

汽车离散制造解决方案介绍



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提纲



- 1) 公司介绍
- 2) 软件架构
- 3) 厂级MES功能介绍
- 4) MES项目执行
- 5) Q&A

群石公司简介

- 一家致力工业自动化软件及智能制造的软件解决方案供应商
- 业务：智能制造（IMS）与制造执行系统（MES）软件平台开发与应用、生产运营管理咨询、生产运营管理信息系统规划与集成
- 目标客户：制造企业、智能制造系统咨询公司、智能制造设备提供商
- 技术咨询、技术服务、系统软件、工程项目执行
- 优势定位：
 - 国际化领先的智能制造平台与技术支撑
 - 拥有自主知识产权的自主MES系统软件平台
 - 深刻的行业背景和实际应用经验
 - GE授权服务提供商
 - 15+年生产运营管理咨询、信息系统规划与系统集成经验
 - 众多行业领先的成功案例
 - 用软件平台来固化知识与业务流程，降低对应用、开发人员的依赖，从而带来竞争力

公司简介

- 公司成立于**2015**年，当年即获得**GE**授权成为其在大中华区解决方案提供商
- 公司同时致力于本地化智能制造应用平台的研发，用于匹配**MES**平台的前端应用和客户定制化需求，**B/S、Mobile**前端组态配置式开发、应用
- 软件平台的成熟，以平台固化运营模型和业务流程
 - 提升项目交付质量
 - 提高项目交付效率
 - 降低项目交付成本
 - 降低对团队技术经验的要求

公司技术团队曾经实施项目案例

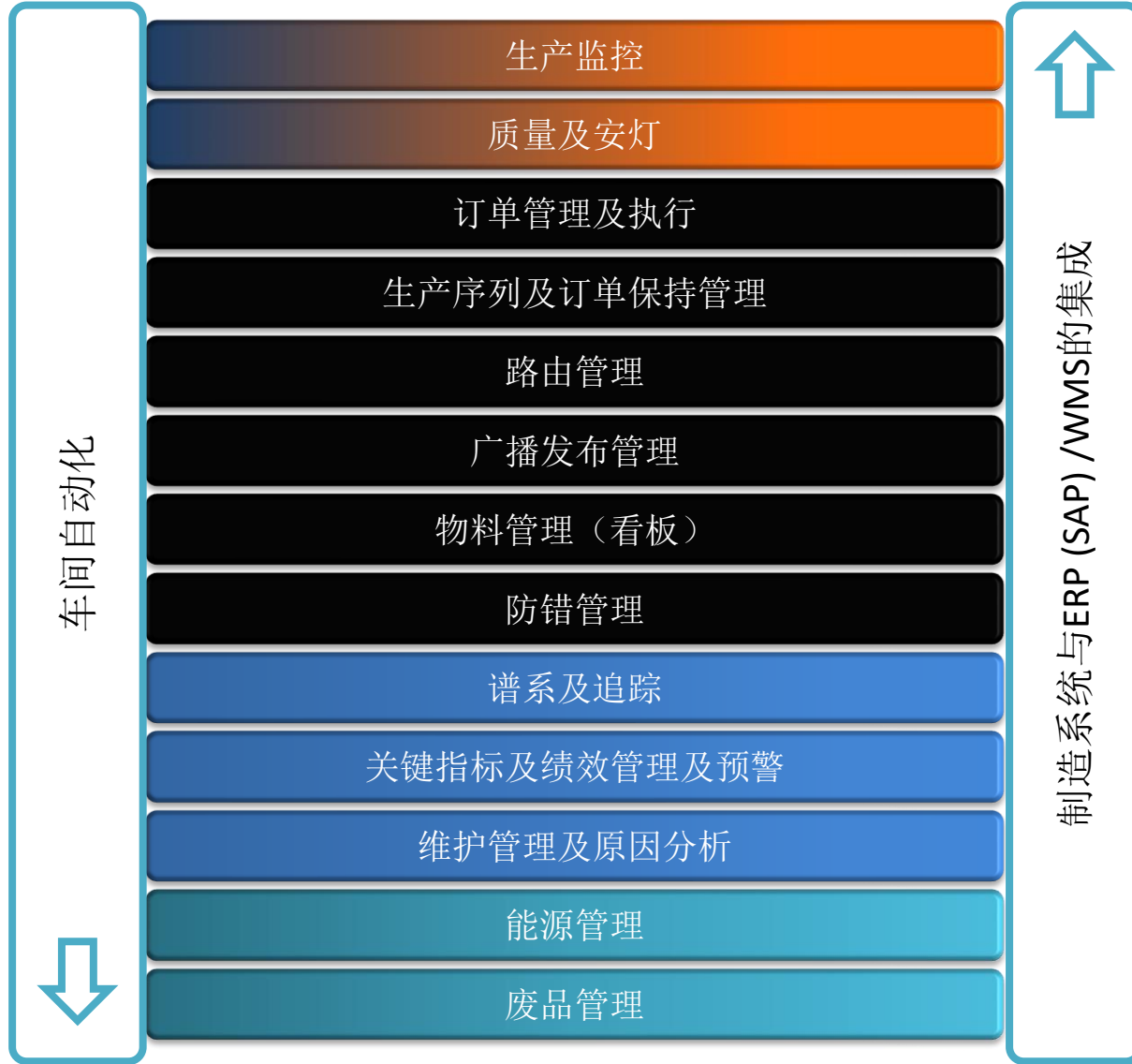
1	吉利汽车MES（宁波北仑基地）	包含焊装、涂装、总装
2	奇瑞汽车MES（芜湖总部基地）	冲压，焊装、涂装、总装--17工厂基地内跨厂车身调拨
3	FAW解放卡车总装厂MES	总装
4	长城汽车天津工厂MES	包含焊装、涂装、总装
5	上海通用汽车烟台动力总成PMC&ANDON	机加、装配
6	VOLVO路桥工厂物料 拉动	总装厂
7	精博电子MES	SMT，装配
8	中科泰雷兹	插件，装配
9	上海汽车临港基地总装厂PMC	总装
10	广东万和新电气集团MES	总装MES 7 生产基地
11	熊猫装备机器人生产线MES	装配
12	金猫装备机器人生产线MES	装配
13	西门子苏州工厂接触器生产线	装配
14	舒适刀片（广州）工厂MES	注塑，钣金，压铸
15	施耐德电气厦门工厂Jarrah生产线MES	装配
16	GE贝克休斯新华工厂MES	装配
17	苏伊士水处理技术（无锡）工厂	设备装配车间、过滤膜生产车间、药剂生产车间
18	百威英博能源管理系统（7工厂）	啤酒工厂
19	伊利乳业追溯系统（肇东）	收奶，前处理，包装
20	蒙牛乳业（唐山）追溯系统	收奶，前处理，包装
21	蒙牛乳业（太原）追溯系统	收奶，前处理，包装
22	三元乳业北京工业园MES	收奶，前处理，包装
23	中国印钞造币总公司昆山印钞厂MES	造纸
24	维达纸业MES	造纸

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汽车行业厂级制造执行系统应用功能



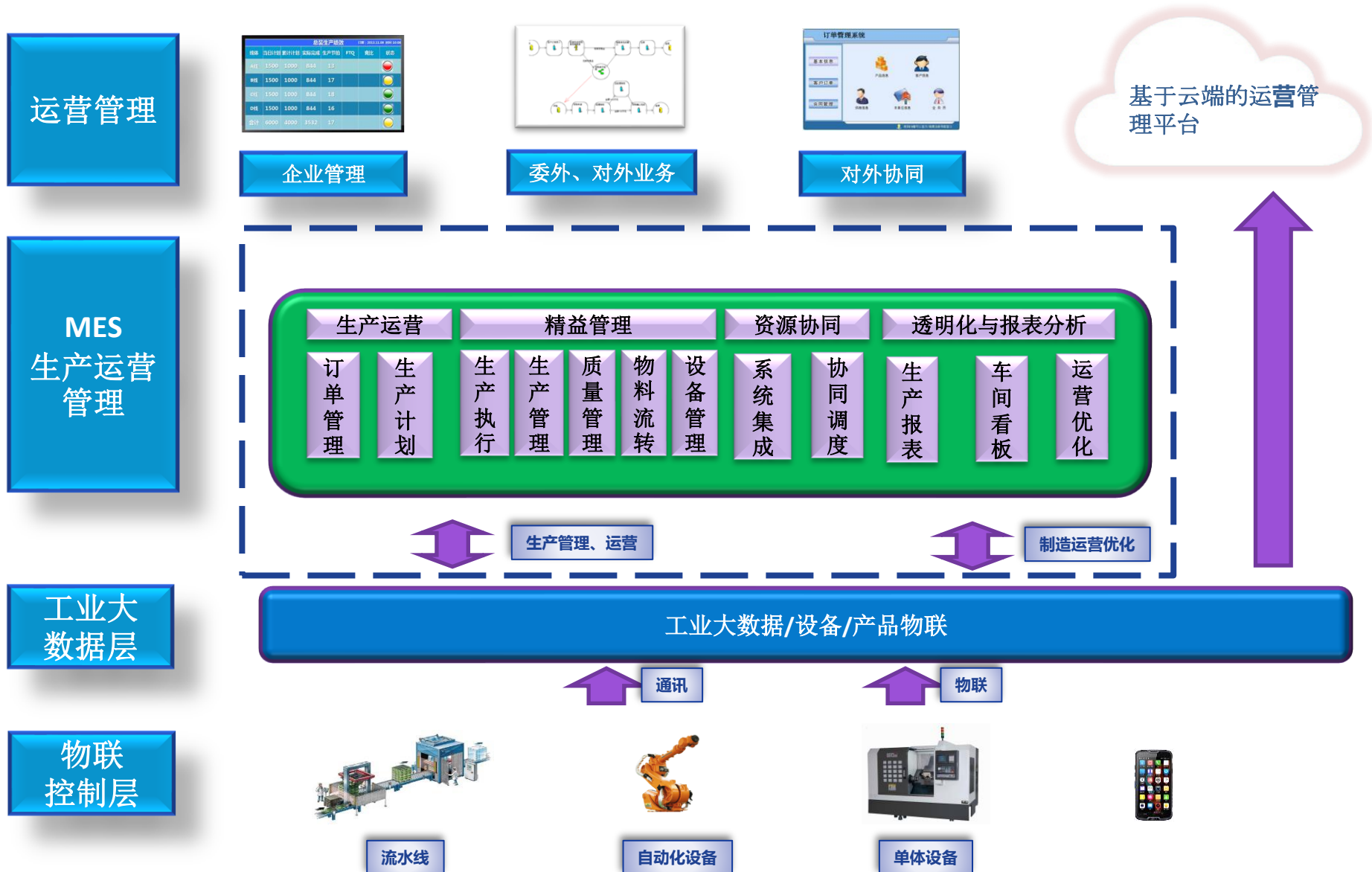
功能关键指标矩阵

关键指标	生产监控	质量及安灯	订单管理及执行	生产队列及订单管理	人员计划	广播发布管理	物料管理	防错管理	谱系及追踪	关键指标绩效管理及预警	维护管理及原因分析	能源管理	废品管理
OEE 设备综合效率	✓	✓	✓	✓				✓	✓	✓	✓		✓
Manpower Costs 人力成本			✓	✓	✓						✓		
Margin/vehicle 利润/车辆			✓	✓	✓		✓	✓		✓	✓	✓	✓
Hours/vehicle 小时/车辆	✓		✓	✓	✓		✓			✓			
WIP Inventory 在制品库存			✓	✓		✓	✓		✓				✓
Inventory /Asset Turns 库存/资产回报率	✓		✓	✓		✓	✓		✓				

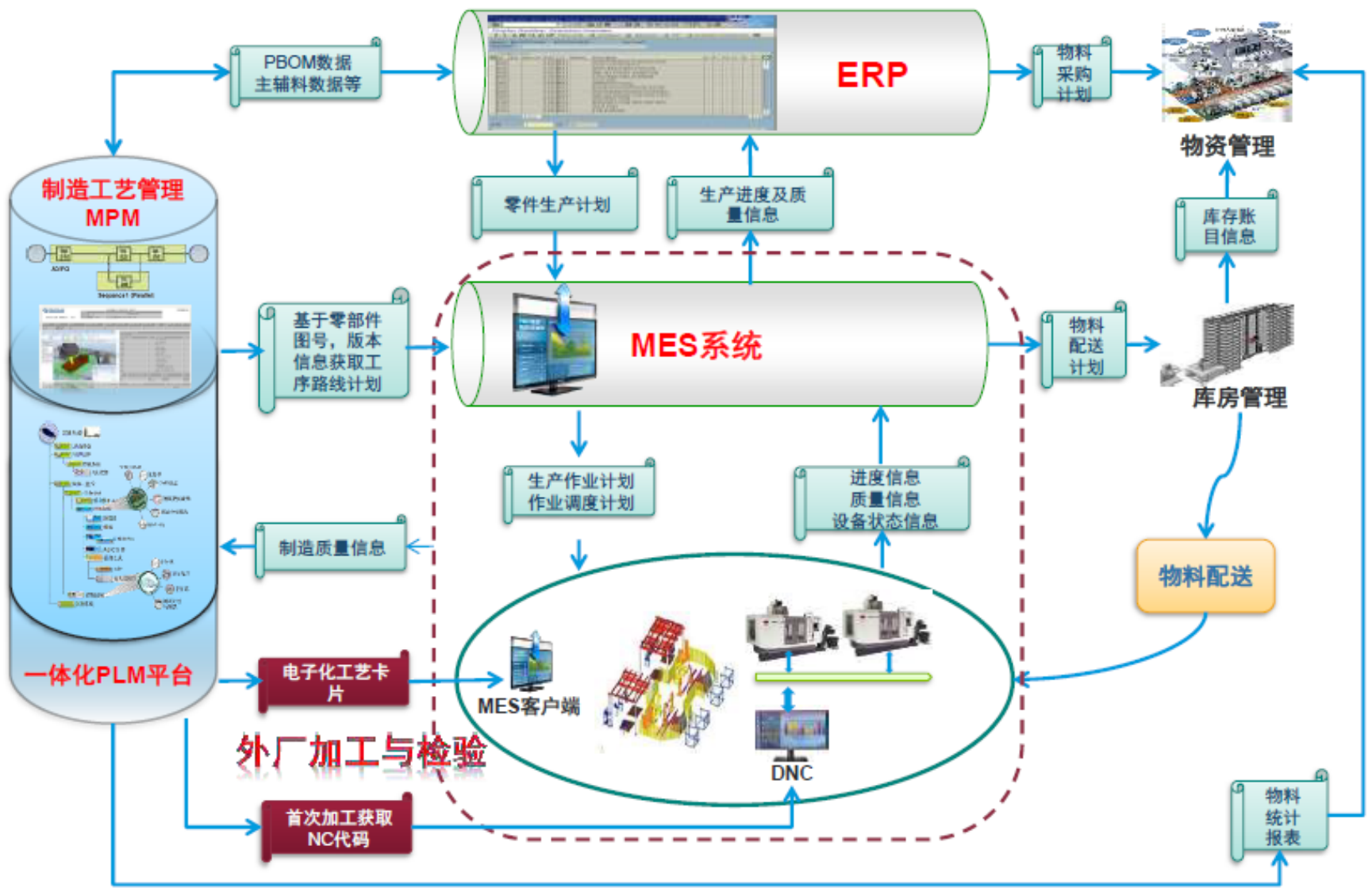
功能关键指标矩阵

KPIs 关键指标	生产监控	质量及安灯	订单管理及执行	生产队列及订单保持管理	人员计划	广播发布管理	物料管理	防错管理	谱系及追踪	关键指标绩效管理及预警	维护管理及原因分析	能源管理	废品管理
Defects/vehicle 车辆缺陷	✓	✓		✓				✓	✓	✓	✓		
First Yield 一次合格率	✓	✓					✓	✓				✓	✓
Quality Ratings (JD Power) 质量率	✓	✓		✓				✓			✓		
Warranty Costs 保修成本	✓	✓						✓	✓	✓			
Sequence Achievement 按队列生产准确率	✓		✓	✓		✓	✓						
On Time Delivery 准时交货	✓		✓	✓	✓	✓	✓			✓	✓		
Waste / Energy Costs 废品及能源成本	✓						✓				✓	✓	✓

