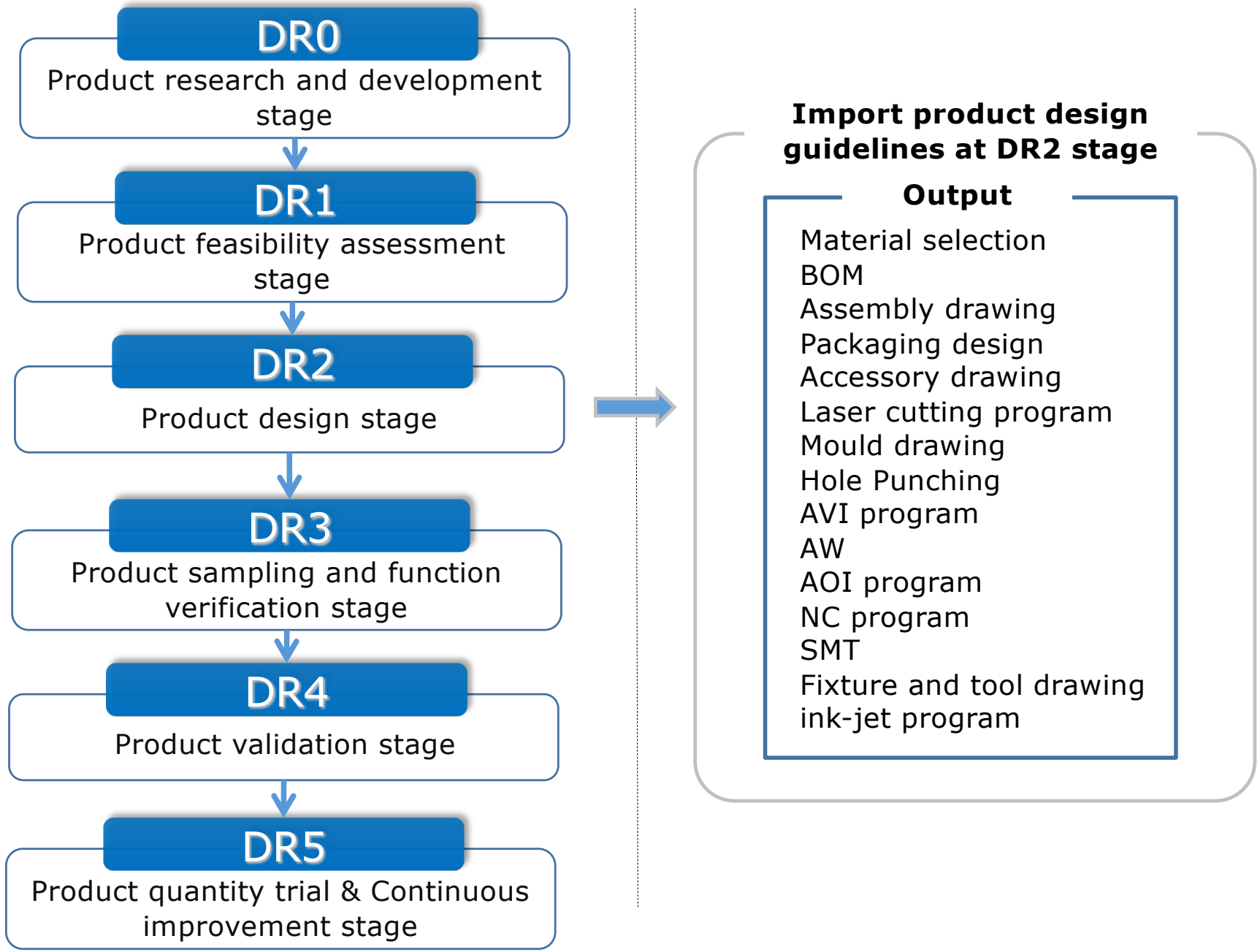
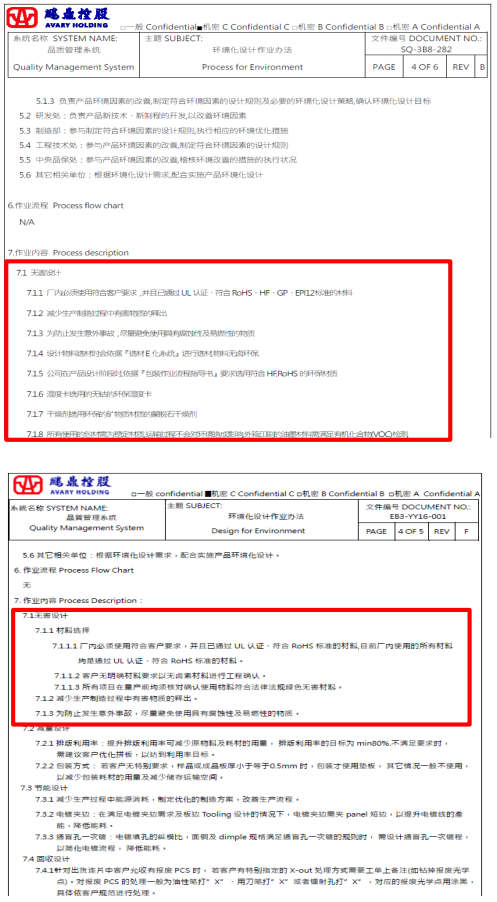
Product design and development process (DR0-DR5)



Choice of raw materials or components that have a lower environmental footprint (1/3)

The Company has implemented the *Environmental Design Operating Specification* that requires the use of non-hazardous materials in new product development. The *Process Design and Development Operating Specification* stipulates that all selected materials must comply with the Company's environmental standards. In addition, under the *Customer Engineering Data Review Procedures*, materials selected for product development must meet applicable environmental protection criteria. Recycled and other applicable materials must also comply with relevant governmental, safety, and environmental regulations. These requirements help reduce the use of hazardous and toxic substances and minimize the environmental footprint of products.

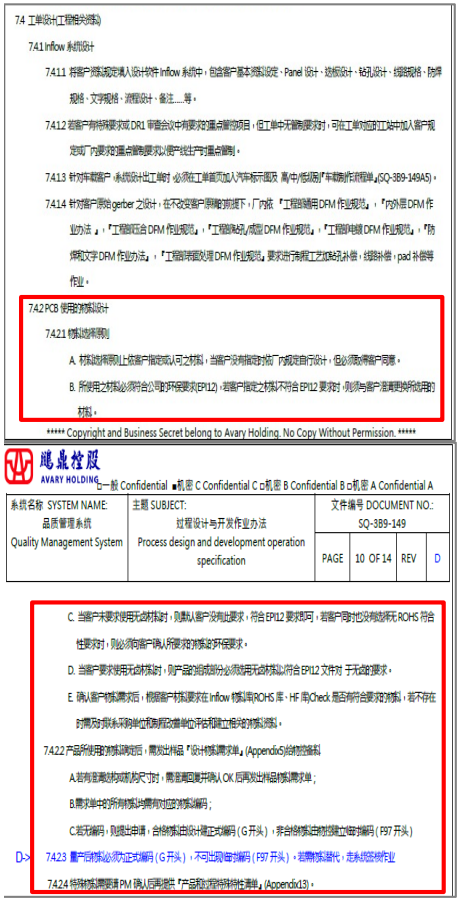
Environmental Design Operation Specification



