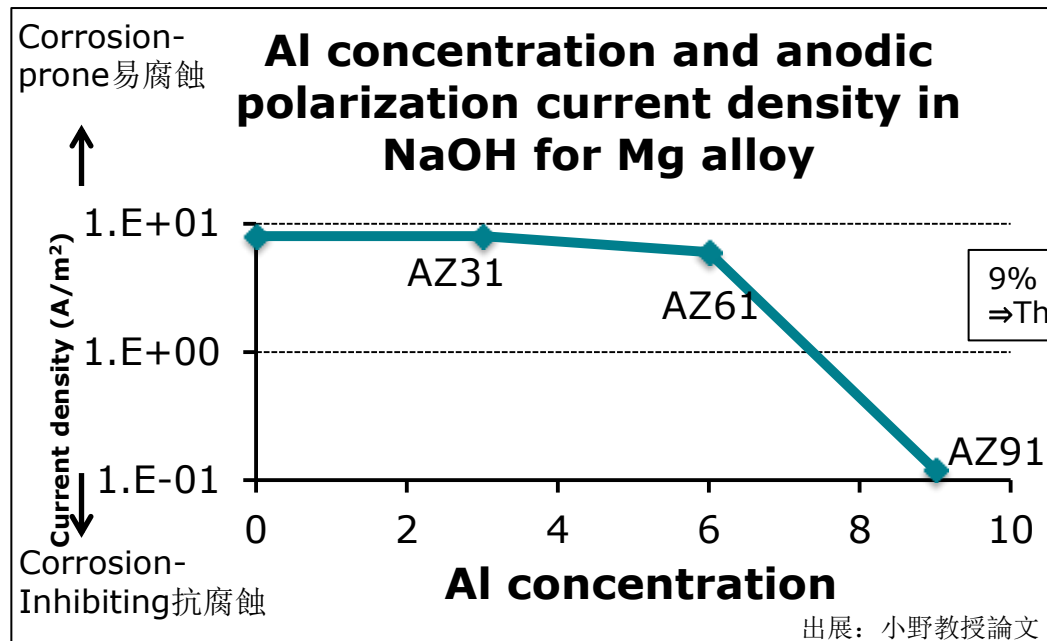
Convention for alloy elements designation  
合金元素名稱的標誌慣例



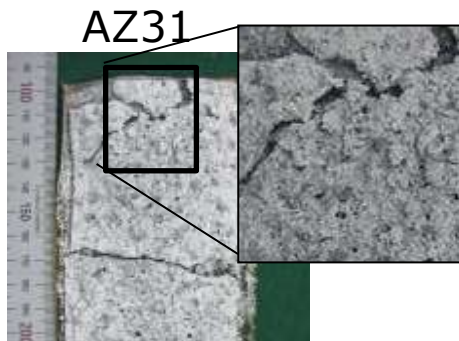
Letter 字母	Alloying Elements 合金元素
A	Aluminum 鋁
C	Copper 銅
E	Rare earth metal 稀土
H	Thorium 鈾
K	Zirconium 鋯
L	Lithium 鋰
M	Manganese 錳
Q	Silver 銀
S	Silicon 矽
Y	Yttrium 鉕
Z	Zinc 鋅

# The corrosion resistance of various Mg alloy 各種鎂合金的耐蝕性

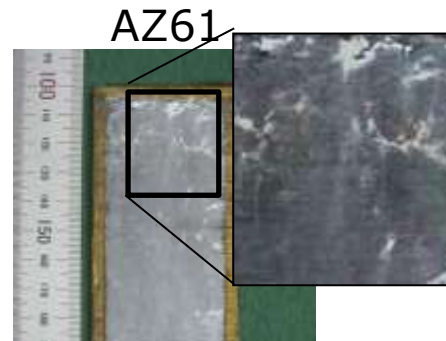
Confidential



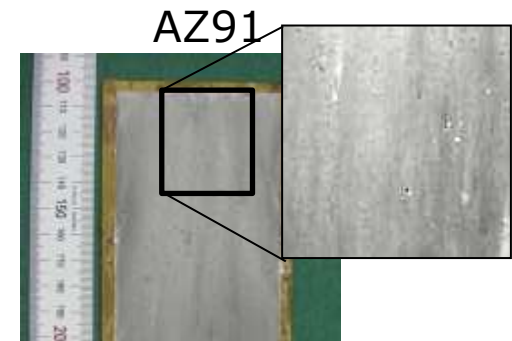
Exterior after 1200hr immersion in 5% NaCl aqueous solution



Intense corrosion of whole surface  
強烈的腐蝕 整個表面



Intense local corrosion  
局部強烈的腐蝕



Thin oxidation uniformly  
均勻的薄氧化反應

# Process Flow

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## • Mg Sheet Process

Casting

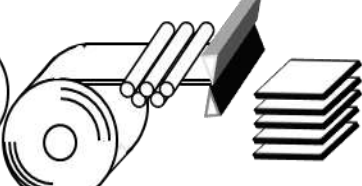
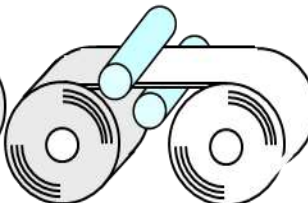
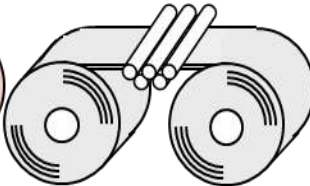
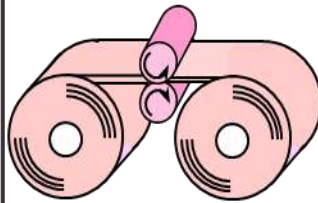
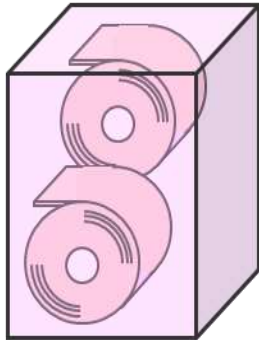
Heating

Rolling

Straightening

Grinding

Cutting

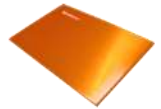
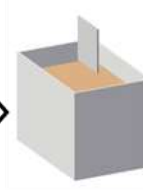
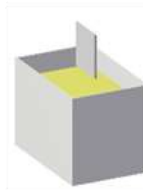
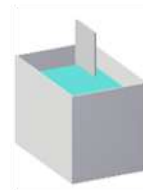
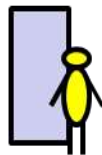
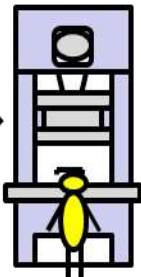
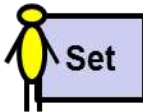


Itami Works , Japan

## • Housing Process (Press & ED)

Press

ED(Electro Deposition)



# These are what we can handle. 這些我們可以做到。

Confidential