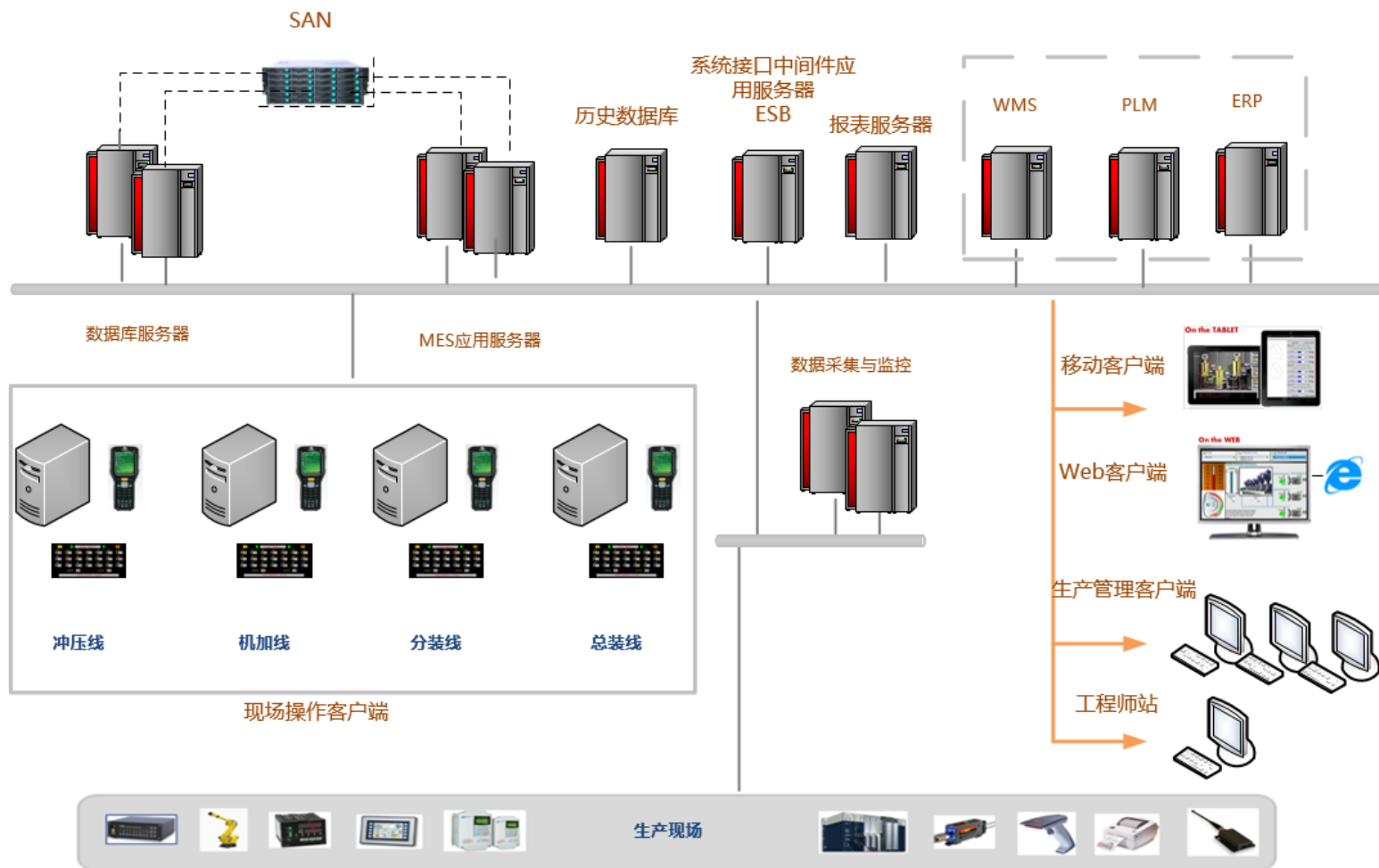
个性化定制模式的智能制造系统架构



全生命周期生产运营管理体系



系统架构设计示例（MES系统）

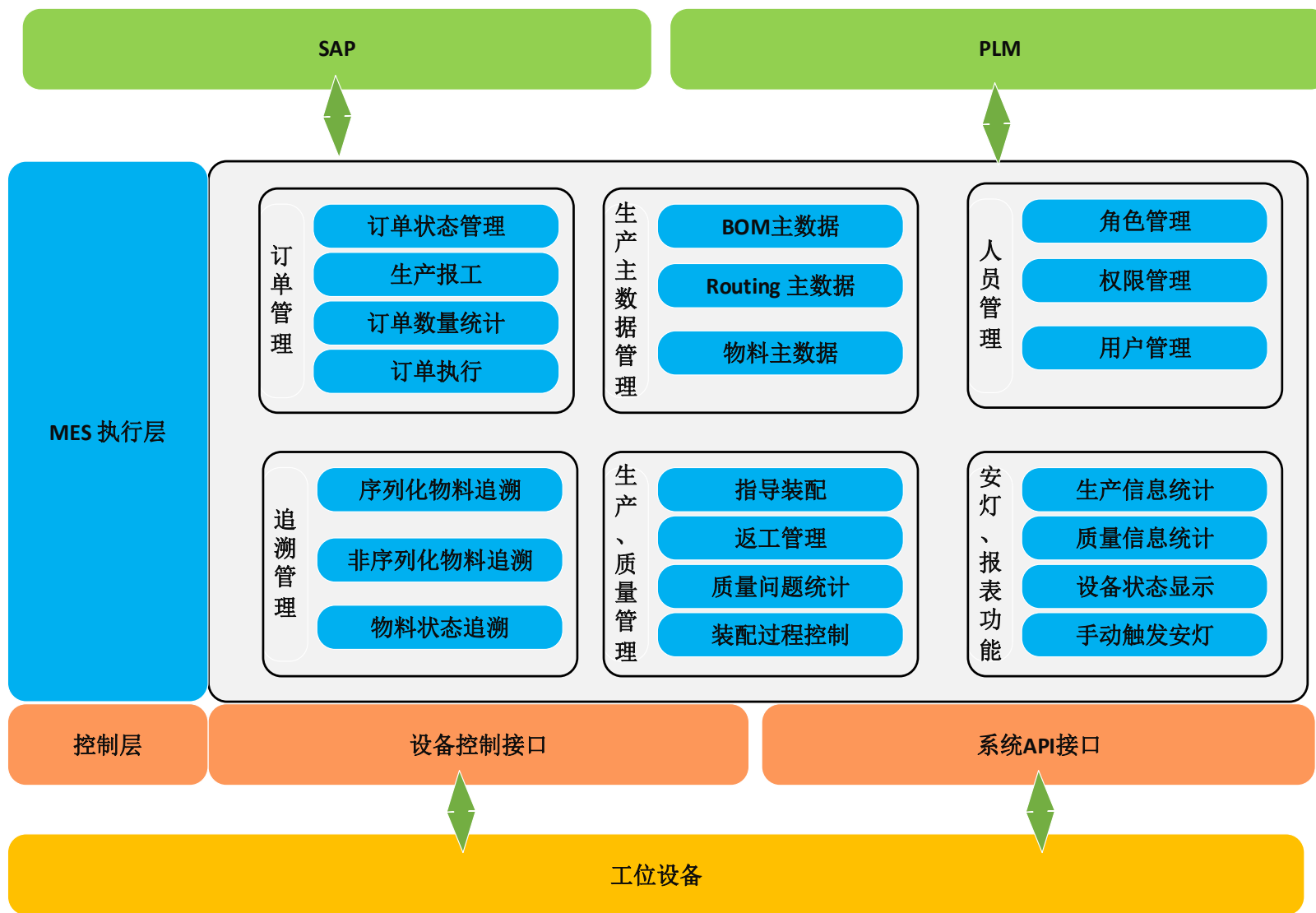


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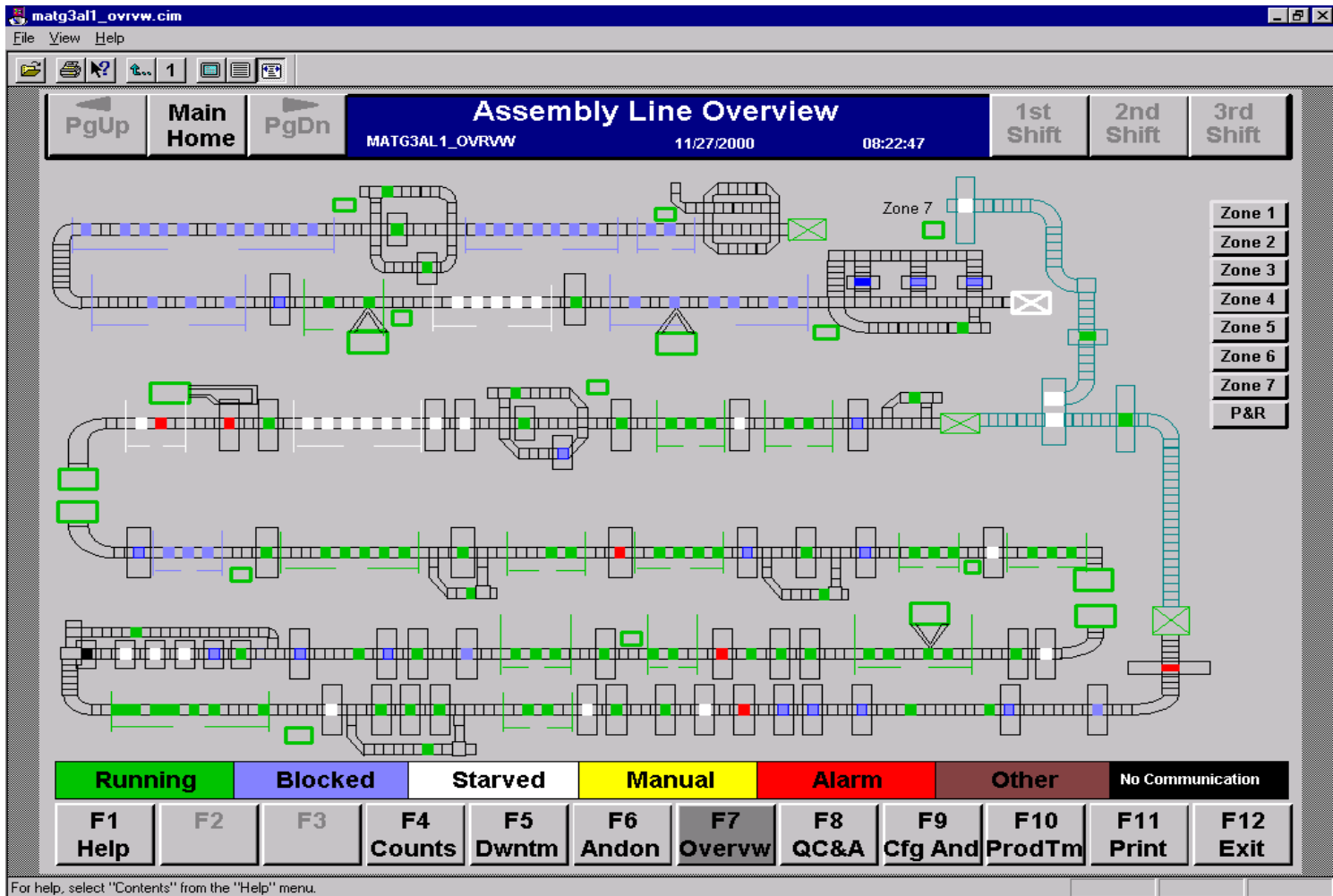


接口标准及Memory Map定义

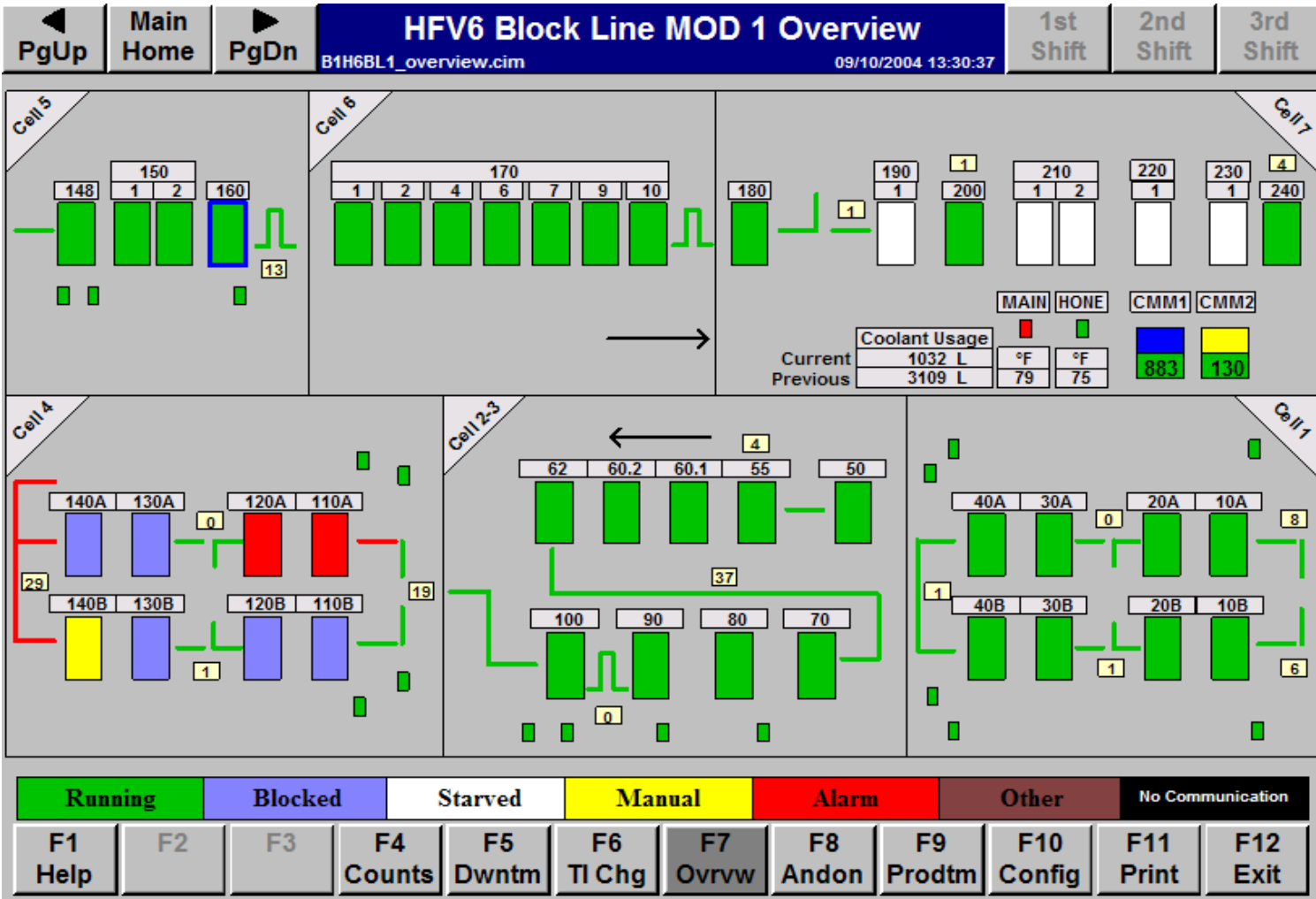
- OP510 Cold TEST Memory Map.

