

Potential Failure Modes and Effects
Analysis (Information Sheet)

PFMEA 编号 (PFMEA Number) : 20104756 C-PFMEA Rev.C

制程名称 (Process Name) : 反应注塑 Reaction Injection Molding

制程任务 (Process Responsibility) : 成品加工 Finished Good Processing

准备人 (Prepared By) : Chu Libo

适用的产品 (Affected Product(s)) : 20104756 C

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Process / Product Failure Modes and Effects Analysis (PFMEA)																			
产品名/料号/版本号: Part Number/Revision :		20104756 C	制程任务 Process Responsibility	成品加工 Finished Good Processing	组员 Team Member:	Chew Ee Hang Chu Guochun Zhao Ranyan	Lu Chuanhai Feng Yuying Chiu Libo	Chen Hang Gan Cheng Wu Zhouwei	PFMEA 日期 (开始/版本) PFMEA Date (Begin/Rev)		2024.06.01	文件号/版本号 Document Number/ Revision:	PFMEA-20104756 C-01						
制程名称 Process Name :		PU注塑 PU injection molding	准备人 : Prepared By :	Chu Li Bo						PFMEA修改日期 PFMEA Revision Date:		/	版本号 Revision:	01					
步骤 Step No.	制程工位 Process Step	主要的制程输入 Key Process Input	潜在失效模式 Potential Failure Mode	潜在失效结果 Potential Failure Effects	S 严重性 Severity	潜在的原因 Potential Causes	O 发生性 Occurrence	目前控制方法 Current Controls	D 检出性 Detection	R 得分 Ranking	推荐的对策 Actions Recommended	负责人 Resp.	被采取的对策 Actions Taken	S 严重性 Severity	O 发生性 Occurrence	D 检出性 Detection	R 得分 Ranking		
过程步骤 Process Steps	当前是哪个制程工位? What is the process step	当前工位的主要输入是什么? What is the Key Process Input?	主要的输入会以何种形式出错? In what ways can the Key Input go wrong?	对输出变量造成什么影响? 输出是否客户要求或者内部要求? What is the impact on the Key Output Variables (Customer Requirements or internal requirements)?	对客户使用有何影响? How Severe is the effect to the customer?	什么输入产生了错误? What causes the Key Input to go wrong?	失效模式发生的可能性? How often does Cause or FA occur?	目前有什么使用中的控制方法和预防方法? 需要包含SOP编号 What are the existing controls and procedures (Inspection and test) that prevent with the cause or the Failure Mode? Should include an SOP number.	怎么检出失效? How well can you detect cause or FA?		针对降低发生率和提高检出性采取什么措施? What are the actions for reducing the occurrence of the Cause, or improving detection?	谁是对策的负责人? Whose Responsible for the recommended action?	哪些对策被彻底执行了? 使用周, 月的数据比较 What are the completed actions taken with the recalculated RPN? Be sure to include completion week/month						
10	业务 business	接受订单 Receive Customer Order	订单信息不清楚 Order information unclear	影响生产和出货 Affect production and delivery	4	英文未及时翻译 Translation not done in time	2	由专人负责客户订单, 对订单内容进行翻译. 将重要信息邮件通知各负责人. The designated personnel to accept customer's order, translate the contents of the order and email the important information to all person in charge	4	32	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
20	生管 Production management	下达生产指令 Issue production order	生产指令不清楚, 内容不完整 production order is not clear and the content is not complete	影响生产和出货 Affect production and delivery	4	订单内容识别误差 Order content identification error	2	核对要按订单及KCM表 Verify with PO and BOM list	4	32	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
30	采购 procurement	采购材料及配件 Purchase material and components	材料及配件采购错误 Erroneous of material and components purchase	影响生产和出货 Affect production and delivery	5	人员失误 Human error	2	核对要按订单及KCM表 Verify with PO and BOM list	3	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
40	仓库 warehouse	接受材料及配件 Receive material and components	产品数量及数据错误 Quantity is incorrect or wrong parts sent	影响生产和出货 Affect production and delivery	5	人员失误 Human error	2	核对要按订单及KCM表 Verify with PO and BOM list	3	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
50	IQC	进料检验 Incoming Quality Inspection	漏检 Missing Incoming material Inspection	影响生产和出货进度 Affect production and delivery schedule	4	来料检验流程错误 Error in IQC	2	来料检验报告和供应商提供的质保书 IQC inspect report& COC from suppliers	5	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
			检验结论错误 Erroneous inspection result	影响生产和出货进度 Affect production and delivery schedule	6	来料检验错误 Error in IQC	2	来料检验报告和供应商提供的质保书 IQC inspect report& COC(Certificate) From suppliers	3	36	N/A	N/A	N/A	N/A	N/A	N/A			
