SGM QSB Overview
SGM 质量系统基础概述

2017.02更新版

GM QSB发展历程

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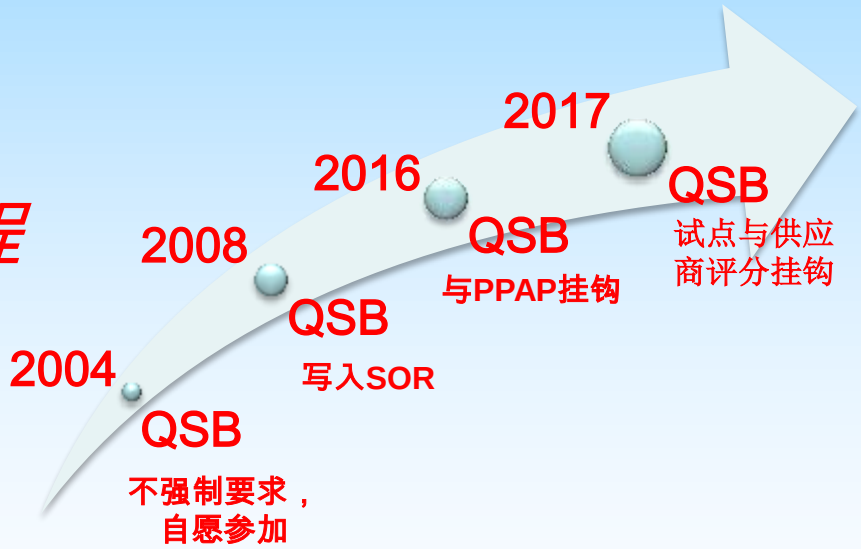


- QSB是一种工具。它是TS16949 的强化、补充以及落地。强调供应商将QSB等各个主机厂的要求与自身的管理方法相结合，并非另建一套质量管理体系。

Profit – Cost of Equation
利润-成本等式

QSB

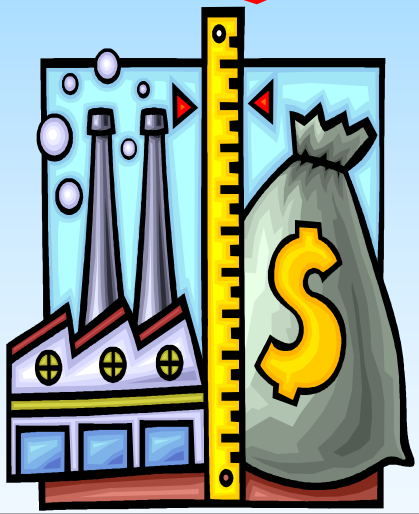
Scrap, Repair, Rework, Containment, Added Operations & Operators, Premium Freight, Loss of Business, etc.
废料、维修、返工、遏制、 增加的操作和操作工、 额外运费、 商业损失等

Profit – Cost of Equation
利润-成本等式

QSB

不断预防问题、发现问题、解决问题
从而消除浪费，降低成本，改善零部件质量
Continuous Problem Solving for
Waste eliminate, Cost down, Quality improve

原材料、能源、劳动力等

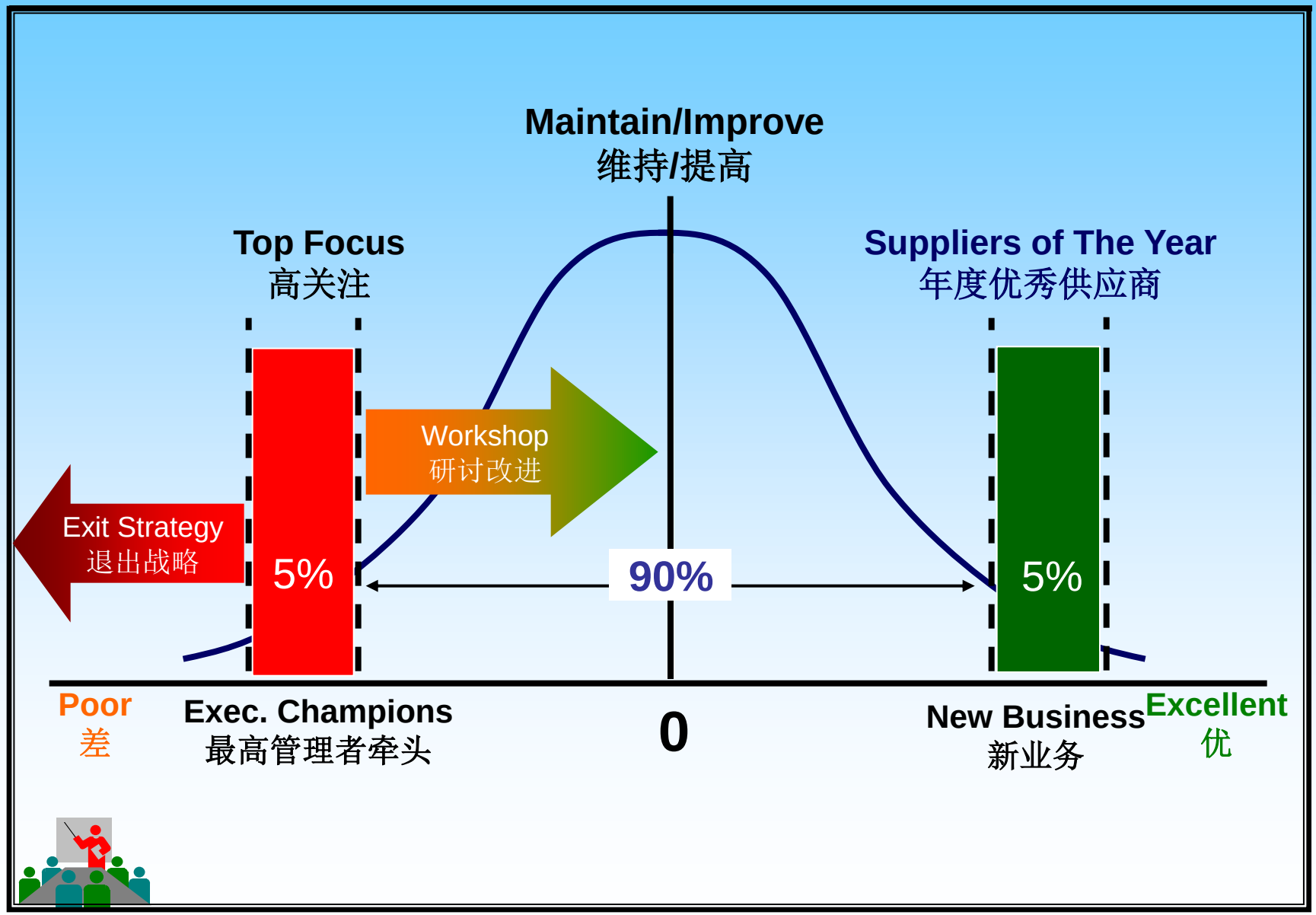


整车OEM厂、市场

降低成本
Cost down

Supplier Performance Distribution
供应商绩效分布

QSB

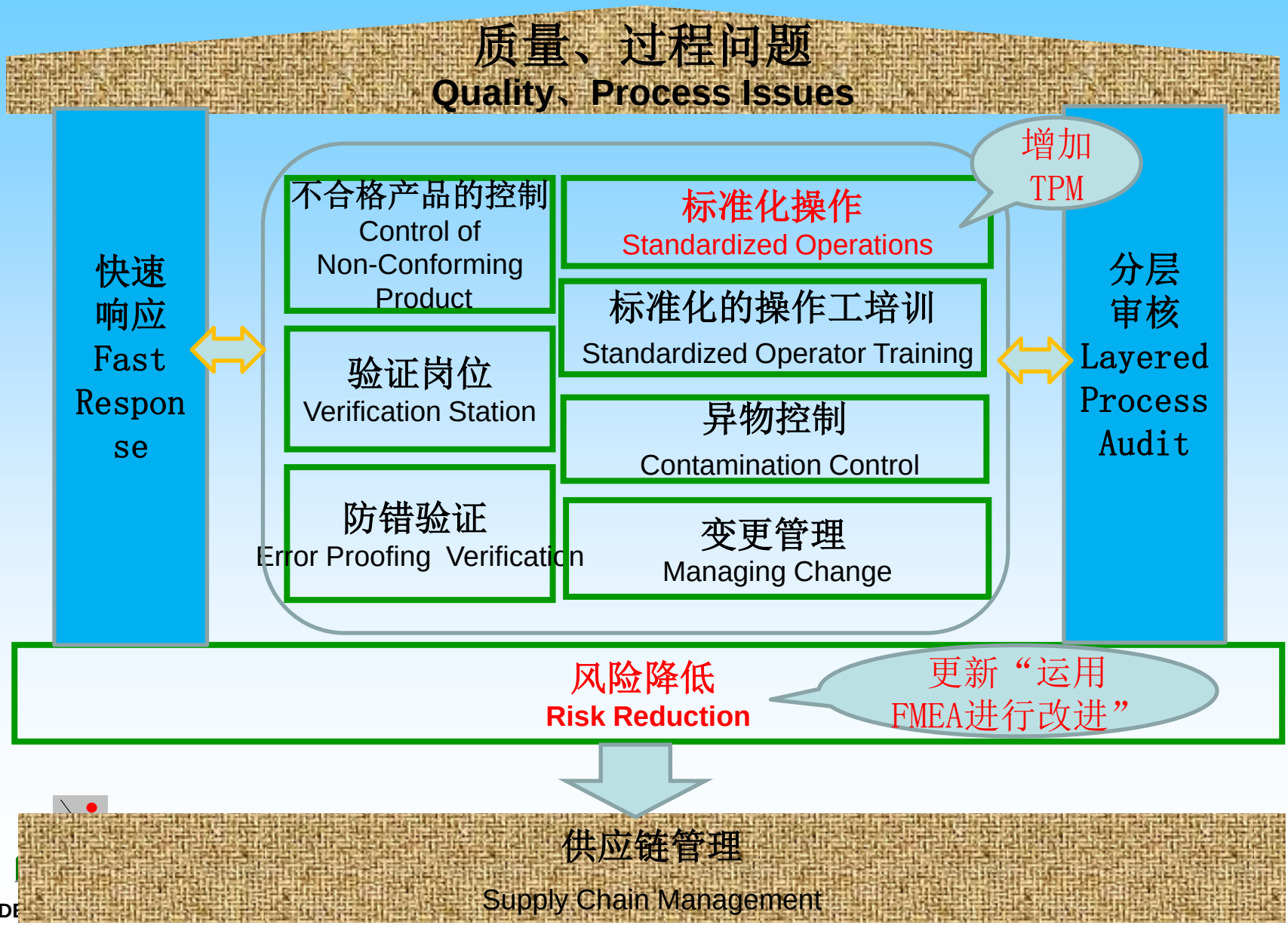


引领至世界级质量
Lead to world class quality

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

无重大质量问题
No Major Disruptions
无PR/Rs
No PR/Rs
0 PPM
+ 0 PPM

World Class Quality
=世界级质量


质量、过程问题
Quality、Process Issues
快速响应 Fast Response
不合格产品的控制 Control of Non-Conforming Product
验证岗位 Verification Station
防错验证 Error Proofing Verification
标准化操作 Standardized Operations
增加 TPM
标准化的操作工培训 Standardized Operator Training
异物控制 Contamination Control
变更管理 Managing Change
分层审核 Layered Process Audit
风险降低 Risk Reduction
更新“运用FMEA进行改进”
供应链管理
Supply Chain Management

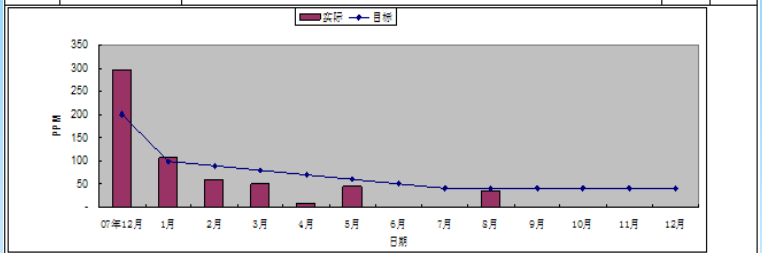
QSB实施关键点
Key points of QSB Workshop Implementation

- 以质量问题、过程问题/生产中断等异常情况为触发器
  Take quality problem, process problem/disruption abnormal production as a trigger.
- 通过快速响应平台促进沟通
  Improve communicate based on F.R.M.
- 通过分层审核保障过程有效性，通过PDCA保持制造/装配的完整性
  Keep manufacture/assemble effect based on L.P.A. Keep integrality through PDCA.
- 以风险降低为基石，预防问题为导向
  Take Risk Reduction as cornerstone, problem prevention as guide.
- 管理层参与快反和分层审核确保问题有效解决和措施落实
  Supplier managements take part in FR and LPA to solve problem and ensure the measure implementation .
- 对关键二级供应商进行绩效监控,并将QSB 向其延伸帮助其改进和提升
  Mornitor performance of key Tier 2 supplier, and help it improve by QSB extension.

有效的组织（例）
Effect Organization

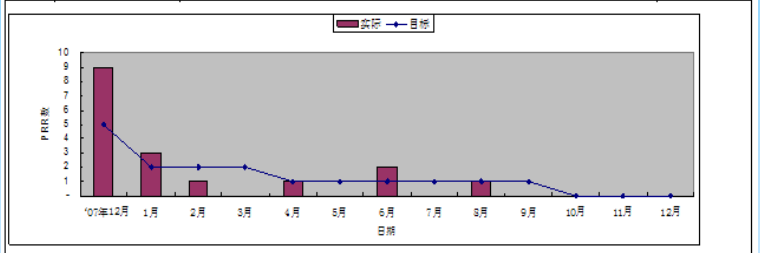
QSB成果（例：实物质量表现）
QSB Achievements

部门名	品质部	PPM 比率 成果指标		担当	乌庆磊
负责人	崔峻瑛				

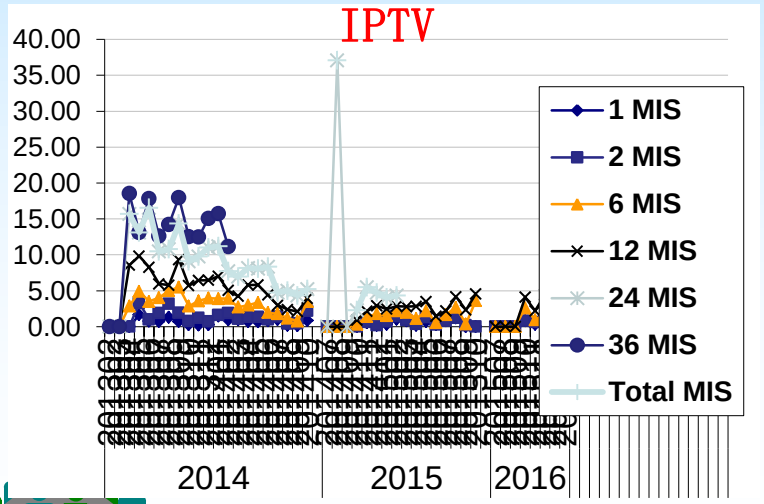


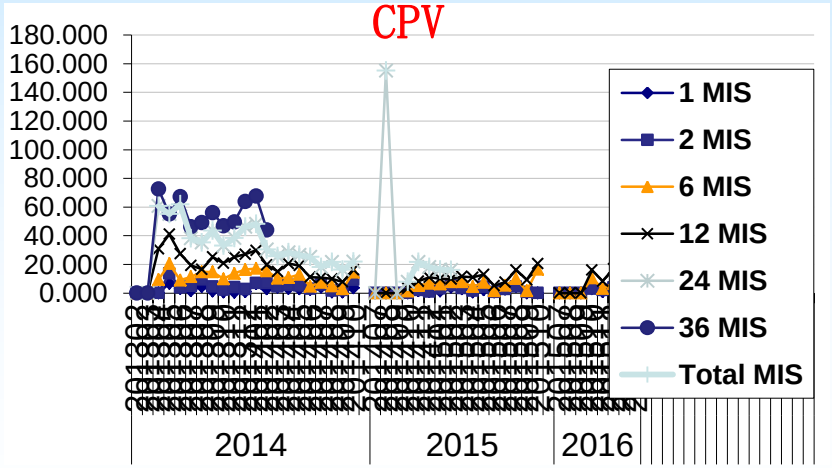
区分 \ 月	07年12月	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	累积
目标	200	100	90	80	70	60	50	40	40	40	40	40	40	58
实绩	295	106	60	51	7	45	0	0	35					

部门名	品质部	PR'R 数量 成果指标		担当	乌庆磊
负责人	崔峻瑛				



区分 \ 月	'07年12月	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	累积
目标	5	2	2	2	1	1	1	1	1	1	0	0	0	12
实绩	9	3	1	0	1	0	2	0	1					8





➢ QSB相关改进建议总结到改善卡

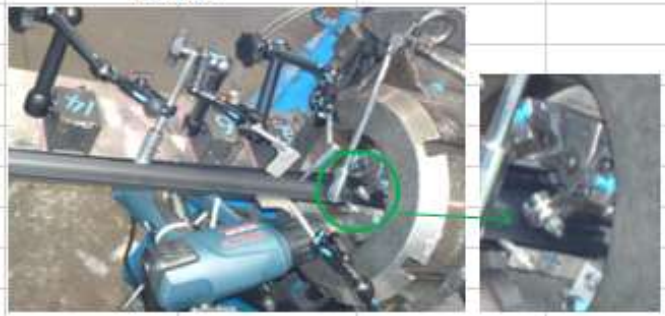
持续改进活动改善卡

车间	产线	工位	团队成员	改善卡编号
挤出区域	EX2	挤出	侯鑫伟、黄卫斌、张伟、许斌	SYO121

改善前：

用大量磁性底座固定滚轮规制断面，换模时间长

改善后：



在口模上安装小滚轮，减少可移动滚轮数量，换模时间短

问题描述	采取的措施	改善目标	改善后目标完成情况
EX2挤出调整密封条断面形状时，由于使用大量滚轮规制断面，造成调整时间过长，产生挤出废品较多。	1. 在口模上安装工装替代磁性滚轮规制，减少滚轮数量。 2. 实施标准化作业，较少调整时间。	1. 磁性滚轮从原来18个减少8个 2. 断面调整时间减少120分钟/次	1. 磁性滚轮从18个减少到5个； 2. 断面规制时间由原来的360秒/次缩短到120秒/次。

提出日期	计划完成日期	实际关闭日期	审核人员
2013.1.17	2013.1.31	2013.1.30	刘伟华

改善卡

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
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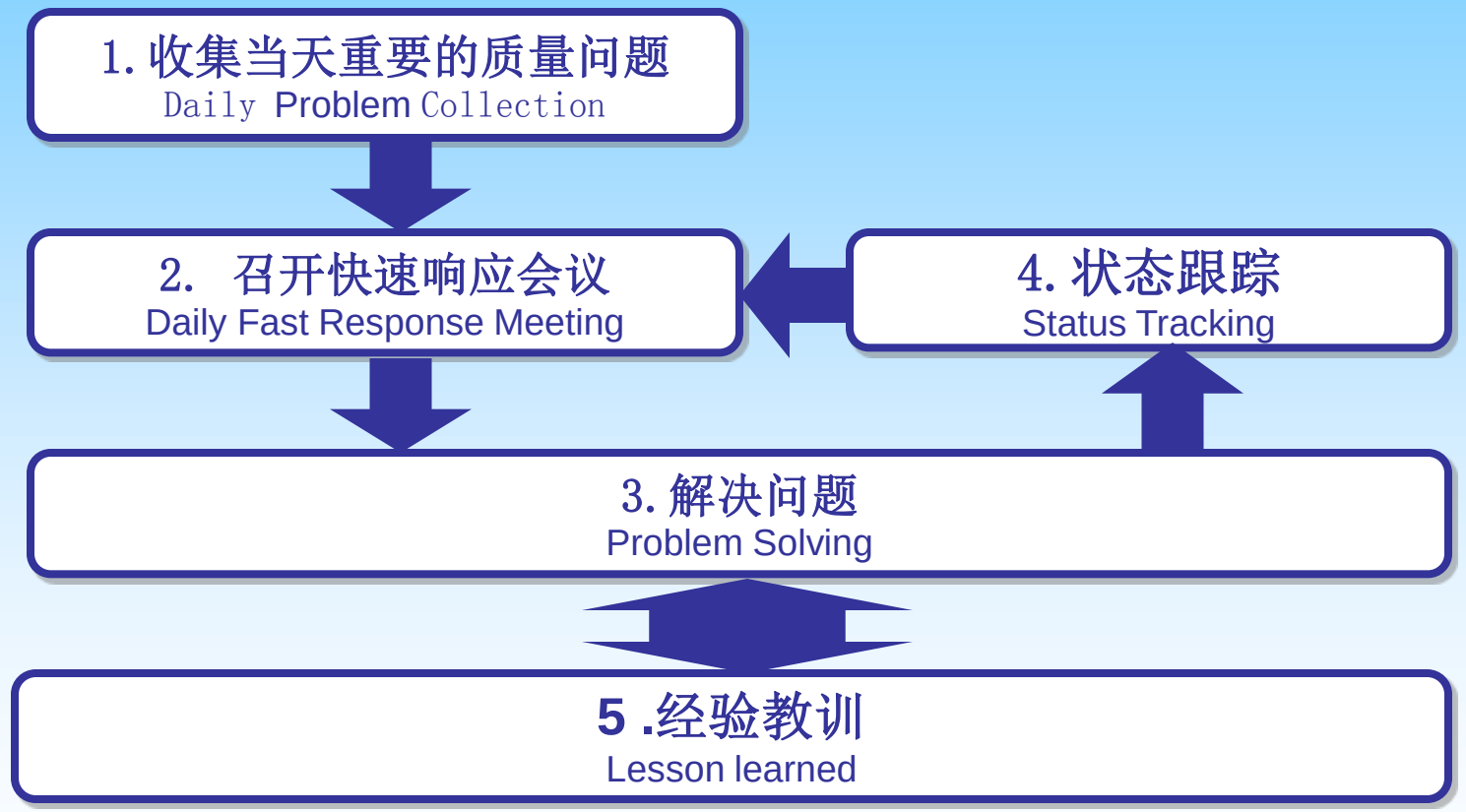
用于迅速处理质量问题的系统层面强制性的方法
Systematic and compelling way for Rapid Reaction to Quality Issues

- 工厂有高层领导参与的晨会吗？(高层支持)
  Leadership involved?
- 会议是否对近期重大质量问题的解决状态进行确认？(及时跟进)
  Open issue closed in time?
- 会后相关责任人或团队是否对专项质量问题进行研讨？(有效解决)
  Find root cause?
- 已关闭问题是否及时总结并经验推广？（举一反三）
  Lesson learned?

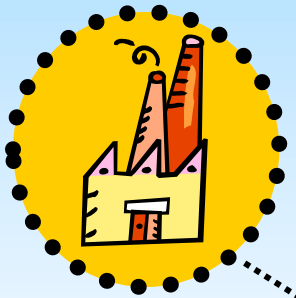
1. 快速响应
Fast Response

关键步骤
Key Steps

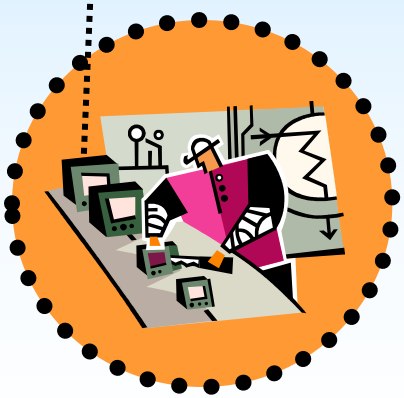


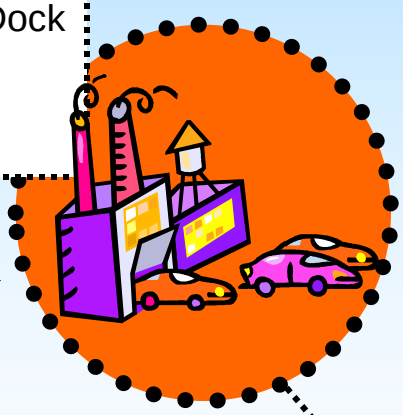
关键步骤-1：收集当天重要的质量问题
Key Steps – Daily Problem Collection

-验证岗位*发现的问题
Verification Station Findings
-过程分层审核*中发现的问题
Layered Process Audit issues
-停线问题
Line stops and Teardown issues
-其他的内部质量问题(出货审核, 产品遏制行动等)
Other internal Quality concerns (Dock Audits, containment activity)
-一次下线合格率数据
FTQ，First Time Quality



分供方的问题
Supplier concerns





客户关注的问题(PRR's,客户抱怨，客户电话等)
Customer concerns (PRR's, Liaison Issues, Customer Calls)

关键步骤-2： 召开快速响应会议
Key Steps - Daily Fast Response Meeting

形式 Way

•是一个交流会，不是一个问题解决会议
A communications meeting, not a problem solving meeting.
•Engineering, Maintenance, etc…
•责任人提前将问题相关措施公布在快速响应板上
Issues shall be added to the Fast Response board prior to the meeting by the owner.