Memory Map Type 1 – Assembly Auto/Semi-Auto Station																				
Word #	Upper byte of word										Lower byte of word									
DB177-DB198	Write Word (written from I.T. System into controller memory).																			
DBW100	Date Write Year (2 digits BCD)										Date Write Month (2 digits BCD)									
DBW102	Status Word 1.																			
	Material Low Acknowledged	Material Low Warning					Quality Check Acknowledged	Quality Check Fault	Quality Check Warning	Manual Mode	Machine Fault Acknowledged	Machine Fault	Starved	Blocked	Stopped by Operator	Auto Cycle Running				
DBW104	Status Word 2.																			
	Bypass-EC-Op	Model-ID-Fault		Energy Condition	Station Over Cycle		Auto-Station-Release-Fault	Auto-Station-ERS	Reject	Accept	Good Piece	Power On/Off	PM&C Data	PM&C Clean Cycle	Heatbeat	Bypassed				
DBW106	Status Word 3 – OEM-Specific.																			
DBW108	Assistance Call Acknowledge byte.										Assistance Call byte.									
	Call 8	Call 7	Call 6	Call 5	Call 4	Call 3	Call 2	Call 1	Call 8	Call 7	Call 6	Call 5	Call 4	Call 3	Call 2	Call 1				
DBW110	PM&C Fault Word (1 word).																			
DBW112 to DBW130	PUN Data (10 words: PUN = Model and Serial Number).																			
																			Characters 1 and 2 (Note:	
	Controller dependent – see Definitions for byte order.																			
	Characters 3 and 4.																			
	Characters 5 and 6.																			
	Characters 7 and 8.																			
	Characters 9 and 10.																			
	Characters 11 and 12.																			
	Characters 13 and 14.																			
	Characters 15 and 16.																			
(Characters 17 and 18).																				
																				PUN Ready
DBW132	PM&C Good Piece Count (16-bit unsigned integer).																			
DBW134	PM&C Reject Piece Count (16-bit unsigned integer).																			
DBW136	PM&C Bypassed Pallet Count (16-bit unsigned integer).																			
DBW138	PM&C Last Cycle Time (16-bit unsigned integer, in units of 100ms).																			

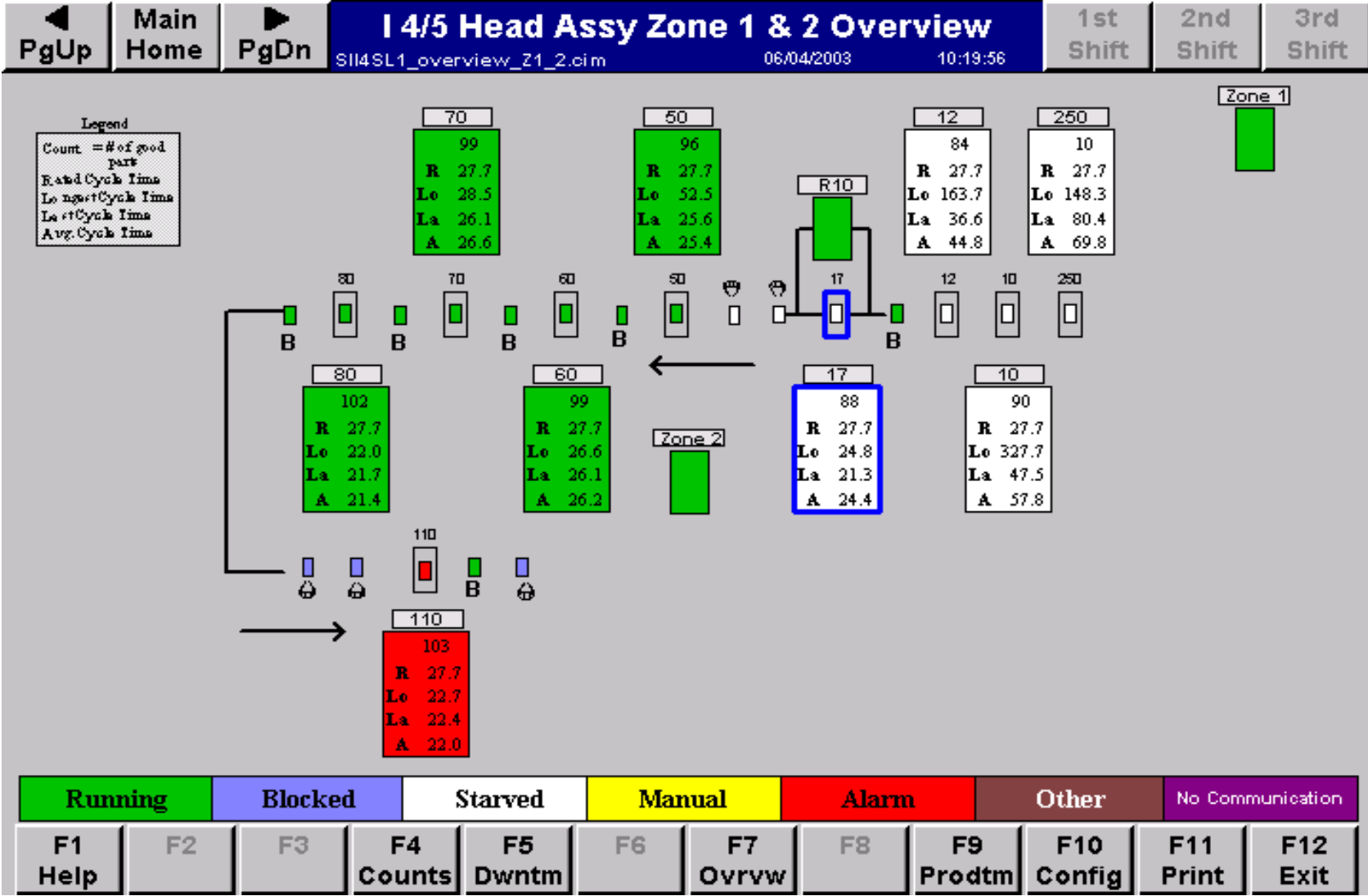
生产总貌图



生产线总体监控



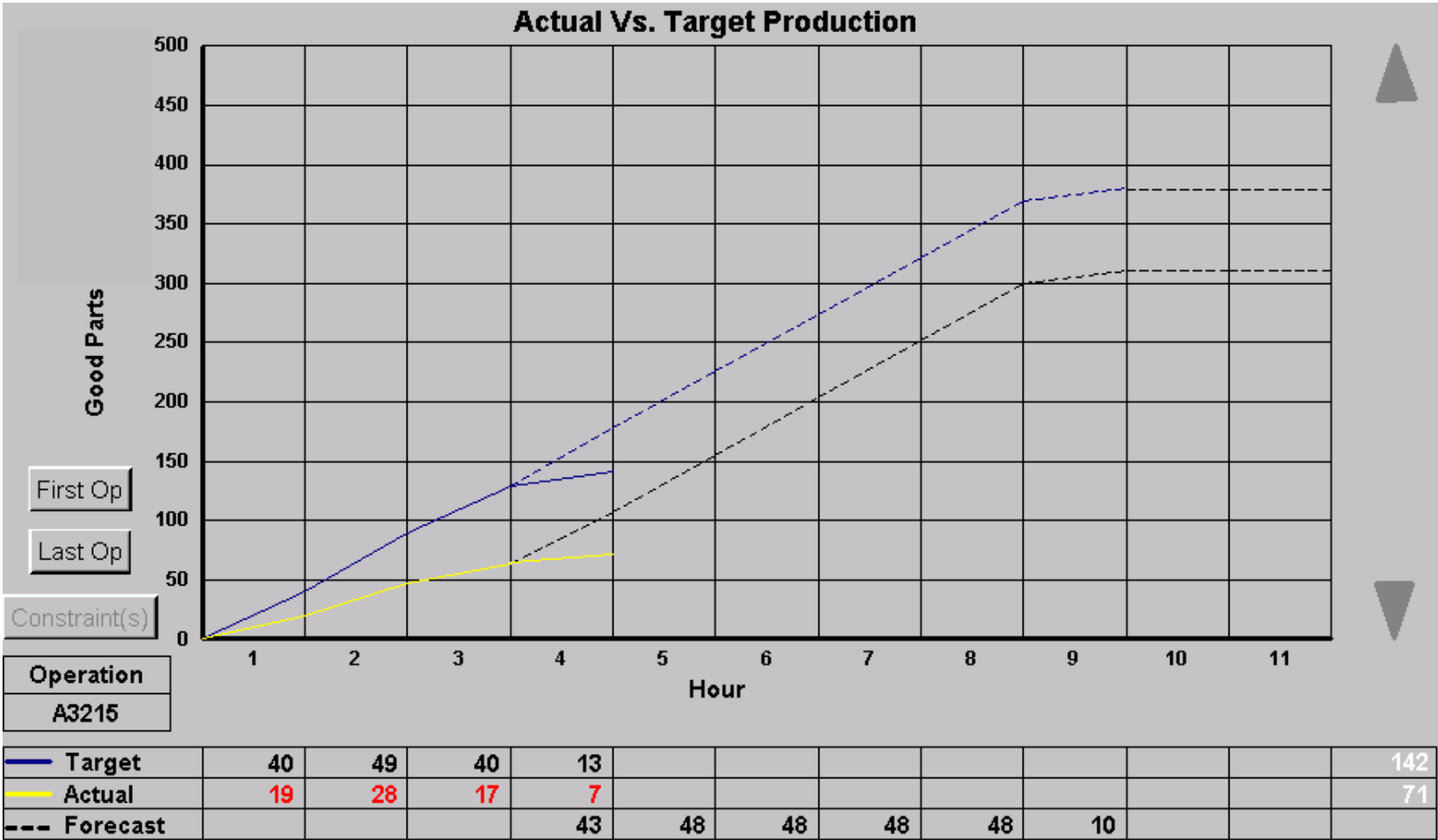
生产工序详细信息监控



生产各产线、工序产量统计

HFV6 Engine Assy - Production Counts												1st Shift	2nd Shift	3rd Shift
PgUp	Main Home	PgDn	A1H6AL1_prod_cnts.cim									09/10/2004 13:51:19		
Description	1	2	3	4	5	6	7	8	9	10	OT	+/-	Total	
LOOP 1														
Target	55	62	52	62	38	63	61	12					405	
Loop 1 In (S1003)	46	38	24	47	37	30	45	10				128	277	
Piston & Rod Out (5022)	25	29	24	38	38	36	48	12				155	250	
Loop 1 Out (RB3)	55	41	17	46	36	11	56	10				133	272	
LOOP 2														
Target	50	57	48	56	35	58	56	11					371	
Loop 2 In (SS1)	44	51	5	1	20	33	51	7				159	212	
Loop 2 Out (RB5)	41	43	21	0	10	33	48	9				166	205	
LOOP 3														
Target	67	77	63	75	47	77	75	15					496	
Loop 3 In (A2333)	39	45	18	0	24	19	53	7				291	205	
Loop 3 Out (Coldtest)	21	51	35	0	17	13	45	16				298	198	
LOOP 4														
Target	46	53	44	52	32	54	52	9					342	
Loop 4 In (M4019)	34	54	27	6	6	28	46	10				131	211	
Loop 4 Out (RB8)	42	52	23	6	9	32	50	9				119	223	
Head Assembly														
Target	108	122	101	121	75	123	120	23					793	
Hd Assembly In (Op 10)	75	76	50	56	54	92	73	11				306	487	
Hd Assembly Out (Op 240)	67	74	52	54	53	96	73	9				315	478	
Hd Assembly Out (LH)	29	31	25	13	45	43	25	0				185	211	
Hd Assembly Out (RH)	38	43	27	41	8	53	48	9				129	267	

生产各产线、工序产量及预期



产线各工位停机次数、停机时间统计

PgUp		Main Home		PgDn		HFV6 Head Mod. 1 - Downtimes										1st Shift		2nd Shift		3rd Shift				
H1H6HL1_dwntm.cim						09/10/2004					13:33:44													
Operations	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8		Hour 9		Hour 10		OT		TOTAL	
	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.	Inc.	Min.
LOADA					1	3																	1	3
OP005A			1	2	1	28																	2	30
OP010A			1	29																			1	29
OP020A																							0	0
BF025A			1	13	2	1									1	2							4	18
CV025A			1	29			2	5					1	12	1	3							5	51
LF025A																							0	0
OP030A																							0	0
OP040A																							0	0
BF045A													1	3									1	3
CV045A																							0	0
LF045A					1	11																	1	11
OP050A					1	26																	1	26
CV055A																							0	0
LOADB																							0	0
OP005B								1	1				1	6									2	8
OP010B																							0	0
OP020B																							0	0
BF025B															1	3							1	3
CV025B															1	3							1	3

Downtimes Blocked Starved Overcycle

F1 Help F2 F3 MchDwn F4 Counts F5 Dwntm F6 Top 10 F7 Ovrwv F8 Andon F9 Prodtm F10 Config F11 Print F12 Exit

产线各工位缺料次数、时间统计

PgUp		Main Home		PgDn		Starved Times														1st Shift		2nd Shift		3rd Shift	
AASSSSS_STRVTM.cim						06/19/2001				12:11:06															
Operations	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8		Hour 9		Hour 10		OT		TOTAL		
	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	
Op 10																							0	0	
Op 20																							0	0	
Op 30	4	1			7	2			6	4												18	7		
Op 40																							0	0	
Op 50																							0	0	
Op 60																							0	0	
Op 70			12	4			13	6															25	10	
Op 80																							0	0	
Op 90																							0	0	
Op 100																							0	0	
Op 110																							0	0	
Op 120																							0	0	
Op 130																							0	0	

产线各工位堵塞次数、时间统计

PgUp		Main Home	PgDn		Blocked Times															1st Shift	2nd Shift	3rd Shift		
AASSSSS_BLKTM.ci.m					06/19/2001					12:04:51														
Operations	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8		Hour 9		Hour 10		OT		TOTAL	
	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min
Op 10	5	4					7	10															12	14
Op 20																							0	0
Op 30																							0	0
Op 40																							0	0
Op 50																							0	0
Op 60																							0	0
Op 70																							0	0
Op 80																							0	0
Op 90																							0	0
Op 100																							0	0
Op 110																							0	0
Op 120	7	10	14	12					4	28													25	50
Op 130																							0	0