60	仓库 warehouse	原材料及配件储存 Store Raw Material and components	包装损坏 Package was destroyed	原材料受污染, 受潮 Raw material easy to be contaminated and affected by damp conditions	3	在包装过程中外力太大造成 External force during packing	3	6S检查 6s checking	4	36	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
			物料损坏 Raw material damaged	影响生产和出货进度 Affect production and delivery schedule	5	在包装过程中外力太大造成 External force during packing	2	6S检查 6s checking	4	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
			数量错误 Wrong quantity	影响生产 Affect production	4	库存管理过程中问题 Mistake in inventory control	3	库存管理台帐, 定期盘点 Inventory management ledger , Cycle count	3	36	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
70	生产部 production department	领料 Material Requisition	使用错误的料号, 和错误的数量, 没有按照先进先出的原则 Use of wrong part number and/or quantity, not following FIFO	产品返工或报废, 产品品质问题无法追溯 Rework or scrap,hard to trace for quality issues	6	外包装无日期, 品名等标识, 仓管员未按照先进先出执行 Packaging lacks labels for date, part number, etc., warehousing staff did not comply with FIFO	2	仓库管理员收货并对产品的标识及数量等进行核对, 材料标识清晰, 先后批次区分清楚. Warehouse verify the quantity and identification card of material,Clear labelling, organise labelled materials according to FIFO	4	48	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
		成型前准备 Preparation before molding	POL料与ISO塑料过程中混料 POL and ISO material mixing	混料后, 两种材料将在机台桶料罐内发生反应, 堵塞喷嘴料道, 管道及枪头, 造成枪头, 料道及管道堵塞, 影响正常交货 After mixing, the two materials will react in the mixing head and can clog the supply lines, pipes and injector nozzle which can cause the parts to go out of commission, affecting normal consignment lead time	8	1.加料人员不熟悉及上岗前未做相关培训 2.两种材料标识不能明显的区分开 1.The operator is not familiar with the injection operation or has yet to receive training. 2. Labels cannot be distinguished between the two materials.	4	在POL料桶 与ISO料桶表面喷涂与机台料道相对应的颜色如POL和ISO字标识 Spray paint written labels the surface of the POL barrel and ISO barrel with the color corresponding to that of the feed tanks	3	96	一次更换一个桶, 不允许同时从两个桶中取出两个泵。在桶带上加装饰, 只有经过授权的人才能从生产处那里查出问题。油漆桶位置相同的颜色。由另外一个负责人进行检查所有加料罐罩。 One barrel at a time for changing, not allow to remove both pumps from both barrels at the same time. Add lock to barrel belt, only authorized personnel can sign out key from production manager. Paint barrels location with same colours. Add checking list by another engineer before pump can be on.	作业员/部门经理 Operators/Department manager	材料领用记录表 Material recipients records	8	2	3	48		
		成型灌注 Molding	漏装螺母或零件 Missing installation (screw or insert)	产品漏装螺母或结构不符报废 Missing installation or structure	8	作业员疏忽 Operator negligence	2	制作专用的子弹盒, 将螺母与子弹组装后全部塞到子弹盒内, 检查螺母数量及是否与子弹组装到位。没有问题后, 再安装到模具内。Fabricated a cassette with the correct number of pockets to contain the brass screw insert to avoid any missing or incorrect number of brass screw inserting into the mold	3	48	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
			气泡不良 Air bubbles	产品表面凹坑, 缺料, 强度降低 Dimples, holes on the surface of the parts, Short shots; reducing strenght	8	注射过程中, 注射压力不够 模具排气不良 Injection pressure is not enough. The mold venting is not good.	4	注射前严格按照工艺参数调整好注射压力, 对模具排气孔不良的位置进行改善操作 Injection pressure is set strictly in accordance with the parameters; modify mold to correct undesirable venting	3	96	更改模具, 增加排气料包或排气槽件 Mold modification, increase overflow material or venting inserts.	作业员/模具工程师 Operator/Mould Engineer	模具排气料包或零件修改变更单 Mold with overflow material for venting or insert changes form.	8	2	2	32		
		PU固化 Curing reaction	产品固化时间不够 Curing time is not enough	产品开模后变形, 外形尺寸不符要求 Dimension is out of spec	7	机台工艺参数成型时间设置较短 Time set is too short	6	严格按照工艺单调整 Adjust in strict accordance with the parameters	1	42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		脱模 Part Ejection	产品脱模不良 Part stuck on the mould	造成产品缺料, 破损, 变形, 拉伤 Loss of material, damage, deformation	5	反应注塑前, 模具温度低于标准范围 The mold temperature is lower than specifications before molding	7	反应注塑前, 模具充分对模具进行加热, 记录, 验证效果, 形成标准, 并记录在工艺单内, 按工艺单执行 Heat up the mold sufficiently before molding. The process is recorded with the results to ensure the process is repeatable, and made into a standard which is to be documented into the molding card and carried out accordingly.	1	35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		脱模剂 Mould Release	产品粘模 Parts stuck on the mold	模具内取出困难 Hard to remove part from the mold	2	模具表面光洁度不够 The mold surface is not smooth enough	4	生产时喷脱模剂 Using mold release agent during production	1	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		CNC 铁料包 CNC Milling Material	料包未加工平整, 或者多铁.	造成产品返修或报废.	7	加工操作不当	3	每件产品加工完成后全检外观, 合格再进行加工下一件.	2	42	N/A								