Environmental Design Operation Specification



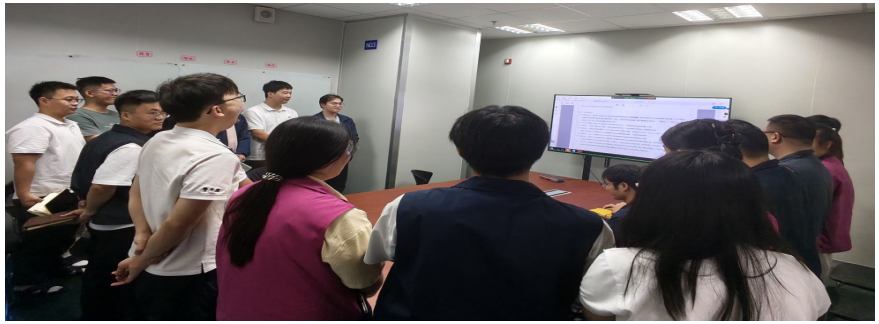
Process Design and Development Operating Specification



Choice of raw materials or components that have a lower environmental footprint (2/3)

The Company provides training on the implementation of the *Environmental Design Operating Specification*, as evidenced by the training records below.

Evidence 1

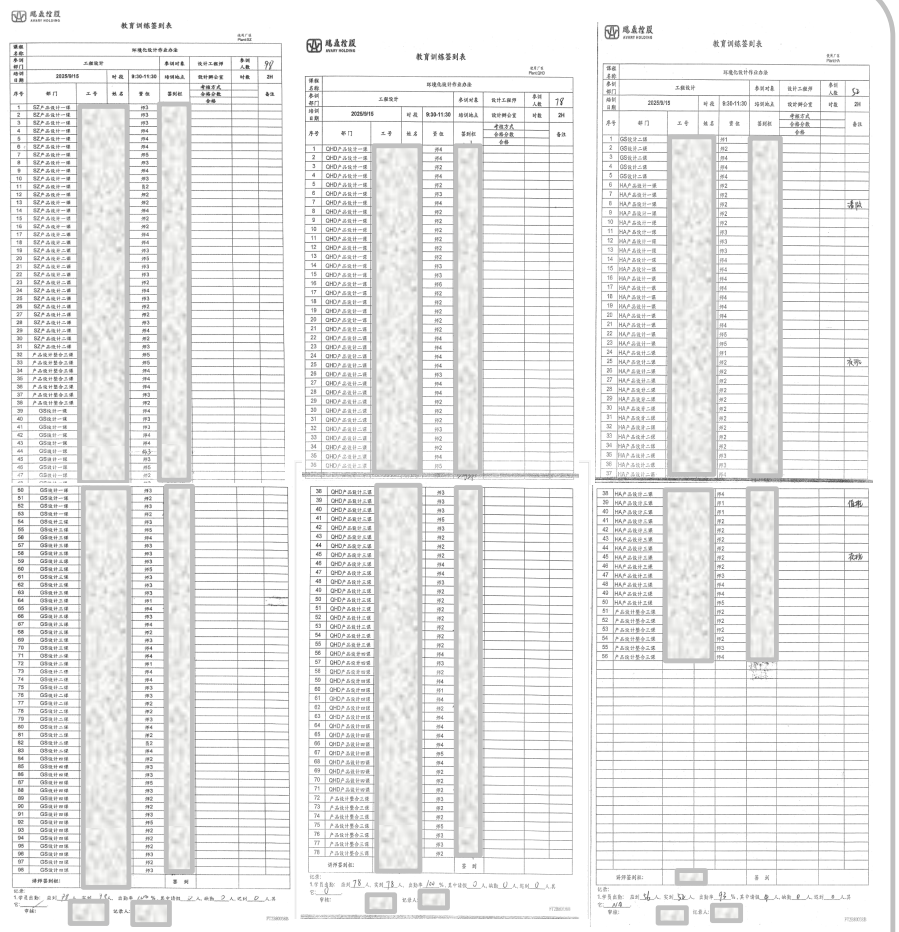






Training photos

Evidence 2



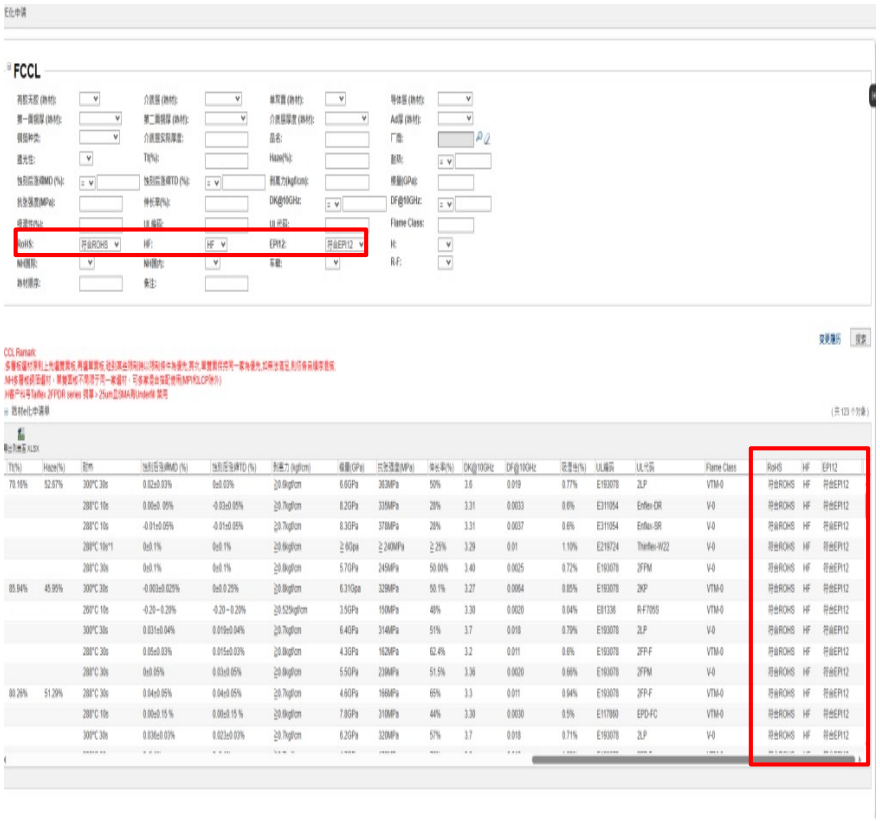
Attendance records

Choice of raw materials or components that have a lower environmental footprint (3/3)

During the product design and material selection process, the Company uses its Material Selection E-System to select and evaluate materials. Materials are required to be halogen-free, environmentally preferable, and compliant with applicable environmental requirements.