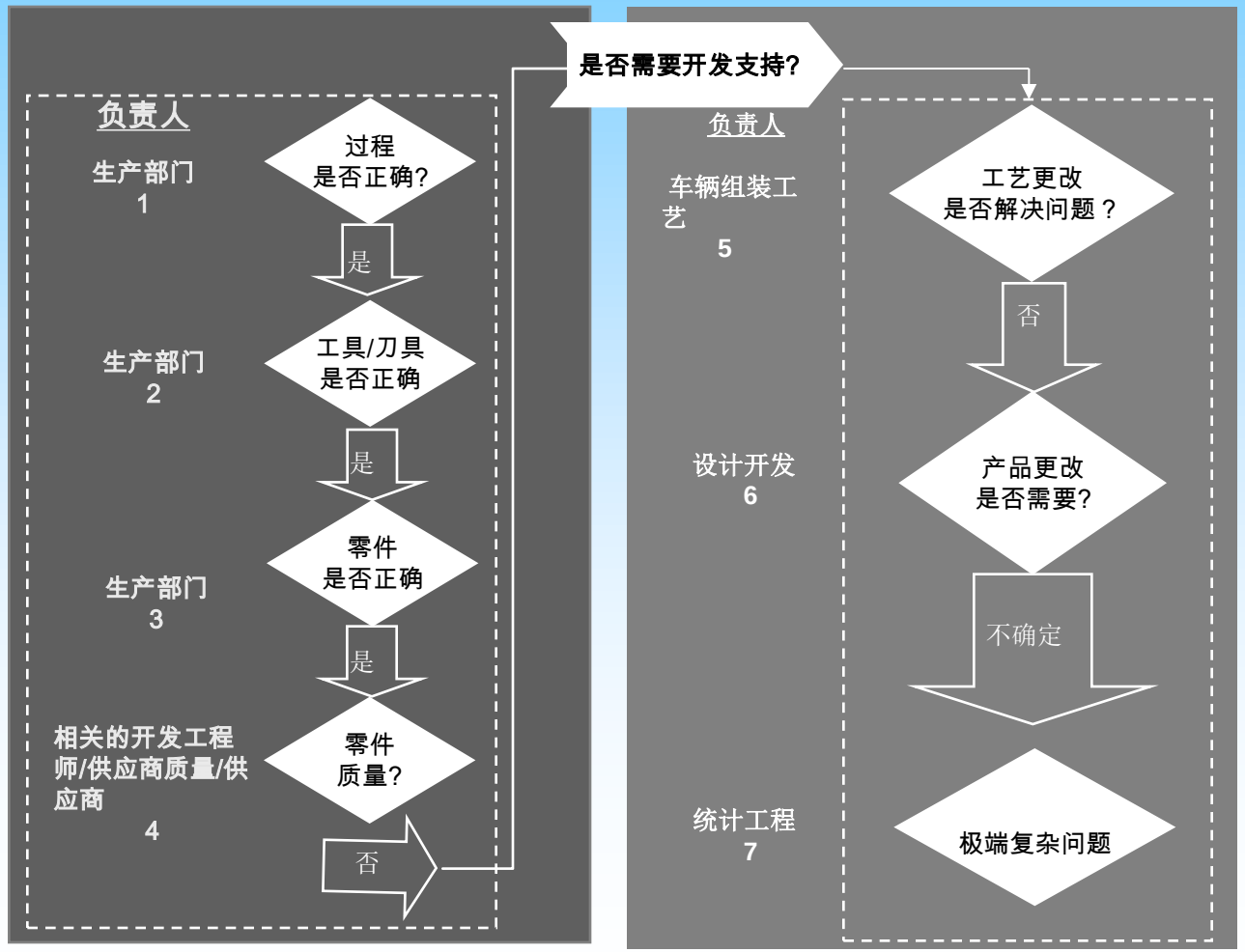
责任 Responsibility

-负责人应确保其负责的重要问题及时得到解决，并且符合所有问题解决标准和退出条件。
Owner responsible for completion of all exit criteria.
- 对于未明确的问题，指定责任人
Designate a leader (owner) for each concern/issue if one has not been already assigned.

时间 Timing

•至少每天召开一次，有些厂可能要每班召开一次
Meetings are held daily at a minimum, although some organizations may choose to hold meetings on each shift.
•是一个10-20分钟的站立会议，在生产现场召开
It should be a 10 - 20 minute stand up meeting held on the shop floor.

关键步骤-3：解决问题
Key Steps - 3： Problem Solving



关键步骤-3：解决问题
Key Steps - 3： Problem Solving

根据因果分析，详细列出5 WHY，确定根本原因。当完成时，再联系因果分析，倒推其相关联系。

关键步骤-4：状态跟踪（例）
Key Steps - 4： Status Tracking

快 速 反 应 跟 踪 表
Quality Fast Response Tracking Board

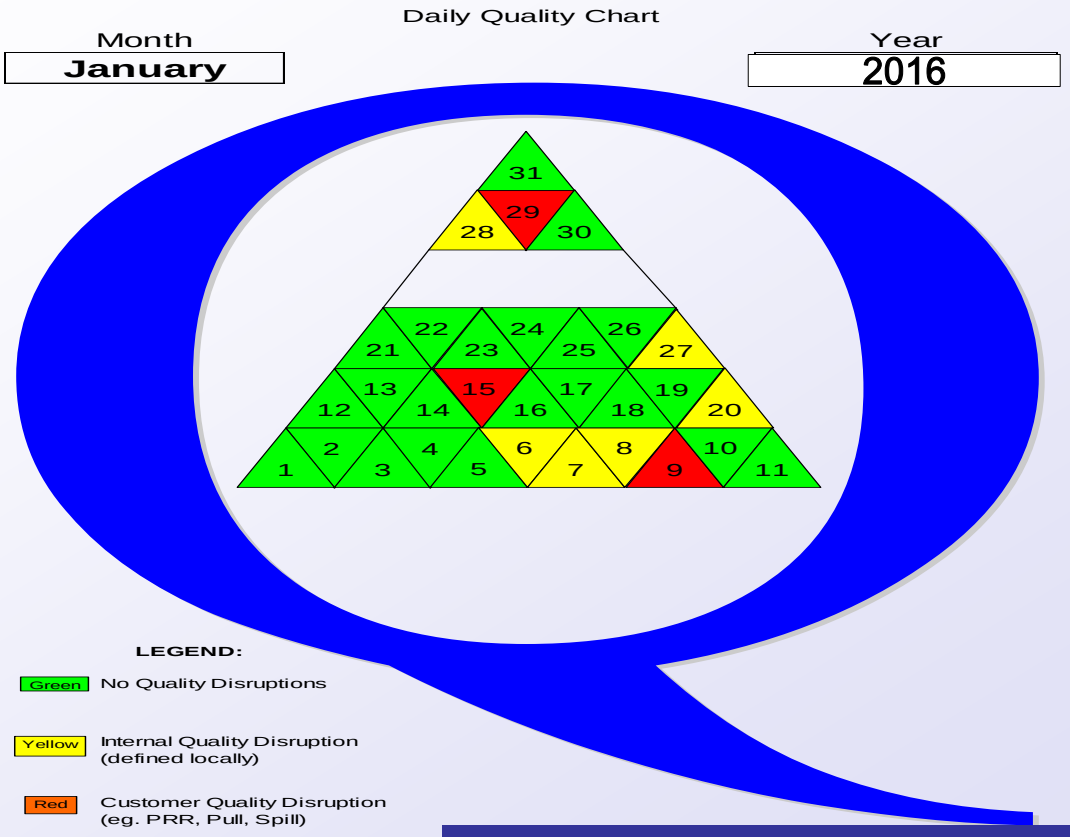
退出标准状态 EXIT CRITERIA STATUS KEY	
R	有要求但没实施或超期 1) Required but not initiated 2) Target Date Missed
Y	已开始但没完成 Initiated but not complete
G	完成 Complete
N/A	不适用 Not Applicable

序号 NO.	发生日期 Date Opened	发生地点 Where place	问题报告# Concern #	项目名称 Program/Product	问题描述 Issue Description	重复发生 Repetitive Issue	责任人 Owner	下次汇报日期 Next Report Date	目标时间，状态&绿色日期 Target Timing,Status & Date Green										改进措施计划/对策 Action Plan / Countermeasure	计划关闭时间 Forecasted Closed date	实际关闭时间 Actual Closed Date	总体状态 OVERALL STATUS (R/Y/G)
									24H	24H	7D	14D			34D	35D		40D	45D				
									遏制/断点 Containment/BP	质量报警 Quality Alert	根本原因识别 Root Cause	改善措施实施 Corrective Action	防错/探测 Error Proof/Detection	分层审核 Layered Process	改善措施验证 Corrective Action Validated	PFMEA / CP Updated	作业指导书更新 Standard Work Operator Instructions	经验教训 Lessons Learned	被动防腐 Check other product Process				
1	20160301	SGM	Y	D2UB	总装大灯安装工位发现左前大灯内有异物1pcs	Y	张三	16/3/2	G	G	G	G	Y	G	G	G	G	G	G	1. 发出质量警报 2. 更新作业指导书，大灯厂内安装后设区域100%重点检查 3. 增加GP12检查3个月	4月16日		Y
									3/2	3/2	3/8	3/15	3/15	3/15	4/5	4/6	4/6	4/11	4/16				
2	20160301	GP12	Y	D2UB	GP12发现左前大灯罩分模线较大，80%	N	李四	16/3/2	G	G	G	G	N/A	G	G	G	G	G	G	1. 发出质量警报 2. 修模	4月16日	4月16日	G
									3/2	3/2	3/8	3/15	3/15	3/15	4/5	4/6	4/6	4/11	4/16				
3	20160302	总装	Y	D2UB	总装检验工位发现左大灯灯泡不亮	N	王五	16/3/3	G	G	G	G	R	G	G	Y	G	G	G	1. 发出质量警报 2. 增加防错工装	4月17日		R
									3/3	3/3	3/9	3/16	3/16	3/16	4/6	4/7	4/7	4/12	4/17				

快反跟踪表案例

关键步骤-4：状态跟踪（例）
Key Steps - 4： Status Tracking

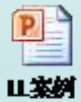
管理层必须通过目视的方式来展示质量状态
Leadership shall display a visual Quality status.



可使用任何形式的目视方法: 如日历, 图表,
Any type of visual management can be used: calendar, chart, etc…

关键步骤-5： 经验教训
Key Steps - 5： Lesson learned

- 识别出哪些类似的产品或过程可能或已经发生同样的失效模式。
  Identify similar products and processes which can potentially have or produce the same failure mode.
- 将问题解决报告发送到其他有类似潜在问题的部门/工厂。在整个组织内贯彻实施解决方案。
  Implement the solution across the organization
- 更新相关的文件：
  Update the necessary documentation:
  *PFMEA 潜在过程失效模式分析
  *Control Plan 控制计划
  Error Proofing Verification *防错验证*
  Standardized Work Instructions *标准化操作指导书*
  Operator Instructions *操作员指导书*
  Lessons Learned *经验教训* ***(建议开发软件系统，建立经验教训数据库)***
- 通过*过程分层审核** 来验证系统是否始终如一的在运作。
  Implement *Layered Process Audits** to verify the system is working consistently.



1. 快速响应
Fast Response

QSB

建立质量问题（过去*24小时*内）快速反映渠道
Build to gather fast significant issues from the past 24 hours.

*领导层参与*快反会议，督促问题的及时跟进和解决
Leadership join Fast Response Meeting to push problem-solving

培养问题解决队伍，关键在于找到*根本原因*
Build problem-resolving team. Focus on finding root cause.

通过*分层审核*及时验证措施的有效落实
Verify action plan based on L.P.A. in time

已关闭问题及时*举一反三*，防止问题的再发生。
Lesson learned in time

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
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- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

2. 不合格品控制
CONTROL OF NONCONFORMING PRODUCT

防止不合格产品被无意使用或安装的标准化系统
Standardized System Of Preventing Unintended Use Or Installation Of All Nonconforming Product

不同状态的产品是否清晰可辨？
Product status clear?

筛选是否覆盖整个物流链？

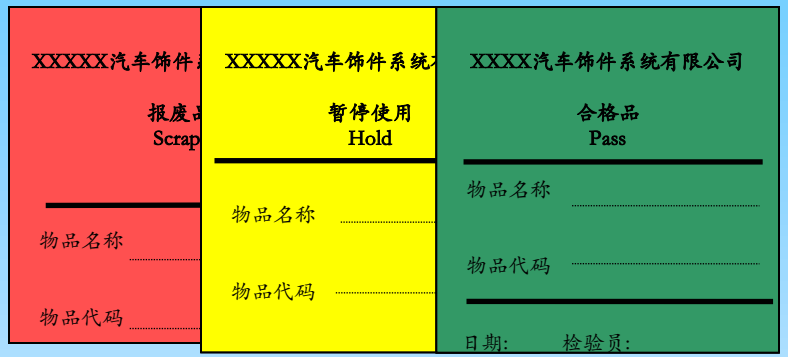
Overcome total logistical chain?

是否及时通知相关方？

Notice correlative customer?

2. 不合格品控制
CONTROL OF NONCONFORMING PRODUCT

QSB



统一的标识（标签）和隔离区域
Consistent identification (tagging) and Segregation Areas

遏制和重新安排
Containment And Reintroduction

与顾客交流
Communication with Customer

统一的标识
Consistent identification (tagging)

(例)
(Example)

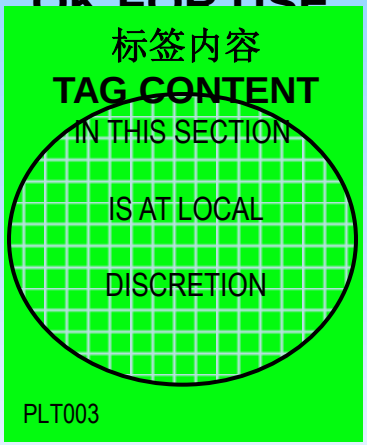
废品
SCRAP

涂成红色的报废箱可不用标签
SCRAP BINS PAINTED RED DO NOT REQUIRE A TAG

可疑品不可使用
SUSPECT DO NOT USE

标签必须显示最后的工位，以保证重新导入生产时回到正确工位
TAG MUST SHOW LAST OPERATION.TO ASSURE PROPER REINTRODUCTION

合格品可以使用
OK FOR USE



绿色或其他颜色（红色和黄色除外）.的标签表示是可接受的 合格产品
ANY COLOR (except red or yellow) FOR CONFORMING PRODUCT IS ACCEPTABLE

标准化的缺陷类型统计表（例）
Standardized Defect Types Statistics Table

***公司工序质量缺陷记录表

产品名称：				工序：					生产日期：				班次：						
缺陷代码	1A	1B	1C	1D	1E	1F	1G	1H	1J	1K	1L	1M	1N	1P	1Q	1R			是否报警
缺陷名称	断脚	缺料	开裂	起泡	烧焦	变形	拉高	缩印	杂质	流纹	划伤	麻点	凹坑	冷料	熔接线	飞边			
报警界限	1	2	2	5	2	1	1	2	10	5	5	10	5	10	5	5			
8：00~10:00																			
10：00~12:00																			
12：00~14:00																			
14：00~16:00																			
16：00~18:00																			
18：00~20:00																			
汇总																			
生产数：					返工/返修数：							报废数：							

报警界限	1、单一缺陷连续出现3个时报警； 2、在2个小时的时间段内单一缺陷超过该缺陷的报警界10%时进行报警； 3、在当班内单一缺陷累计超过该缺陷的报警界限50%时进行报警；	备注	1、在每个时间段内划“正”记录缺陷数； 2、当超出报警界限时向生产班长进行报警。

隔离区域
Segregation Areas

◆ 所有可疑产品和不合格产品必须被隔离以便后续快速响应并进一步分析问题（尤其中班和晚班发现的）。

All nonconforming and suspect product shall be segregated for needs of problem solving.

◆ 隔离品需及时处理和分析

Suspect products shall be done and analyzed in time.

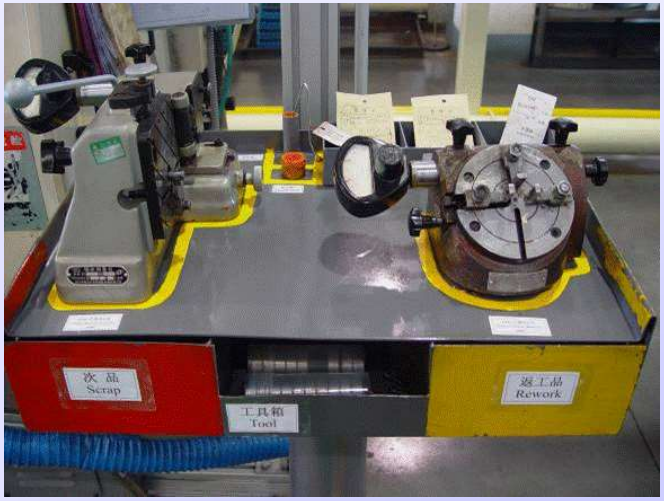
◆ 隔离区域必须划线区分或明显标识。

Segregation areas shall be foot printed or otherwise identified.

例如：

Example:

- 废料箱
  Scrap bins
- 返工台
  Rework Tables
- 遏制区域
  Containment areas
- 不合格产品存放区
  Nonconforming material hold areas



2. 不合格品控制
CONTROL OF NONCONFORMING PRODUCT

遏制
Containment

遏制措施必须确认断点:

Containment shall verify breakpoint:

- 对于遏制范围内的产品100%检查
  using 100% Inspection
- 持续时间由现场领导层决定
  for a duration specified by site leadership

混淆和弄错断点是你所能犯的最大错误。
Violating the BREAKPOINT is the biggest mistake you can make.

PRODUCT CONTAINMENT SCOPE

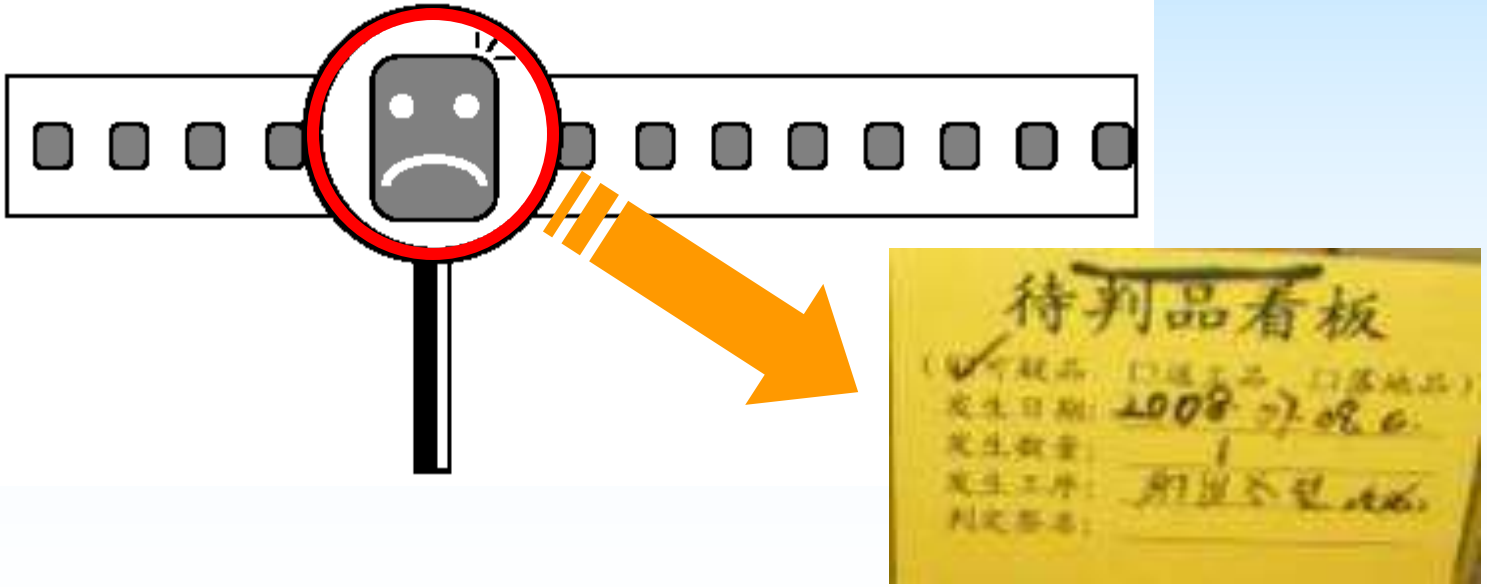
IDENTIFY ALL AREAS WHERE SUSPECT PRODUCT COULD BE LOCATED

LOCATION	可能存在的数量	区域确认人	可疑品发现数量	确认责任人
Receiving 收货区	500	P.S.	500	P. Smith
Laboratory 实验室	6	K.C.	6	T. Brown
WIP Storage Areas 在制品放置区	1000	P.S.	1000	P. Smith
Outside Processing - (Plating)外加工	1000	C.J.	1000	C. Jones
Scrap Bins 报废品区	42	K.C.	42	C. Jones
Rework Areas 返工区	0	B.T.	0	C. Jones
Shipping Dock 发货区	0	K.C.	0	C. Jones
Heat Treater 热处理中	0	P.S.	0	C. Jones
At Customer 顾客端	0	B.T.	0	C. Jones
In Transit 运输中	0	B.T.	0	C. Jones
Service Parts Operations 售后部门	0	P.S.	0	C. Jones

重新安排
Reintroduction

从正常的工艺过程中取走的产品重新回到生产线时，返回点必须在取出工位或之前。
Product removed from the approved process flow shall be reintroduced into the process stream at or prior to the point of removal.

对于退出返工、返修和遏制区域的产品，必须明确建立放行流程与授权。
Process & authority for releasing product out of rework, repair and containment areas shall be defined.

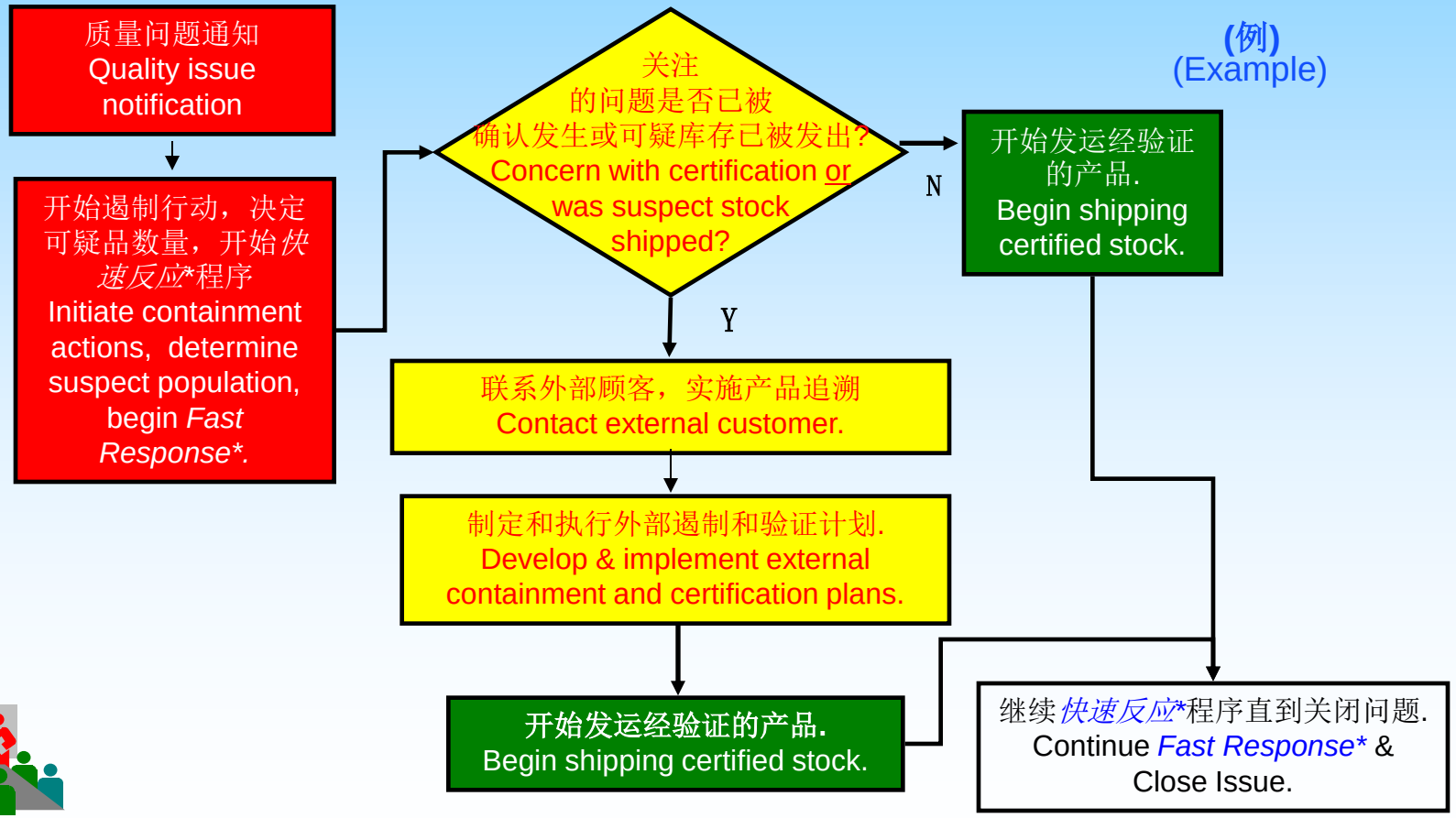


2. 不合格品控制
CONTROL OF NONCONFORMING PRODUCT

与顾客交流
Communication with Customer

不合格警报和遏制程序必须建立时间顺序，任务和沟通方式以满足顾客要求，确保可追溯性。

A nonconformance alert and containment procedure shall establish the timeline, tasks and communications necessary to meet customer requirements and insure the traceability.