		抛光部门加工 Polishing department processing		打磨过度或打磨不到位 Excessive or improper polishing	产品废工或报废 Rework or Scrap	5	砂纸型号用错, 打磨方式不正确 Incorrect sandpaper is incorrect, sanding method is incorrect	4	专职人员修复打磨 delegated professionals to sand again and repair	3	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				腻子灰粘接不牢固 Putty adhesiveness not strong enough	产品表面凹坑, 缺料不良 Dents on surface, short-shots	5	凹坑漏修补 Omitted to patch up the sink marks or voids	7	专职人员修磨 delegated professionals to repair	3	105	作业人员完成后自检,确认后由检验员再次进行全部检查Workers after the completion of the self-checking, confirmed by the inspectors to check all again later	作业员 检验员 Operators/Inspector	检验记录 Inspection Record	5	5	2	50	
80	喷漆 painting	喷涂 Painting	产品喷漆不良. Finishing issue on painted surface.	导致产品返工, 追溯困难 Parts need to rework, hard to trace	6	未按指示要求作业 Failure to follow instructions	2	喷漆前检验作业指导书 Spray paint inspection work instruction	2	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
		喷漆品全检 Complete inspection of painted products	产品表面有划痕 Scratches on part surface	产品废工或报废 Rework or Scrap	6	人员及检验员疏忽 Staff negligence	1	检验员100%检查 100% full inspection	2	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
		油漆调配 Paint Mixing	油漆调配比例不对 Wrong paint mixing ratio	喷漆前产品油漆调配比例不符合要求. The paint layer abrasion resistance test of the part after painting failed to meet the requirements.	7	人员及检验员疏忽 Staff negligence	1	按照油漆厂家配方进行调配, 将配比写入喷漆作业指导书内, 每批油漆调配时, 做好相关调配记录. Make the mixture according to the paint manufacturer's formula, record the ratio into the spray painting operation instructions. When mixing each batch of paint, make relevant mixing records.	6	42	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
			油漆, 固化剂, 稀释剂用错. Wrong paint, hardener and thinner were used.	1.附着力达不到标准要求, 喷漆后产品表面会橘皮. 2.油漆无法固化. 3.漆膜附着力差, 产品外观质感与标准色板差距较大, 颜色不符合要求. 1. The adhesion does not meet the standard requirements, the surface of the part will have orange peel patterns after spray painting. 2. The paint cannot be cured. 3. After the painting is completed, the appearance and feel of the part are quite different from the standard color plate, the color does not meet the requirements.	6	作业人员不清楚调配油漆公式. The operator not sure of the paint formula.	1	将油漆, 稀释剂, 固化剂型号和配比, 写入喷漆作业指导书. 每批油漆严格按照指导书要求调配. Record the paint, thinner, curing agent models and ratios into the spray painting operation instructions. Each batch is prepared in strict accordance with the instructions.	3	18	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
		喷漆过程 Spray painting process	喷漆过程中, 灰尘落到产品表面, 造成产品颗粒不良. During the painting process, dust falls on the surface of the part, causing defective part particles.	产品返工 Rework	5	产品打磨后表面有灰尘未清理干净, 带到喷漆室. After the part was polished, the dust on the surface was not cleaned and brought into the spray paint room.	3	1.要求作业员每天上下班打扫工位卫生. 2.产品完成抛光打磨后, 将表面灰尘清理干净再流入喷漆室. 1. Operators are required to clean the site every day on and off work. 2. After the part is grinded and polished, clean the surface dust before flowing into the spray paint room	3	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
		喷漆后烘烤产品 Heated parts after spray painting	油漆烘烤后烘烤温度偏高 The heating temperature is too high after paint spraying	造成产品变形, 鼓包不良. Resulting in part deformation and defective bulging.	5	烘烤温度设置不当 Improper heating temperature setting	2	确定好烘烤温度, 加入到喷漆作业指导书, 员工按指导书要求作业. Determine the heating temperature and add it to the spray painting instructions. Employees work according to instructions.	3	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