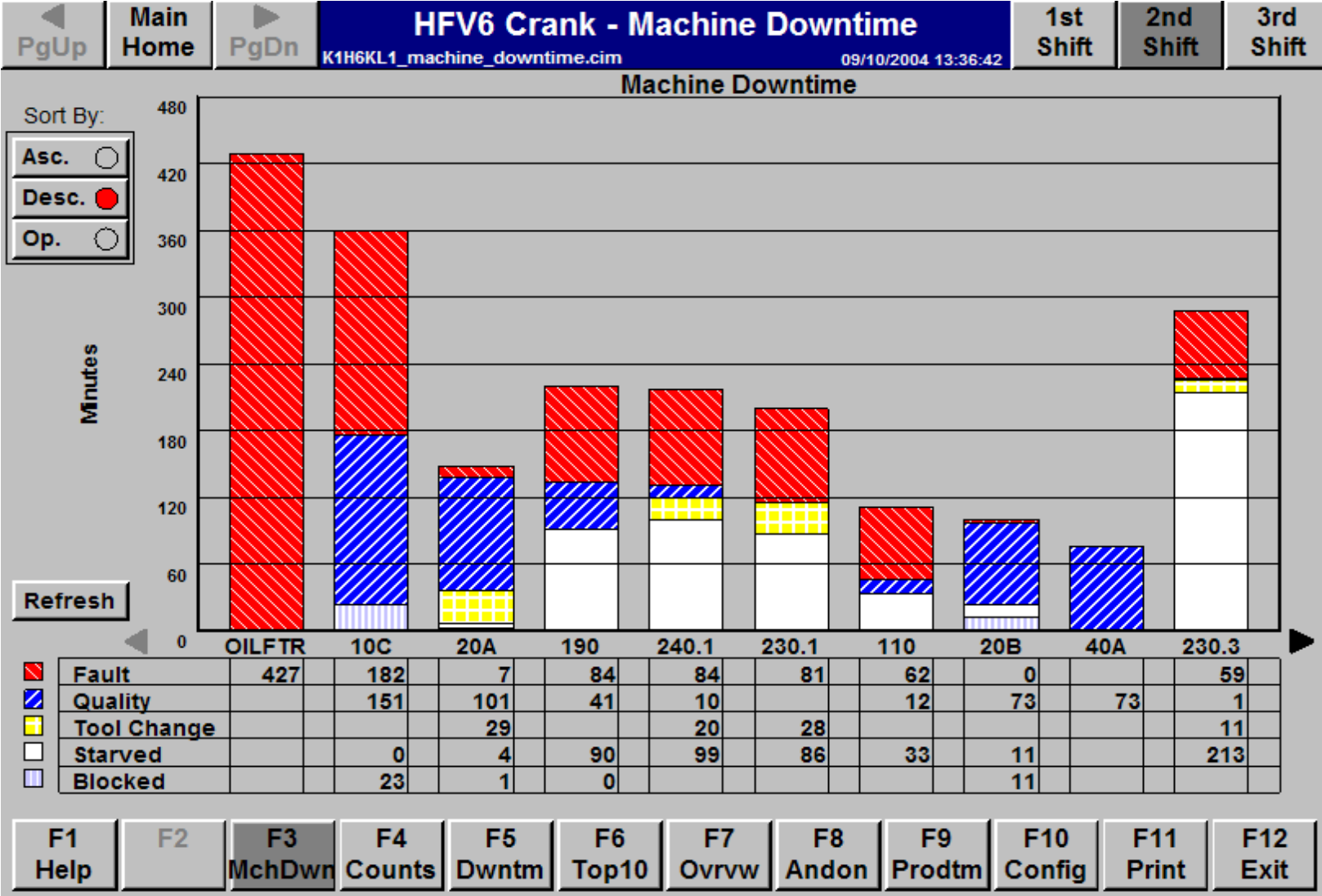
产线各工位节拍超时次数、时间统计

PgUp	Main Home	PgDn	Overcycle Times										1st Shift	2nd Shift	3rd Shift			
			AASSSSS_DVRCTM.cim										06/19/2001		12:18:24			

Operations	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8		Hour 9		Hour 10		OT		TOTAL	
	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min	inc	min
Op 10																							0	0
Op 20																							0	0
Op 30	4	1			7	2			6	4												18	7	
Op 40																							0	0
Op 50																							0	0
Op 60																							0	0
Op 70			12	4			13	6															25	10
Op 80																							0	0
Op 90																							0	0
Op 100																							0	0
Op 110																							0	0
Op 120																							0	0
Op 130																							0	0

F1 Help	F2 Lang	F3 MchDwn	F4 Counts	F5 Dwntm	F6 Top 10	F7 Ovrw	F8	F9 Prodtm	F10 Config	F11 Print	F12 Exit
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产线设备停机原因分析



产线停机原因分析

Navigation: PgUp | Main Home | PgDn

HFV6 Eng Assy Loop 2 - Top 10 Down

A1H6AL1_top_10_downtimes_L2.cim 09/07/2004 15:19:15

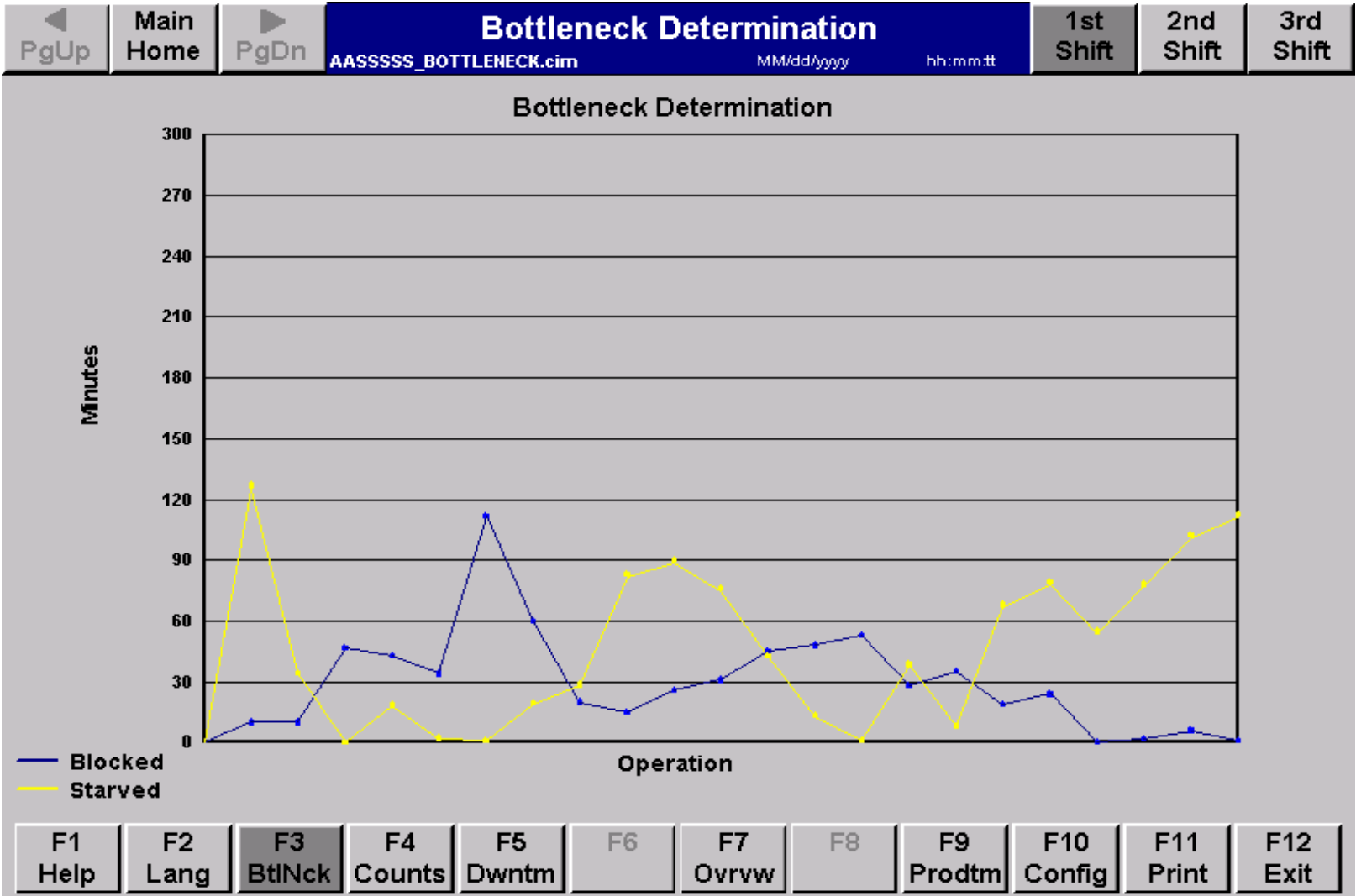
Shifts: 1st Shift | 2nd Shift | 3rd Shift

Downtimes		Overcycle		Rejects	
Operation	Minutes	Operation	Minutes	Operation	Number Of
1. A2108	37	1. A2104	82	1. A2108	18
2. A2104	30	2. M2252	75	2. A2266	14
3. A2049	9	3. A2082	52	3. A2181	10
4. A2154	7	4. M2054/7	44	4. A2082	6
5. A2181	6	5. M2173	36	5. A2154	6
6. A2082	3	6. M2130	32	6. A2049	5
7. A2063	2	7. M2148	30	7. A2104	5
8. Zone 5	2	8. M2139	30	8. M2130	4
9. M2219	2	9. M2041	23	9. M2139	4
10. A2211	1	10. M2205	21	10. M2148	3

[Refresh](#)

Function Keys: F1 Help | F2 | F3 MchDwn | F4 Counts | F5 Dwn tm | **F6 Top10** | F7 Ovr vw | F8 | F9 Pro dtm | F10 Config | F11 Print | F12 Exit

产线瓶颈分析



刀具管理-换刀数据监测

PgUp
Main Home
PgDn

HFV6 Block Mod. 1 Tool Change Overview

B1H6BL1_tool_chg.ci.m 06/03/2003 16:00:16

1st Shift

2nd Shift

3rd Shift

OP	10A	10A	10A	10B	10B	10B	20A	20A	20B	120A	120A
POCKET	1	2	3	1	2	3	3	4	3	1	3
TOOL	1000830	1000831	1000832	1000830	1000831	1000832	2000860	2001315	2000860	12002068	12001413
SERIAL	413	297	350	411	409	1124	439	405	440	558	565
LIMIT	500	500	200	500	500	200	200	200	200	3000	3000
COUNT	325	349	101	176	460	33	100	100	105	2720	2720
REM	175	151	99	324	40	167	100	100	95	280	280

OP	120B	150
POCKET	1	2
TOOL	12002068	15001777
SERIAL	561	462
LIMIT	3000	250
COUNT	2994	103
REM	6	147

OP	100	100	100	100
STATION	2	2	3	3
GROUP	A	B	A	B
SERIAL	0	0	0	0
LIMIT	351	351	350	350
COUNT	41	41	40	40
REM	310	310	310	310

Click below to set Compare Value

350

Refresh Screen

Tool Overview

10A	10B	20A	20B	30A	30B	40A	40B	70	80	90	100
110A	110B	120A	120B	130A	130B	140A	140B	148	150	160	

F1 Help

F2

F3

F4 Counts

F5 Dwn tm

F6 TI Chg

F7 Ovr vw

F8 Andon

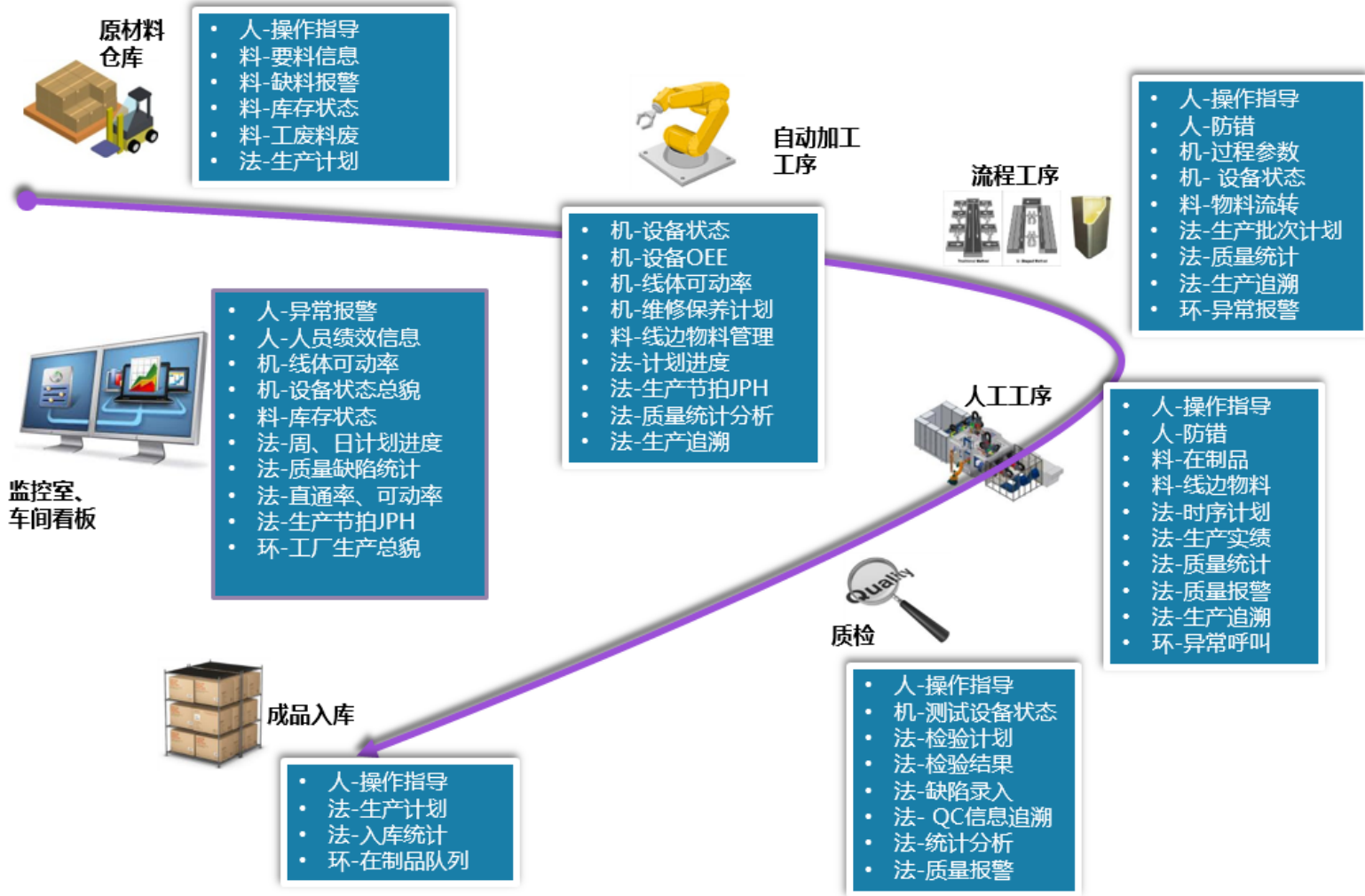
F9 Pro dtm

F10 Config

F11 Print

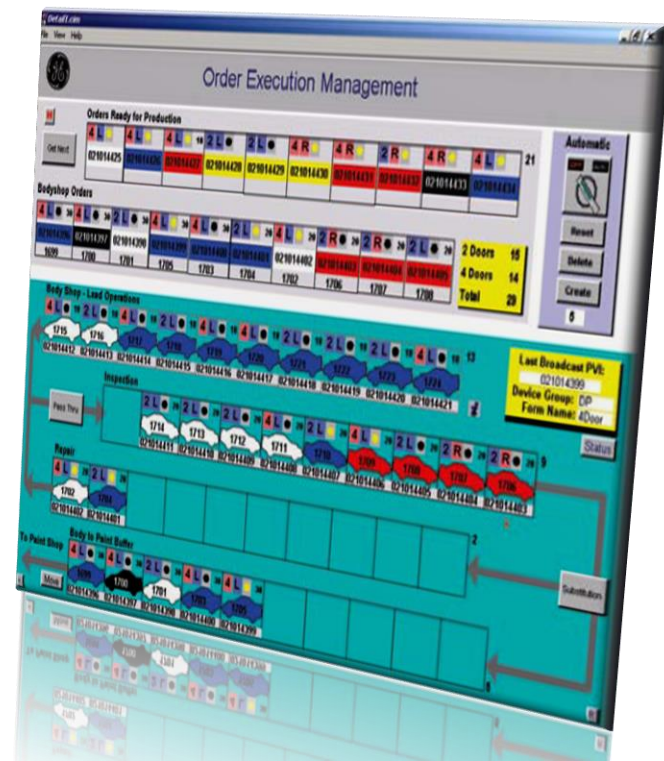
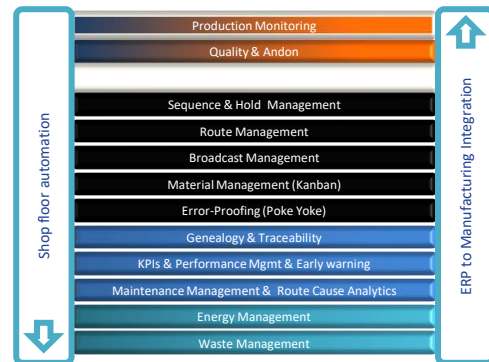
F12 Exit