The Company also uses recycled materials, including recycled gold and recycled copper, to promote the circular use of metals, reduce reliance on virgin raw materials, and minimize waste and associated environmental impacts.

Item 1



Item 2

The table below shows Avary's recycled material usage and the proportion of recycled materials used in 2025. :

Recycled Material Consumption and Targets During the Reporting Period

Recycled Material	Unit	2025	
		Total Consumption	Recycled Ratio (%)
Solder Paste	kg	32,563	86
Potassium Gold Cyanide	kg	1,259	96
Copper Balls	kg	1,387,215	100
Copper Powder	kg	4,431,595	100
Copper Sulfate	kg	533,325	83
Copper Foil	kg	6,485,552	100
FCCL (Copper Foil Base)	m^2	7,140,500	15
CCL (Copper Foil Base)	m^2	5,827,723	86
SUS Stiffeners	kg	267,206	41
Tray	pcs	71,416,579	8
Aluminum	kg	350,344	0
Nickel	kg	1,320	0
Titanium	kg	4,401	0
Lithium	kg	0	0
Cobalt	kg	0	0

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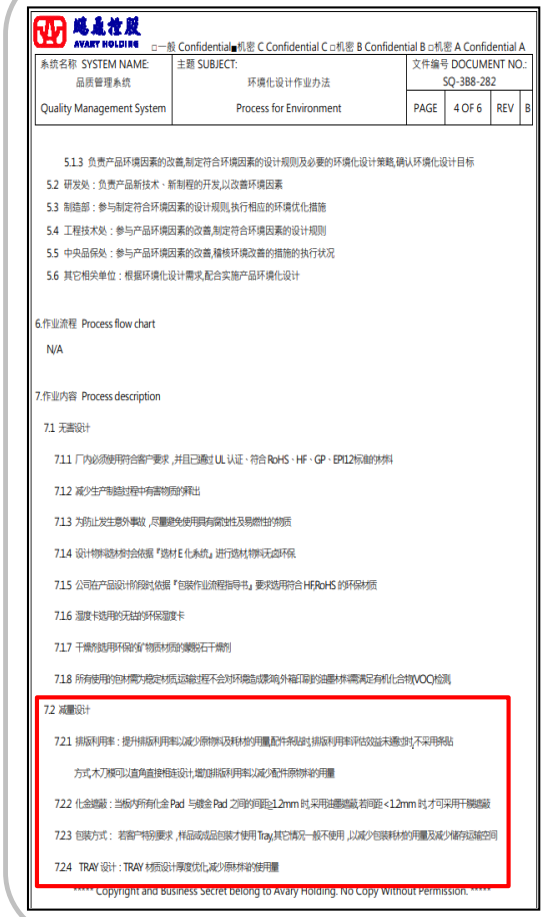
AVARY HOLDING

Direct operations, production & manufacturing (1/3)

During the product design stage, the Company applies the principles of non-hazardous materials, energy conservation, reduction, and recycling set out in its *Environmental Design Operating Specification*. By incorporating these principles into production and manufacturing, the Company minimizes raw material and component waste and reduces equipment electricity and water consumption during operation. These measures help reduce waste generation and resource use in direct operations.

The Company provides training on the implementation of the *Environmental Design Operating Specification*, as evidenced by the training records below.

Item 1



鵬鼎控股 AVARY HOLDING □一般 Confidential■机密 C Confidential C □机密 B Confidential B □机密 A Confidential A

系统名称 SYSTEM NAME: 品质管理系统 Quality Management System	主题 SUBJECT: 环境化设计作业办法 Process for Environment	文件编号 DOCUMENT NO.: SQ-3B8-282			
		PAGE	4 OF 6	REV	B

5.1.3 负责产品环境因素的改善,制定符合环境因素的设计规则及必要的环境化设计策略,确认环境化设计目标

5.2 研发处：负责产品新技术、新制程的开发,以改善环境因素

5.3 制造部：参与制定符合环境因素的设计规则,执行相应的环境优化措施

5.4 工程技术处：参与产品环境因素的改善,制定符合环境因素的设计规则

5.5 中央品保处：参与产品环境因素的改善,稽核环境改善的措施的执行状况

5.6 其它相关单位：根据环境化设计需求,配合实施产品环境化设计

6.作业流程 Process flow chart

N/A

7.作业内容 Process description

7.1 无害设计

7.1.1 厂内必须使用符合客户要求，并且已通过 UL 认证、符合 RoHS、HF、GP、EPI12标准的材料

7.1.2 减少生产制造过程中有害物质的释出

7.1.3 为防止发生意外事故，尽量避免使用具有腐蚀性及易燃性的物质

7.1.4 设计物料选材时会依据『选材 E 化系统』进行选材,物料无虑环保

7.1.5 公司在产品设计阶段时,依据『包装作业流程指导书』要求选用符合 HF,RoHS 的环保材质

7.1.6 湿度卡选用的无钴的环保湿度卡

7.1.7 干燥剂选用环保的矿物质材质的蒙脱石干燥剂

7.1.8 所有使用的包材需为稳定材质,运输过程不会对环境造成影响,外箱印刷的油墨材料需满足有机化合物(VOC)检测

7.2 减量设计

7.2.1 排版利用率：提升排版利用率以减少原物料及耗材的用量,配件条贴时,排版利用率评估效益未遍时,不采用条贴方式,木刀模可以直角直接相连设计,增加排版利用率以减少配件原物料的用量

7.2.2 化金遮蔽：当板内所有化金 Pad 与镀金 Pad 之间的间距≥1.2mm 时,采用油墨遮蔽,若间距＜1.2mm 时,才可采用干膜遮蔽

7.2.3 包装方式：若客户特别要求，样品或成品包装才使用 Tray,其它情况一般不使用，以减少包装耗材的用量及减少储存运输空间

7.2.4 TRAY 设计：TRAY 材质设计厚度优化,减少原材料的使用量

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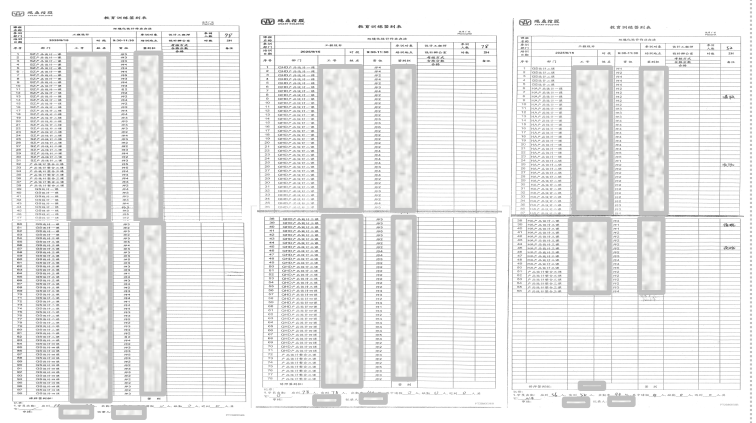
FPC for example:
saved RMB 29.517 million