			油漆烘烤后烘烤温度偏低 The heating temperature is too low after paint spraying	造成油漆干不透, 附着力差. As a result, the paint cannot dry completely and has poor adhesion.	6	烘烤温度设置不当 Improper heating temperature setting	2	确定好烘烤温度, 加入到喷漆作业指导书, 员工按指导书要求作业. Determine the heating temperature and add it to the spray painting instructions. Employees work according to instructions.	3	36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
90	IQC	产品在货架上摆放整齐, 避免碰撞. The products are neatly placed on the shelves to avoid collisions.	产品表面有划痕 Scratches on part surface	导致产品返工, 追溯困难 Parts need to rework, hard to trace	6	人员及检验员疏忽 Staff negligence	1	检验员100%检查 100% full inspection	2	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
100	生产部 production department	领料 Material Requisition	使用错误的材料, 和错误的数量, 没有按照先进先出的原则 Using the wrong material (number) and wrong quantity, not in accordance to FIFO principle	产品返工或报废, 产品品质问题无法追溯 Rework or scrap, quality issues will be difficult to trace	6	外包装无日期, 品名等标识, 仓管员未按照先进先出执行 No identification and indicating "Date, Part no., etc." on label, not following FIFO	2	仓库管理员收货并对产品的标识及数量等进行核对 Warehouse verify the quantity and identification of Part and quantity	2	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
110	生产部 production department	组装 Assembly	1.组装间隙, 错位, 胶垫等不良. Gap, mismatch and dropping issue 2.漏装等配件. Missing of components	产品不合要求 Does not meet requirements of product	6	作业方法不对 Incorrect of working method	2	组装作业指导书 Assembly Work Instruction	2	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
120	生产部 production department	贴保护膜 Apply protective film	保护膜贴不到位, 褶皱, 气泡不良. Does not meet requirements of product	产品不合要求 Does not meet requirements of product	5	作业方法不对 Incorrect of working method	2	贴膜作业指导书 Pastling of Film Instructions	2	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
130	生产部 production department	视频检验抽查 Video Recording Check	拍摄无法清晰捕捉区域/角度 area/angle not able to capture clearly by video	导致产品返工, 追溯困难 Parts need to rework, hard to trace	6	检验员疏忽 Staff negligence	1	视频检查前, 包装人员拿起产品, 对所有的面进行仔细检查. Before the video inspection, the packer picks up the part and carefully inspects all the sides. (零件必须无任何瑕疵或异常现象, 不合格即报废. No angle will be specified and parts are subject to check at any angles.)	2	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
		包装 Packaging	包装不能有效保护产品. Packaging does not effectively protect the part.	导致产品外观不良, 重新返工. Resulting in poor part appearance, rework again.	5	没能选用合适的包材. Failed to choose suitable packaging material.	3	针对产品造型设计合适包材, 包装经过自由落体验证后, 确定能完好保护产品后, 才能批量使用. Appropriate packaging materials are designed according to the part shape, the packaging can be used in batches only after it has been verified by free fall and can protect the part is intact.	3	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
			包装产品过程错误不良. The process of packaging parts is defective.	导致产品外观不良, 重新返工. Resulting in poor part appearance, rework again.	5	包装台外漏无防护, 包装作业时容易碰撞产品. The packaging table has no protection against leakage, it is easy for parts to be bumped during packaging operations.	3	包装台上贴海绵. Cover the packaging table with foam.	3	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
			包材用错. Wrong packaging material used.	造成产品无法包装, 或者包装后产品保护不到位 The part cannot be packaged or the part is not properly protected after packaging.	5	包装人员不清楚包材规格. Packaging personnel do not know the packaging material specifications.	2	包材规格及用量写入包装指导书内, 包材放入仓库固定库位, 使用时由专人到库位领取. The specifications and amount of packaging materials are written in the packaging instructions, the packaging materials are placed in a fixed location in the warehouse. When used, a designated person will pick them up at the location.	3	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
140	仓库 warehouse	入库 storage	包装不当及标识错误 Improper packing or incorrect identification label	导致产品返工, 追溯困难 Parts need to rework, hard to trace	6	包装人员及检验员疏忽 Staff negligence	1	出货包装人员贴封套并检查 Labeling and 100% full inspection	2	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
150	仓库 warehouse	库存 Product storage	成品存储超过有效期 Expired shelf life of finished goods	影响产品性能 Affect function and performance	6	没有遵循先进先出原则 Failure to follow FIFO	2	物料接收和先进先出管理 Receiving Stamp and FIFO Management	3	36	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