透明化工厂设计

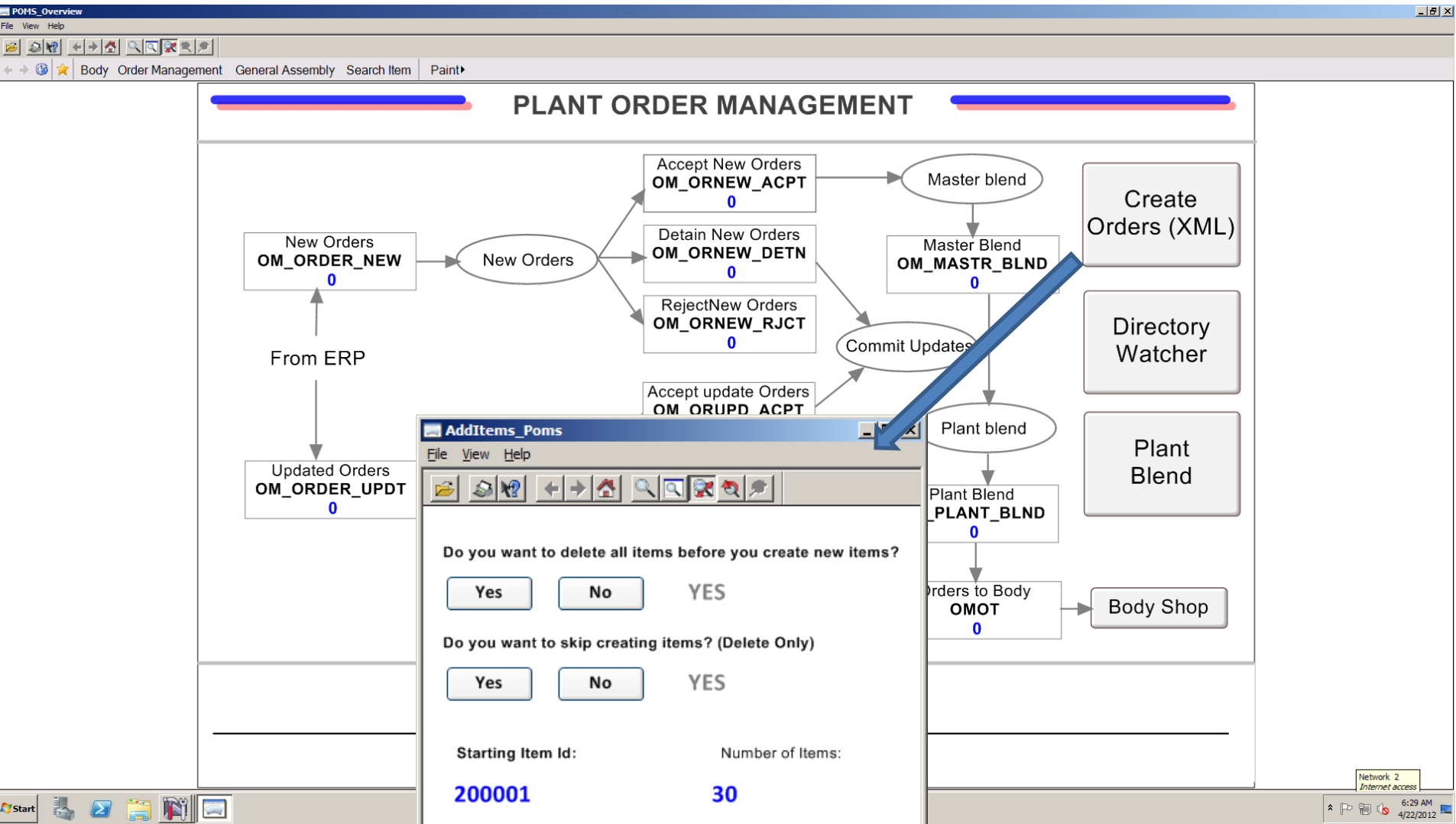


订单管理&执行

- 集成从ERP系统下载订单
- 动态的根据目前的制约因素下达生产订单
- 管理订单队列和BOM
- 管理生产过程中出现的产品和质量的“保持”问题
- 支持”构建指令“或其它介质 (e.g. RFID)
- 支持下装参数和指令到控制器和生产运营系统



订单管理



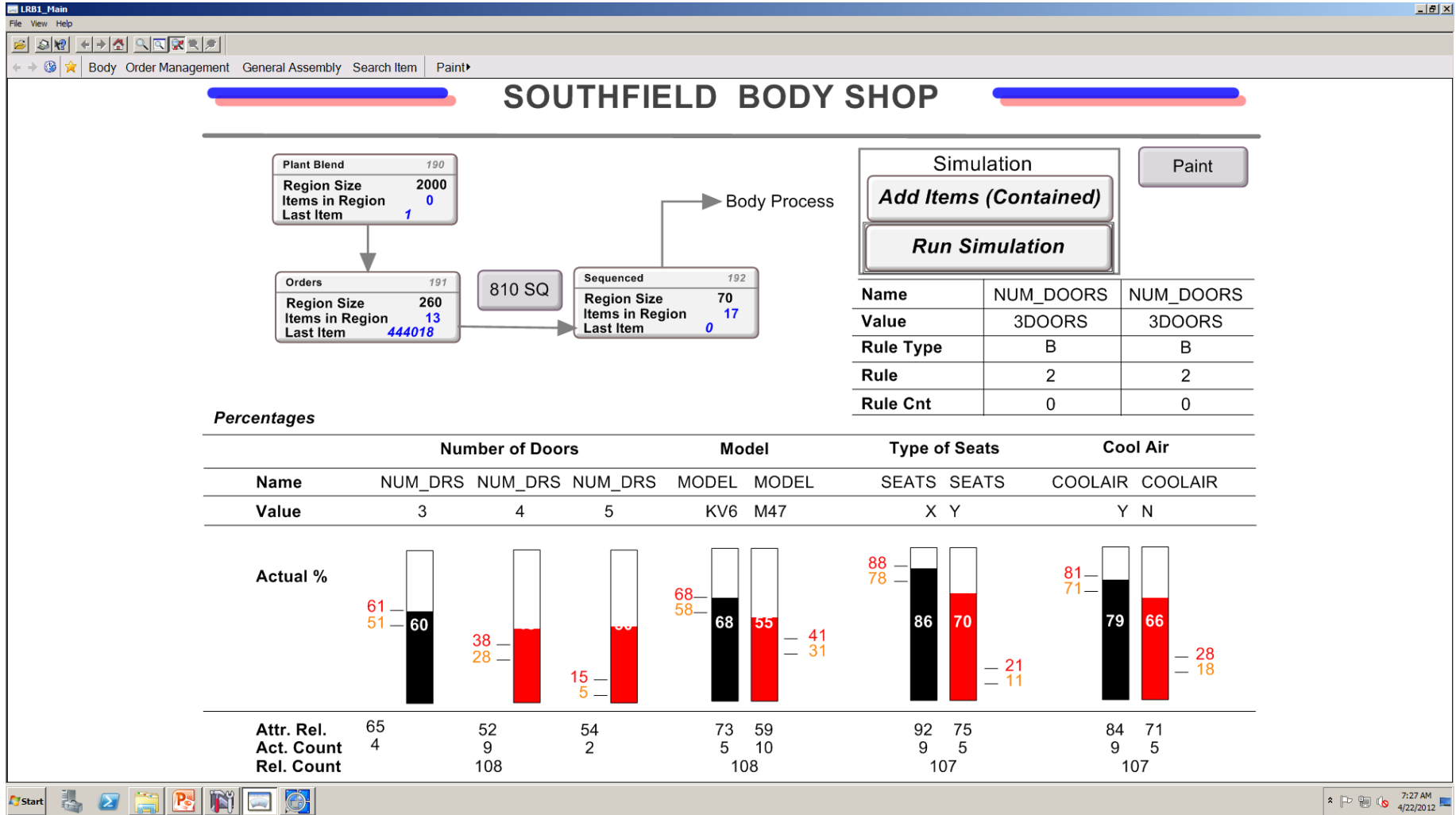
订单排产及排序规则

The screenshot illustrates the configuration of order scheduling and sorting rules in a software application. The main interface shows a process flow for 'PLANT 0' involving 'New Orders' and 'Updated Orders' from an ERP system. A 'Plant Blend' dialog allows selecting from five rule sets, with 'RULE2' currently selected. The 'RuleSet2' dialog provides detailed configuration for 'Plant Blend Rule Set 2'.

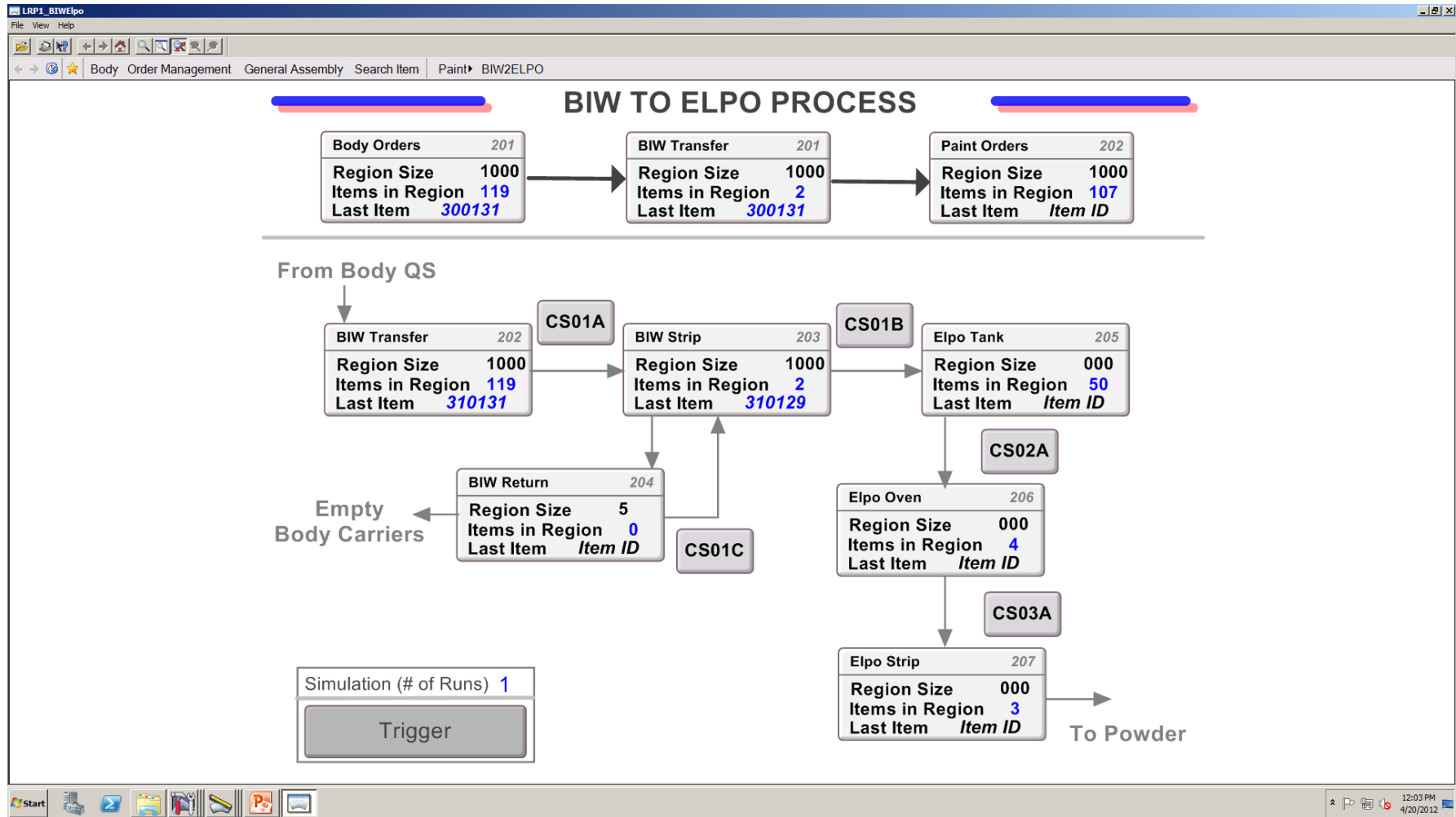
Attribute Name	Attribute Value	Block Size	Block Limit	Weight	Breakable
Ratio 1	WAGON	YES	2	1	1024
Oldest Blend				1	
Items On Hold				0	

Buttons: By Attribute, By Solve, Size, Limit & Weight Defaults

生产计划执行监控

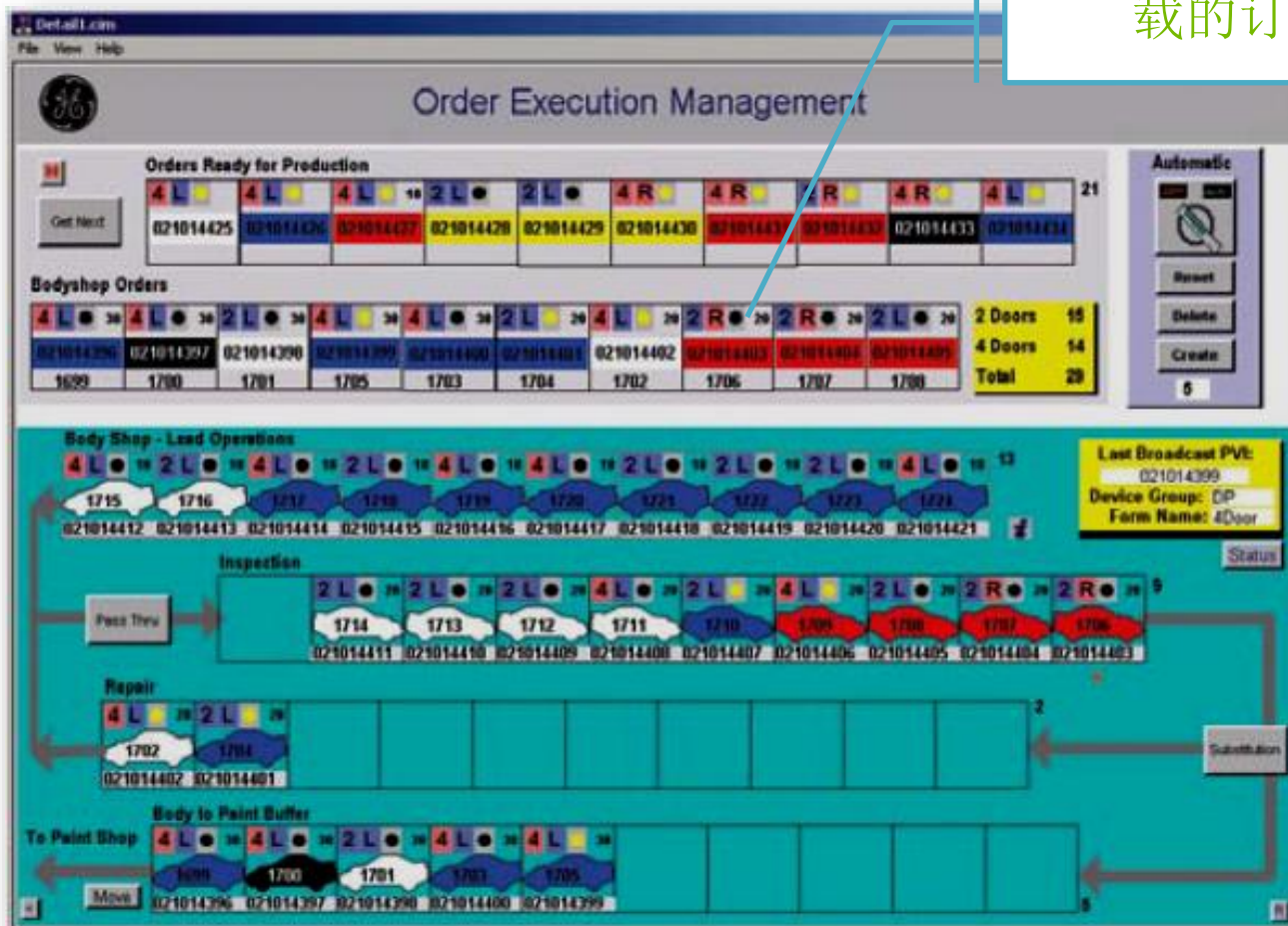


生产过程执行与跟踪



订单管理&执行

从ERP & 队列中下载的订单

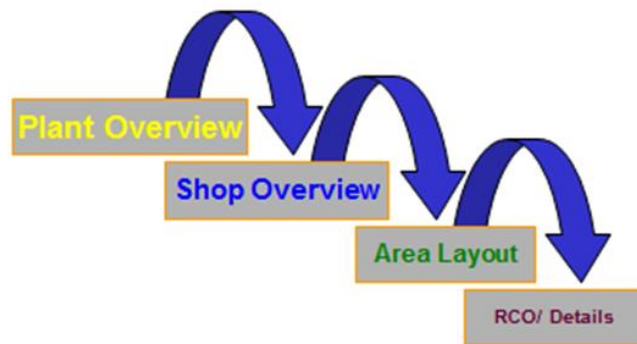


生产监控

- 采集各类生产信息
- 追溯订单及在制品进程
- 在快需要生产切换时提前做出通知
- 自动计算完成目标所需时间
- 实时的生产界面显示
- 支持基本的和移动的数据显示界面