2. 不合格品控制
CONTROL OF NONCONFORMING PRODUCT

可追溯性
Traceability

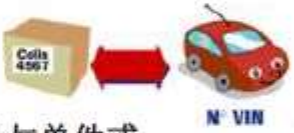
3 types of Traceability : 三种类型的可追溯性

Imprecision

Unit link traceability : allows each major unit (or part of a unit) to be linked to the vehicle.

单元链接可追溯性：允许每个主要单品（或单品的部分零件）与整车链接

Reinforced traceability (lot control) : packaging of same parts is given a unique reference. This reference is linked to a unit or a vehicle.



批次控制的可追溯性：整包装的相同零件给予一个独立号，该号与单件或整车链接

Temporal Traceability : information on logistical flows and production is retained. This information is used to identify a part's origins and use. Traceability relies on **FIFO**

临时可追溯性：保留物流流和产品的信息。这个信息用于识别零件产地与使用情况。可追溯性依赖FIFO。

Cost

Compromise between **cost** of traceability data and **Imprecision**

2. 不合格品控制
CONTROL OF NONCONFORMING PRODUCT

QSB

利用统一的标识(标签)以清楚地识别，在标识明确的区域进行隔离(状态明确)
Clearly identified using consistent identification (tagging). Segregated in well-identified areas

通过遏制工作表加以遏制（全过程筛选）
Contained through the use of a containment worksheet

放行时，应按规定程序进行并有授权（独立执行）
Released using a defined process and authority

在取出点或之前重新回到过程流中（防止漏加工）
Reintroduced into the process stream at or prior to the point of removal

领导层必须对产品遏制问题进行审核（确保追溯性）
Product containment issues shall be reviewed by Leadership

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

3. 验证岗位 Verification Stations

在线控制和验证
In-Process Control & Verification

为什么需要验证岗位？
Why need verification stations？

哪些区域应该设立验证岗位？

Where verification stations placed?

如何设立验证岗位？

How to build verification stations?

绝不
Do not

一件缺陷零件！
A defect!

验证岗位
Verification Stations

QSB

为什么需要验证岗位？
Why need verification stations

此策略避免你的客户接受不合格产品、偏差零件和标签错误的零件

Isolate our customers from disqualification, bias, and wrong tag parts

- 验证岗位提供了一个通过报警系统来迅速处理顾客关注及内部的优先级问题的方法，也对频发的低严重度的不符合项提醒注意。

  Provide a means through an alarm system and quick response to address highest priority customer concerns and the frequent, low severity non-conformances.

- 改善一次合格率（FTQ）并提高过程能力（迅速识别特殊原因变差、系统地减少普通原因变差）

  Improve first time quality (FTQ) and process capability (promptly identifying special cause variation and systematically reducing common cause variation)

- 警示操作员过程有变化，提供信息以采取快速纠正及跟踪措施确保变化受控

  Alert operators of changes in the process and provide information for rapid corrective action

- 补充经核准的控制计划

  Complement approved control plan

在哪里设立验证岗位
Where Are Verification Stations Placed?

- 存在以下状况的任何过程或作业点：

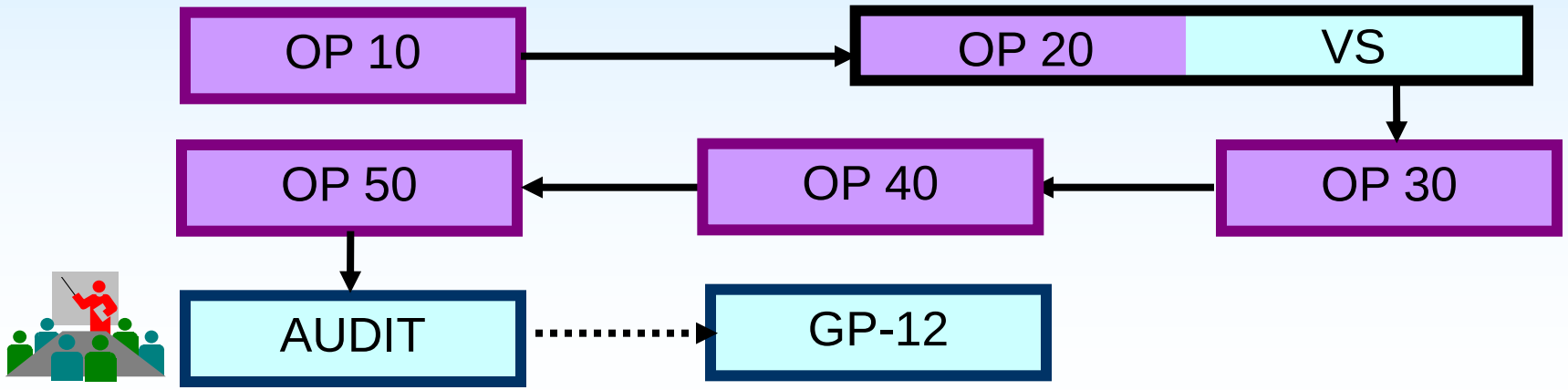
  Points in the process or operation where there exists:
  - 高风险/High risk
  - **PR&R**（顾客抱怨）/Customer complain
  - 高严重度（安全） /High severity
  - 高频次 / High Occurrence
  - 低过程能力 **(Ppk, Cpk, FTQ)**：任何 **Cpk** 或 **Ppk** 低于**1.33** 的工序必须 **100%** 检验/ low capability (Ppk, Cpk, FTQ) Any operation with a Cpk or Ppk below 1.33 requires 100% inspection
  - 变化发生点 Change Point

- 可设立在问题发现点（**Point of Cause)** 不同部门或在截然不同的过程之间
  Between departments or distinct processes at point of cause.

如何设立验证岗位
How to build Verification Stations?

- 针对新项目，通过GP-12验证岗位采取100%检查方式控制过程风险。
  For new part, set up GP-12 for 100% check
- 针对单一简单问题，在相应后道工序中增加确认动作。
  For Single simple issue, add verification action in following station
- 针对最终产品，采取抽检的方式，由独立人员执行AUDIT，领导层评审责任部门的整改行动
  For finished product, independent do product audit and leadership review the owner's action.
- 针对复杂问题，设立独立的验证岗位，对相应缺陷进行100%检查，直到长期有效措施生效。
  For complex problem, verification station set up for 100% check until long-term action

(所有验证岗位发现的问题，应保留失效样品以供有效问题解决分析使用。)



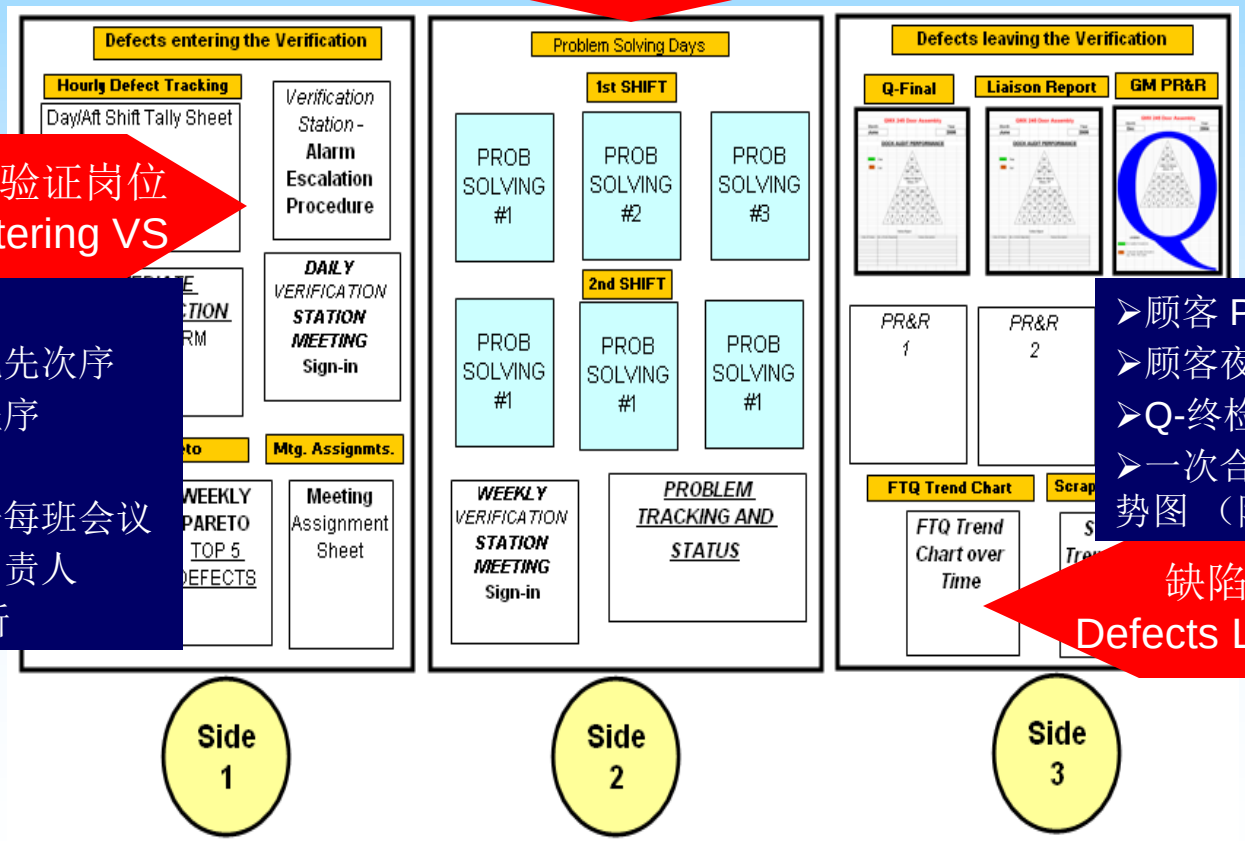
3. 验证岗位 Verification Stations

验证岗位内容 Verification Stations Content

问题解决 – 驱动在过程中解决问题
Problem Solving – Driving fixes into station

缺陷件进入验证岗位
Defects Entering VS

- ➢产品检验
- ➢排列缺陷优先次序
- ➢警报升级程序
- ➢立即响应
- ➢领导层召开每班会议
- ➢会议指定负责人
- ➢Pareto 分析



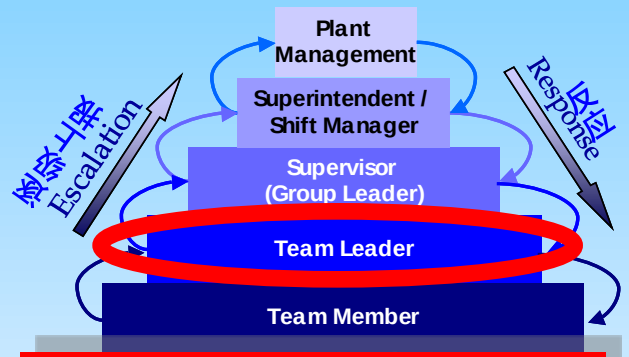
- ➢顾客 PR&R 抱怨
- ➢顾客夜班口头抱怨。
- ➢Q-终检I/GP-12/CS-1/CS-2
- ➢一次合格率 FTQ & 废品趋势图 （随时间）

缺陷流出验证岗位
Defects Leaving VS Station

3. 验证岗位 Verification Stations

问题上升
Problem Escalation

设定报警界限
SET ALARM LIMITS



逐级上报流程
ESCALATION PROCESSES

立即行动响应
IMMEDIATE ACTION RESPONSE

质量反馈/质量汇报
QUALITY FEEDBACK / FEEDFORWARD

3. 验证岗位
Verification Stations

QSB

实施100%检验或其它检验方式
Institute 100% inspection or other inspections

到达报警界线时，立即采取行动（问题上升）
Take immediate action when alarm limit is reached

根据验证岗位信息及失效样品，实施整改（问题解决）
Implement corrective actions based on VS data and parts

将根本原因/整改行动增加到过程分层审核中（执行确认）
Add the Root Cause/Corrective Action to the Layered Process Audit

管理层定期到验证岗位进行巡视/并召开会议（领导重视）
Conduct regular management walk-through/meetings at the Station

Key Strategies
关键策略

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- 异物控制 Contamination Control
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- 变更管理 Managing Change

4. 标准化操作
Standardized Operations

确定执行任务的最佳方式，然后制定每个人应遵守的标准工作流程的过程
The best way of work procedure which everyone must obey

- 有效、增值的生产顺序

  Efficient and value-added production sequence
- 减少浪费、解决问题和控制质量

  Waste reduction, problem solving and quality control
- 检查操作工的操作是否符合作业指导书的要求（例如分层审核）

  Auditing operator conformance to work instructions *(Layered Process Audit*).*
- 确保操作工始终如一地执行重复的任务和程序
  Ensuring operators are consistently performing the repeated tasks and procedures

4. 标准化操作
Standardized Operations

QSB

4. 标准化操作
Standardized Operations

QSB

4. 标准化操作
Standardized Operations

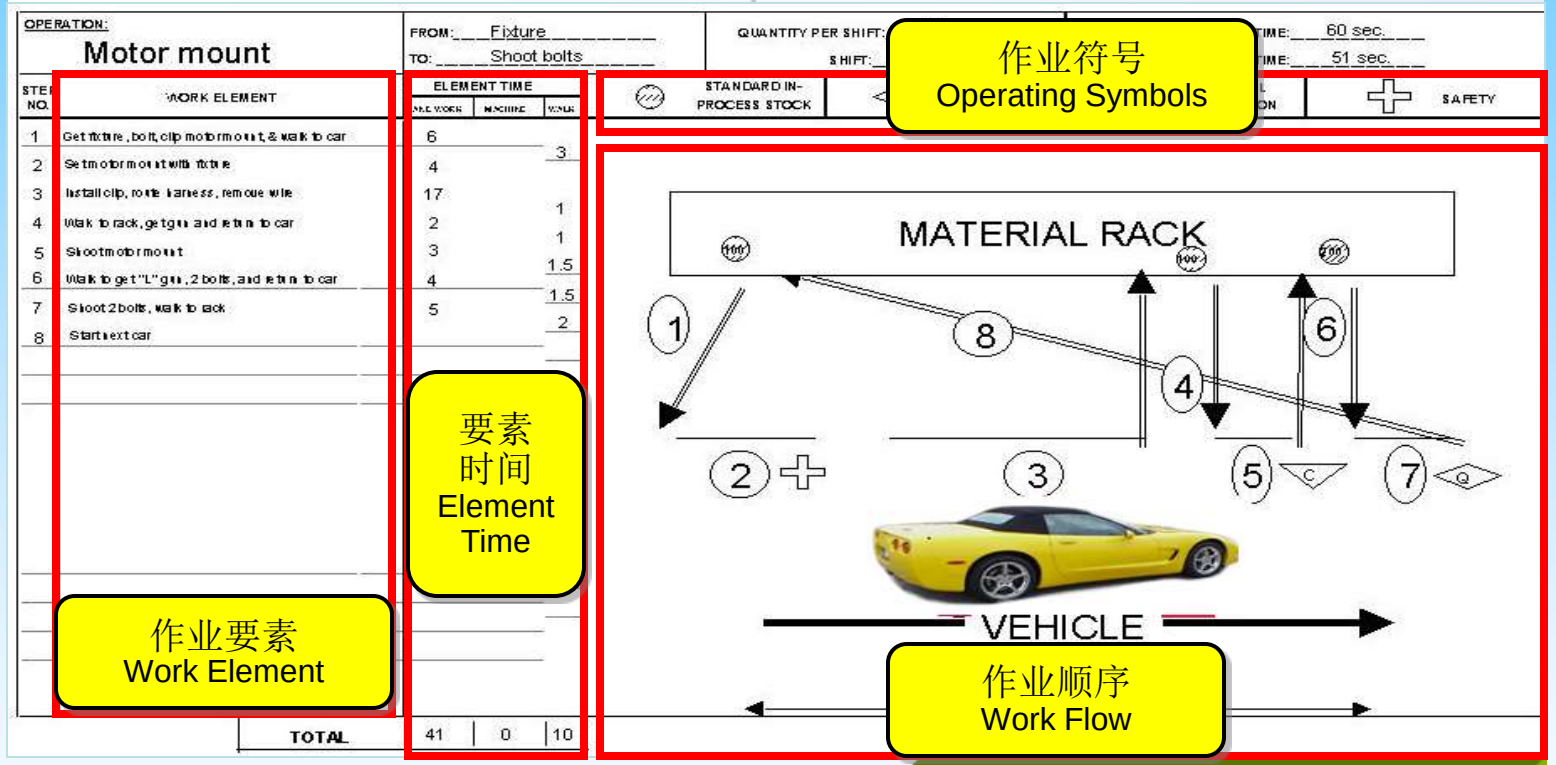
QSB

工作场地的组织
– 7种浪费 / 5S
Workplace Organization
---7 wastes/5S

整洁、有序的工作环境
A clean, well-organized work environment.

4. 标准化操作 Standardized Operations

标准化作业指导书 Standard Operation Sheet



标准化操作
—标准化作业指导书
Standardized Work
(Standard Operation Sheet)

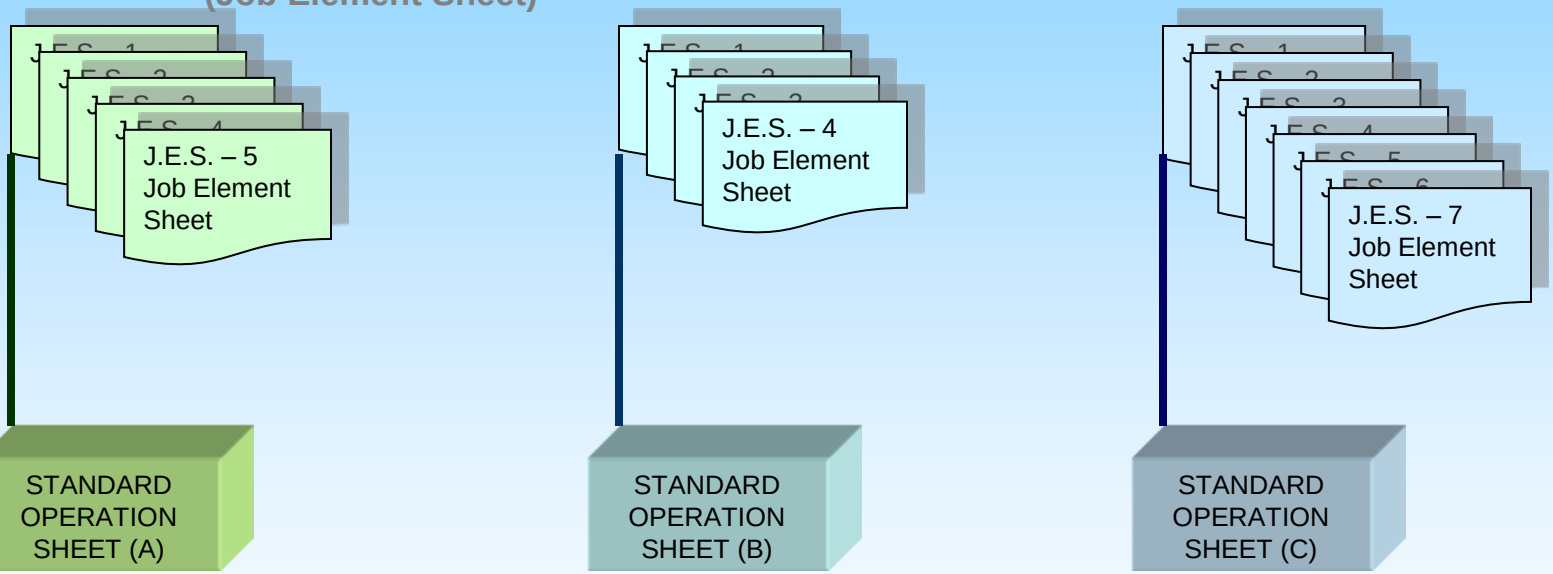
操作主要步骤，每一步骤所花时间
What are the Major Steps, how long should it take?

4. 标准化操作
Standardized Operations

QSB

详细的动作步骤，怎样做，为什么这样操作。
Detailed Steps for What, How, and Why.