节水节电金额（KRMB）		1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月
深圳 A01厂	5,839	550	590	675	674	637	596	535	524	250	250	279	279
秦皇岛 A02厂	6,013	431	560	626	571	629	615	620	465	506	501	256	234
秦皇岛 A06厂	6,011	475	455	490	548	558	520	631	614	610	337	462	311
淮安 B05厂	6,077	467	532	506	510	495	502	519	577	513	508	465	481
淮安 B06厂	5,577	241	344	376	536	405	520	538	538	520	520	520	520
总计	29,517	2,164	2,481	2,674	2,839	2,723	2,754	2,843	2,717	2,400	2,116	1,981	1,824
												总计 WRMB	2951.7

Item 2



Training photos



Attendance records

Direct operations, production & manufacturing (2/3)

Through process optimization, including optimizing manufacturing parameters, improving production efficiency, modifying equipment, and reducing waste, the Company improves production yield. These measures help reduce waste generation and generate water- and electricity-saving benefits of RMB 19.501 million.

序号	项目	专案名称	改善前后对比	改善方案	当前进度	预估效益 (KRMB/年)
1	制程优化	槽孔分辨率优化	改善前：槽孔分辨率0.035mm 改善后：槽孔分辨率0.070mm 效率提升8.79~20.32%	降低槽孔分辨率，减少孔数	已完成	834.8
2		压合离型剂评估导入A3压合	改善前：牛皮纸与钢板之间加Dummy铜箔 改善后：钢板涂覆离型剂，取消牛皮纸与钢板之间加Dummy铜箔；	离型剂评估测试 a.取消牛皮纸与钢板之间加Dummy铜箔； b.减少钢板外发研磨量		1463.4
3		定深捞效率提升	改善前：单一strip捞型 改善后：多连片捞型 预估节省4.6台机	改多连片/pnl捞型		4914.0
4		湿制程药水添加量降低（压合）	改善前：减铜线水洗更槽1次/班 黑化线微蚀添加2L/110 SF 改善后：减铜线水洗更槽1次/班 黑化线微蚀添加2L/140SF	BKM集团内优化、内部study 更槽频率、添加量		29.7
5		湿制程药水添加量降低（电镀）	改善前：填孔减铜线水洗槽更槽频率1次/班 改善后：填孔减铜线水洗槽更槽频率1次/2周	BKM集团内优化、内部study 更槽频率、添加量		9.0
6		湿制程药水添加量降低（线路）	改善前：前处理酸洗后水洗频率1次/班 改善后：前处理酸洗后水洗频率1次/天	BKM集团内优化、内部study 更槽频率、添加量		36.9
7		湿制程药水添加量降低（防焊）	改善前：防焊前处理&树脂研磨非关键槽水洗频率1次/班 改善后：防焊前处理&树脂研磨非关键槽水洗频率1次/天	BKM集团内优化、内部study 更槽频率、添加量		35.2
8		湿制程药水添加量降低（加工）	改善前：表面处理前处理&喷砂前处理&去膜1#2#非关键槽水洗频率1次/班 改善后：表面处理前处理&喷砂前处理&去膜1#2#非关键槽水洗频率1次/天	BKM集团内优化、内部study 更槽频率、添加量		10.0
9	效率提升	雷射效率提升	改善前：三菱5/6代精度1次/4H 改善后：三菱5/6代精度1次/6H 提升产出孔数15M/天	优化精度校准频次		228.0
10		雷射PP1027参数优化	改善前：3发 改善后：2发 提升产出孔数357M/天	BKM MSAP降低发数		5148.0
11		雷射烧靶size优化	改善前：烧靶2.5mm，抓1.5mm圆 改善后：烧靶1.5mm，抓1.0mm圆 提升产出孔数357M/天	烧圆形靶，size缩小至1.0mm		5136.0
12		外层雷射加工strip lot章优化	改善前：PNL边+strip板边6码lot章 改善后：PNL边lot章 提升产出孔数17M/天	取消外层雷射加工strip lot章		252.0
13		取消雷射空跑涨缩	改善前：雷射首件空跑涨缩后设定 改善后：雷射取消空跑涨缩动作	a.雷射生产10pnl 后，依加工记录设定 b.CCB已预提报，展开测试中		1404.0

Direct operations, production & manufacturing (3/3)

The *Environmental Design Operating Specification* calls for optimizing material layout and utilization, minimizing raw material and component scrap, and reducing equipment electricity and water consumption during production. These requirements help reduce waste generation and improve resource efficiency in direct operations and manufacturing. In 2025, these measures generated savings of RMB 15.555 million.

排版利用率提升专案														
序号	料号	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	TOTAL
1							0	1,935,576	290,090	290,090	290,090	278,830	140,994	3,225,669.1
2									176,658	176,658	176,658	176,658	256,526	963,158.2
3									176,658	176,658	176,658	176,658	256,386	963,017.7
4											301,357	301,357	301,357	904,071.0
5											501,582	501,582	501,582	1,504,746.0
6						0	353,848	233,536	514,286	514,286	514,286	514,286	514,286	3,158,812.6
7		7,452	52,853	0	0		0	17,234	11,679	12,068	18,103	18,727	28,583	166,699.0
8				2900	0	0	40	0	140	320	0	0	0	3400
9				470	1,120	3,460	9,140	9,580	6,420	2,880	1,640	4,600	920	40230
10				0	0	0	450	910	1,930	620	0	0	0	3910
11						411.2541176	0	0	478.1247	0	518.2471	0	789.0729	2196.698824
12						142.8141176	0	101.821176	113.7224	0	190.4188	316.0424	0	864.8188235
13										79603.13	83866.49	85287.61	80049.77	328807.0001
14										1386.112	1109.715	2268.934	396.0321	5160.79357
15		430567.9542	92742.8	327956.2567	143790.1015	184870.5874								1179927.688
16		1335225.778	517314	381524.2222	348339.7778	499292.8376								3081696.615
17		15490.67852	4016.98	1627.235556	1458.24	378.3860706								22971.52385
													总计RMB	15,555,338.7

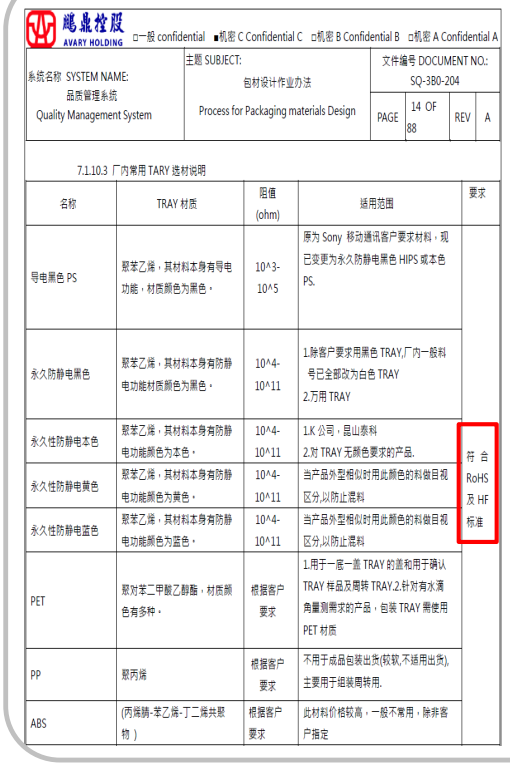
Distribution, storage and transportation (1/3)