生产监视



Total Count
225

UL 164 ZWK2 0
WZW 61 ZWK4 0
EMPTY 0

Body Main Respot

Home Screen

NISSAN

Line Control

CONTROL ON

LINE IN CYCLE

Over CYCLE

ROBOT IN HALT

Pallet Stage

NO FORCES

Tip Cycles

Current Value 64

Tip Dress

Current Value 4
Preset Value 10

Production Counters

150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
Safety Normal	Safety Normal	Safety Normal	Safety Normal	Safety Normal	Safety Normal	Safety Normal	Safety Normal	Safety Normal	Safety Normal	Safety Abnormal	Safety Normal	Safety Normal	Safety Normal	Safety Normal
Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position	Home Position
Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete	Cycle Complete
Stage Fault	#140 D.L Auto	Stage Fault	Stage Fault	Stage Fault	Stage Fault	Stage Fault	Stage Fault	Stage Fault	Stage Fault	CS Robot Cycle #11	Stage Fault	Stage Fault	Stage Fault	#10 D.L
Empty	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	WZW	Empty	Empty	Empty	Empty
140+1	130+1	120+1	110+1	100+1	90+1	80+1	70+1	60+1	50+1	40+1	30+1	20+1	10+1	

Goto LINE LAYOUT

Alarm Screen

NEXT3 Data Empty

NEXT2 Data Empty

NEXT1 Data Empty

#120 LH Operator

OFF ON

#120 RH Operator

OFF ON

LINK STATUS

MARQUEE LAMP TEST

9/4/03

5:04:28 PM

WT LINEAR RESET

BROAD CASTING AMP ON

WARNING SIREN

All Robot Enabled

All Robot Select

SOUTHFIELD PAINT MIX BANK

Body Orders 201

Region Size 1000

Items in Region 121

Last Item 300137

Paint Orders 205

Region Size 1000

Items in Region 107

Last Item 300014

Paint Mix 236

Region Size 1000

Items in Region 17

Last Item Item ID

GA Orders 240

Region Size 1000

Items in Region 5

Last Item Item ID

From Quality/Repair → To GA CS10B

VIEW SEQUENCING RULE

RETURN LANE

Simulation (# of Runs) 1 Trigger

Min. Hold in Bank: 10



Back

质量 & 安灯

- 提供可视化的实时质量监控
- 提供高可视化的质量和生产看板
- 支持可选择的安灯系统，例如“保持” vs. 停止产线
- 零部件缺陷，质量瑕疵和其它质量相关问题
- 根据队列管理，为那些不能按队列生产的订单安排生产
- 根据需求管理返工流程



Back

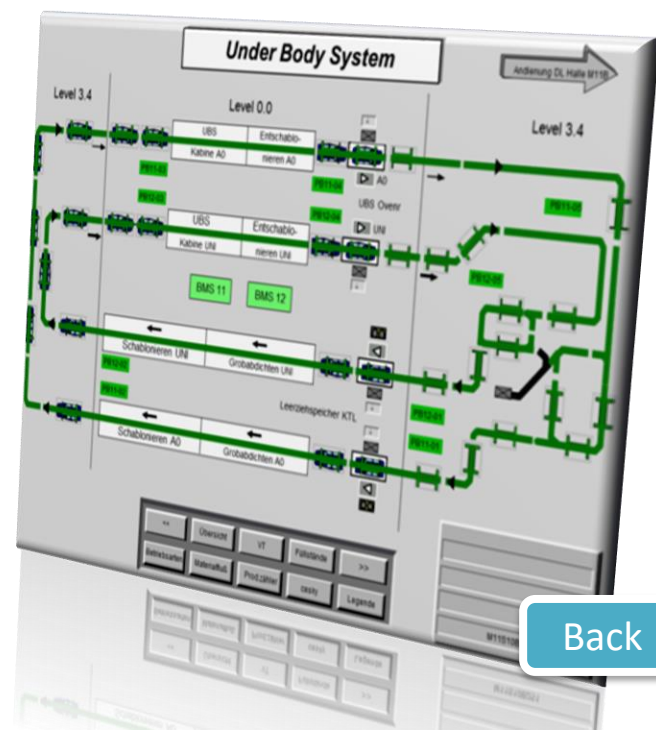
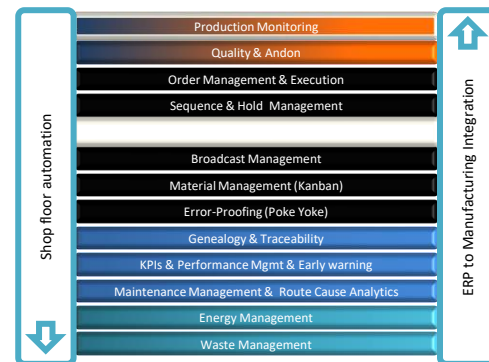
质量 & 安灯

Defect marked for later rework

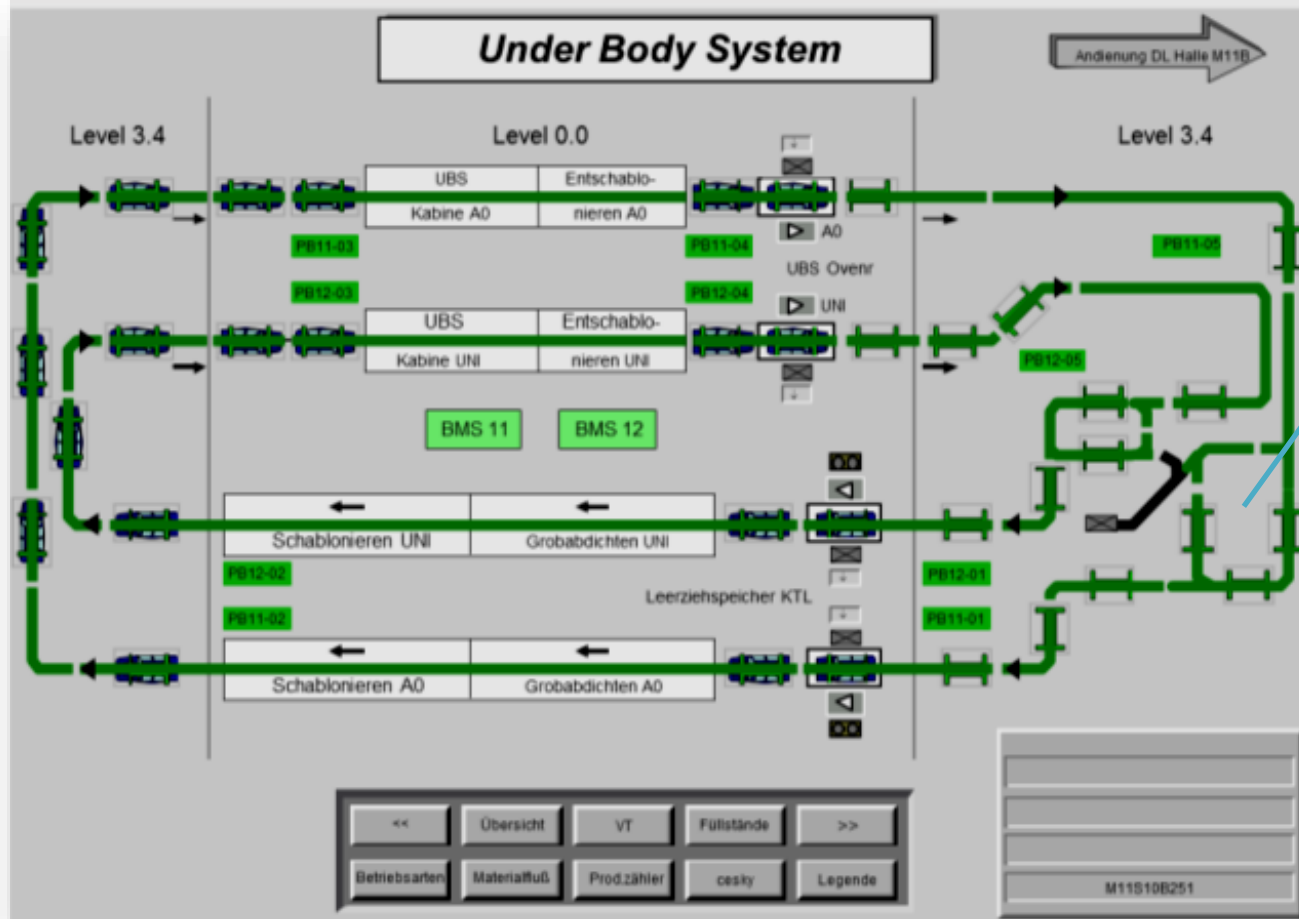
The screenshot displays a quality control software interface. The main area shows a 3D model of a car body with a red square marker on the rear door panel, indicating a defect. A callout box points to this marker with the text "Defect marked for later rework". The interface includes a data entry form on the right with fields for "shortcut-code", "position-code", "position-select", "position-desc", "reason-code", "reason-type", "reason-desc", "reason-dept", "level", "amount", "solution", "result", and "remark". The "result" field is set to "pass". There are "Add" and "Submit" buttons at the bottom of the form. Below the form is a table with columns for "NO", "position", "position-desc", "reason-type", "reason-desc", "reason-dept", "level", "amount", "solution", "result", and "remark". The table shows "total : 0 records".

路由管理

- 管理原材料和产品在生产过程中的路由
- 包括运载工具和产品容器
- 管理：
 - 传送带控制
 - ASRS –自动仓储系统
 - AGV –自动导引车系统



路由管理



传送系统的路由管理

广播及信息发布管理

- 将排队信息发布到工厂级的订单执行系统中
- 在适当的节拍点触发产线供应(“广播”)
- 输出打印, RFID, EDI, 工艺设备, 操作员站和工具
- 输出到车身车间, 涂装车间, 总装车间, 装配线
- 支持通过瘦客户接口查看系统数据



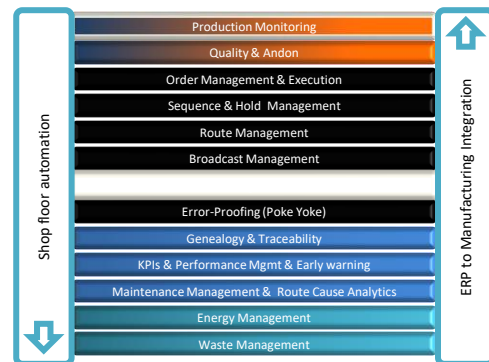
LINE	DESCRIPTION	UNIT	QTY	STATUS	REMARKS
1	LHD PETROL A R FRONT				
2	ARC POWER PREMIUM SUN ROOF				
3	ARC PETROL AUTO				
4	CLEAR D.DU A				
5	61 XX BLANK				
6	7 - A 7H42 - B NON TOW				
7	7 - A YES				
8	C 320				
9	C YES U				
10	320 YES YES LHD ROW				
11	YES YES YES				
12	YES YES YES ROW LHD				
13	ESONV YES YES YES				
14	PETROL BLACK FRONT				
15	BASIC BLACK YES				
16	B YES YES				
17	AUTO C				
18	ORANGE				
19	SCISSOR YES YES				
20	BLACK CHINA SICKET S/C YES				
21	YES YES YES				
22	INSERT PATCHES MAN CRUZ-MAD-ACKS-LINE-IND HIT				
23	YES SILVER ORANG				
24	IVORY BLACK YES				
25	YES BLACK 320 BLACK				
26	A NO 320 EURO				
27	BASIC X 14 PET BRUSH BLK PLAN				
28	E YES YES				
29	A YES YES				
30	B C & D				
31	ROW PET 5H22 - D				
32	S/C PET YES C				
33	7-PVJ C				
34	E GULF YES				
35	SILVER E GULF IVORY				
36	EURO				
37	PETROL F				
38	ARC PETROL FRONT YES YES				

Over 1m long
200+ fields
Printed and
routed
In sequence
within
TAKT time

Back

物料管理

- 根据产线需求和消耗管理原材料和零部件（辅料）仓库
- 监控零部件消耗
- 电子看板(支持“推”或“拉”方式)
- 根据排产情况进行零部件采购
- 顺序的零部件，装配和运输追踪
- 提供数据给谱系追踪和分析使用



原材料管理

Reorder Monitor

Description	Part #	DLoc	ULoc
Door Handles	12345	K35	DL47562

Sun Roof Trim
Inventory: 80
Reorder Level: 75

Door Handles
Inventory: 49
Reorder Level: 50

Failsafing
Part L: ●
Part R: ●

Move

4 L ● 30 2 L ● 30 4 L ● 30 2 30 2 L ● 30

1700 1701 1702 1705 1707 1708

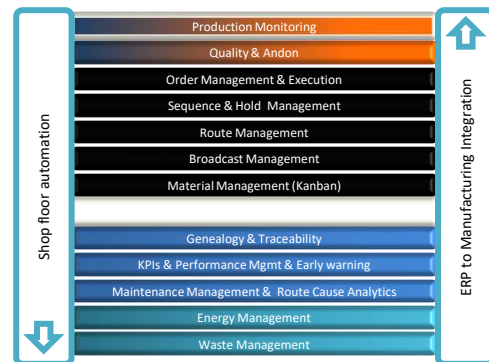
021014397 021014398 021014400 021014399 0

线边监视库存
和填补

Back

防错

- 在关键件部位进行确认信息和步骤
- 确认正确的产品按照正确的工序进行了正确的装配
- 支持操作员站，条码，摘取式拣货，紧固工具等方式的集成
- 以上的任何步骤出现问题时实时报警
- 当出现返工失败时进行保持
- 彻底的提高“一次成功率”，减少返工成本
- 根据需求管理返工流程



防错

Station: Z7A-S3 Vehicle In Station Station Release

VIN: SALLSAAG3BA710990 Station Reset

Waiting for tooling complete...