操作工指导书
– 作业要素表
Operator Instructions
(Job Element Sheet)



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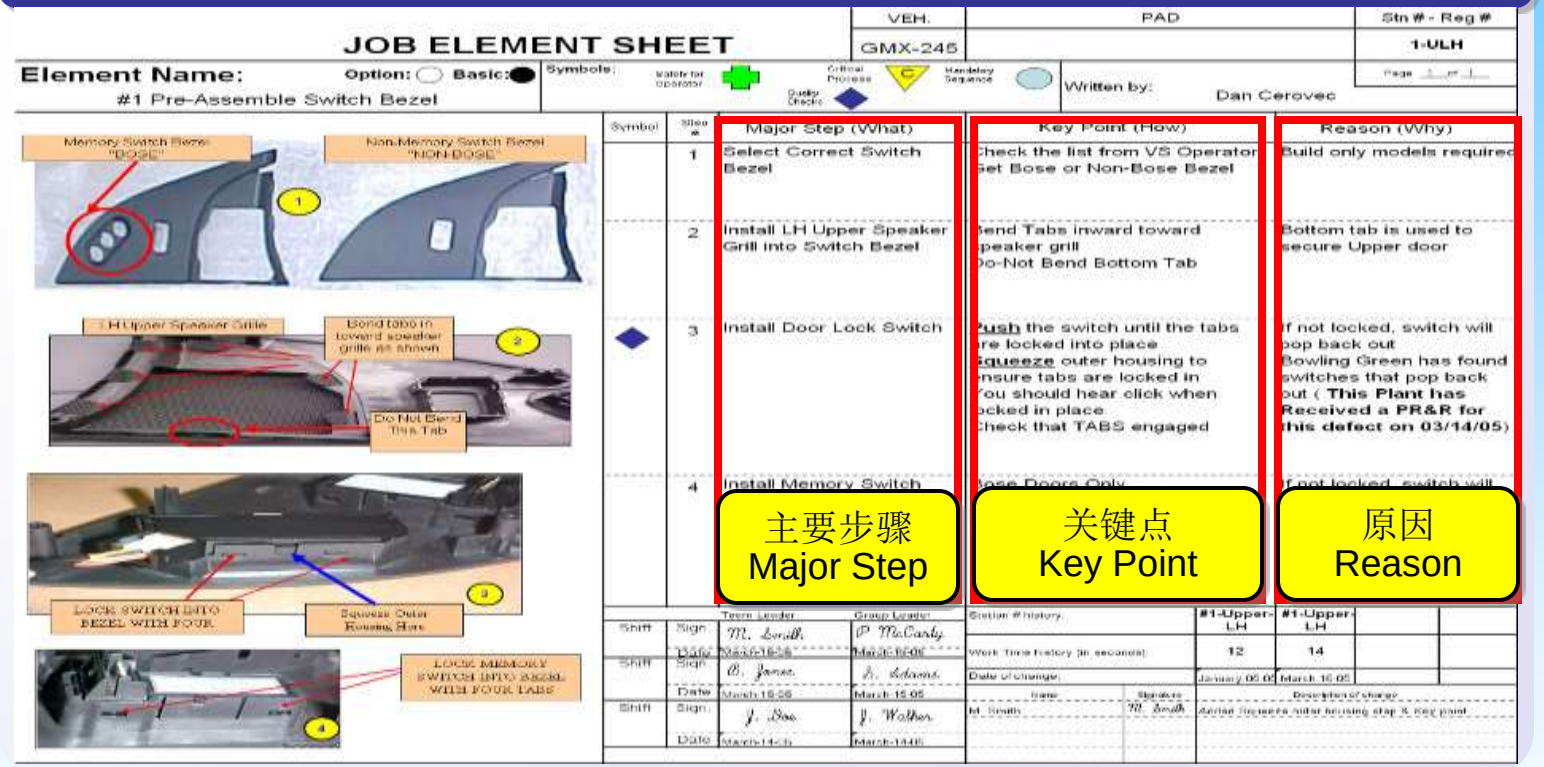
作业要素表 Job Element Sheet



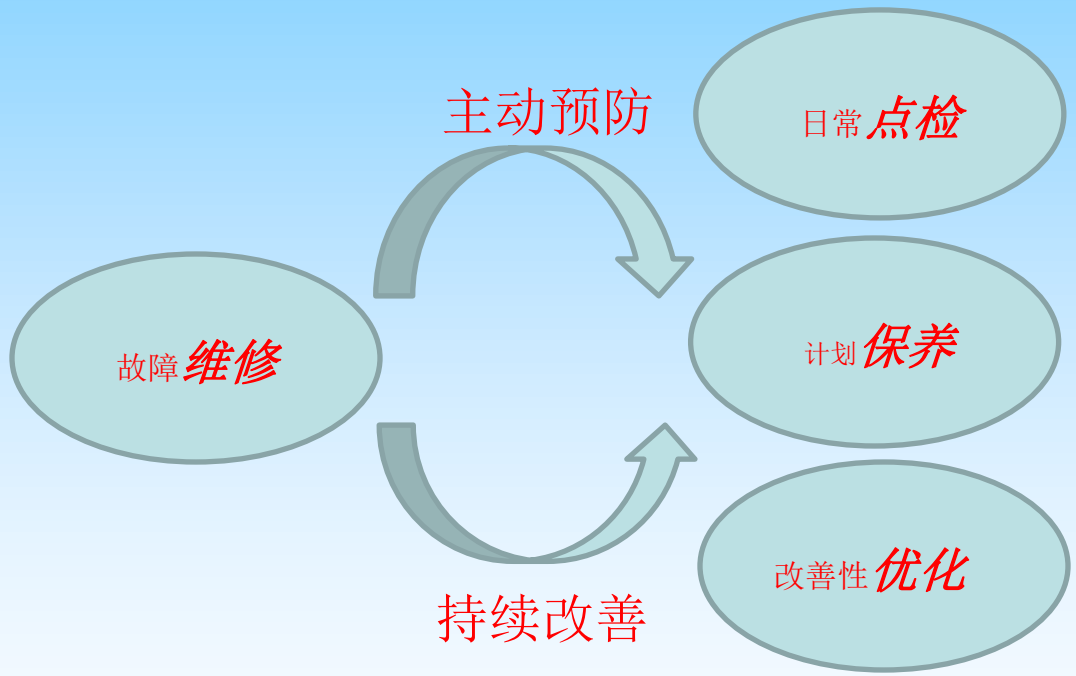
详细的动作步骤，怎样做，为什么这样操作。

Detailed Steps for What, How, and Why.

操作工指导书 – 作业要素表

Operator Instructions (Job Element Sheet)

TPM—设备、工装、模/检具 TPM



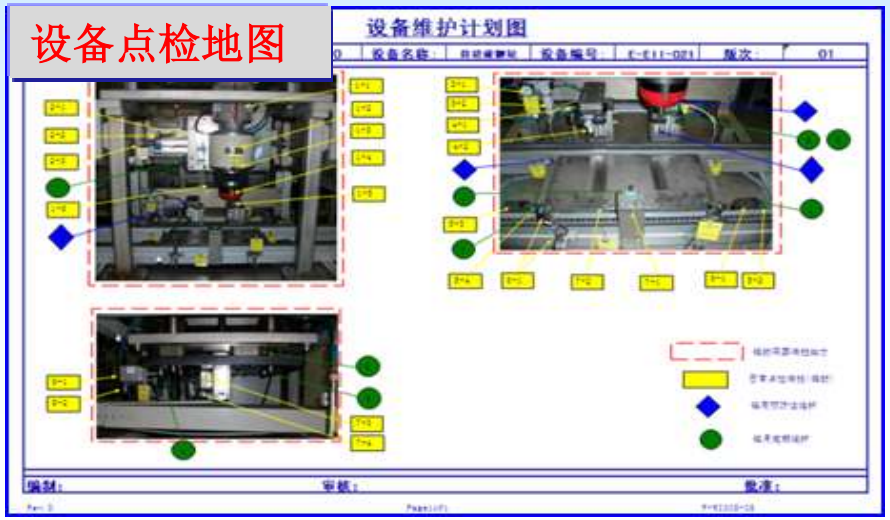
变“修”为“改”，针对频繁维修部件，可考虑更改其设计

TPM—设备、工装、模/检具TPM

- 日常点检（点检指导书、点检记录表）
  - ✓ 点检指导书要求图文并茂、简单易懂
  - ✓ 点检处应尽可能标识、目视化（如点检地图）
  - ✓ 点检有效实施通过分层审核加强监控

点检指导书

设备点检地图



TPM—设备、工装、模/检具TPM

- 计划保养（保养计划、指导书、记录表）

✓ 制定设备等维护保养计划，并确保按计划实施

- 区分关键设备/部件、一般设备/部件
- 制定关键设备的临时替代流程（参见Bypass部分）

计划描述(不超过50个中文字)即PM项目名称	计划开始运算的日期(yyyy-mm-dd)，与第一次工作单生成日期提前一个所用策略中的最小周期	计划期间(最大为999)	时间单位，天为Day，周为Wee，月为Mon，年为Ann	维护周期包(ZSGM00,ZSGM01,ZSGM02)	计划类型，PM或PDM	授权组，参看填表说明	分类字段，按需要填写	计划Item号，四位，起始0010	计划Item描述
1#尾气排放PM	2014/11/13	30	Ann	ZSGM02	PM	A231	PM	0010	1#尾气排放PM
2#尾气排放PM	2014/11/20	30	Ann	ZSGM02	PM	A231	PM	0010	2#尾气排放PM
3#尾气排放PM	2014/11/27	30	Ann	ZSGM02	PM	A231	PM	0010	3#尾气排放PM
NGFTT在线刷新工具PM	2014/11/13	30	Ann	ZSGM02	PM	A231	PM	0010	NGFTT在线刷新工具PM
老三轨链1#链PM1	2014/1/9	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链1#链PM1
老三轨链1#链PM2	2014/1/9	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链1#链PM2
老三轨链2#链PM1	2014/1/16	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链2#链PM1
老三轨链2#链PM2	2014/1/16	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链2#链PM2
老三轨链3#链PM1	2014/1/23	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链3#链PM1
老三轨链3#链PM2	2014/1/23	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链3#链PM2
老三轨链4#链PM1	2014/1/30	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链4#链PM1
老三轨链4#链PM2	2014/1/30	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链4#链PM2
老三轨链5#链PM1	2014/2/6	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链5#链PM1
老三轨链5#链PM2	2014/2/6	30	Ann	ZSGM02	PM	A231	PM	0010	老三轨链5#链PM2
底盘线吊具PM2	2014/7/24	30	Ann	ZSGM02	PM	A231	PM	0010	底盘线吊具PM2
手刹张紧调整设备PM	2014/5/1	30	Ann	ZSGM02	PM	A231	PM	0010	手刹张紧调整设备PM
玻璃输送线PM	2014/10/1	30	Ann	ZSGM02	PM	A231	PM	0010	玻璃输送线PM
玻璃涂胶机器人A PM	2014/6/5	30	Ann	ZSGM02	PM	A231	PM	0010	玻璃涂胶机器人A PM
玻璃涂胶机器人B PM	2014/6/12	30	Ann	ZSGM02	PM	A231	PM	0010	玻璃涂胶机器人B PM
玻璃涂胶机器人D PM	2014/12/10	30	Ann	ZSGM02					
四轴轮胎拧紧机PM	2014/6/6	30	Ann	ZSGM02					
五轴轮胎拧紧机PM	2014/2/24	30	Ann	ZSGM02					

Example: PM plan

PM Plan Equipment

PM Plan Tooling

TPM—设备、工装、模/检具TPM

- 计划保养（保养计划、指导书、记录表）

✓ 计划保养的按时开展可通过系统来设定

（如模具次数、设备运转时间等来保证）

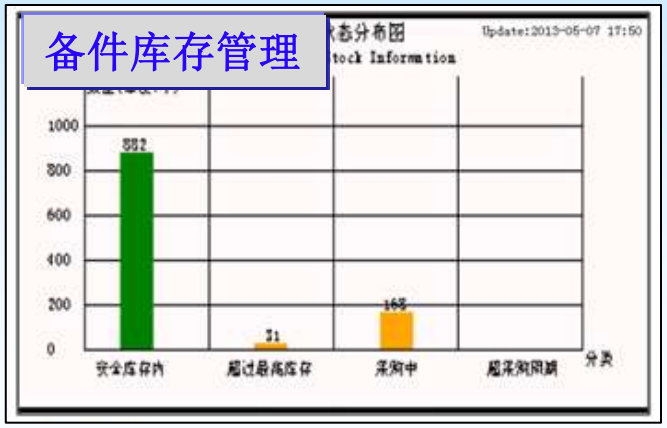
设备保养作业指导

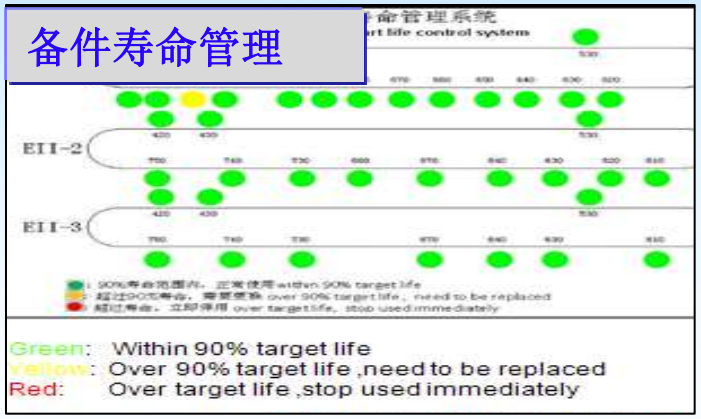
维护保养工单系统

TPM—设备、工装、模/检具TPM

- 计划保养（保养计划、指导书、记录表）

✓ 识别关键部件及易损件，对其备件需求和存储实施有效管理（如最小库存，采购周期，存储环境，寿命等要求）





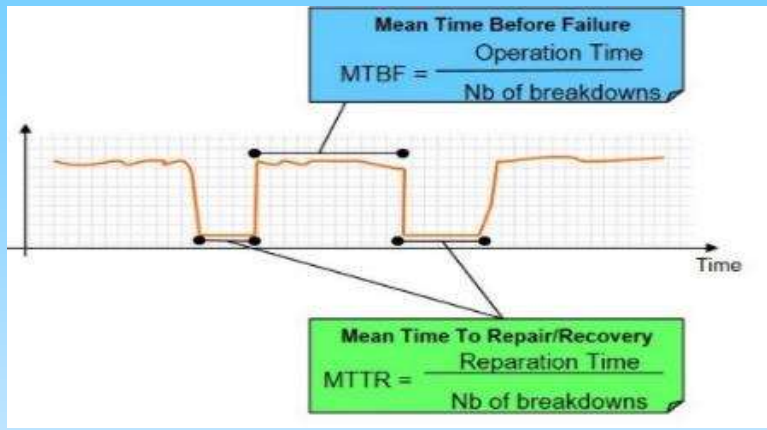
TPM—设备、工装、模/检具TPM

- 故障维修，改善优化

（维修记录、维修指导书）

✓ 对维修进行管理，记录MTTR和MTBF数据

✓ 建立维修台账数据库



设备异常处理指南

历史故障电子资料库

TPM—设备、工装、模/检具TPM

- 故障维修，改善优化（维修记录、维修指导书）
- ✓ 创建设备FMEA，指导设备采购和备件管理

设备FMEA

/Function 设备名称/功能	要求	Potential Failure mode 潜在的失效模式	Potential Effect(s) of Failure 潜在的失效后果	Severity 严重度(S)	Potential Cause(s)/ Mechanism(s) of Failure 潜在的失效起因/机理	Occurrence 频度(O)	Detection 探测度(D)	RPN 风险指数
OP240 Laser marking激光打标 Function:功能： Automatic equipment carving 设备自动标刻 Equipment components: 设备组成： encoder编码器 DPX (digital fluorescence)DPX (数字荧光） controller控制器 Laser lens激光镜头 Laser tube激光管 power电源	Reliable safety protective measures 可靠的安全防护措施	Automatic state opened the door equipment still action 自动状态下打开门设备仍旧动作	Hazard staff personal safety危害员工人身安全	5	Unreasonable PLC program不合理的PLC程序 Artificial modification or screening program人为修改或屏蔽程序	2 2	5 5	50 50
		Shield being security blind Angle防护罩存在安全死角	Hazard staff personal safety危害员工人身安全	5	Design does not consider设计中未考虑	1	5	25
	Marking machine working properly 打标机运转正常	No marking不打标	Defective products outflow, stop line of time More than 15 m不良品流出，停线时间超过15M	4	Encoder/speed fast (overflow)编码器/线速度太快（溢出） Encoder/speed fast (overflow)编码器/线速度太快（溢出）	2 2	5 5	40 40

TPM—小结

◆ 质量控制从以质量部门为核心转变到以制造部门为核心。

——从缺陷的探测/遏制到预防缺陷的发生。

•网页数据

•手机APP数据

BIQ
制造
质量

ME
制造
工程

4. 标准化操作
Standardized Operations

QSB

利用系统的方法来开展和保持车间现场管理（5S）
Utilize a systematic approach to implement and maintain Workplace Organization

标准化操作指导书应具有可操作性，采纳工人的意见（全员参与）
Develop and implement Standardized Work Instructions using multi-disciplinary teams.

所有的操作工位均应张贴标准化操作指导书（目视化）
Post Standardized Work Instructions at all operations

发生重大质量或安全事故的工位应张贴警示 （风险警示）
Station where happen major quality/safe issues post “Quality/ Safe alert”

当过程/产品更改时，通过分层审核确认更新的操作指导书（及时确认）
Verify update operator instructions by layered process Audit as processes/parts change.

设备、工装、模检具均需有效实施TPM（关注TPM）
Equipments and toolings are implemented effectively by TPM.

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

5. 标准化的操作工培训 Standardized Operator Training

培训、监控和评估操作工的系统方法
Systematic procedure to train, monitor and evaluate operators

- 确保每个人都接受相同的培训

  Assures all operators have adequate and similar training

- 确保每个人都始终以相同的方式来完成相同的工作

  Assures unqualified operators receive training prior to operating equipment

- 确保有书面的培训流程来保证所有的操作员都知道如何完成工作

  Written training procedure to assure all operators to know how to work

- 减少操作中的偏差和不合格项

  Reduces sort, rework and containment activities

操作工培训四步法
THE 4 STEPS OF OPERATOR TRAINING

第四步　跟踪
Major Step 4： Follow-up

第三步　试操作
Major Step 3： Try-out performance

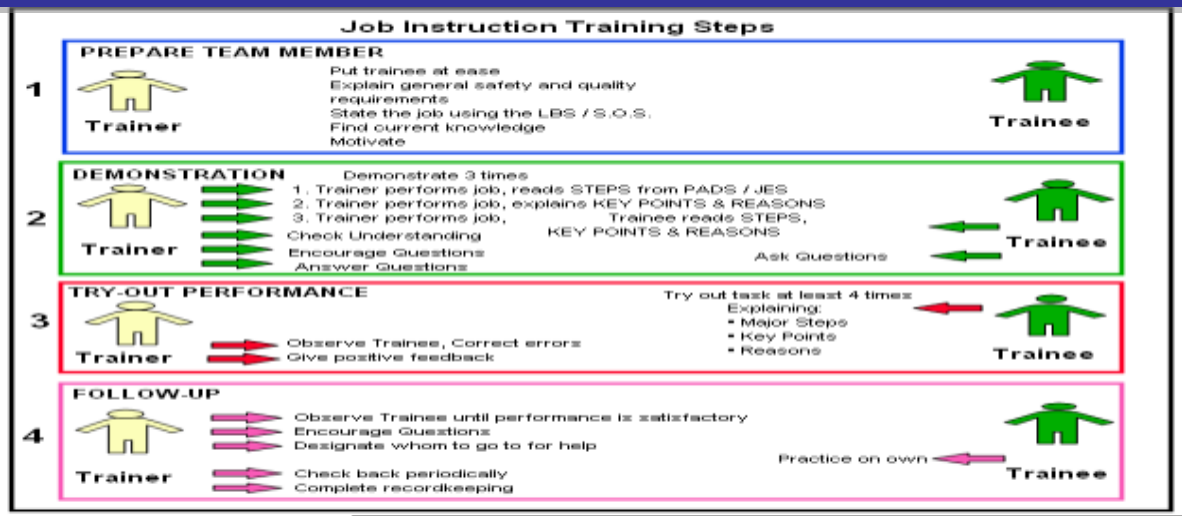
第二步　示范操作
Major Step 2： Demonstration

第一步　成员准备
Major Step 1： Prepare team member

5. 标准化的操作工培训
Standardized Operator Training

QSB

岗位操作技能记录表
Job Instruction Certification Record



#	Workstation / Job / Description	1 Date	2 Date	3 Date	#4 Signatures for successful completion of THREE Quadrants: Date	Team Member	Trainer	Supervisor	Revision Level

能力修订
Revision Level of Job

作业描述
Workstation Description

符合前两级时间
Dates of Training for the First Two Quadrants

符合第三级时间及认可
Date & Signatures for the Third Quadrant

FILE:

SD

培训记录
Training Record

操作项目和编号： _____

审核　　完成

(例)

安全/设备操作	
标准化的工作指导	
要填写的质量记录	
零件（产品）功能	
示范操作和问题回答	
示范测量和回答问题	
让新员工进行操作并回答相关问题	
讲授该岗位过去发生的问题	
检验首次生产的产品，并加以指导	
当班内再次检查标准化的操作与产品质量	
大约1天内再次检查标准化的操作与产品质量	
向下游工位通报潜在缺陷	

被培训者签名 _____　　培训师签名 _____

运用：任何新操作员都应完成上表

受训操作工跟踪表
Trained Operator Tracking Record

(例)

操作工岗位培训验证表

操作工姓名	岗位编号	岗位名称	班组长	带教人	验证人

接受/制造/传递缺陷详细记录

年/月/日	缺陷代码	缺陷名称	产生缺陷原因	改进行动	是否操作工责任	记录人

其他异常记录

年/月/日	异常情况描述	异常发生原因	改进行动	是否操作工责任	记录人

验证栏

填写要求：在（）内填入验证的年份和月份，当天/当月验证状态由验证人在对应格子内涂绿色或划"√"表示没有接受/制造/传递缺陷、没有引发异常情况；涂红色或划"X"表示接受/制造/传递了缺陷或引发异常情况。未生产不做任何标记。

月/年状态

(　　　) 年

1	2	3	4	5	6	7	8	9	10	11	12

(　　　) 年

1	2	3	4	5	6	7	8	9	10	11	12

日/月状态

(　　) 月

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

(　　) 月

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

(　　) 月

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

(　　) 月

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

(　　) 月

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
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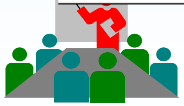
29	30	31				

(　　) 月

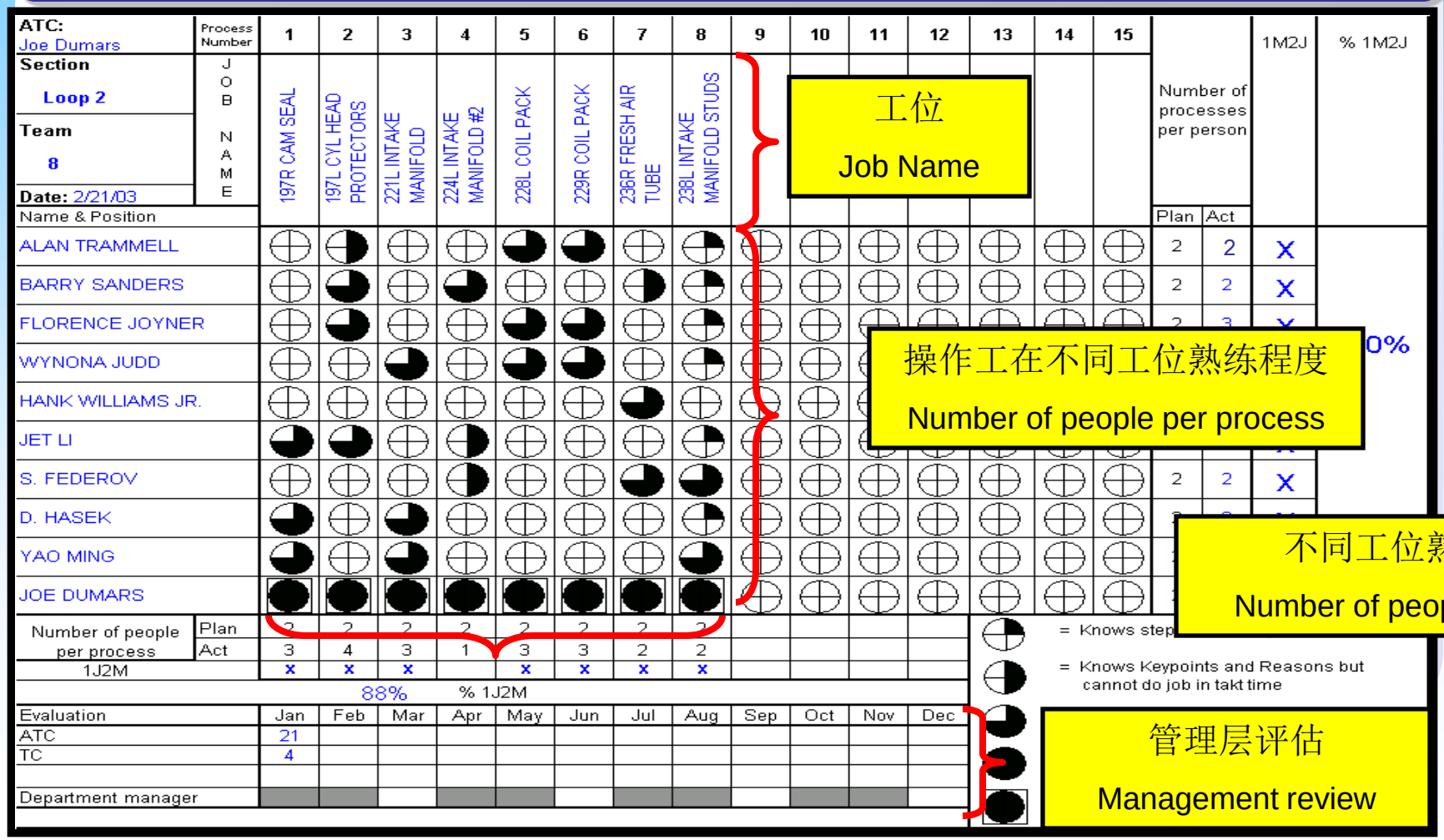
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				



5. 标准化的操作工培训
Standardized Operator Training

QSB

培训柔性表
FLEXIBILITY CHART



5. 标准化的操作工培训
Standardized Operator Training

QSB

确保操作人员培训在“受训操作工跟踪表”中跟踪
Ensure operator training is being tracked on “Trained Operator Tracking Sheets”.

在每个工位张贴操作工培训追踪表
Post operator Tracking Sheets at each operation

新员工上岗操作，相应下道工序增加验证动作
Add verification action at downstream operations of new operators

培训最近3个月内没有上岗的后备员工
Train Supplemental employees who have not performed the job within the last three months

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
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- 变更管理 Managing Change

为什么要防错验证
Benefits of Error Proofing Verification

确保防错/错误探测装置正常工作
Assures error proof/detection devices are working as intended.

防止制造或传递不合格产品
Prevents nonconforming product from being made or transferred.

为每台装置建立历史档案以指示何时需要对其进行预防性维护或维修
Establishes a history for each device; indicates when preventative maintenance or repair is needed.