160	仓库 warehouse	出货 Outgoing Shipment	发货错, 少数量 The delivery is short of quantity	影响客户生产 Affect customer production line	6	没仔细核对发货单 Not checking the invoice carefully	2	发货单 invoice	4	45	N/A	N/A	N/A	N/A	N/A	N/A
170	仓库 warehouse	发运 Forwarding despatch	发货错, 少数量 The delivery is short of quantity	影响客户生产 Affect customer production line	6	没仔细核对发货单 Not checking the invoice carefully	2	发货单 invoice	4	45	N/A	N/A	N/A	N/A	N/A	N/A
			产品受损 Products to receive damage	影响产品质量 Affect product quality	6	运输过程防护不当 Improper protection during transportation	2	产品防护管理程序 Preservation of product procedure	4	45	N/A	N/A	N/A	N/A	N/A	N/A

HANSIN Production Quality FMEA SEVERITY RANKINGS							
用户后果(Customer Effect)	HANSIN Factory 制造/生产后果(Manufactory effect)			标准 (Criteria: Severity of Effect Defined)	Effect	评分 (Ranking)	
潜在失效模式影响安全使用或包含不符合政府法规情形, 失效发生时无警告	Potential failure mode affects safety or involves noncompliance with government regulation. Failure occurs without warning.	可能危及作业人员 (机器或组装) 而无警告	Hurt operator (machine) without warning	May endanger operator. Failure mode affects safe vehicle operation and /or involves noncompliance with government regulation. Failure will occur WITHOUT warning.	Hazardous without warning	10	
潜在失效模式影响安全使用或包含不符合政府法规情形, 失效发生时无警告	Potential failure mode affects safety or involves noncompliance with government regulation. Failure occurs with warning.	可能危及作业人员 (机器或组装) 但有警告	Hurt operator (machine) with warning	May endanger operator. Failure mode affects safe vehicle operation and /or involves noncompliance with government regulation. Failure will occur WITH warning.	Hazardous with warning	9	
丧失基本功能 (产品不能运行, 但不影响安全性)	Loss of primary function (Product cannot be used but does not affect safety)	产品可能必须重100%返序产线停止并禁止装运	Product may be scrapped 100% stop line , stop shipment	Major disruption to production line. 100% of product may have to be scrapped. Vehicle / item inoperable, loss of primary function. Customer very dissatisfied.	Very High	8	
主要功能降低 (产品可运行, 但性能降低等级)	Primary function reduced (product can be used but, functional performance degraded)	产品可使用一部分 (少于100%)必须被废弃, 主要过程中出现偏差 (生产线速度降低需要增加人力)	A part of product can be used, (less than 100%) may be scrapped. Major process has problem (production line speed will be slower or increase manpower)	Minor disruption to production line. Product may have to be sorted and a portion less than 100%) scrapped. vehicle operable, but at a reduced level of performance. Customer dissatisfied.	High	7	
次要功能丧失 (产品可运行, 但便利性等能丧失)	Loss of minor function (product can be used but with loss in functions such as convenience)	产品使用必须在100%返工之后	Must rework the 100% product off-line before use. A part of product must be scrapped	Minor disruption to production line. A portion less than 100%) may have to be scrapped (no sorting). Vehicle / item operable, but some comfort / convenience terms) inoperable. Customers experience discomfort.	Moderate	6	
次要功能降低 (产品可运行, 但便利性等能降低)	Reduction of minor function (product can be used but with degradation in functions such as convenience)	一部分产品使用必须经过返工	A part of product must be rework off-line before use	Minor disruption to production line. 100% of product may have to be reworked. Vehicle / item operable, but some comfort / convenience terms) operable at reduced level of performance. Customer experiences some dissatisfaction.	Low	5	
产品可使用, 但是外观或噪音等项目不合格, 并大多数 (>75%) 客户会发现这些缺陷	Product can be used but aspects such as cosmetic appearance and sound insulation doesn't meet spec; majority (>75%) user can detect these defects	产品使用必须在100%在返工之后	Must rework the 100% product on the production line before use	Minor disruption to production line. The product may have to be sorted and a portion less than 100%) reworked. Fit / finish / squeak / rattle item does not conform. Defect noticed by most customers.	Very Low	4	
产品可使用, 但是外观或噪音等项目不合格, 并许多 (50%) 客户会发现这些缺陷	Product can be used but aspects such as cosmetic appearance and sound insulation doesn't meet spec; many (50%) user can detect these defects	一部分产品使用必须经过在产线返工	A part of product must be rework on the line before use	Minor disruption to production line. A portion less than 100%) of the product may have to be reworked on line but not off-station. Fit / finish / squeak / rattle item does not conform. Defect noticed by average customers.	Minor	3	
产品可使用, 但是外观或噪音等项目不合格, 并少数 (<25%) 客户有能力将产品发现这些缺陷	Product can be used but aspects such as cosmetic appearance and sound insulation doesn't meet spec; some (<25%) user can detect these defects	对过程, 作业或作业人员带来轻微不便	Make inconvenience for process , operation or operator	Minor disruption to production line. A portion less than 100%) of the product may have to be reworked on-line but in station. Fit / finish / squeak / rattle item does not conform. Defect noticed by discriminating customers.	Very Minor	2	
没有可识别的后果	No identifiable effect	没有可识别的影响	Even operator find out the defect , no actions needed	No effect.	None	1	