Packaging Material Selection:

- The Company selects packaging materials—including trays, foam inserts, bags, cartons, desiccants, and humidity-indicator cards—that comply with applicable environmental requirements, including HF and RoHS requirements.
- For humidity-indicator cards, we use cobalt-free cards. For desiccants, the Company uses montmorillonite desiccants made from natural mineral materials. We do not use silica-gel desiccants, taking into consideration the environmental impacts associated with the chemicals used in their production.

The Company provides training on the implementation of the *Packaging Material Design Operating Procedures*, as evidenced by the training records below.

Item 1



鹏鼎控股 AVARY HOLDING

□一般 confidential ■机密 C Confidential C □机密 B Confidential B □机密 A Confidential A

系统名称 SYSTEM NAME: 品质管理系统 Quality Management System	主题 SUBJECT: 包材设计作业办法 Process for Packaging materials Design	文件编号 DOCUMENT NO.: SQ-3B0-204	PAGE 14 OF 88	REV A

7.1.10.3 厂内常用 TARY 选材说明

名称	TRAY 材质	阻值 (ohm)	适用范围	要求
导电黑色 PS	聚苯乙烯，其材料本身有导电功能，材质颜色为黑色，	10^3-10^5	原为 Sony 移动通讯客户要求材料，现已变更为永久防静电黑色 HIPS 或本色 PS.	
永久防静电黑色	聚苯乙烯，其材料本身有防静电功能材质颜色为黑色，	10^4-10^11	1.除客户要求用黑色 TRAY,厂内一般料号已全部改为白色 TRAY 2.万用 TRAY	
永久性防静电本色	聚苯乙烯，其材料本身有防静电功能颜色为本色，	10^4-10^11	1.K 公司，昆山泰科 2.对 TRAY 无颜色要求的产品.	符合 RoHS 及 HF 标准
永久性防静电黄色	聚苯乙烯，其材料本身有防静电功能颜色为黄色，	10^4-10^11	当产品外型相似时用此颜色的料做目视区分,以防止混料	
永久性防静电蓝色	聚苯乙烯，其材料本身有防静电功能颜色为蓝色，	10^4-10^11	当产品外型相似时用此颜色的料做目视区分,以防止混料	
PET	聚对苯二甲酸乙醇酯，材质颜色有多种，	根据客户要求	1.用于一底一盖 TRAY 的盖和用于确认 TRAY 样品及周转 TRAY.2.针对有水滴角量测需求的产品，包装 TRAY 需使用 PET 材质	
PP	聚丙烯	根据客户要求	不用于成品包装出货(较软,不适用出货),主要用于组装周转用.	
ABS	(丙烯腈-苯乙烯-丁二烯共聚物)	根据客户要求	此材料价格较高，一般不常用，除非客户指定	



CTI 华测检测

检测报告

报告编号 A2250435733101002C 第 2 页 共 4 页

检测依据

测试项目	测试方法	测试仪器
钴(Co)	参考US EPA 3052:1996 & US EPA 6010D:2018	ICP-OES

检测结果

测试项目	结果	方法检出限
	002	
钴(Co)	N.D.	2 mg/kg

样品/部位描述

序号	CTI样品ID	描述
1	002	有棕色/黑色油墨的白色纸

SGS

Test Report No.: CANEC25020180811 Date: Aug 22, 2025 Page 1 of 7

Client Name: FOSHAN SHUNDE TOPCOD INDUSTRY CO.,LTD.

Client Address: NO. 6, PAISHA INDUSTRY ROAD, PAISHA COMMUNITY, LONGJIANG TOWN, SHUNDE DISTRICT, FOSHAN CITY

Sample Name: Montmorillonite Desiccant

The above sample(s) and information were provided by the client.

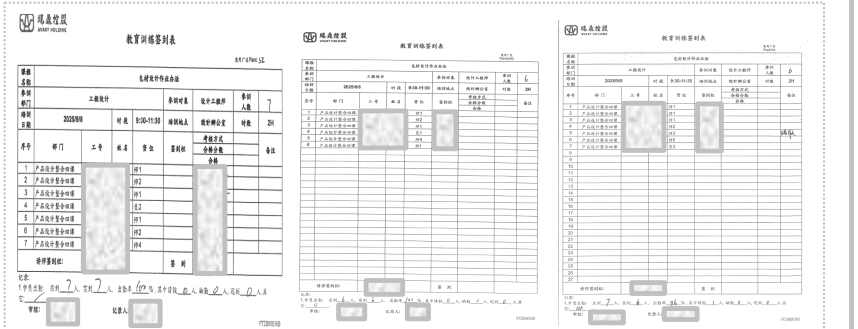
SGS Job No.: GZP25-023501
Sample Receiving Date: Aug 15, 2025
Testing Period: Aug 15, 2025 ~ Aug 22, 2025
Test Requested: Select test(s) as requested by the client.
Test Method(s): Please refer to next page(s).
Test Result(s): Please refer to next page(s).

Test Requirement	Conclusion
Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	See Results

Item 2



Training photos



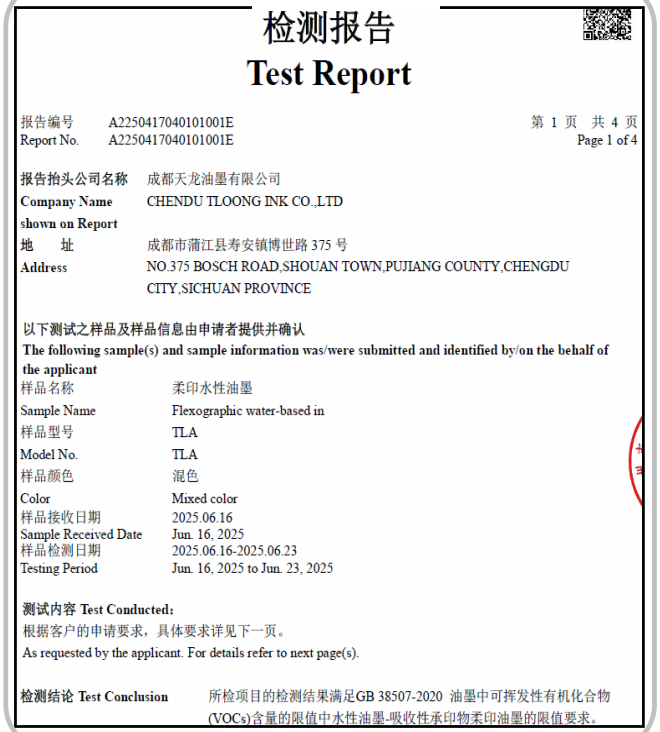
Attendance records

Distribution, storage and transportation (2/3)

Transportation:

- For distribution and transportation, the Company selects packaging materials that comply with applicable environmental requirements and considers their potential environmental impacts. The inks used on outer cartons are tested for volatile organic compounds (VOCs) and comply with applicable environmental protection standards.
- The Company also adopts shipment consolidation in its logistics operations to reduce the number of transportation trips and improve transport efficiency. In 2025, this initiative saved 4,121,750 liters of fuel, thereby reducing vehicle energy consumption and associated carbon emissions.