在整个过程中培养良好的行为规范
Instills discipline within the process.

防错验证定义
Definition of Error Proofing

所有可能失效，磨损，移位或超出调整范围的防错/探测装置，每班必须最少验证一次。
首选的方法是在开班前或在生产过程中由生产线作业员/生产线班组长来实施防错验证。

All error proofing/detection devices with the potential to fail, wear, misalign, or otherwise become out-of-adjustment shall be verified at a minimum of once per shift. The preferred method is for a team member/ leader to perform as part of start-up and throughout the shift.

防错装置 —（不制造）—防止加工或装配不合格产品的装置
Error Proofing Device — (CAN NOT MAKE)
Devices which prevent the manufacture or assembly of nonconforming product.

错误探测装置 —（不传递或不接受）—防止传递不合格产品的装置 （如**100%**在线检测设备）
Error Detection Device — (CAN NOT PASS or CAN NOT ACCEPT)
Devices which prevent the transfer of nonconforming product (e.g. 100% in-line inspection equipment).

注：防错/错误探测装置不是校准一个量具 （如：调零位），而是将一个已知的好/坏零件分别通过防错/错误探测装置，以确认装置功能是否有效。
Note: *This is not mastering a gage, (e.g. Setting gage to zero). It is sending known good & bad parts through to confirm the device is operating correctly.*

防错验证的要求
The requirements of Error Proofing Verification

所有的防错装置必须被验证,相关防错装置的位置应该被记录.

当防错装置被查证出失效时,应该必须马上启动和跟踪相应的反应计划.

防错装置必须每班至少验证一次.

必须要记录防错验证的结果,这样可以对防错装置失效做出迅速的反应.

工厂管理层必须要定期回顾验证记录.

- 防错装置在主控文件中应有识别号和位置
- 确认防错验证频率
- 确定标准样件（好的/坏的）以及检查的失效模式

- 明确定义防错装置失效时的反应计划
- 当如果防错装置不能检测出残次品，什么时候停机？
- 遏制计划？ (100% 检验，等.)
- 可疑品是否 需重新通过防错装置？
- 怎样/什么时候防错装置需要维修？

- 在防错装置确认之间生产的产品的批量数量
- 用过程的历史记录决定验证的频率
- 过程是否稳定
- 可疑品的遏制是否有效

- 建立防错验证失效及对失效进行的整改的记录
- 建立表格，以通知不符合项及逐级汇报不符合反应行动
- 将以上信息做为经验积累存档

- 确定收集相关信息的方法
- 确定哪些信息需要公布/展示

防错验证的要求
The requirements of Error Proofing Verification

ERROR PROOFING DEVICES SHALL BE VERIFIED AND THEIR RESPECTIVE LOCATIONS DOCUMENTED

- Master Document of Error Proofing devices, with identification number and location
- Verification frequency
- Identify masters (Good/Bad) and defect being checked

REACTION PLANS SHALL BE DEVELOPED TO FOLLOW WHEN THE ERROR PROOFING DEVICES FAIL VERIFICATION

- Clearly defined reaction plan if device fails to detect
- When/if shut down when device fails to detect bad part?
- Containment plan? (100% Inspection, etc.)
- Are suspect parts rerun thru Error Proofing device?
- How/when is Error Proofing device repaired?

ERROR PROOFING DEVICES SHALL BE VERIFIED ONCE per SHIFT

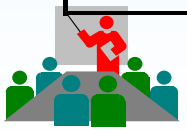
- Lot size of parts run between Error Proofing verification
- History of process to determine verification frequency
- How robust is the process?
- How easy is it to contain suspect product?

VERIFICATION RESULTS SHALL BE RECORDED WITH IMMEDIATE RESPONSES TO FAILURES

- Develop Log of Error Proof Verification failures with reaction plan to nonconformities
- Develop form to notify of nonconformities and escalate reaction to nonconformities
- Document as Lessons Learned

VERIFICATION RESULTS SHALL BE REVIEWED BY SITE LEADERSHIP

- Method for getting information to management
- Determine how information is to be displayed



6. 防错验证
ERROR PROOFING VERIFICATION

QSB

防错验证检查表
Error Proofing Verification Checklist

(例)

工序#	是否有卡环	以下项目必须每天检查	编号	YES	NO	问题描述
OP 30	4	在左/右卡环安装工装上不装卡环-工件是否被拒收?	4			
OP 30	5	灯柱上的红灯是否亮？(左&右)	5			
OP 30	6	被拒收的工件是否仍然在工作台内? (左&右)	6			
OP 30	7	按灯报警器是否响起？(左&右)	7			
OP 40	8	在小卡环安装工装上不装卡环-工件是否被拒收?	8			
	9	灯柱上的红灯是否亮？(小卡环)	9			
	10	被拒收的工件是否仍然在工作台内? (小卡环)	10			
	11	按灯报警器是否响起？(小卡环)	11			
	12	当手动确认工具上红色拒收灯亮起时，工件是否仍然在工位内？	182			
	13	是否可看到小卡环?	15			
	14	当小卡环安装工具出现故障，备份检具是否可用？	12			
	15	如果没有安装小卡环，备份检具是否可拒收工件？	13			
	16	红色指示灯是否亮？ (小卡环备份安装工具）	14			
				YES	NO	

主管: _____

检查人: _____

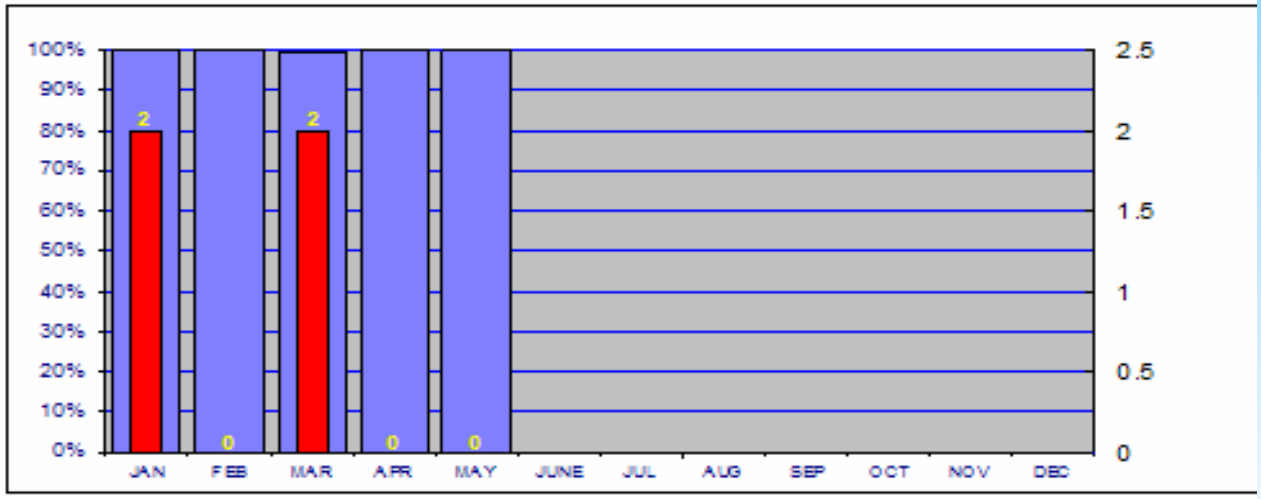
当标为黄色的项目不合格时，必须立即通知主管。

防错验证的完成情况应被记录并展示在工位上。防错装置的验证状态应被所有人清楚的看到。

防错验证结果
Error Proofing Verification Result

(例)

部门:轴承 2



月份	JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEP	OCT
% 符合百分比	100%	100%	100%	100%	100%					
# 总验证项目量:	984	908	984	984	832					
# 符合的项目量:	984	908	982	984	832					
不符合项目量	2	0	2	0	0					

6. 防错验证
ERROR PROOFING VERIFICATION

QSB

防错装置至少每班验证一次。（防止批量事故）
Error proofing devices shall be verified at least once per shift

防错装置的位置被记录在案。（管理方便）
Error Proofing device locations shall be documented.

制定防错装制失效的应对计划。（以防万一）
Reaction Plans to failures shall be developed.

记录防错验证结果。（评估输入）
Verification results shall be recorded.

领导层检查和评审防错验证的结果。（领导重视）
Leadership shall review verification results

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
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- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

为什么做分层审核
Why do LAYERED PROCESS AUDIT

- 质量责任明确到位，落实到人。
  Quality responsibility and owner is clear
- 跟踪质量问题解决措施的现场状态
  Follow-up status of correction action from quality issues
- 对现行控制计划和作业指导检查的补充
  Supplement to ongoing Control Plan and job instruction checks
- 日常工作的有效性检查
  Instills discipline
- 通过各层人员的审核提供沟通的平台
  Improves communication based on different layered person audits

7. 分层审核
LAYERED PROCESS AUDIT

QSB

检查表
Checklist

- 制定在分层审核过程中需要检验的高风险项目的检查表

  Establish a checklist of high-risk items to be verified during Layered Audits
- 审查内部审核的结果，并将重复出现的不合格项放在分层审核检查表中

  Review results from internal audits and include repetitive nonconformities on the checklist
- 检查表是一个动态文件

  The checklist should be a living document

频率
Frequency

- 高风险项目应该至少每班检查一次

  At a minimum of once per shift for high-risk items
- 分层审核频率基于产量、过程风险级别以及相关的程序

  The frequency of Layered Audits is based on production volume and level of risk of the process and associated procedures

核查
Verification

- 制造部门主管应该每天核查操作工是否完成了质量记录

  The manufacturing supervisor shall verify daily that Quality documentation is completed by operators
- 制造部门区域经理应该每周检查主管是否完成了核查工作

  The manufacturing area manager shall verify weekly that supervisor verification is being completed
- 工厂领导应该每月/每季执行定期过程核查评估工作

  Site Leadership shall conduct monthly or quarterly process verification assessments

检查表
Checklist

必须建立一份在过程分层审核过程中进行确认的高风险项目清单。
A list of high risk items to be verified during Layered Process Audits shall be established.

要素例：
Possible elements to consider include:

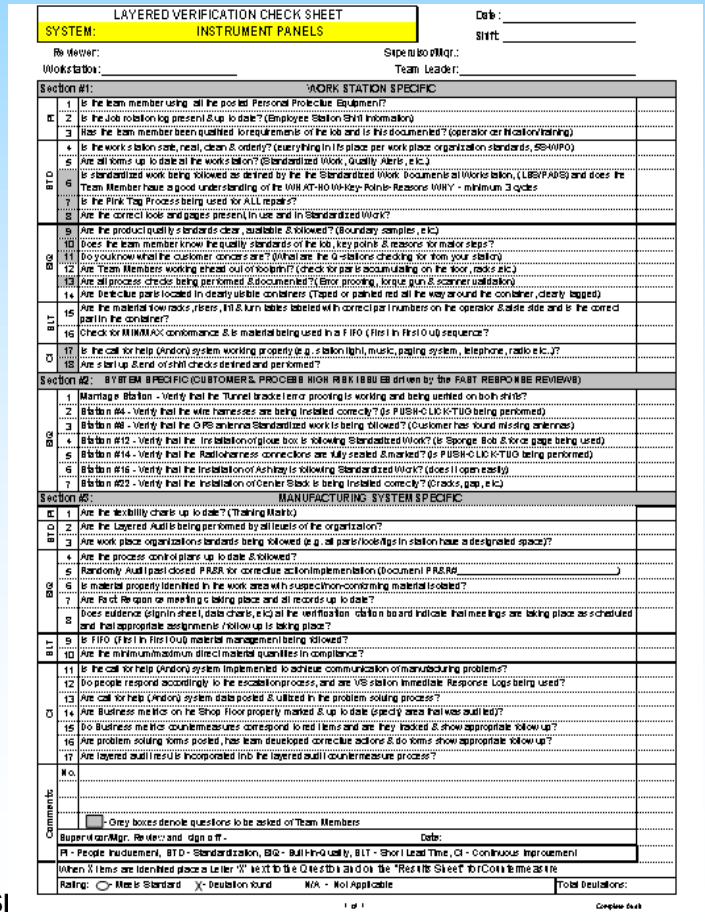
过程参数 Process parameters
量检具的功能和校验的确认 Gages functioning and calibration confirmation
堆放/包装技术 Stacking/packing techniques
目视辅助工具是否在现场，内容是否正确 Visual aids presence and content
作业指导书 Work instructions
产品标识 Product identification
扭矩监控（如适用）Torque monitoring (if applicable)
文件/记录的完整性 Documentation / record completion
客户反馈 Customer feedback

7. 分层审核
LAYERED PROCESS AUDIT

QSB

检查表
Checklist


LAYERED VERIFICATION CHECK SHEET
SYSTEM: INSTRUMENT PANELS
Reviewer:
Workstation:
Date:
Shift:
Supervisor/Mgr.:
Team Leader:
Section #1: WORK STATION SPECIFIC


LAYERED VERIFICATION CHECK SHEET
SYSTEM: INSTRUMENT PANELS
Date:
Shift:
Reviewer:
Supervisor/Mgr.:
Workstation:
Team Leader:

Section #1:		WORK STATION SPECIFIC	
PI	1	Is the team member using all the posted Personal Protective Equipment?	
PI	2	Is the Job rotation log present & up to date? (Employee Station Shift Information)	
PI	3	Has the team member been qualified to requirements of the job and is this documented? (operator certification/training)	
BTD	4	Is the work station safe, neat, clean & orderly? (everything in its place per work place organization standards, 5S/HVPO)	
BTD	5	Are all forms up to date at the workstation? (Standardized Work, Quality Alerts, etc.)	
BTD	6	Is standardized work being followed as defined by the the Standardized Work Documents at Workstation, (LIBS/PADS) and does the Team Member have a good understanding of the WHAT-HOW-Key Points- Reasons WHY - minimum 3 cycles	
BTD	7	Is the Pink Tag Process being used for ALL repairs?	
BTD	8	Are the correct tools and gages present, in use and in Standardized Work?	
BIQ	9	Are the product quality standards clear, available & followed? (Boundary samples, etc)	
BIQ	10	Does the team member know the quality standards of the job, key points & reasons for major steps?	
BIQ	11	Do you know what the customer concern are? (What are the Q-stations checking for from your station)	
BIQ	12	Are Team Members working ahead out of footprint? (check for parts accumulating on the floor, racks etc.)	
BIQ	13	Are all process checks being performed & documented? (Error proofing, torque gun & scanner validation)	
BIQ	14	Are defective parts located in clearly visible containers (Taped or painted red all the way around the container, clearly tagged)	
BLT	15	Are the material flow racks, risers, lift & turn tables labeled with correct part numbers on the operator & aside side and is the correct part in the container?	
BLT	16	Check for MIN/MAX conformance & is material being used in a FIFO (First In First Out) sequence?	
CI	17	Is the call for help (Andon) system working properly (e.g., station light, music, paging system, telephone, radio etc.)?	
CI	18	Are start up & end of shift checks defined and performed?	
Section #2:		SYSTEM SPECIFIC (CUSTOMER & PROCESS HIGH RISK ISSUES driven by the FAST RESPONSE REVIEWS)	
BIQ	1	Marriage Station - Verify that the Tunnel bracket error proofing is working and being verified on both shifts?	
BIQ	2	Station #44 - Verify that the wire harnesses are being installed correctly? (Is PUSH-CLICK-TUG being performed)	
BIQ	3	Station #8 - Verify that the GPS antenna Standardized work is being followed? (Customer has found missing antennas)	
BIQ	4	Station #12 - Verify that the installation of glove box is following Standardized Work? (Is Sponge Bob & force gage being used)	
BIQ	5	Station #14 - Verify that the Radiohermes connections are fully seated & marked? (Is PUSH-CLICK-TUG being performed)	
BIQ	6	Station #16 - Verify that the installation of Ashtray is following Standardized Work? (does it open easily)	
BIQ	7	Station #22 - Verify that the installation of Center Stack is being installed correctly? (Cracks, gap, etc)	
Section #3:		MANUFACTURING SYSTEM SPECIFIC	
PI	1	Are the flexibility charts up to date? (Training Matrix)	
BTD	2	Are the Layered Audits being performed by all levels of the organization?	
BTD	3	Are work place organizations standards being followed (e.g., all parts/tools/jigs in station have a designated space)?	
BIQ	4	Are the process control plans up to date & followed?	
BIQ	5	Randomly Audit past closed PRRR for corrective action/implementation (Document PRRR#_____)	
BIQ	6	Is material properly identified in the work area with suspect/non-conforming material isolated?	
BIQ	7	Are Red Ribbon or meeting's taking place and all records up to date?	
BIQ	8	Does evidence (sign-in sheet, data sheets, etc) at the verification station board indicate that meetings are taking place as scheduled and that appropriate assignments /follow up is taking place?	
BLT	9	Is FIFO (First In First Out) material management being followed?	
BLT	10	Are the minimum/maximum direct material quantities in compliance?	
CI	11	Is the call for help (Andon) system implemented to achieve communication of manufacturing problems?	
CI	12	Do people respond accordingly to the escalation process, and are VIS station Immediate Response Logs being used?	
CI	13	Are call for help (Andon) system data posted & utilized in the problem solving process?	
CI	14	Are Business metrics on the Shop Floor properly marked & up to date (specify area that was audited)?	
CI	15	Do Business metrics countermeasures correspond to red items and are they tracked & show appropriate follow up?	
CI	16	Are problem solving forms posted, has team developed corrective actions & do forms show appropriate follow up?	
CI	17	Are layered audit results incorporated into the layered audit countermeasure process?	
Comments:	No.		
		- Grey boxes denote questions to be asked of Team Members	
Supervisor/Mgr. Review and sign off -			Date:
PI - People Involvement, BTD - Standardization, BIQ - Built-In-Quality, BLT - Short Lead Time, CI - Continuous Improvement			
When X items are identified place a Letter "X" next to the Question and on the "Results Sheet" for Countermeasure			
Rating: ◯ - Meets Standard X - Deviation found N/A - Not Applicable			Total Deviations:

页眉: 输入系统名称
产品线或工厂区域名

1. Molding 注塑
2. Paint/Coating 喷气/表面处理
3. Assembly 组装
4. Warehouse/Shipping 库房/发货

Section #1:
普遍的工位问题
COMMON Workstation Questions

Section #2:
产品线或区域的特殊问题
Unique to a Product line or Area of the Plant

先前的客户投诉问题
Previous Customer Concerns

Section #3:
普遍的系统问题
COMMON Systems Questions

检查表
Checklist

#1 部分 工位问题具体为：

Section #1 WORK STATION SPECIFIC:

班组长通过过程分层审核表中工位部分的问题来支持一线操作员工。

The Workstation section of the Layered Process Audits Check Sheet is used by the Group Leader and Team Leader to support the operator.

- 确保操作工遵守安全规定和佩戴个人防护装置。
  Ensuring proper safety practices and PPE are being followed.
- 确保操作工使用正确的工具、量检具和材料。
  Ensuring proper tools, gages and materials are available &used.
- 确保操作工理解和遵守标准化操作和质量标准。
  Ensuring standardized work & quality standards are understood &followed.
- 确保Andon按灯系统正常工作。
  Ensuring Andon system is functioning properly.
- 确保执行工作现场管理和可视化管理标准（例如根据工厂的现场管理标准和可视化管理规定）。
  Ensuring Workplace Organization &Visual Management standards are maintained (e.g. according to the plant WPO standards and Visual Management policy).
- 确保符合物料管理的要求 –如FIFO先进先出/最低-最高库存
  Ensuring compliance to Material Processes – FIFO/Min.-Max. levels.

检查表
Checklist

#2 部分: 质量关注部分的问题具体为：
Section #2: QUALITY SYSTEM SPECIFIC：

质量关注部分覆盖整个班组或团队，并由班组长或团队领导审核以支持一线操作员工。

The **Quality Focused section** covers the entire team or group and is also audited by the Team Leader & Group Leader to support the operator

- 确保防错装置正常工作且已知的高风险/重大的过程控制要素处于受控状态，以防止问题重复发生。
  Ensuring error proofing is functioning properly and identified high risk/ significant process elements are controlled to prevent known problems from reoccurring.
- 确保完成所有要求的质量检查和/或文件记录。
  Ensuring required quality inspection and/or documentation are being completed.

检查表
Checklist

#3 部分: 系统问题具体为：

Section #3: COMMON SYSTEMS QUESTIONS：

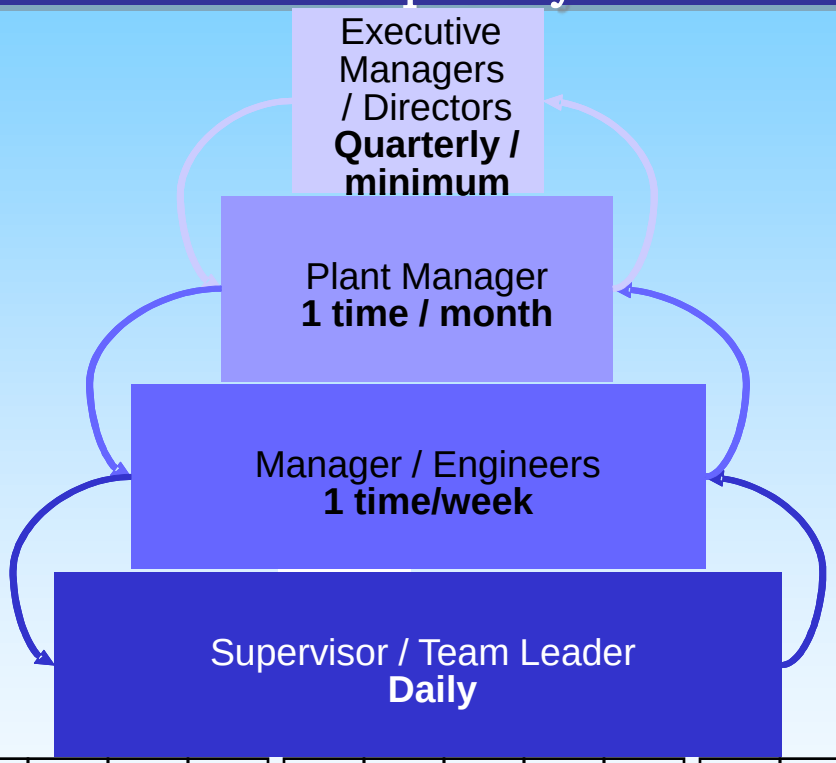
工厂管理人员和带班主管/经理针对工位应评审相同的项目（#1，#2部分）,另外通过过程分层审核（#3部分）评估班组长的工作内容。

Plant Staff and Shift Leaders/Managers review the same items at a workstation level （section #1，#2）, and in addition review a Group Leaders' area using the Layered Process Audit （section #3）.

- 是否完成安全训导和巡视
  Completion of safety talks & tours
- 是否符合过程控制计划
  Compliance to Process Control Plans
- 是否符合现场5S管理的标准
  Conformance to Workplace Organization standards
- 是否正确利用Andon“暗灯”系统
  Proper use of the Andon System
- 是否有效的解决问题和实施对策
  Effective Problem solving & countermeasure implementation
- 是否有效的利用过程分层审核实施控制和跟踪
  Effective use of Layered Process Audits process for control and follow up

频率
Frequency

(例)
(Example)



	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F
Operator Supervisor															
Manager			☐					☐					☐		
Site Leader								☐							

整改措施表
Countermeasure Sheet

(例)
(Example)

项目# Item #	日期 Date	地点 Location	问题描述 Problem Description	责任人 Owner	对策措施 Countermeasure	目标完成日期 Target date	发起人 Initials	完成日期 Complete Date
4	7-7-03	005R	胶带掉地上 Tape missing on floor	TL1	把胶带放回原处 Replace tape	7-7-03	RS	7-8-03
6	7-7-03	005R	用来安装排水沟的工具不同于标准，团队成员通常不经通告组长就使用替代品。 tool for installing drainplugs is different from standard, TM used replacement without informing TL	TL1	在工作现场从仓库拿来标准工具取代原先的工具。 get standard tool from store, replace at workstation	7-8-03	RS	7-8-03

- 通过对策措施流程来跟踪并关闭那些不能在审核中立即纠正的问题。

  Open discrepancies, those issues not immediately corrected during the audit, are tracked to closure using a Countermeasure process.

- 当问题解决后，对策措施表应被更新并签名。

  The countermeasure sheet is updated and signed as issues are resolved.

- 出于使用者的考虑，他们可能会选择跟踪一段时间内发现的不合格项的总数。可以通过问题汇总表或某项具体问题的曲线图来表示。

  At the users discretion, they may also choose to track total # of discrepancies found over time. This can be done at an aggregate or line item level of detail as required to meet their needs.