HANSIN Production Quality FMEA OCCURRENCE EVALUATION RANKINGS						
失效可能性 (Probability of Failure)	发生可能性 (Possible Failure Rates)	Cpk	PPM	%	(评分) Ranking	
Very High: Failure is almost inevitable	1 in 2	< 0.33	Persistent failures, >= 100,000 ppm	>= 10	10	
High: Generally associated with processes similar to previous processes that have often failed	1 in 3	< 0.33	>= 50,000 ppm < 100,000 ppm	5	9	
Medium: Generally associated with processes similar to previous processes which have experienced occasional failures, but not in major proportions	1 in 8	< 0.51	>= 20,000 ppm < 50,000 ppm	2	8	
Moderate: Generally associated with processes similar to previous processes which have experienced occasional failures, but not in major proportions	1 in 20	< 0.67	Occurrence about 1 per month or >= 10,000 ppm < 20,000 ppm	1	7	
Low: Isolated failures associated with similar processes	1 in 80	< 0.83	Occasional failure of about 1 every 3 months or >= 5,000ppm < 10,000ppm	0.5	6	
Very Low: Only isolated failures associated with almost identical processes	1 in 400	< 1	Occurrence about every 6 to 12 months or >= 2,000 ppm < 5,000 ppm	0.2	5	
Minimal: Failure is unlikely. No failures ever associated with almost identical processes	1 in 2,000	< 1.17	1000 ppm	0.1	4	
	1 in 15,000	< 1.33	500 ppm	0.05	3	
	1 in 150,000	< 1.5	100 ppm	0.01	2	
	1 in 1,500,000	< 1.67	10 ppm	<=0.001	1	