Item 1



检测报告

Test Report

报告编号 A22504170401010O1E 第 1 页 共 4 页
Report No. A22504170401010O1E Page 1 of 4

报告抬头公司名称 成都天龙油墨有限公司
Company Name shown on Report CHENDU TLOONG INK CO.,LTD
地 址 成都市蒲江县寿安镇博世路 375 号
Address NO.375 BOSCH ROAD,SHOUAN TOWN,PUJIANG COUNTY,CHENGDU CITY,SICHUAN PROVINCE

以下测试之样品及样品信息由申请者提供并确认
The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant

样品名称	柔印水性油墨
Sample Name	Flexographic water-based in
样品型号	TLA
Model No.	TLA
样品颜色	混色
Color	Mixed color
样品接收日期	2025.06.16
Sample Received Date	Jun. 16, 2025
样品检测日期	2025.06.16-2025.06.23
Testing Period	Jun. 16, 2025 to Jun. 23, 2025

测试内容 Test Conducted:
根据客户的申请要求，具体要求详见下一页。
As requested by the applicant. For details refer to next page(s).

检测结论 Test Conclusion 所检项目的检测结果满足GB 38507-2020 油墨中可挥发性有机化合物(VOCs)含量的限值中水性油墨-吸收性承印物柔印油墨的限值要求。

Item 2

厂区	月份	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	总计
秦皇岛	需求派车（车次）	562	600	756	663	612	678	794	707	667	621	608	664	7,932
	实际派车（车次）	291	275	337	333	295	327	364	348	368	309	301	329	3,877
	节省车次（车次）	271	325	419	330	317	351	430	359	299	312	307	335	4,055
	节省路程（公里）	325,200	390,000	502,800	396,000	380,400	421,200	516,000	430,800	358,800	374,400	368,400	402,000	4,866,000
	节省燃油（升）	81,300	97,500	125,700	99,000	95,100	105,300	129,000	107,700	89,700	93,600	92,100	100,500	1,216,500
深圳	需求派车（车次）	368	408	488	495	548	582	585	598	602	560	513	457	6,204
	实际派车（车次）	152	162	202	206	210	223	236	244	261	223	214	190	2,523
	节省车次（车次）	216	246	286	289	338	359	349	354	341	337	299	267	3,681
	节省路程（公里）	216,000	246,000	286,000	289,000	338,000	359,000	349,000	354,000	341,000	337,000	299,000	267,000	3,681,000
	节省燃油（升）	54,000	61,500	71,500	72,250	84,500	89,750	87,250	88,500	85,250	84,250	74,750	66,750	920,250
淮安	需求派车（车次）	1,040	1,158	1,538	1,525	1,368	1,398	1,798	1,657	1,773	1,476	1,482	1,508	17,721
	实际派车（车次）	464	526	659	646	578	583	756	730	824	677	640	713	7,796
	节省车次（车次）	576	632	879	879	790	815	1,042	927	949	799	842	795	9,925
	节省路程（公里）	460,800	505,600	703,200	703,200	632,000	652,000	833,600	741,600	759,200	639,200	673,600	636,000	7,940,000
	节省燃油（升）	115,200	126,400	175,800	175,800	158,000	163,000	208,400	185,400	189,800	159,800	168,400	159,000	1,985,000
合计	需求派车（车次）	1,970	2,166	2,782	2,683	2,528	2,658	3,177	2,962	3,042	2,657	2,603	2,629	31,857
	实际派车（车次）	907	963	1,198	1,185	1,083	1,133	1,356	1,322	1,453	1,209	1,155	1,232	14,196
	节省车次（车次）	1,063	1,203	1,584	1,498	1,445	1,525	1,821	1,640	1,589	1,448	1,448	1,397	17,661
	节省路程（公里）	1,002,000	1,141,600	1,492,000	1,388,200	1,350,400	1,432,200	1,698,600	1,526,400	1,459,000	1,350,600	1,341,000	1,305,000	16,487,000
	节省燃油（升）	250,500	285,400	373,000	347,050	337,600	358,050	424,650	381,600	364,750	337,650	335,250	326,250	4,121,750

Distribution, storage and transportation (3/3)

Packaging Recovery and Reuse:

During product distribution and transportation, the Company recovers trays and plastic pallets delivered to customers and reuses them where feasible. For internal transfers between our facilities, trays, foam inserts, and plastic pallets are collected and reused. These practices help reduce packaging waste, resource consumption, and the environmental impacts associated with distribution and transportation.

Item 1&2

料號查詢 Material number query

單號： Flow No.		申請人工號： Number of applicant		申請人姓名： Applicant	
狀態： Status	ALL	申請時間起： Application date start time	2025-01-01	申請時間止： Application date end time	2025-12-31
物料類型： Material Type		新料號： Material	G39	舊料號 Old Material Number	
品名： Product Name		規格： Specifications		物料組： Material Group	
品牌： Brand		廠商 Supplier		廠商料號 Supplier's Material	
設備名稱： Equipment name		設備供應商 Equipment supplier		客戶料號： Customer's Material	
成品料號：		物料描述： Descr.	回收	備品第8碼： 8th Order code	

查詢Query 導出Export 導出濕敏感 導出特性值 導出長文

序號 Item	上傳單號 Flow No.	複製料號 Copy	修改 Edit	生成狀態 Status	物料描述 Descr.	新料號 Material	長文 Long text	申請人 Applicant	品名 Product Name	品牌 Brand	規格 Specifications	廠區 Factory	BU BU	客戶料號 Customer's Material	成品料號	廠商 Supplier	廠商料號 Supplier's Material
1	G3990AP00PK1	複製		已生成	TRAY出货PS本色 310 230 1.0 回收TRAY 4-11ohm	G3990AP00PK1	TRAY出货PS本色 310 230 1.0 回收TRAY 4-11ohm	外部系統调用PLM系統接口时使用此账密验									
2	G3990AP0LD91	複製		已生成	TRAY出货PS本色 300 195 0.8 回收TRAY 4-11ohm	G3990AP0LD91	TRAY出货PS本色 300 195 0.8 回收TRAY 4-11ohm	外部系統调用PLM系統接口时使用此账密验									
3	G3990AP0MG71	複製		已生成	TRAY出货PS黃色 300 195 0.8 回收TRAY 4-11ohm	G3990AP0MG71	TRAY出货PS黃色 300 195 0.8 回收TRAY 4-11ohm	外部系統调用PLM系統接口时使用此账密验									

Use phase - operation and servicing/ maintenance (1/2)

The *Bending Product Design Guidelines* define principles for material selection, stack-up design, and mesh design to improve product durability during bending. These design criteria help extend product service life and reduce the need for product replacement and associated resource consumption.