TC07-03-L

Process Main Line \ Station 2

Description	Part Number	Qty. Req.	Process
S-CAM	A-1956	2 EA	Completed
SPINDLE END PLUG	A-1934	1 EA	In process
ANCHOR PIN	A-2374	4 EA	Not Started

Override

Manual:Waiting for input..

Order Info Panel

Work Order S#1 ORDERS(BOM.KEY)

Part to Make ORDERS(BOM.PART_NUMBER)

Quantity

MP DRAWING # MP-26706

STANDARD BOM FOR ASSEMBLY

Drawn By: G. Dudgeon 10/1/2002

Checked By: S. Anderson 2/8/2004

App'd By: J. Fabover 2/8/2004

Rev: 1/2002 By: Date

1 11200 23P 2/22/2002

2 11200 23P 1/22/2004

3 11207 1L 11/22/2004

Always check the "DCI" Seal

1. Check your personal protection equipment (PPE).
2. Check locking / nesting systems.
3. Check condition of toolhead and equipment.

Safety Rules

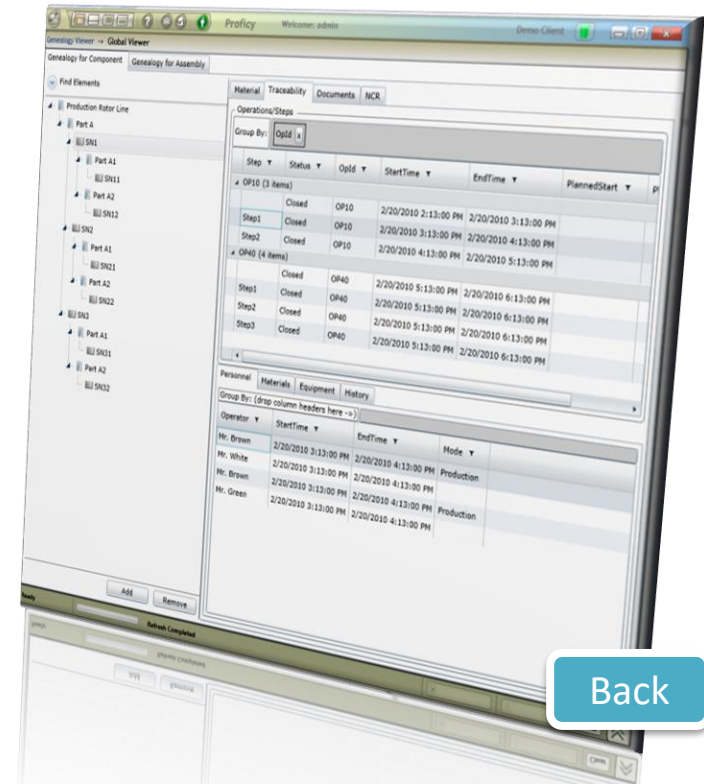
- Caddy Down
- Chucks
- Steel Tap Press

线边工作指导和调整, DC tooling integration

质量及生产谱系追溯

- 跟踪产品在生产中的每一个步骤
- 记录所有原材料的起始点和成品的去向
- 如果产品的质量或者原材料出现问题，实现快速召回
- 显示车辆识别码 - VIN 和 BOM 结构。

- 扫描枪、RFID



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谱系及追踪

The screenshot displays the Proficy Genealogy Viewer interface. On the left, a tree view shows the production structure for 'Production Rotor Line', including 'Part A' and its sub-components (SN1, SN2, SN3) with further sub-parts (A1, A2) and serial numbers (SN11, SN12, SN21, SN22, SN31, SN32). The main area shows the 'Operations/Steps' tab, which is grouped by 'OpId'. Below this, the 'Personnel' tab is active, showing a table of operators and their work times.

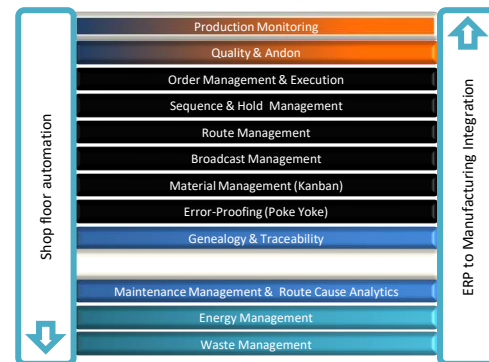
Step	Status	OpId	StartTime	EndTime	PlannedStart	P
OP10 (3 items)						
	Closed	OP10	2/20/2010 2:13:00 PM	2/20/2010 3:13:00 PM		
Step1	Closed	OP10	2/20/2010 3:13:00 PM	2/20/2010 4:13:00 PM		
Step2	Closed	OP10	2/20/2010 4:13:00 PM	2/20/2010 5:13:00 PM		
OP40 (4 items)						
	Closed	OP40	2/20/2010 5:13:00 PM	2/20/2010 6:13:00 PM		
Step1	Closed	OP40	2/20/2010 5:13:00 PM	2/20/2010 6:13:00 PM		
Step2	Closed	OP40	2/20/2010 5:13:00 PM	2/20/2010 6:13:00 PM		
Step3	Closed	OP40	2/20/2010 5:13:00 PM	2/20/2010 6:13:00 PM		

Operator	StartTime	EndTime	Mode
Mr. Brown	2/20/2010 3:13:00 PM	2/20/2010 4:13:00 PM	Production
Mr. White	2/20/2010 3:13:00 PM	2/20/2010 4:13:00 PM	Production
Mr. Brown	2/20/2010 3:13:00 PM	2/20/2010 4:13:00 PM	Production
Mr. Green	2/20/2010 3:13:00 PM	2/20/2010 4:13:00 PM	

某个订单的
谱系报表

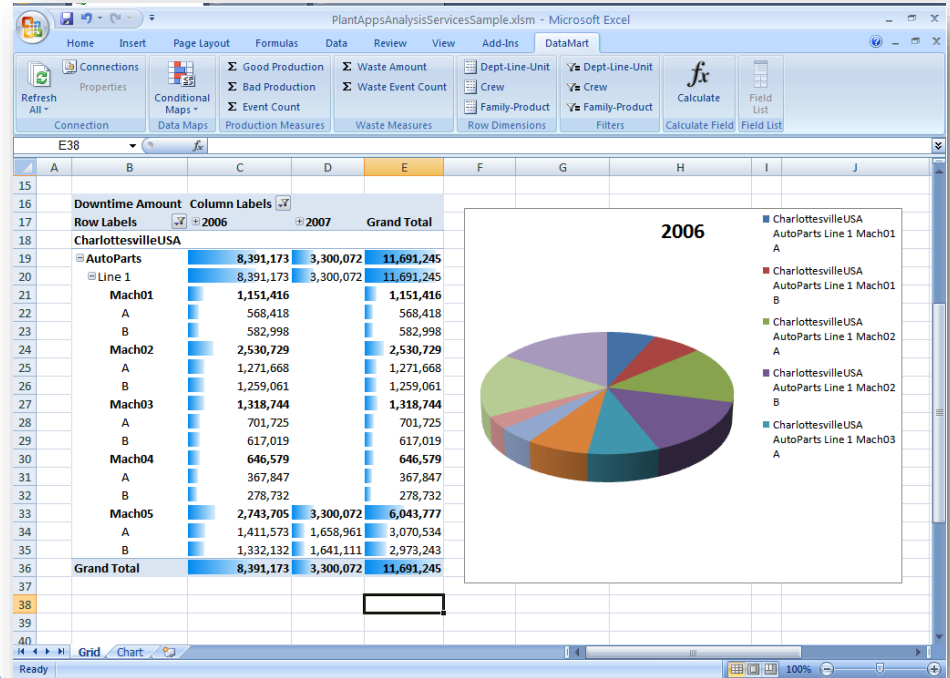
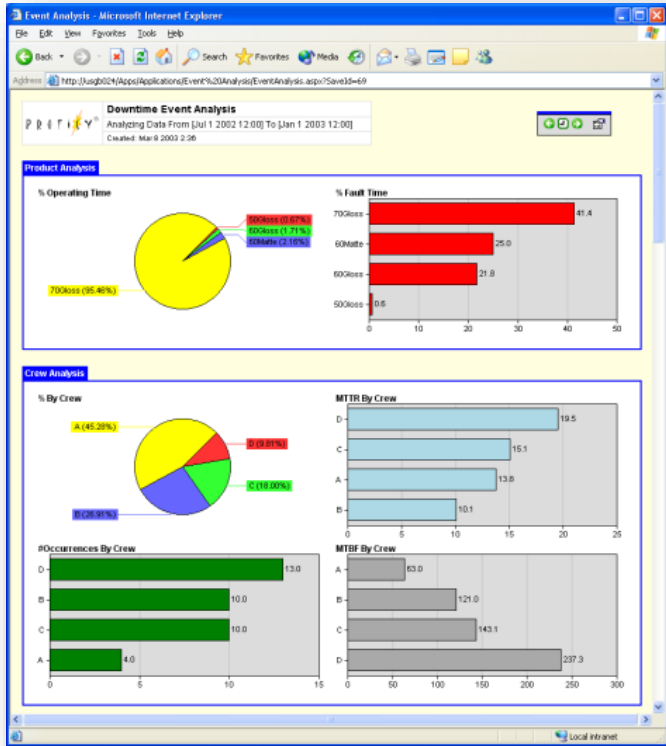
关键绩效管理 and 报警

- 可视化的 KPI 包括
 - 生产绩效
 - 一次喷涂产出率
 - 顺序完成率
 - OEE/Downtime 指标
 - 帕累托 - Pareto 缺陷分析
- 可方便实现KPI的自定义