审核结果
Layered Process Audit Result

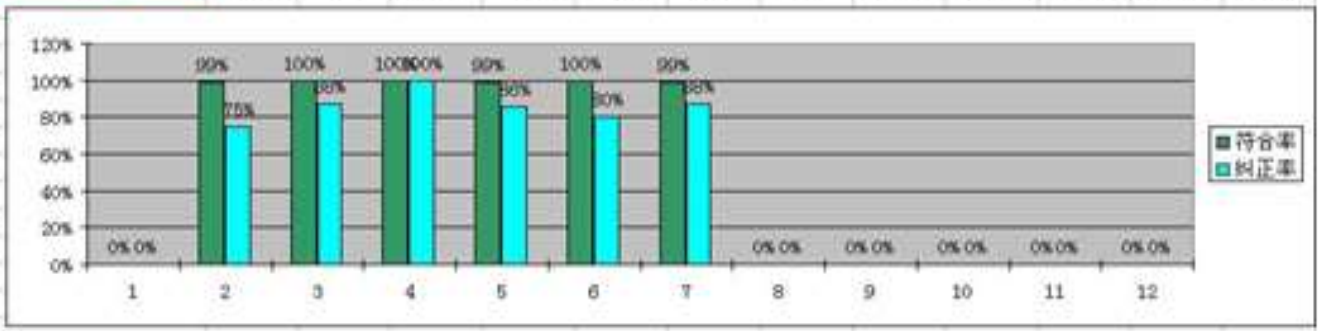
(例)
(Example)

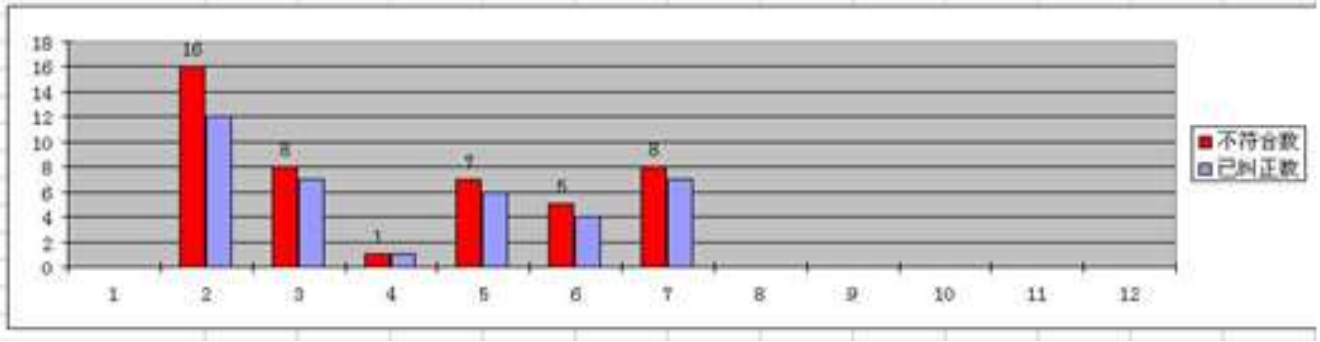
分层审核结果汇总表

天合(宁波)电子元件紧固装置有限公司
TNW(Ningbo) Components & Fastening

部门:装配车间
更新日期:2007-07

项目 \ 月份	1	2	3	4	5	6	7	8	9	10	11	12
符合率%	#DIV/0!	99%	100%	100%	99%	100%	99%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
审核项目数		1340	781	796	877	1109	845					
符合数		1324	780	795	870	1104	838					
不符合数		16	8	1	7	5	8					
已纠正数		12	7	1	6	4	7					
纠正率	#DIV/0!	75%	88%	100%	86%	80%	88%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!





审核结果
Layered Process Audit Result

1 计划

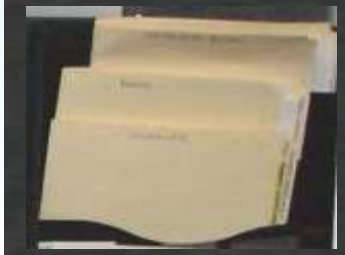
审核频率

现场布置图

2 行动

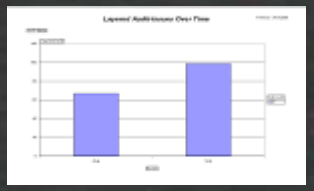
IP's

空白审核表



关闭的PRR清单

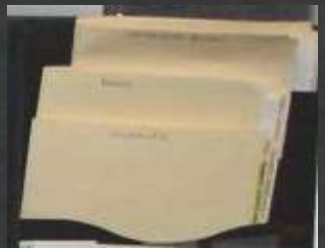
3 检查



管理层计划表

(例)
(Example)

完成审核



4 改进

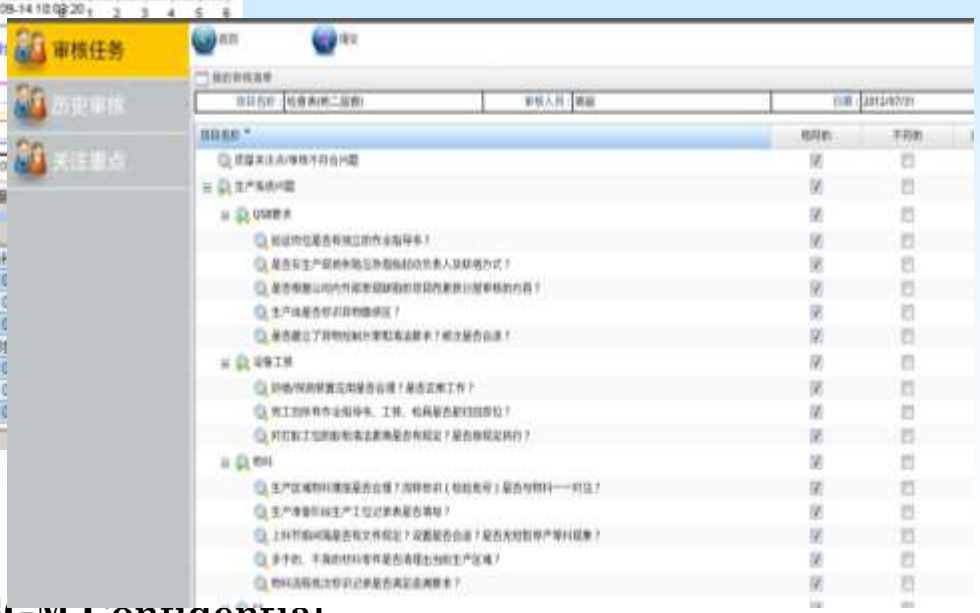
对策措施表

7. 分层审核
LAYERED PROCESS AUDIT

电子化分层审核
Electronic Layered Process Audit

(例)
(Example) 运用自动化、信息化、智能化技术手段实现：

- 通过电子化分层审核实现动态更新和状态跟踪；
- 通过设备联网实现监控报警替代人为审核。



7. 分层审核
LAYERED PROCESS AUDIT

指定生产部门负责建立并执行过程分层审核。
Designate manufacturing to own and conduct Layered Audits.

审核内容结合实际，具有可操作性 。
Audit content is maneuverable.

设定审核频次(PR&R, CSI, CSII, 高风险项应至少每班审核一次）。
Establish frequency of audits. (High risk items to be audited at a minimum of once per shift).

重大问题纳入快速响应会议。
Critical Quality Issues run in F.R.M.

跟踪和回顾过程分层审核的结果，作为CIP来源。
Track and review the results of Layered Process Audits. CIP resource

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

为什么实施风险降低
Risk Reduction Benefits

使管理层集中有限的资源解决重大的质量风险。

Allows leadership to allocate limited resources to critical areas.

- 提供一个有效防错和问题解决的基础。

  Provides a basis for effective error-proofing and problem solving.

- 是APQP和PPAP要求的核心工具。

  Core tool for APQP and PPAP requirements.

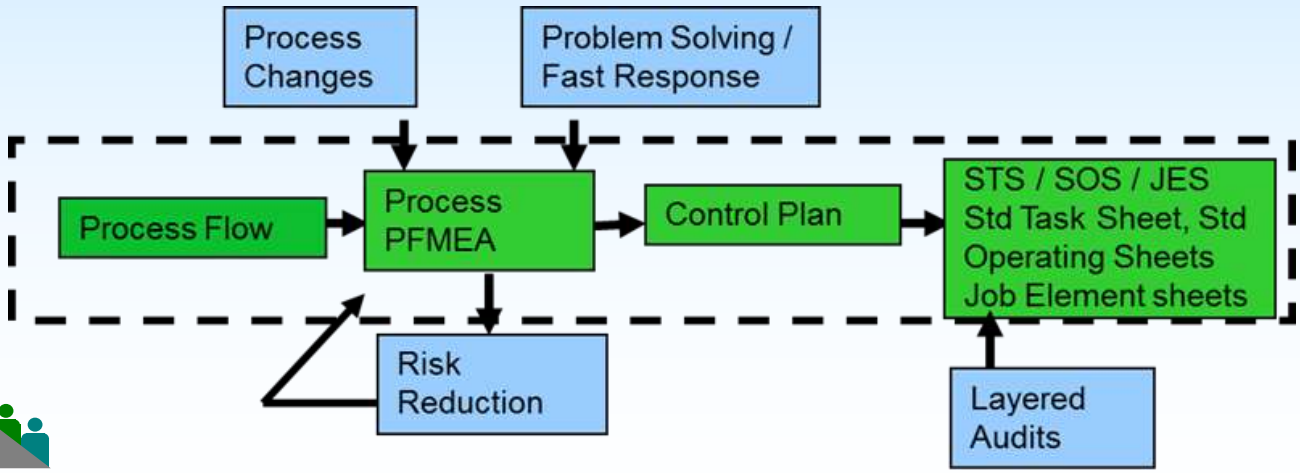
- 提供经验教训文件。

  Provides a Lessons Learned archive.

降低质量风险定义
Reduction Quality Risk Definition

主动式：PROACTIVE:
降低潜在的质量故障风险
To reduce the risk of a **Potentia**l quality failures

被动式：REACTIVE:
对发生过的质量故障防错
Error proofing for **Past** quality failures



主动降低风险要求----反向PFMEA审核

- 定期开展实施主动风险降低活动（反向**PFMEA**）以识别新的过程失效模式，进行持续改善。

  - 确认 PFMEA 满足客户要求及期望 (AIAG, PPAP, Launch等)；
  - 确认包含了所有的操作/ 过程；
  - 确认快速响应板上问题，变化点，客户反馈及内部过程问题相关的内容在PFMEA中得到更新；
  - 确认严重度打分准确；
  - 频率应依据数据分析 (SPC，一次下线合格率FTQ，*验证岗位**，C.A.R.E.*，报废率等)；
  - 探测度打分选定准确 ；
  - 确认反向FMEA识别的项目是否已体现在流程图，PFMEA，控制计划和作业指导书的更新中；
  - 确认所有制定的措施是否在现场真正有效实施。

- 完成审核后,多功能小组必须建立高风险降低机会清单，制定风险降低对策；（对策包含建议措施，责任人，完成时间）

- 多功能小组依据行动计划跟踪降低风险的进展情况。

8. 风险降低
RISK REDUCTION

QSB

案例分享

Risk Limiting Method（GM风险控制方法）

Priority Level 优先等级

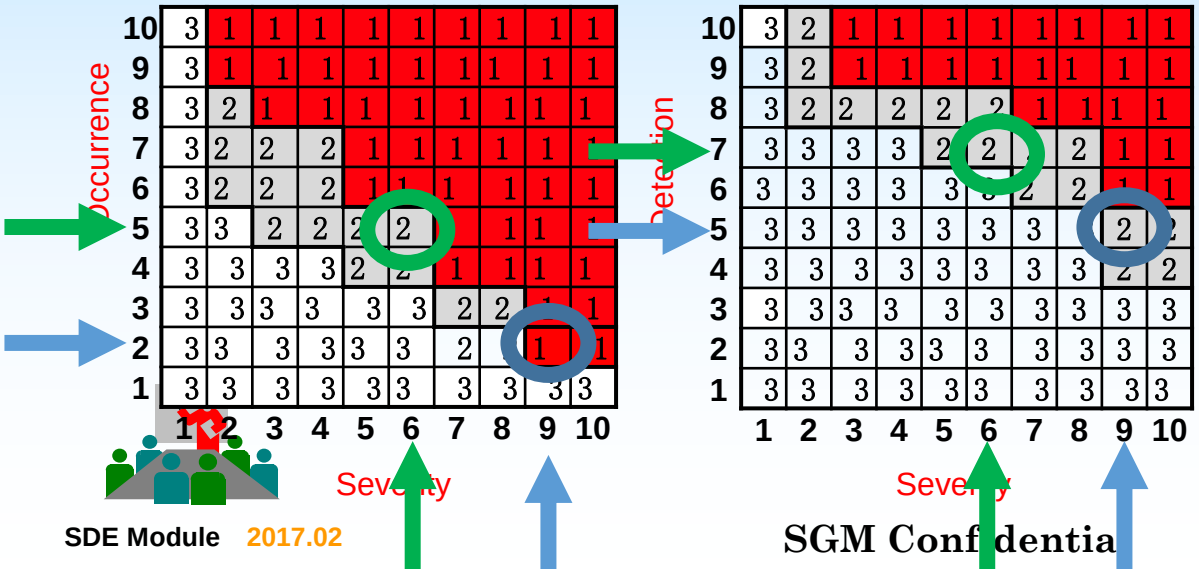
- 频度区域：对比严重度和频度分值
- 探测度区域：对比严重度和探测度分值
- 基于以上2区域决定优先等级

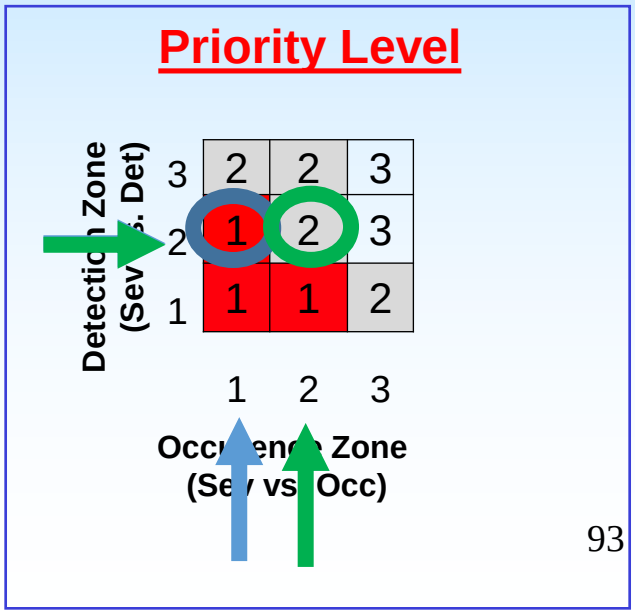
#	Sev.	Occ.	Det.	RPN	优先等级
Risk#1	9	2	5	90	1
Risk#2	6	5	7	210	2
Risk#3	6	3	8	192	3

优先等级1： 高风险，需要评审潜在风险降低活动

优先等级2： 中风险，需要在下一阶段评审潜在风险降低活动

优先等级3： 低风险，不需要评审潜在风险降低活动





8. 风险降低
RISK REDUCTION

QSB

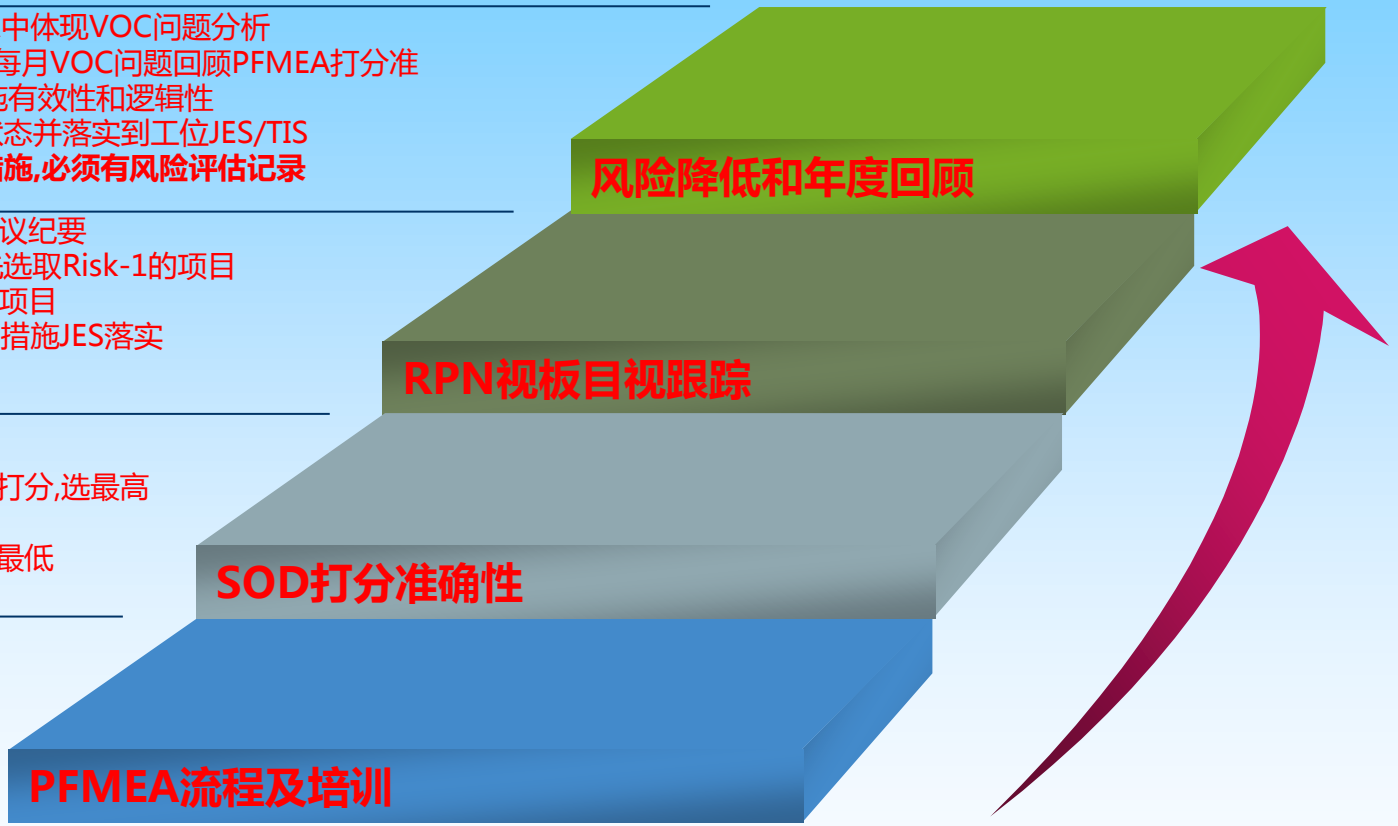
风险降低流程（例）

- ✓ PFMEA变更记录，PFMEA中体现VOC问题分析
- ✓ 月度/年度回顾记录，结合每月VOC问题回顾PFMEA打分准确性和一致性以及控制措施有效性和逻辑性
- ✓ Top问题动态更新措施和状态并落实到工位JES/TIS
- ✓ **Risk Level 1无有效控制措施,必须有风险评估记录**

- ◆ 工段Top5问题,月度回顾会议纪要
- ◆ 各工段TOP5问题跟踪,优先选取Risk-1的项目 其次选取Risk-2中RPN高的项目
- ◆ 严重度9~10问题清单,控制措施JES落实
- ◆ 年度回顾计划月度更新

- SOD保证最新,出口为ME
- S—分析内/外所有严重度打分,选最高
- O--频度不低于3分
- D—所有控制措施打分,选最低

- ➢ 各级编制人员培训
- ➢ 各层级培训考核
- ➢ 跨功能组织结构
- ➢ SOD校核细化



进行聚焦于防止缺陷离开工位的月度风险降低回顾来驱动不断改进。任何在一年中没有通过其它流程（快速响应，变化点管理，过程失效报警等）回顾的PFMEA必须进行年度回顾，来确保近期发生的内部和外部质量问题已经包含PFMEA分析中。

被动降低风险要求（与快反关联）
Reactive Risk Reduction Requirement

•通过多功能组建立一个过去内部/外部质量失效的清单。
Multi-disciplinary team(s) **shall** be utilized to develop a list of the past internal and external quality failures.

• 小组共同识别PFMEA中每一个失效模式真实的严重度、频度和可探测度
Team(s) identify true PFMEA Severity, Occurrence and Detection rating for each Failure Mode using AIAG guidelines.

• 小组制定行动计划对失效进行防错。
Team(s) **shall** develop an action plan to Error Proof the failures.

– 建议采取防止或减少失效模式发生的改进行动。
Recommended Actions are improvements that will prevent or reduce the Failure Mode.

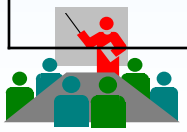
– 如防错不可行，应制定计划改善探测方式。
When Error Proofing is not feasible, a plan to improve detection shall be established.

– 分派小组成员负责实施建议的行动。
A team member **shall** be assigned responsibility for implementing the recommended action.

– 制定合理的目标完成日期。
Reasonable target completion dates **shall** be established.

质量问题汇总清单（例）
Quality Problem Summery List (Example)

问题编号	问题描述	2016年重复发生次数
ICA-16-01	OP20工位 拉紧弹簧装配不到位	19
ICA-16-12	OP10工位 螺母松动	12
ICA-16-04	OP140工位 O型密封圈损坏	7
ICA-16-09	OP60工位 密封圈漏装	5
ICA-16-11	OP50工位 密封件放置位置错误	5



8. 风险降低
RISK REDUCTION

QSB

每年对PFMEA培训需求进行一次评估（正确理解PFMEA）
Should review the need for PFMEA training at least once per year (Understand PFMEA)

支持风险降低活动并提供必需的资源（领导支持）
Shall support risk reduction activities and provide necessary resources. (Leader support)

持续评估风险降低跟踪表（跟踪总结）
Shall review continually the risk reduction tracking charts. (Follow-up and summary)

提供一个有效防错和问题解决的基础（机制保障）
Based on effective error-proving and problem-resolving. (Based on organization)

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

异物控制的目的
Aim of Contamination Control

- 建立起为避免产品缺陷的最低要求。

Contamination Control establishes minimum requirements to avoid product failure.

异物的定义
Definition of Contamination

- 脏污，外来物，或沉淀物 （注：铸件类定义为残留物）

Dirt, foreign materials or sediment
(Note: Castings define Contamination as retained material.)

- 多余的零件，（如：多余的螺栓螺母等）

Extra parts (i.e. extra fasteners）

- 涂层污染

Coating Contamination

异物控制的要求
Requirement of Contamination Control

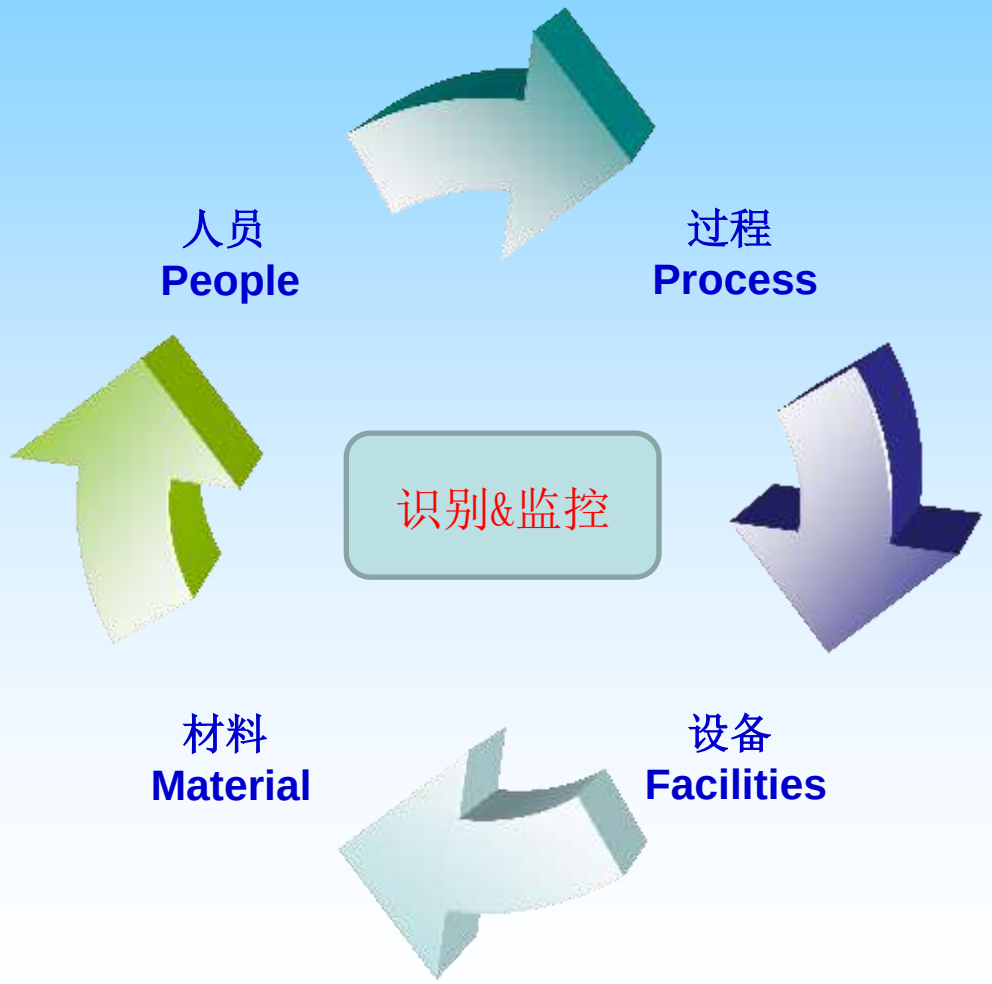
- 所有零件都必须符合 **SGM** 对清洁度和无异物的要求。每个 **GM** 分部都有具体规定。
  All parts must meet GM requirements for cleanliness and contamination. Specific requirements are specified by each GM division.