Training records related to the implementation of the *Bending Product Design Guidelines* are provided as supporting evidence.

Item 1



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■一般 Non-confidential □密 Confidential □机密 Secret □极机密 Top Secret

系統名称 SYSTEM NAME: 品質管理系統 Quality Management System	主题 SUBJECT: 绕折产品设计指导书 Operation Instruction for bend	文件编号 DOCUMENT NO.: EB8-BM14-013EH			
		PAGE	4OF 11	REV	B

6. 作业流程 Process Flow Chart：
无 N\A

7. 作业内容 Process Description：
7.1 静态绕折产品功能特征介绍:
产品本身没有转动或滑行要求,客户要求出货时候保持一种弯折的形状利于其组装,客户要求的这种形状在组装或重工时会被弯折,为了防止组装或重工过程中的弯折折断FPC,故客户会在FPC出货时候要求作弯折测试定义
1.弯折半径,2.弯折角度,2.弯折次数,满足方可出货,如,客户要求:选用弯折半径1mm 弯折角度180°,弯折次数必须满足进行绕折30个cycles没有失效.

图1

7.2 动态绕折产品功能特征介绍:
产品本身就有转动或滑行要求,客户通过软板转动或滑行的要求以满足其产品功能要求,客户会要求在FPC有一定的弯折寿命要求,如在弯折半径1.5mm,行程20mm要求下要滑行80K次.

图2

7.3 静态&动态绕着设计通用考虑要点
A 叠构
a. 绕折区厚度
如图3根据材料力学分析，越厚的叠构表面所受张应力(Tensile)和压应力(Compressive)会大于同规格比较薄的叠构。所以说，绕折区层叠构越薄的所受张应力和压应力会越小,会更耐绕折.
设计引伸
1.如果客户要求为转动，滑行等动态绕折，绕折区域需要设计成单层区才能满足动态绕折要求,此类FPC单面板是最优设计。
双面板可以考虑线路走在一层，另外一层蚀刻为PI设计降低厚度设计。

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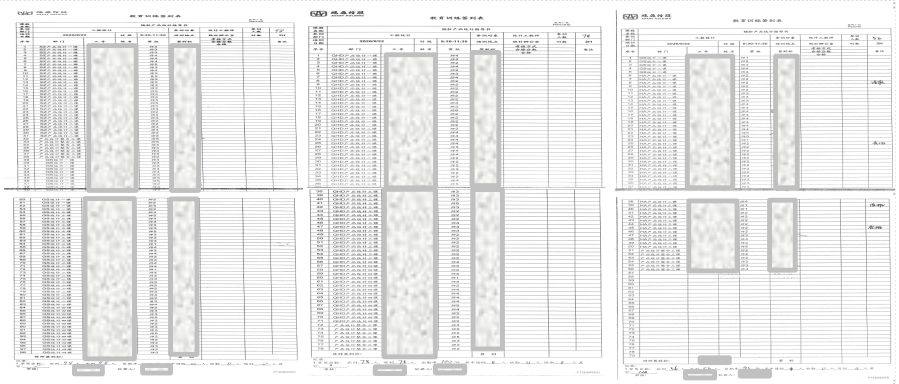
Item 2



Training photos



Attendance records

Use phase - operation and servicing/ maintenance (2/2)

The Company improves product durability by enhancing flexural resistance and electrical reliability. These improvements help extend product service life, reduce product failure and replacement frequency, and consequently reduce the resources required for replacement, including materials, energy, and water. These criteria are not applicable to RPCB and HDI products due to differences in product categories.

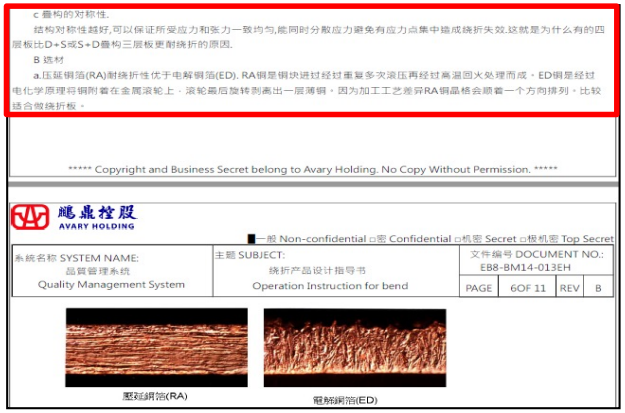
Flexural resistance is improved through:

- selecting materials with higher flexural resistance, such as HA copper;
- modifying the product stack-up design, including: applying a symmetrical front-and-back stack-up; reducing the number of board layers and incorporating an air-gap design, also referred to as a no-adhesive-area design; and
- applying a mesh design to the circuit layout.

Electrical reliability is improved by selecting materials with enhanced resistance to ion migration.

Improve bend performance

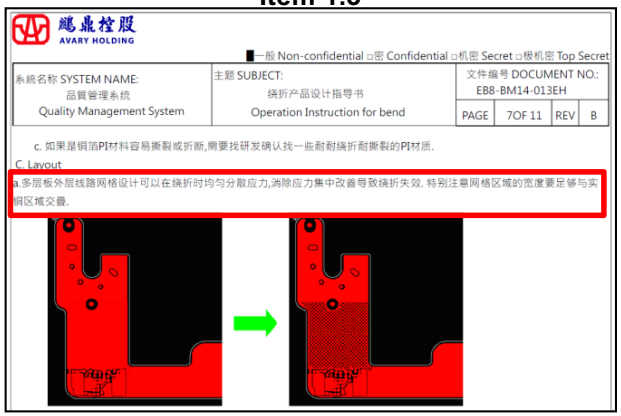
Item 1.1



Item1.2



Item 1.3



Improve electrical reliability

Item 2

鹏鼎控股 AVARY HOLDING

□一般 confidential ■机密 C Confidential C □机密 B confidential B □机密 A confidential A

系统名称 SYSTEM NAME: 品质管理系统 Quality Management System	主题 SUBJECT: H 客户软板通用信赖性测试作业办法 Process for H Bare flex General Reliability Test	文件编号 DOCUMENT NO.: SQ-3B8-293			
		PAGE	3 OF 4	REV	E

序号	检验项目	测试样本	测试步骤	测试设备	允收标准
11	bHAST	测试条	测试样品: 测试条设计参考ODB 921-04415,仅供参考,且仅限一层的情况,供应商需根据实际产品设计修改测试条叠构(例如,FPC为多层板或双面板需增加孔),如果需要的话允许加大裸露PAD使焊接更容易. 1. HAST环境:110℃, 85%RH,122kPa, SIR测试电压 32V, 24小时. 2. 每5min,在量测电压32V下,记录一次绝缘电阻,并进行外观确认,持续监控. 3.测试前,后, 均需用绝缘阻值测试仪测绝缘阻值,记录数据. 4.量测测试电阻图:Pad或线与线间 5.对抗离子迁移材料需去测试Coverlay, 防焊和防焊	SIR bHAST机台 (高加速应力试验机台) 表面绝缘电阻量测系统 200X显微镜	1.功能: 4W测试持续监控,阻值≥100MΩ 2.外观:100%检验,无气泡,剥离,分层不良,规格参考料号专用SIP及<H客戶空板出貨外观检验指导书>. 3.周光外观检: 仅对功能和外观NG品进行周光检查 方法:去掉测试条背面层,只保留正面层,200倍周光检查剩余层(参考右图),无模晶线,无异物,药水残留,脏污.