Back

关键绩效管理 and 报警

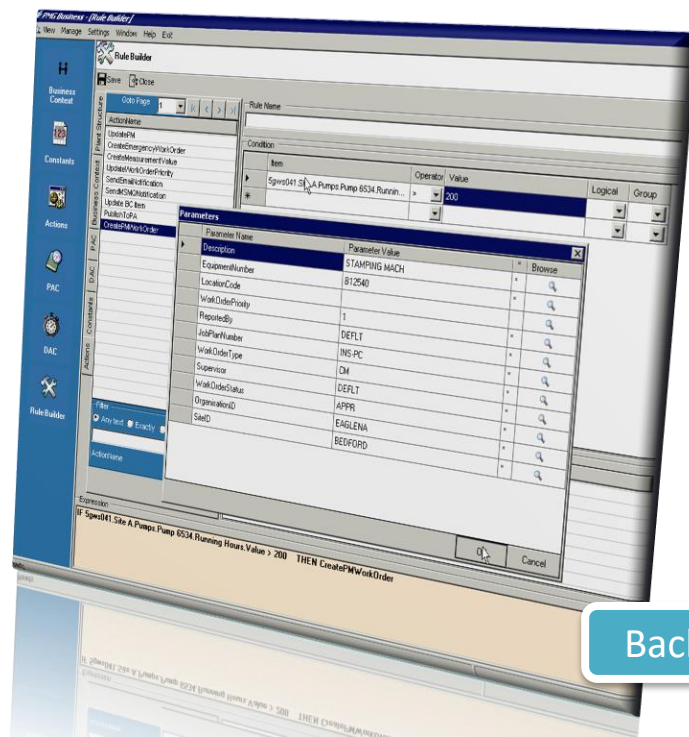


KPI & Performance
Mgt reports

Back

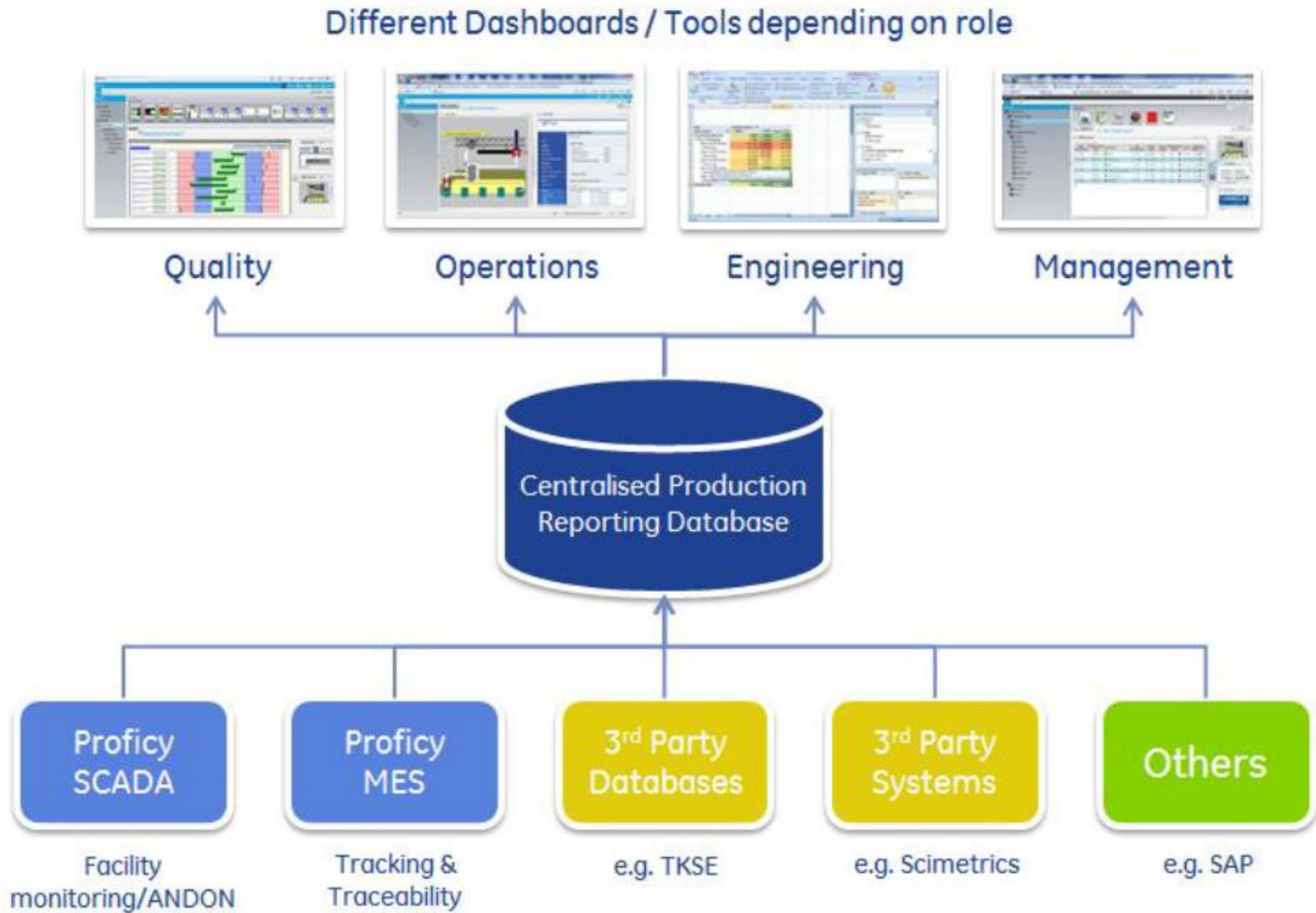
维护管理及原因分析

- 与资产管理 - EAM系统的接口
- 预防性维护安排
- 过程分析和变量关联
- 预防性维护报警

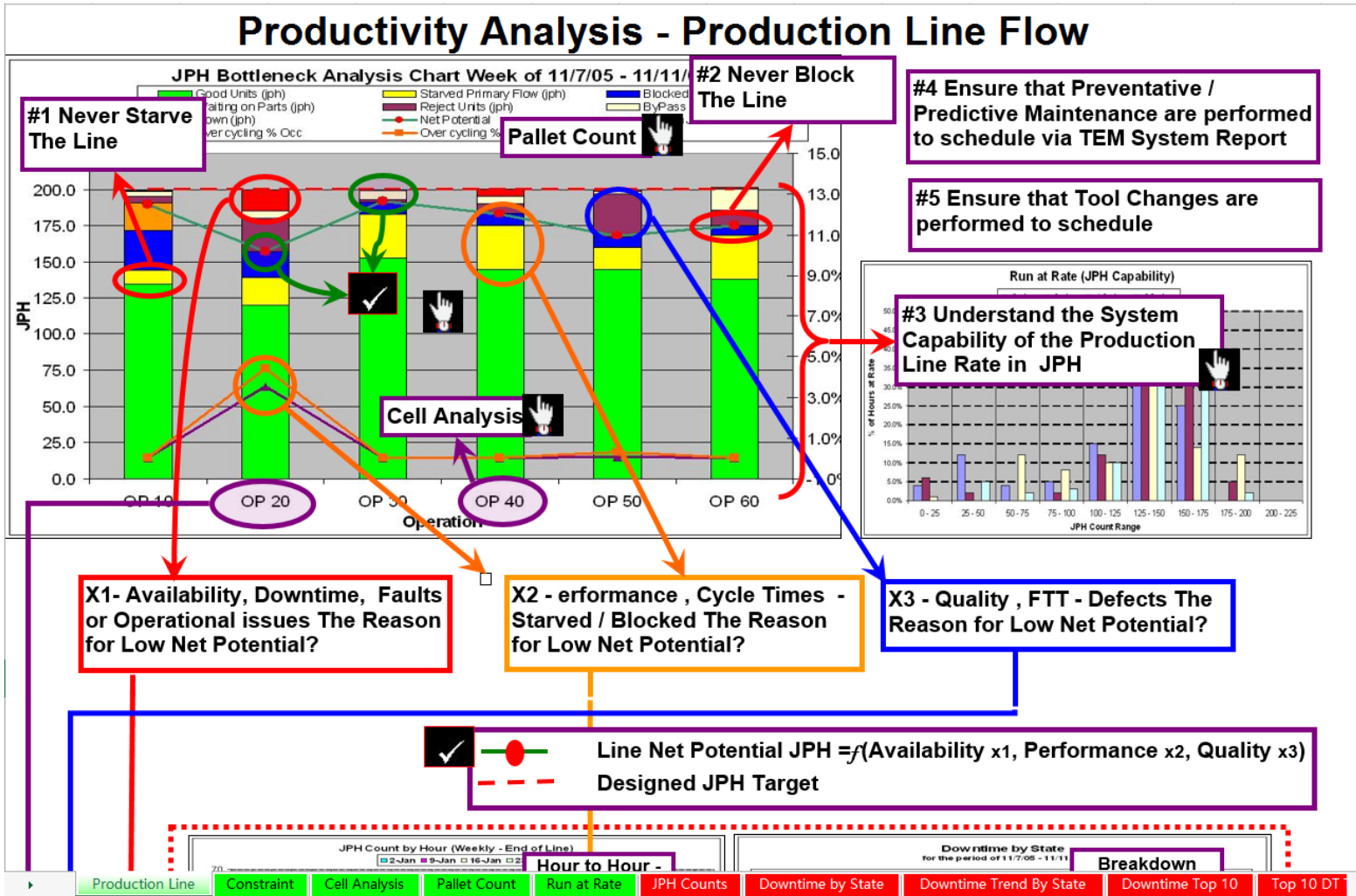


Back

企业级报表体系架构





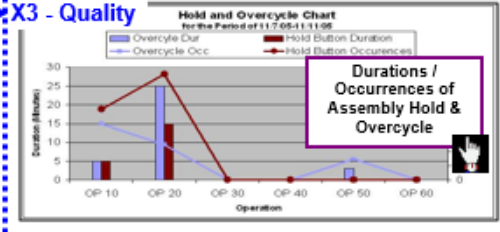
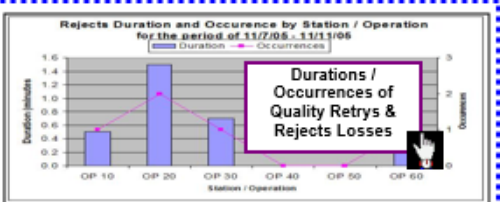
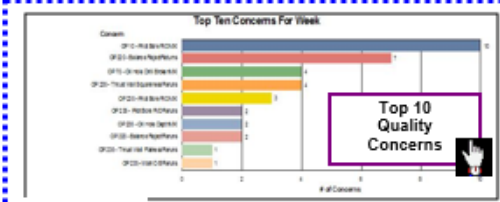
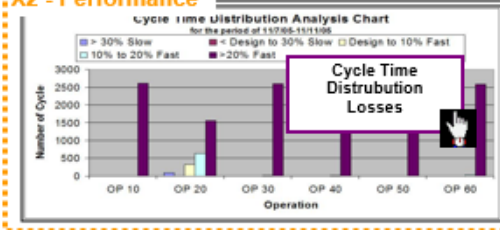
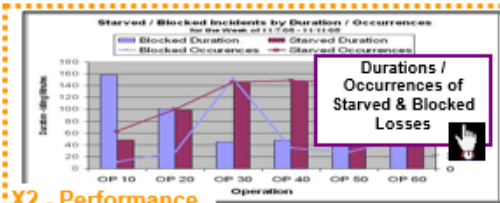
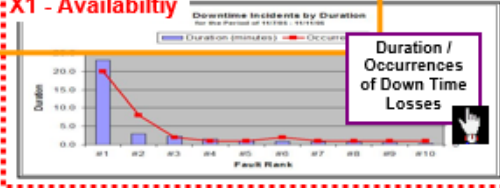
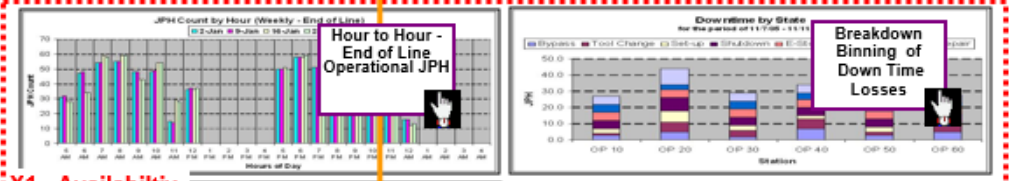
报表详细定义示例(JPH,OEE)



报表详细定义

Drilldown

 Line Net Potential JPH = $f(\text{Availability } x1, \text{Performance } x2, \text{Quality } x3)$
 Designed JPH Target



X1 - Availability

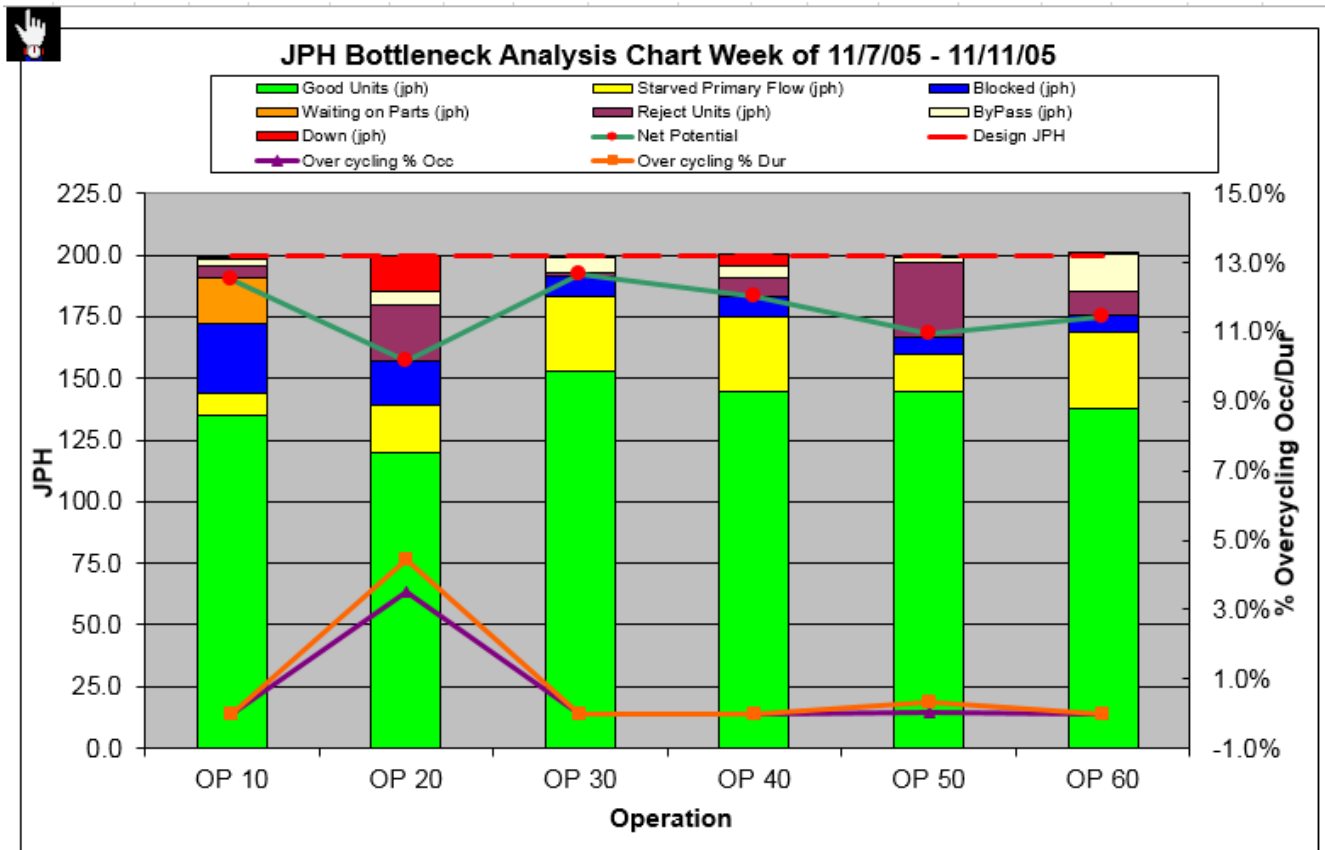
X2 - Performance

X3 - Quality



报表详细定义

瓶颈分析与潜在能力挖掘



JPH Bottleneck Analysis Data Table

Rank	Asset Name	Total Units	Good Units	Rejected Units	Total (jph)	Good Units (jph)	Reject Units (jph)	ByPass (jph)	Starved Primary Flow (jph)	Waiting on Parts (jph)	Down (jph)	Cycling (jph)	Cycling Loss / (Gain) (jph)	Net Potential	Design JPH	Blocked (jph)	Over Cycling % Occ	Over Cycling % Dur
1	OP 20	2,609	2,608	1	120.0	120.0	23.0	5.0	19.3	0.0	15.0	160.4	40.4	157.0	200.0	17.7	3.5%	4.4%
2	OP 10	2,610	2,608	2	135.0	135.0	5.0	3.0	9.1	18.7	0.6	141.9	6.9	190.0	200.0	27.8	0.0%	0.0%
3	OP 40	2,609	2,608	1	146.0	145.0	7.0	5.0	30.0	0.0	4.7	155.5	10.5	183.0	200.0	8.5	0.0%	0.0%
4	OP 50	2,608	2,608	0	145.0	145.0	30.0	2.0	15.0	0.0	0.6	160.3	15.3	168.0	200.0	7.0	0.0%	0.3%
5	OP 30	2,608	2,608	0	153.0	153.0	2.0	6.0	30.2	0.0	0.6	159.8	6.8	192.0	200.0	7.9	0.0%	0.0%
6	OP 60	2,609	2,608	1	138.0	138.0	10.0	15.0	30.7	0.0	0.7	160.7	22.7	175.0	200.0	6.7	0.0%	0.0%

Similar to FIS report 10.1 Bottleneck Report.

Flow capability will not be used for this report.

The calculated net potential value of the assets will be used to determine which asset is the bottleneck.

The chart will present the assets in process order.

The data table will list the assets with the worst net potential on top.

A line will be shown on the chart for % overcycles duration which equals (total duration of overcycles)/(total duration of cycle times).

A line will be shown on the chart for % overcycles occurrences which equals (total occurrences of overcycles)/(total occurrences of cycles).

The y axis scale must automatically scale to the data presented. Design JPH may vary from 300 to 60 JPH.

The y axis scale should not default to a minimum of zero but instead focus on the area around the top of the cycling JPH.

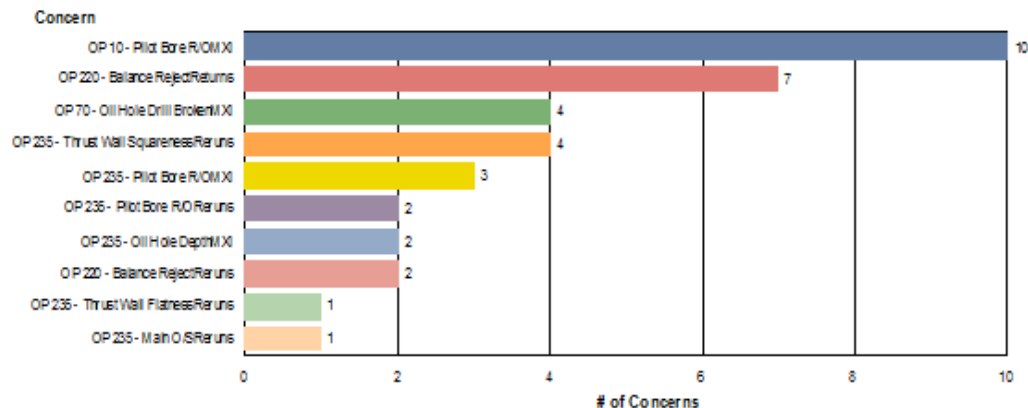
报表详细定义

主要质量问题分析

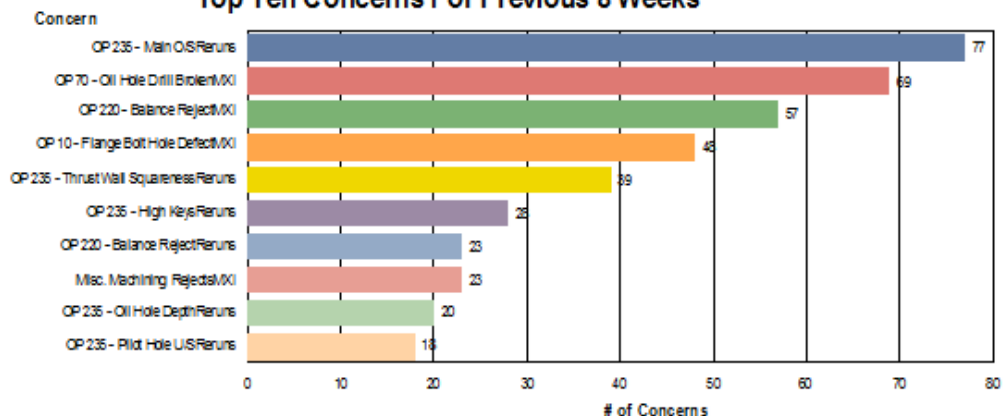
Top 10 Quality Concerns



Top Ten Concerns For Week



Top Ten Concerns For Previous 8 Weeks





群石智能
QUNSHI INTELLIGENT

致力智能制造