- 供应商必须在适用处制定用于异物控制的程序和作业指导书。规定所需的检验方法和频次，确保各种过程和设备符合其特有的功能。
  Suppliers shall have procedures and work instructions for Contamination Control where appropriate. Each manufacturing site shall define procedures for the method and frequency of checks required to ensure proper functionality of processes and equipment .

- 现场管理人员必须审核异物数据，确定必要的整改行动。
  Site leadership shall review contamination data to determine the necessary corrective actions.

- 与客户抱怨相关的异物问题必须采取整改行动。不符项应可通过 *“快速反应*”* 和 *“过程分层审核*”* 进行重点检查。
  Contamination related customer complaints shall require corrective actions. Non-compliance may be addressed through *Fast Response** and *Layered Process Audit** systems.

异物控制小组重点关注方面
Main areas of focus for the Contamination Control Team



人员
People

“灰尘自知” “Dirt Awareness”

所有工序都做到自主检查/清扫Self inspection/clean up on all operations

喷漆和电子产品制造应在洁净区域Clean area for paint and electronics manufacturing

传达相关的要求：Communicate expectations

– 只穿戴允许的服装
approved attire only

–明白并遵循个人物品的限制规定
understand and follow personal product restrictions

–禁止吃东西/喝饮料/抽烟
no Food/Drink/Smoking

–禁止在喷漆和表面处理区域出现含纤维的物品
如：报纸，纸巾，纸

– no fibrous materials in paint and coatings areas
i.e., newspapers, paper towels, cardboard, etc.

设备
Facility

– 针对异物源对所有过程和设备进行维护：

Facility maintenance relating to contamination sources in all process and equipment:

– 清洁 Cleaning
– 更换滤芯 Filter changes
– 平衡要求 Balance requirements

– 日常的卫生管理要求 General Housekeeping requirements.

– 表面处理，油漆，和电子产品区域的洁净间应关闭并密封

Clean Rooms for Coatings, Paint, and Electronic Areas closed and sealed.

– 适当的通风 Proper ventilation.

– 运输行走路线和入口的标识和控制

Identification and control of traffic patterns and access.

材料
Material

- 日常用品的存放和清洁（如：卡片板，纸，旧标签）
  Dunnage maintenance and cleaning (ex.: cardboards, papers, old labels)
- 外购材料或在制品的清洁（如：生锈腐蚀，表面覆盖异物，混料等）
  Purchased and in-process parts cleanliness (ex.: rust, coatings, mixed parts)
- 储存地的条件 （如：灰尘，温度，和湿度控制）
  Storage locations conditions (ex.: dust, temperature and humidity control)
- 适当的材料轮换
  Proper material rotation
- 零件搬运技术
  Part handling techniques
- 批准的修理工序必须使用与正常工序一样的工具：手套，面罩，拧紧设备。
  Approved repair operations must use the same tools designed for primary operation: gloves, masking, torque equipment.
- 不允许在线返修（磨，去毛刺，钻孔）。
  No repair (grinding, flash removal, tapping holes) permitted on line.
- 不要在装配线上手工清洁零件：不可用擦拭布、砂轮清洁打磨工件。
  Do not manually clean parts on assembly line: no Scotchbrite pads, sanding discs.

过程
Process

过程监控和分析 Process Monitoring and Analysis

–异物计数 (SPC, U-Charts)

–Contamination count (SPC, U-Charts

–严重异物问题的识别 (Pareto)

–Contamination identification (Pareto)

建立并维护异物参考手册并有范例

Establish and maintain a Contamination Reference Handbook with examples.

衡量结果

Measure results.

异物控制的要求
Requirement of Contamination Control

- 因异物问题引起的客户抱怨必须通过厂级交流形式与员工沟通：

Customer concerns due to contamination should be communicated to all employees using plant communications such as:

- 快速响应* 跟踪信息板，质量Q 图 *Fast Response** Tracking Board, Quality Q
- 质量警报，整改行动记录(如问题解决报告PPSR)
  Quality Alerts, Corrective Action documents (PPSR)
- 内部刊物，闭路电视 newsletters, closed-circuit television
- 经验教训* 数据库 *Lessons Learned** *Data Base*

- 异物敏感区必须明确标示给：

Areas sensitive to contamination shall be identified for:

- 员工 Employees
- 来访者 Visitors
- 卖方 （供应商）Vendors (Suppliers)

- 完成指定区域维护后，在生产区域张贴维护检查清单以表明该区域可以进行生产。

Post maintenance checklist after maintenance is done to designate area is fit for manufacturing

9. 异物控制
CONTAMINATION CONTROL

QSB

基于产品特点和工艺要求识别异物。
Identify Contamination based on part qualification and production process requirements.

在适合的地方建立异物控制程序和作业指导书。
Suppliers shall have procedures and work instructions for Contamination Control where appropriate.

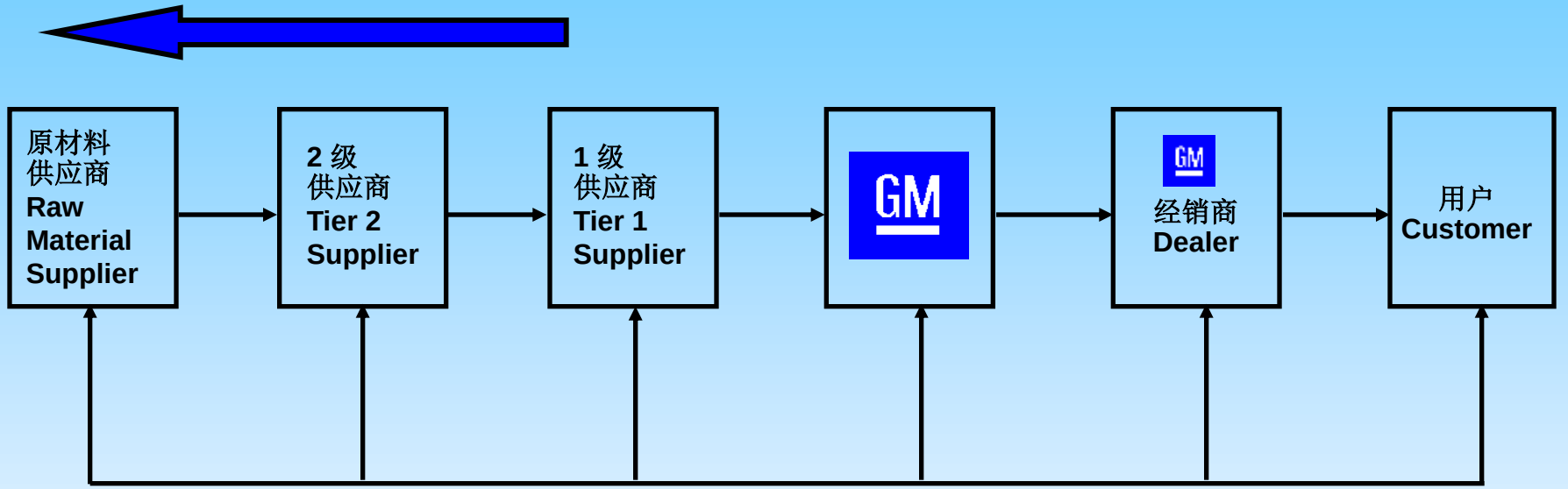
现场管理人员必须审核异物数据，确定必要的整改行动。
Site leadership shall review contamination data to determine the necessary corrective actions.

与客户抱怨有关的异物问题必须要求整改行动。
Contamination related customer complaints shall require corrective actions.

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

10. 供应链管理
SUPPLY CHAIN MANAGEMENT



供应链管理的目的：提供一个管理整个供应链中各级供应商的标准化的程序。

The purpose of Supply Chain Management is to provide a standard process for managing all of the supplier tiers in the supply chain.

供应链管理要求
Requirements of Supply Chain Management

• 使用各种工具对其战略性分供方的特殊要求进行识别和跟踪（**GP-12，GP-5或PCR/8D等**）
Use tools to identify and track requirements to their strategic suppliers (GP-12, compliance to GP-5, etc.)

• 开发各级供应商质量管理体系，符合 **ISO/TS16949** 要求（符合 **ISO9001: 2000** 是达到目标的第一步。 **ISO/TS16949: 2002 7.4.1.2**）。Develop Tier supplier quality management system with the goal of conforming to ISO/TS 16949. (conformity with ISO 9001: 2000 is the first step in achieving this goal. ISO/TS 16949: 2002 7.4.1.2)

• **建立专门的Supplier Quality团队管理供应商质量并推动其改进。** To Establish specialized Supplier Quality Team to manage supplier quality and push them to improve.

• **在供应链中交流 GM / SGM的期望和要求。** Communicate General Motors / Shanghai General Motors expectations and requirements to the supply chain.

供应链**必须**开发一个衡量其所有分供方业绩的系统。用来衡量的技术可以包括对供应链各级的评审 – QSB 审核，PCPA过程控制计划审核，PSA (潜在供应商评审）等。Supplier Chain shall develop a system to measure performance of all their suppliers. Techniques used to measure may include audits of the supply chain base – QSB audits, Process Control Plan Audit, PSA (Potential Supplier Assessments), etc.

供应链质量期望
Supply chain quality expectations

- 符合 **SGM** 质量方针。
  Compliance to GM quality guidelines.
- 开发供应链管理体系。
  Development of a supply chain management system.
- **Tier1** 需指导和监控关键二级分供方有效实施**QSB**工作。
  Tier1 must coach and monitor key tier2 to implement QSB.
- **Tier1** 需监控关键二级分供方质量表现。如每月质量数据统计以及不断改进。
  Tier1 must monitor key tier2 quality performance such as: quality data per month and CI.
- 数据指标如： **FTQ, PPM,** 内部/外部质量。
  Data metrics such as: FTQ, PPM, Internal/external quality.
- 持续改进朝着高质量和低成本方向努力。
  Continual improvements geared toward higher levels of quality and lower costs.

积极主动的过程！ A proactive approach!

10. 供应链管理
SUPPLY CHAIN MANAGEMENT

借鉴整车客户类似的方法系统管理分供方。
Use a system that manages your suppliers in a similar manner to that used by your customers to manage you.

使用管理工具，如：对问题的反馈，业绩指标，供应活动的评审，和问题解决工具。
Use management tools such as: response to issues, performance metrics, audit of supplier activities, and problem solving tools.

实施供应商评价和验证系统。
Implement a supplier measurement and validation system.

Key Strategies
关键策略

- 快速响应 Fast Response
- 不合格产品的控制 Control of Non-Conforming Product
- 验证岗位 Verification Station
- 标准化操作 Standardized Operations
- 标准化的操作工培训 Standardized Operator Training
- 防错验证 Error Proofing Verification
- 分层审核 Layered Process Audits
- 风险降低 Risk Reduction
- 异物控制 Contamination Control
- 供应链管理 Supply Chain Management
- 变更管理 Managing Change

变更管理的目的
Aim of Managing Change

- 有一个系统来管理工厂中所有的过程变更，确保变化的提前预防、全面准备及有效跟踪。

  Have a system to manage all plant process changes. Ensure that all changes can be well prevented, overall prepared and effectively tracked.

  计划的变更
  Planned Changes
  紧急的变更
  Unplanned Changes (Emergency)

- 在标准化沟通下，建立一个通用的试运行流程，完成变更后产品质量评审。

  Establish a common Trial Run process with standardized communication, readiness reviews and quality reviews.

- 执行一个受控的备库流程，改善备库品质量。

  Implement a controlled banking process. Improves quality of banked parts.

- 为临时替代生产流程定义可接受的最低要求。

  Define minimum requirements for bypassing existing production processes.

- 确保有一个系统的方法来适当的对变更点进行跟踪。

  Assures a systematic approach for suitable tracking of each change point.

变更管理的范围
Scope of Managing Change

- 可能影响最终产品的变更
  Changes that may affect the final product.
- 客户已经批准的生产设备和生产系统
  Machines and systems that have been approved by the Customer.
- 工厂中的手工和自动化岗位
  Manual and automated stations within the plant.
- 通过文件控制而受控的流程
  Controlled through a Document Control Process.

职责
Responsibility

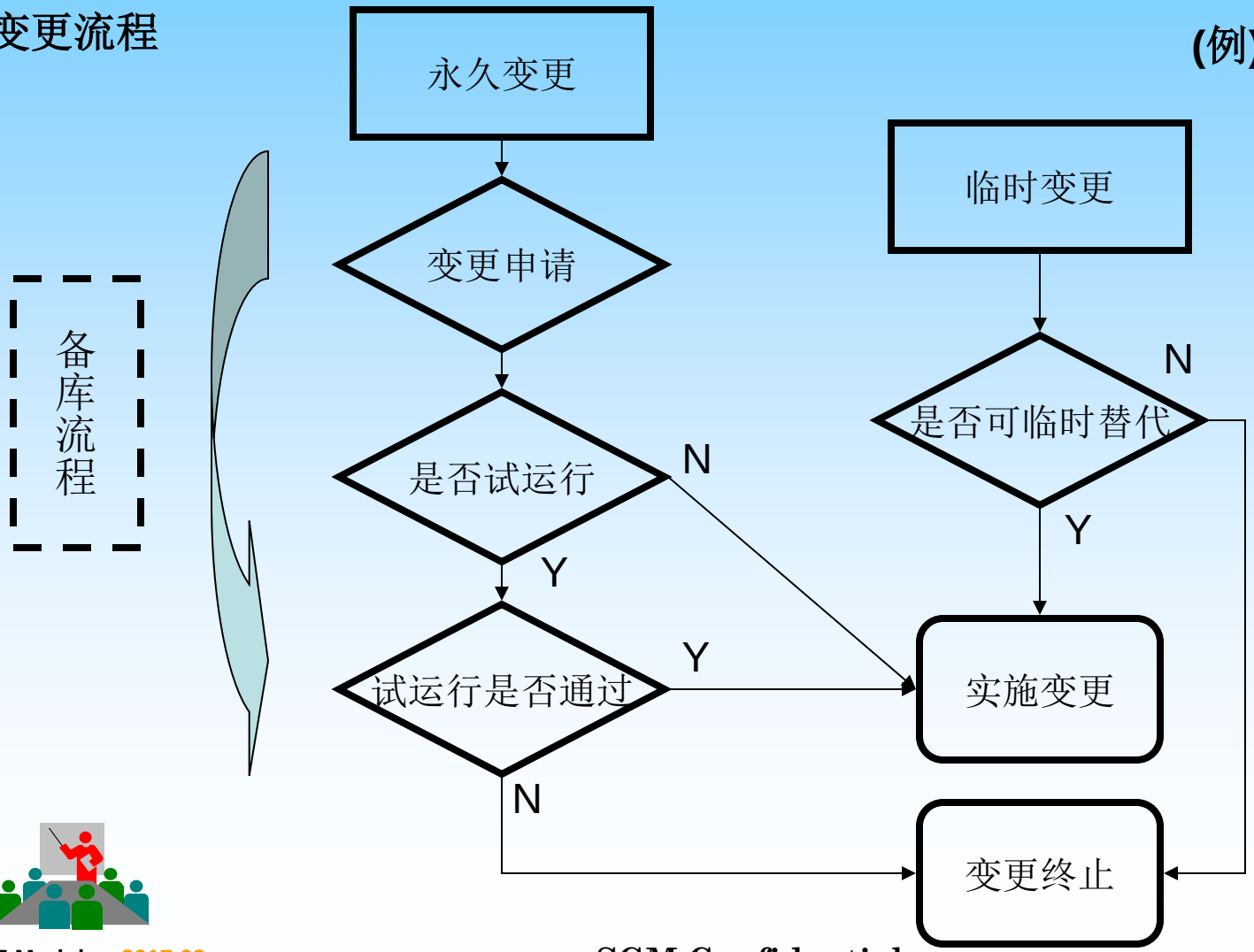
负责人：
Ownership

- 营运经理 Operations Manager
- 生产 / 技术经理 Manufacturing/Engineering Manager
- 质量经理 Quality Manager

变更流程
Change Process

变更流程

(例)example



变更流程
Change Process

所有供应商都应有一个控制工厂过程变更的程序，并确保：

All suppliers shall have a procedure for Plant Process Changes:

- 保留所有可能影响到最终产品或原客户认可的过程的变更记录，并通知客户。
  Maintain a record of all changes that may impact the final product and the process which customer approved. And inform the customer.

- 对不影响最终产品质量及非原客户认可过程但对过程可能有负面影响的系统变更确保其可追溯性。*（不合格品控制）*
  Track system changes that may have a negative impact on the process, but not necessarily on the final product quality.

- 在计划变更实施的过程中进行必要的备库，并通过审核*（分层审核）*确保备库产品的质量。
  Implement the banking process if necessary when planned change happen, and insure the banking parts' quality through the audit. (LPA)

(例) example

工厂过程变更请求表

Plant Process Change Request Form

Rev. Date: 10/5/07 — **PLANT PROCESS CHANGE REQUEST** — PPCR NO.

(ALL SHADED AREAS MUST BE COMPLETED) — CONTACT: EXT. 5-5391

SECTION 1: BACKGROUND INFORMATION

EMERGENCY PPCR? YES ☐ NO ☐ IF "YES", GIVE COPY TO QUALITY

PART NAME(S) IMPACTED

Manufacturing Process Bypassed? ☐ YES ☐ NO — IF "YES", COMPLETE Manufacturing Process Backup Worksheet (in S:\ECO\FORMS)

MODEL YEAR AND APPLICATION

PART #(S) IMPACTED

DATE INITIATED

MFG. DEPT(S) IMPACTED OPERATION / STATION #

(IF EMERGENCY, TIME ALSO REQUIRED)

PLANNED CHANGE DATE

OPPORTUNITY / PROBLEM STATEMENT:

DESCRIPTION OF CHANGE/EMERGENCY REACTION PLAN:

WHAT IS THE AIM OF THIS CHANGE? WHY SHOULD WE WORK ON THIS NOW?

EXPLAIN THE METHOD BY WHICH PROPER OPERATION WILL BE VERIFIED:

INITIATOR NAME

INITIATING DEPARTMENT

CHANGE LEADER NAME (if different than initiator)

AREA MGR. SIGN. (EMER. ONLY)

SECTION 2: DETERMINE IF CHANGE REQUIRES PDT/CIT-LEVEL OR PPAP REVIEW AND APPROVAL

CHECK ANY OF THE FOLLOWING THAT MAY BE APPLICABLE:

☐	CM, P	A NEW PART OR PRODUCT (i.e. A SPECIFIC PART, MATERIAL OR COLOR NOT PREVIOUSLY SUPPLIED TO THE SPECIFIC CUSTOMER).
☐	CM, P	PRODUCT MODIFIED BY AN ENGINEERING CHANGE TO DESIGN RECORDS, SPECIFICATIONS OR MATERIALS.
☐	CM, P	USE OF ANOTHER OPTIONAL CONSTRUCTION OR MATERIAL THAN WAS USED IN THE PREVIOUSLY APPROVED PART.
☐	CM, P	PRODUCTION FOLLOWING ANY CHANGE IN PROCESS OR METHOD OF MANUFACTURE WHERE, IN THE JUDGEMENT OF TECHNICAL EXPERTS, THE POTENTIAL EXISTS TO IMPACT PRODUCT INTEGRITY (e.g. MATERIAL PROPERTIES, SURFACE FINISH ... ETC.).
☐	P	PRODUCTION FOLLOWING ANY CHANGE IN PROCESS OR METHOD OF MANUFACTURE.
☐	P	CORRECTION OF A DISCREPANCY ON A PREVIOUSLY SUBMITTED PART.
☐	P	PRODUCTION FROM TOOLING AND EQUIPMENT TRANSFERRED TO A DIFFERENT PLANT LOCATION OR FROM AN ADDITIONAL PLANT LOCATION.
☐	P	PRODUCTION FOLLOWING REFURBISHMENT OR REARRANGEMENT OF EXISTING TOOLING OR EQUIPMENT.
☐	P	CHANGE IN SOURCE FOR SUBCONTRACTED PARTS, MATERIALS, DUNNAGE OR SERVICES (e.g. HEAT-TREATING, PLATING, PAINTING, ETC.)
☐	P	PRODUCT RE-RELEASED AFTER TOOLING HAS BEEN INACTIVE FOR VOLUME PRODUCTION FOR TWELVE MONTHS OR MORE.
☐	P	FOLLOWING A CUSTOMER REQUEST TO SUSPEND SHIPMENT DUE TO A SUPPLIER QUALITY CONCERN.
☐	P	PRODUCTION FROM NEW OR MODIFIED TOOLS (EXCEPT PERISHABLE TOOLS), DIES, MOLDS, PATTERNS ... ETC., INCLUDING ADDITIONAL OR REPLACEMENT TOOLING.

☐ NO ITEMS APPLICABLE ☐ CHANGE ALREADY PDT/CIT APPROVED

IF YOU CHECKED ANY "CM" ITEM(S): 1) DO NOT CONTINUE TO SECTION 3 UNTIL FURTHER NOTIFIED BY YOUR PDT/CIT LEADER. 2) FORWARD THIS SHEET TO THE MANUFACTURING ENGINEERING CLERK.

IF YOU CHECKED ONLY "P" ITEM(S): CONTINUE TO SECTION 3. COMPLETE PPAP SECTION (MANDATORY).

Rev. Date: 10/5/07 — **PLANT PROCESS CHANGE REQUEST** — PPCR NO.