End of life management (1/2)

The *Environmental Design Operating Specification* require the Company to consider the feasibility and value of recovering product components and materials during product development. The Company selects appropriate recovery processes and technologies and aims to minimize environmental impacts at the end of the product life cycle.

The Company provides training on the implementation of the *Environmental Design Operating Specification*, as evidenced by the training records below.

Item 1

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□一般 Confidential ■机密 C Confidential C □机密 B Confidential B □机密 A Confidential A

系统名称 SYSTEM NAME: 品质管理系统	主题 SUBJECT: 环境化设计作业办法	文件编号 DOCUMENT NO.: SQ-3B8-282			
Quality Management System	Process for Environment	PAGE	4 OF 6	REV	B

4.定义 Definition:

4.1 环境化设计：DFE是 Design for Environment的缩写,指将环境因素融入到产品的设计中,旨在贯穿产品的整个生命周期中改善产品的环境性能.DFE是在满足技术、安全、功能及市场的前提下,其主要围绕无害设计、 减量设计、节能设计、可回收设计及人体工学等指标展开的设计活动

4.2 产品生命周期：是指产品(或服务)从取得原材料,经生产、使用直至废弃回收的整个过程

4.3 无害设计：降低产品在生产制造、使用及废弃回收等各个生命周期对环境及人类健康的危害

4.4 节能设计：是指加强用能管理,让产品以最低功率产生最大效能；采用设计上可行、经济上合理及环境及社会可以承受的措施,减少产品从生产到营运各个生命周期的损失和浪费,更加有效、合理地利用资源

4.5 减量设计：减少产品重量/体积/材料种类和数量/零部件数量/制造流程等设计方案

4.6 回收设计：回收设计也是循环设计,是使得产品零部件及材料在回收时对环境污染最小的一种思想方法.在产品设计时,充分考虑产品零部件及材料的回收的可能、价值大小、回收处理方法及技术等一系列问题,以达到零部件及材料的充分有效利用

4.7 人体工学：是指使产品的使用方式尽量适合人体的自然形态,这样在使用产品时,身体及精神上不需要任何主动适应,减少由于使用产品造成的疲劳或困扰,使产品和环境的设计更好地满足人的生理和心理的特点

5.职责 Responsibility:

5.1 设计处

5.1.1 负责将产品环境因素纳入产品的设计活动中,提高产品在生命周期中对环境的友善程度

5.1.2 负责本文件修订及维护,检讨为频率1次/年(特殊情况变更时需即时修订)

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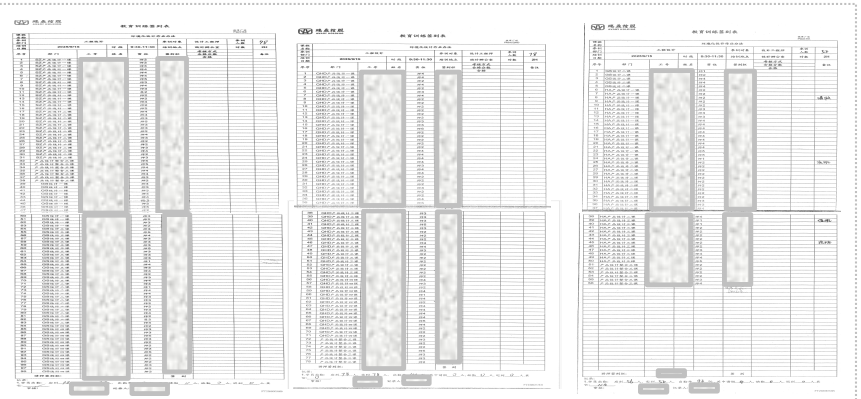
Item 2



Training photos



Attendance records

End of life management (2/2)

Packaging Material Recycling

Shipping trays and plastic pallets are retrieved and sent to the certified recycler for recycling, thereby reducing packaging waste and associated environmental impacts. Within the company, trays, foam inserts, and plastic pallets are collected for reuse or recycling.

Item 1&2

料號查詢 Material number query

單號： Flow No.		申請人工號： Number of applicant		申請人姓名： Applicant	
狀態： Status	ALL	申請時間起： Application date start time	2025-01-01	申請時間止： Application date end time	2025-12-31
物料類型： Material Type		新料號： Material	G39	舊料號 Old Material Number	
品名： Product Name		規格： Specifications		物料組： Material Group	
品牌： Brand		廠商 Supplier		廠商料號 Supplier's Material	
設備名稱： Equipment name		設備供應商 Equipment supplier		客戶料號： Customer's Material	
成品料號：		物料描述： Descr.	回收	備品第8碼： 8th Order code	

查詢Query 導出Export 導出濕敏感 導出特性值 導出長文

序號 Item	上傳單號 Flow No.	複製料號 Copy	修改 Edit	生成狀態 Status	物料描述 Descr.	新料號 Material	長文 Long text	申請人 Applicant	品名 Product Name	品牌 Brand	規格 Specifications	廠區 Factory	BU BU	客戶料號 Customer's Material	成品料號	廠商 Supplier	廠商料號 Supplier's Material
1	G3990AP00PK1	複製		已生成	TRAY出货PS本色310 230 1.0 回收TRAY 4-11ohm	G3990AP00PK1	TRAY出货PS本色310 230 1.0 回收TRAY 4-11ohm	外部系統调用PLM系統接口时使用此账密验									
2	G3990AP0LD91	複製		已生成	TRAY出货PS本色300 195 0.8 回收TRAY 4-11ohm	G3990AP0LD91	TRAY出货PS本色300 195 0.8 回收TRAY 4-11ohm	外部系統调用PLM系統接口时使用此账密验									
3	G3990AP0MG71	複製		已生成	TRAY出货PS黃色300 195 0.8 回收TRAY 4-11ohm	G3990AP0MG71	TRAY出货PS黃色300 195 0.8 回收TRAY 4-11ohm	外部系統调用PLM系統接口时使用此账密验									