可侦测 (Detection)		检查类型			标准： 制程管制之可能侦测率 Criteria: likelihood the existence of a defect will be detected by test content	评分 (Ranking)
		系统故障 SPS	测量 Measure	人工检查 Visual		
Almost Impossible	几乎不可能			○	确定无法探测，也没有检查。 (No way to detect and inspect)	10
Very Remote	微渺小			○	现在控制方法不可能探测，仅能以间接或随机检查来达到控制 (Current control processes cannot detect; can only be detected via indirect or sampling methods)	9
Remote	渺小			○	现在控制方法只有很小机会去探测，仅能以目视检查来达到控制 (Current control processes can detect with a low possibility; can be detected with visual inspection)	8
Very Low	很低			○	现在控制方法只有很小机会去探测，现场无法察觉，需要工程待测仪器或复杂手段方能发现，或需通过重复目视检查来达到控制 (Current control processes can detect with a low possibility; cannot be detected on-site and requires engineers to use equipment with complex procedures or repeated visual inspection to detect)	7
Low	低		○	○	现在控制方法可能可以探测，但失效无法察觉或不能及时发现，只能通过图表方法（比如：SPC）来达到控制 (Current control processes may be able to detect but loss in efficiency is difficult if not impossible to detect; control can be achieved only with graphical methods (such as SPC chart))	6
Moderate	中等		○		现在控制方法可能可以探测，但只能在检验时由其他测量仪器或设备方能发现 (Current control processes may be able to detect but gauge or measuring instruments must be used to detect)	5
Moderately High	中上	○	○		现在控制方法有很好机会去探测，可在后续作业中探测发现，或能通过作业前准备和零件的测定检查而发现失效 (Current control processes can detect at a high chance; failure can be detected in the subsequent operation or through pre-operations preparation and during FA inspection)*	4
High	高	○	○		现在控制方法有很好机会去探测，本工序作业可发现失效，或后续作业中可探测发现失效 (Current control processes can detect at a high chance; failure detection can occur in the current operation or in the subsequent operation)	3
Very High	很高	○	○		现在控制方法几乎可以探测，现场制造设备都可自动判断并发现，失效产品不能被通过 (Current control processes can detect almost all the time; on-site production facilities can determine and detect failure automatically. Unqualified products shall not pass.)	2
Almost Certain	几乎肯定	○			现在控制方法肯定可以探测，已设计了防错，失效产品不会发生 (Current control processes can definitely detect; prevention ensures that failed products do not occur)	1

* Note: Identical to Manual except for Rankings of 6 and 4. Words: "On gauging performed on setup and first piece check" moved from a detection of 4 to a detection of 6.

* Note: Identical to Manual except for Rankings of 6 and 4. Words "On gauging performed on setup and first piece check" moved from a detection of 4 to a detection of 6.

RPN得分与对策基准对照表 (RPN value and corrective action matrix)			
等级 (Grade)	得分 (RPN value)	对策基准 (Action standard)	备注 Notes
5	≥512	设计变更对策 (Design change)	
A	≥216	一定要下对策 (Prevent action required)	
B	≥100	尽量下对策 (Take actions if possible)	
C	≥27	视情况下对策 (Take action considering manufacturing impact)	
D	<27	视情况下对策 (Take action considering the risk)	
Occurance=7 or Severity=3 or Detection=7		一定要下对策 (Preventive action required, it is imperative to act regardless of the RPN value)	列入A (Same as A)