SECTION 3: DETERMINE WHICH FUNCTIONAL GROUPS NEED TO RESPOND TO THIS CHANGE

CHECK ANY ITEMS THAT MAY BE APPLICABLE / IMPACTED: — RESPONSE DUE DATE:

SAFETY: CONTACT: SIGNATURE:
- ☐ GUARDING
- ☐ OTHER
- ☐ WORK-FIT INSTRUCTIONS

MANUFACTURING: CONTACT: SIGNATURE:
- ☐ MAINTENANCE
- ☐ MANUFACTURING INSTRUCTIONS
- ☐ PRODUCTION MONITORING

MANUFACTURING ENGINEERING: CONTACT: SIGNATURE:
- ☐ PROCESS ROUTING
- ☐ TOOLING AND DRAWINGS
- ☐ PROCESS CONTROL PLAN
- ☐ ERROR PROOFING
- ☐ PROCESS PARAMETERS
- ☐ PFMEA
- ☐ MACHINE DRAWINGS (MECH/ELECT)
- ☐ GAGE CHECK SHEET
- ☐ GAGE (DRAWING, PLAN)
- ☐ CMM (DRAWING, FIXTURES)
- ☐ FLOAT SHEETS
- ☐ PROCESS FLOW DIAGRAM

TOOLING ENGINEERING: CONTACT: SIGNATURE:
- ☐ CUTTING TOOLS & DRAWINGS
- ☐ CNC PART PROGRAM
- ☐ TOOL ROUTING

INDUSTRIAL ENGINEERING: CONTACT: SIGNATURE:
- ☐ WORKPLACE LAYOUT
- ☐ TAKT TIME / LABOR CONTENT
- ☐ DUNNAGE (INTERNAL & EXTERNAL)
- ☐ MATERIAL HANDLING
- ☐ ANDON SIGNALING SYSTEM
- ☐ ENGINE SEQUENCING SYSTEM
- ☐ CYCLE TIME (PART TO PART)
- ☐ ERGONOMICS
- ☐ JOB DESIGN (METHOD CHANGE)
- ☐ JOB INSTRUCTIONS (SWC/SOS/STS/JES)
- ☐ STANDARDIZED WORK VIDEO
- ☐ GAGE/TOOL CHG/COMP. FREQ.
- ☐ VISUAL CONTROLS

PLANT ENGINEERING: CONTACT: SIGNATURE:
- ☐ ELECTRICAL/CONTROLS
- ☐ RELOCATION/REARRANGEMENTS
- ☐ SOFTWARE INSTALLATION/REMOVAL
- ☐ WASHER PARAMETERS/CHEMICALS
- ☐ COOLANTS/FILTRATION

ENVIRONMENTAL ENGINEERING: *FOR QUESTIONS ON ASSESSING ENVIRONMENTAL IMPACT, CONTACT ENVIRONMENTAL ENGINEER.*
CONTACT: SIGNATURE:
IS THERE AN ENVIRONMENTAL IMPACT? YES ☐ NO ☐

TRAINING: CONTACT: SIGNATURE:
- ☐ WORK REFERENCE STATION
- ☐ INTEGRATED TASK PROCEDURES
- ☐ OEM / SUPPLIER
- ☐ SYSTEM LEVEL JOB AIDS
- ☐ TASK/STATION LEVEL JOB AIDS
- ☐ TRAINING MODULES
- ☐ CHECKLISTS
- ☐ OTHER

PRODUCTION CONTROL & LOGISTICS: CONTACT: SIGNATURE:
- ☐ BREAK-POINT REQUIRED
- ☐ DELIVERY ROUTES
- ☐ MATERIAL PARTS LIST
- ☐ MATERIAL PULL SYSTEM
- ☐ ADDRESS SYSTEM
- ☐ SUPPLIER DUNNAGE
- ☐ SUPPLIER PACKAGING

IS&S: CONTACT: SIGNATURE:
IS THERE AN IMPACT ON IS&S? YES ☐ NO ☐

QUALITY / RELIABILITY:
- ☐ GAGES (EQUIPMENT, PROGRAMS) CONTACT: SIGNATURE:
- ☐ CMM'S (EQUIPMENT, PROGRAMS) CONTACT: SIGNATURE:
- ☐ MATERIAL SPECIFICATIONS CONTACT: SIGNATURE:
- ☐ STATISTICAL VERIFICATION CONTACT: SIGNATURE:
- ☐ QUALITY SYSTEM CONTACT: SIGNATURE:

PPAP (PRELIMINARY REVIEW): CONTACT: SIGNATURE:
- ☐ CUSTOMER'S EASE OF ASSEMBLY
- ☐ ERROR PROOFING AUDIT
- ☐ CUSTOMER'S AUDITS/TESTS
- ☐ DUNNAGE/PACKAGING
- ☐ CUSTOMER'S PROCESS OR TOOLING CONTROL PLAN (INSP. METH./FREQ.)

IMPORTANT:
1. THIS SECTION REQUIRES SIGN-OFF IF ANY OF THE ABOVE ITEMS OR IF ANY OF THE "P" ITEMS FROM SECTION 2 APPLY.
2. AFTER CONTACTING THE SQA, FORWARD THIS FORM AND A PPAP WARRANT TO THE SQA, AS APPLICABLE.
3. THE SQA IS TO SIGN THIS SECTION AS APPROVAL OF ALL REVIEWED PRE-IMPLEMENTATION PLANS FOR FULFILLING PPAP REQTS.

ADVISE PRODUCTION OF IMPENDING CHANGE? YES ☐ CONTACT:

SECTION 3 REVIEW FOR APPROVAL — THIS AREA IS FOR USE BY CHANGE LEADER'S SUPERVISOR ONLY

APPROVED BY: PRINT NAME SIGN DATE
(LEADER'S GENERAL SUPERVISOR OR SUPERINTENDENT)

SECTION 4: OTHER INSTRUCTIONS / COMMENTS

SECTION 5A: TO IMPLEMENT — PPAP WARRANT APPROVED (IF APPLIC.) ☐

THIS AREA IS FOR USE BY CHANGE LEADER'S SUPERVISOR ONLY

APPROVED BY: PRINT NAME SIGN DATE
(LEADER'S GENERAL SUPERVISOR OR SUPERINTENDENT)

THIS AREA IS FOR USE BY CHANGE LEADER (MANUFACTURING) ONLY

APPROVED BY: PRINT NAME SIGN DATE
(MANUFACTURING GENERAL SUPERVISOR OR SUPERINTENDENT)

POST-IMPLEMENTATION — SIGNATURE BY CHANGE LEADER

ACTUAL IMPLEMENTATION DATE — BREAKPOINT (IF APPLIC.) (USE ENG. # OR DATE)

SECTION 5B: FINAL APPROVAL

THIS AREA IS FOR USE BY CHANGE LEADER'S SUPERVISOR ONLY

APPROVED BY: PRINT NAME SIGN DATE
(LEADER'S GENERAL SUPERVISOR OR SUPERINTENDENT)

THIS AREA IS FOR CUSTOMER (MANUFACTURING) USE ONLY

APPROVED BY: PRINT NAME SIGN DATE
(MANUFACTURING GENERAL SUPERVISOR OR SUPERINTENDENT)

试生产（PTR） 流程
Production Trial Run (PTR) process

供应商内部应该建立并利用一个规定好的PTR流程，此流程可提供以下要素以确保PTR的成功执行：

Suppliers shall establish and utilize a defined PTR process that provides the following elements to ensure successful PTR execution:

- 标准化的沟通和记录Standardized Communication and Documentation
- 变更准备评审Build Readiness Reviews
- 变更前后的质量评审Quality Reviews before and after the change

一个有效PTR流程的关键要素：

Key elements of an Effective PTR Process:

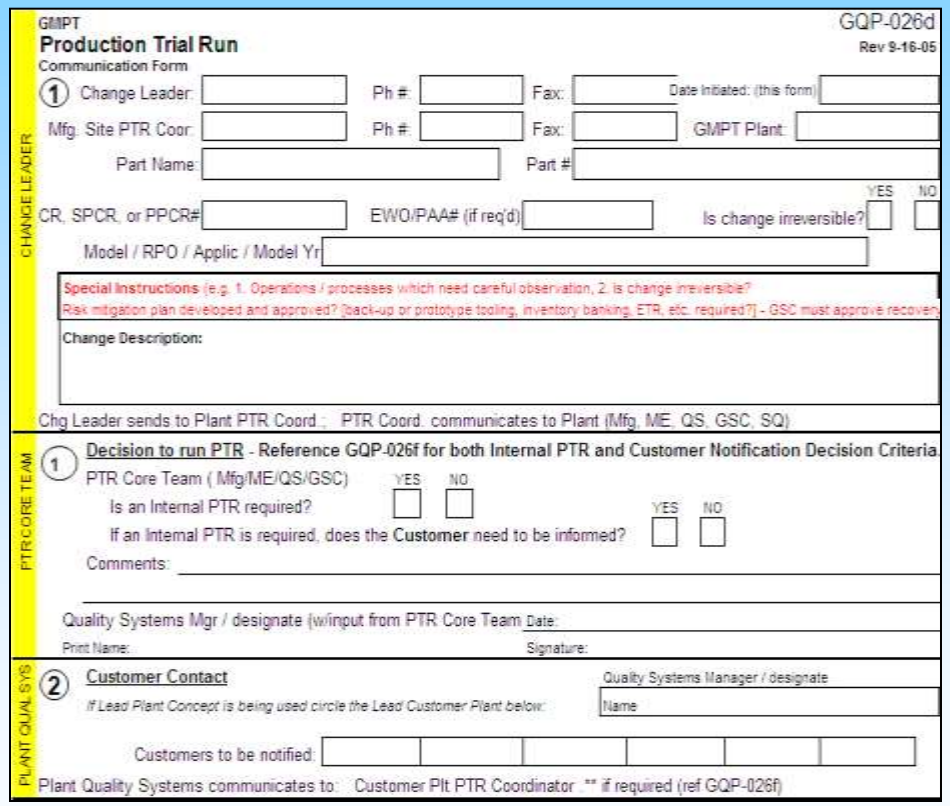
- PTR是有限的、受控的，并且包含在进行量产前用于评估变更的试生产。A PTR is a limited , controlled and contained production tryout used to evaluate a change prior to full production implementation.
- PTR可在正常生产环境下确认一个变更的可制造性。The PTR confirms the manufacturability of a change within the normal production environment.
- PTR不是产品确认流程的替代品或扩展。The PTR is not a substitute or extension of the product validation process.
- 必须有一个书面的程序和流程图来定义PTR流程和要求。A written procedure and flow chart shall define the PTR process and requirements.

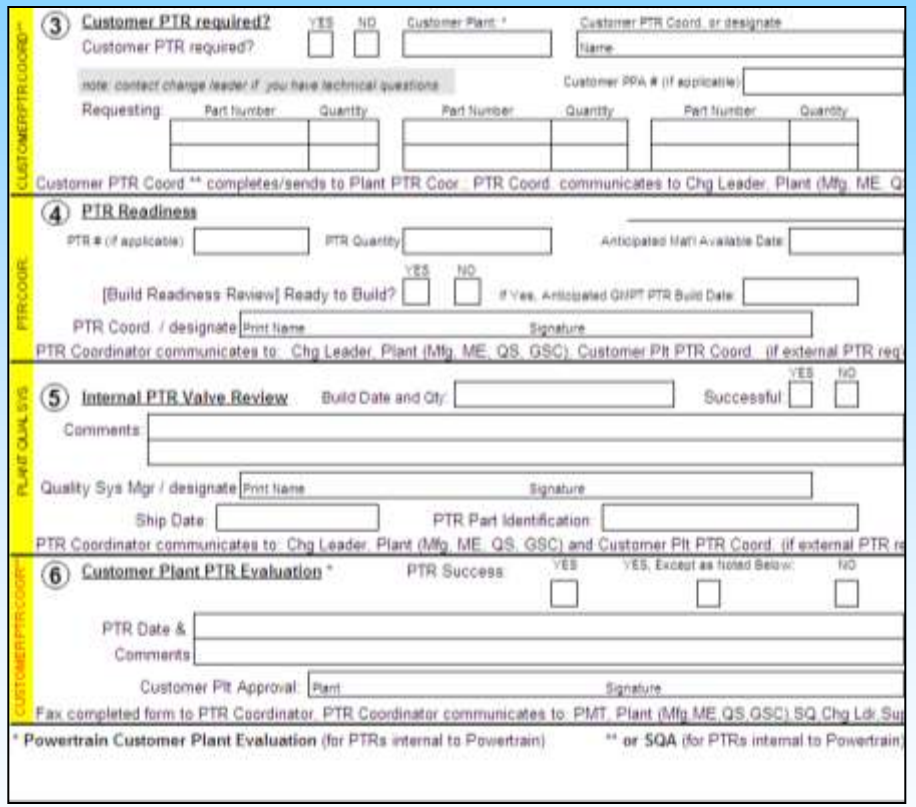
试生产表

（例）

表的上半部

表的下半部





临时替代流程
Bypass Process

针对任何超出批准的控制计划的过程紧急变更(如检具问题、扭矩枪替代等），供应商内部应事先制定一个临时替代控制程序，并包括以下要素：

Any time the bypass process is altered outside the approved documented control plan(Torque gun failures, gaging turned off), suppliers shall establish a Bypass Process Control procedure that:

- 为临时替代生产工艺过程定义最低可接受标准。

  Defines the minimum requirements for bypassing an existing manufacturing process.

- 当退出临时替代时，对原来的工艺过程定义验证要求。

  Defines minimum requirements for verification of the original process when exiting the bypass.

- 建立Bypass清单以及替代方法。

  Establish bypass lists and methods.

临时替代流程（续）
Bypass Process

临时替代控制程序的关键要素：

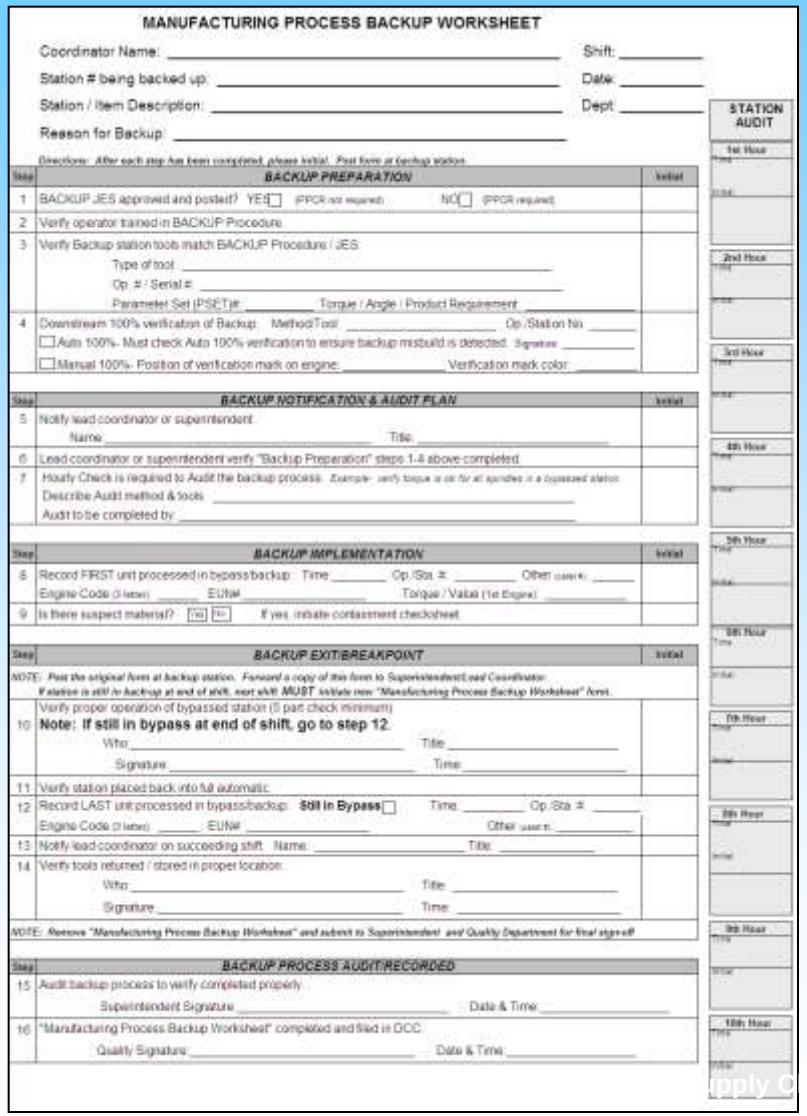
- 临时替代生产工艺过程和控制手段必须获得营运经理、工程经理和质量经理批准。The process methods/controls defined for bypassing an existing manufacturing process are approved by the Operations Manager, the Engineering Manager and the Quality Manager.
- 临时替代的开始和结束的断点必须被记录下来。Starting and ending breakpoints are recorded.
- 更新PFMEA和控制计划。对临时替代进行必要的验证。*（验证岗位）*The PFMEA and Control Plan include the bypass process. Add check event into verification station.
- 结束临时替代流程重新开始原有过程之前，原有过程参数和设置必须被验证，并试做一部分产品来确认，最后由营运经理、工程经理和质量经理批准来启动原有流程。Before return to the original process, after Bypass, the process parameters and settings are verified and a pre-established quantity of parts are validated.

（例）

《临时替代岗位工作记录表》

这个文件是用来记录：
This document is a record that documents:

- 进入和退出**临时替代**的断点 breakpoints of entering and exiting the by-pass process
- 确定工具工装、检验和审核的要求 identifies tooling, inspection, and audit requirements
- 定义**临时替代**的验证方法 identifies validating method of bypass process



MANUFACTURING PROCESS BACKUP WORKSHEET

Coordinator Name: _____ Shift: _____

Station # being backed up: _____ Date: _____

Station / Item Description: _____ Dept: _____

Reason for Backup: _____

STATION AUDIT

Step	BACKUP PREPARATION	Initial
1	BACKUP JES approved and posted? YES☐ (PPCR not required) NO☐ (PPCR required)	
2	Verify operator trained in BACKUP Procedure	
3	Verify Backup station tools match BACKUP Procedure / JES: Type of tool: _____ Op. # / Serial #: _____ Parameter Set (PSET)#: _____ Torque / Angle / Product Requirement: _____	
4	Downstream 100% verification of Backup: Method/Tool: _____ Op./Station No. _____ ☐ Auto 100%- Must check Auto 100% verification to ensure backup mistuild is detected. Signature: _____ ☐ Manual 100%- Position of verification mark on engine: _____ Verification mark color: _____	

Step	BACKUP NOTIFICATION & AUDIT PLAN	Initial
5	Notify lead coordinator or superintendent Name: _____ Title: _____	
6	Lead coordinator or superintendent verify "Backup Preparation" steps 1-4 above completed	
7	Hourly Check is required to Audit the backup process. Example- verify torque is ok for all spindles in a bypassed station Describe Audit method & tools: _____ Audit to be completed by: _____	

Step	BACKUP IMPLEMENTATION	Initial
8	Record FIRST unit processed in bypass/backup: Time _____ Op./Sta. # _____ Other (specify): _____ Engine Code (3 letter): _____ EUW: _____ Torque / Value (1st Engine): _____	
9	Is there suspect material? Yes No If yes, initiate containment checksheet	

Step	BACKUP EXIT/BREAKPOINT	Initial
	NOTE: Post the original form at backup station. Forward a copy of this form to Superintendent/Lead Coordinator. If station is still in backup at end of shift, next shift MUST initiate new "Manufacturing Process Backup Worksheet" form.	
10	Verify proper operation of bypassed station (5 part check minimum) **Note: If still in bypass at end of shift, go to step 12** Who: _____ Title: _____ Signature: _____ Time: _____	
11	Verify station placed back into full automatic	
12	Record LAST unit processed in bypass/backup: **Still in Bypass**☐ Time _____ Op./Sta. # _____ Engine Code (3 letter): _____ EUW: _____ Other (specify): _____	
13	Notify lead coordinator on succeeding shift. Name: _____ Title: _____	
14	Verify tools returned / stored in proper location Who: _____ Title: _____ Signature: _____ Time: _____	
	NOTE: Remove "Manufacturing Process Backup Worksheet" and submit to Superintendent and Quality Department for final sign-off	

Step	BACKUP PROCESS AUDIT RECORDED	
15	Audit backup process to verify completed properly Superintendent Signature: _____ Date & Time: _____	
16	"Manufacturing Process Backup Worksheet" completed and filed in DCC Quality Signature: _____ Date & Time: _____	

变更状态跟踪
Change status tracking

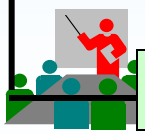
发生变更前后进行跟踪确认和适当的对策是非常必要的。

It's necessary to do the suitable tracing of any changes.

变化点－人、设备、材料、方法、产量等方面的变更发生点。

Change point-man, machine, material, method, output.

- 人员
  - 操作的人有变化（新操作者或轮岗）
- 设备
  - 工艺过程的设备发生变更（例：换新设备）
  - 长假连续休息结束后
  - 夹具、模具、设备更换或修理后
- 物料
  - 设计变更（例：产品形状、材料、尺寸变更等）
  - 零部件供应商变更（首件）
  - 批量的零件进行了异常处置时（返工、修正）
- 方法
  - 工艺步骤发生变化
  - 检查项目发生变化
  - 计量器具方法发生变化
- 产量
  - 产量或节拍有很大变动时



变更状态跟踪
Change status tracking

系统针对变化作出相应的对策：

System makes countermeasure according to any change point:

- 将过去24小时的紧急变更及计划实施的永久变更在快速响应会议最末与组织进行信息沟通。包括断点、识别方法、系统的变化。 *（快速响应）*

  Any changes should be reviewed at end of daily fast response meeting.

- 在分层审核中增加各区域对当日变更内容的审核项目。 *（分层审核）*

  Add item of daily change point into LPA.

- 变更实施中，在验证岗位增加相应的审核内容。 *（验证岗位）*

  Add verification station of change point.

- 在变更实施前进行必要的人员培训。 *（标准化操作工培训）*

  Doing necessarily operator training before change implementation.

- 预先为变更可能出现的问题制定遏制措施。 *（不合格品控制）*

  Establish containment for possible problem in advance.

变更状态跟踪
Change Status Tracking

生产现场进行目视化的变更展示
To lay out the changes visually on the spot

有变化点发生阶段在班组看板公布

班组变更看板

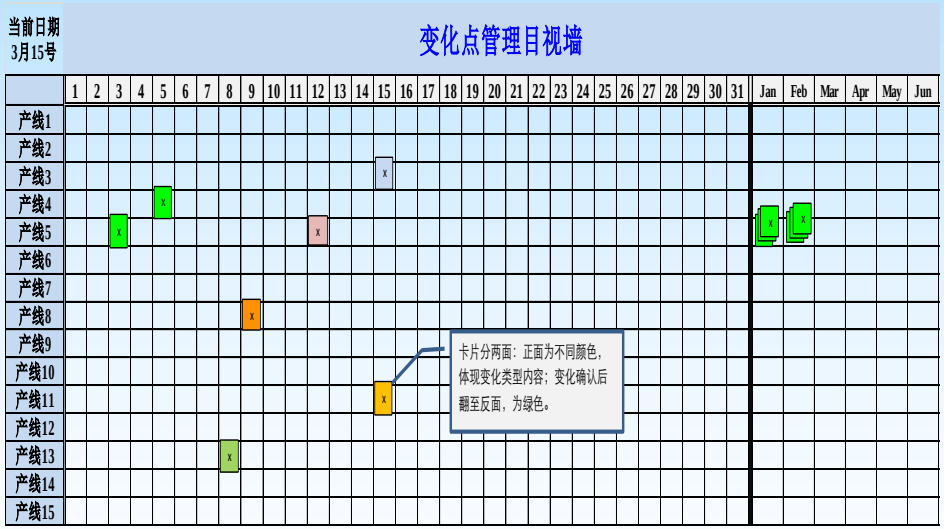
人员　　设备　　材料　方法　产量

在具体工位上进行提醒
To caution on the spot

警示

OP 10

对变化点的内容及措施通过表单跟踪确认




变化点管理看板

➢ 变化点管理目视板（例）


变化点
01-01-001
人
变化内容
优先级
确认
1 新人培训 高
2 员工轮岗培训 高
3 外部门人员实习 高
4 跨平台轮岗 中
变化点
01-01-001
机
变化内容
优先级
确认
1 设备增加、移位、改造 高
2 机运线参数调整 高
3 设备保养（PM） 中
4 焊接参数调整 高
5 设备故障/应急维修 高
6 工装调整 高
7 更换定位销 中
8 扭力扳手维护/更换（电动/气动） 高
9 手动工具（工装/夹具）改造/更换 中
10 检具改造 中
变化点
01-01-001
料
变化内容
优先级
确认
1 项目物料 高
2 PTR物料 中
3 PAA物料 高
4 物料装配工位调整 高
5 物料断点（BP） 高
变化点
01-01-001
法
变化内容
优先级
确认
1 SOS内容更改 高
2 JIS内容更改 高
3 临时操作变化（BACK UP方案等） 中
4 短期措施 中
5 PAA需要方法改变 高
6 在线质量问题控制措施 中
变化点
01-01-001
环
变化内容
优先级
确认
1 工位布置变化 高
2 工位改造 高
3 天气突变/温度变化 中
4 SHUT DOWN 高
5 产量/工作时间变化 中
6 线速度(JPH)调整 高

➢ 变化点跟踪记录板（例）

XXX Plant 变化点跟踪记录清单

工段名称	T-CAR分拼工段

变化点的内容				变化点的控制		变化点的验证							
开启日期	工位号	变化类型	变化点具体内容	是否高等级变化点	控制/验证方法	验证结果			库存及断点信息	关闭日期	工段长签名	值班经理确认结果	值班经理签名
						第一次	第二次	增加检查					
2009/2/6	BSL20	料	A柱加强件PTR验证		使用正确零件；生产验证，记录起止断点车号	O	O				张三		
						O	O				李四		
						O	O			2010/2/7	刘五		
2009/2/6	ER20	人	新员工培训	✓	安全培训、带教师傅岗位带教、班组长工段长跟踪检查	X	O	O		2009/2/13	张三	O	王一

11. 变更管理 MANAGING CHANGE

建立一个工厂过程变更程序，并进行必要的备库流程。

Establish and implement a Plant Process Change procedure. Implement a Banking Process if it's necessary.

事先建立一个临时替代控制程序。

Establish a proactive Process Bypass Control procedure.

运用一个规定好的试生产（PTR）程序。

Utilize a defined Production Trial Run (PTR) procedure.

适当地对变化点进行跟踪（目视化）。

Suitable tracking of each change point.

建立快反会议review变化点状态机制。

To set up the mechanism about that the change points shall be reviewed in Fast Response meeting.