自动化运营控制整合解决方案

我们提供从安装到运营的便捷、稳定的服务，通过提供智能工厂平台和各种打包形式的解决方案来构建最优化的工厂自动化。

利用设备及其之间的数据，实现从生产运营到设备维护和监控的一体化运营管理 /

即时处理，使客户能够更有效地利用资源，最大限度地提高运营效率。

Real-Time Statistical Process Control

面向现场的优化服务

角色定义

nexbe+ rSPC是一款On、Off-line rSPC（统计性工艺管理）系统，可实时收集生产和测量数据，并利用统计资料和分析技术，实现早期发现异常并警告的功能。

With **nexbe+** rSPC, You Can

“Real-Time Statistical Process Control”

基准信息管理

- 控制规则、控制图表、rSPC规格建模

实时规则检查

- 根据控制对象计算统计数据 / 控制参数
- 检查规则违反，规则违反结果存档
- OCAP interface (Corrective action在 MES service执行)

分析

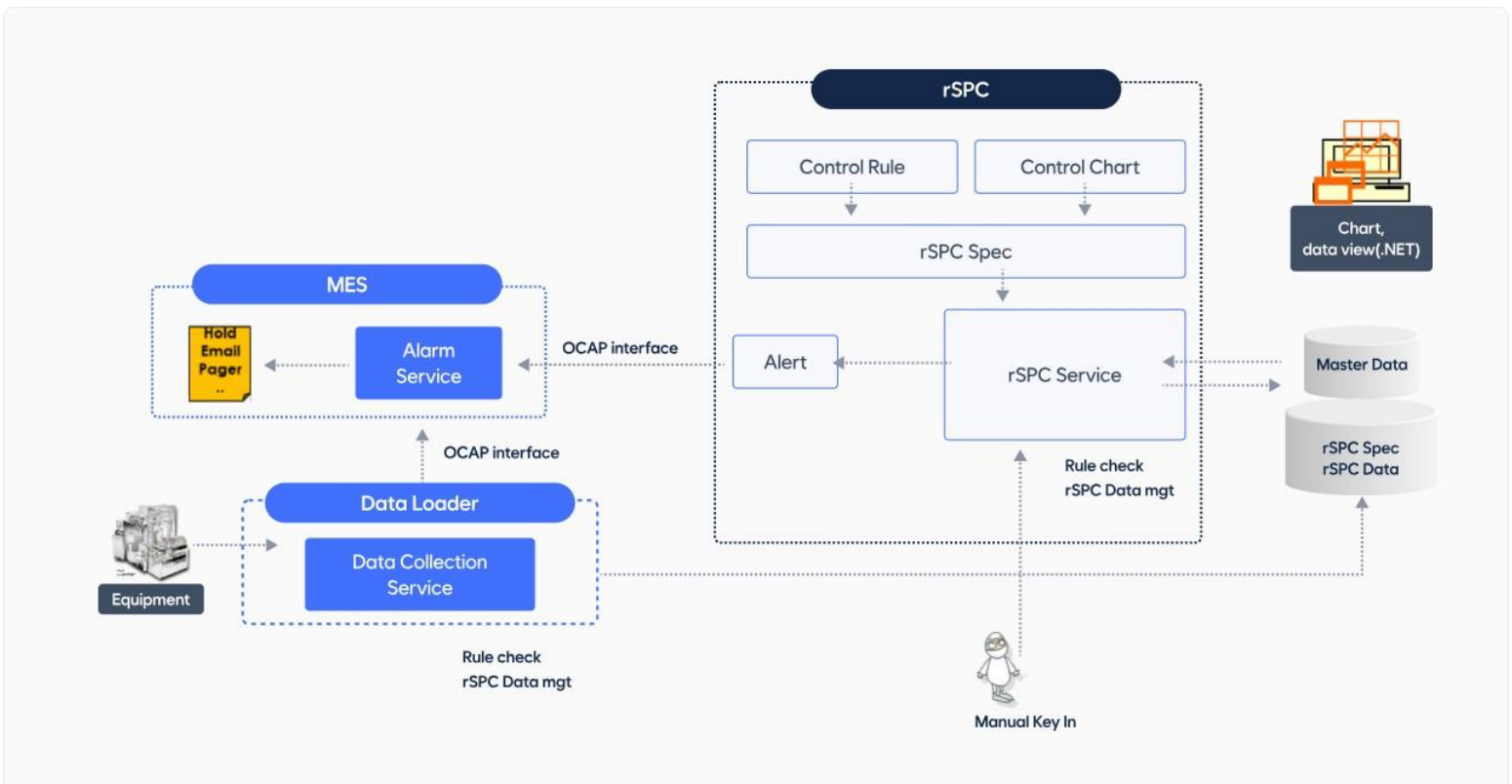
- Cp/Cpk报告，模拟（规格和控制限值估计），指数报告（报警，Cp/Cpk）

依照批量管理进行统计值管理

- CL (根据原始数据自动生成CL)

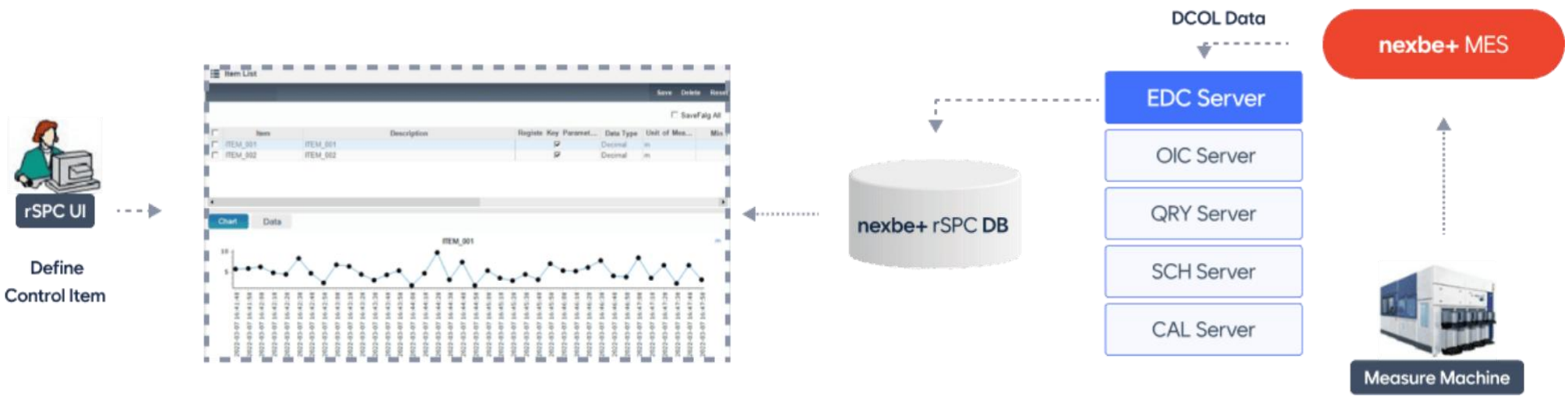
产品架构

- rSPC收集用户定义的数据，执行规则检查并保存结果
- 发生规则偏离（Rule Out）时，根据OCAP定义，与MES进行接口或作为其他事件进行处理



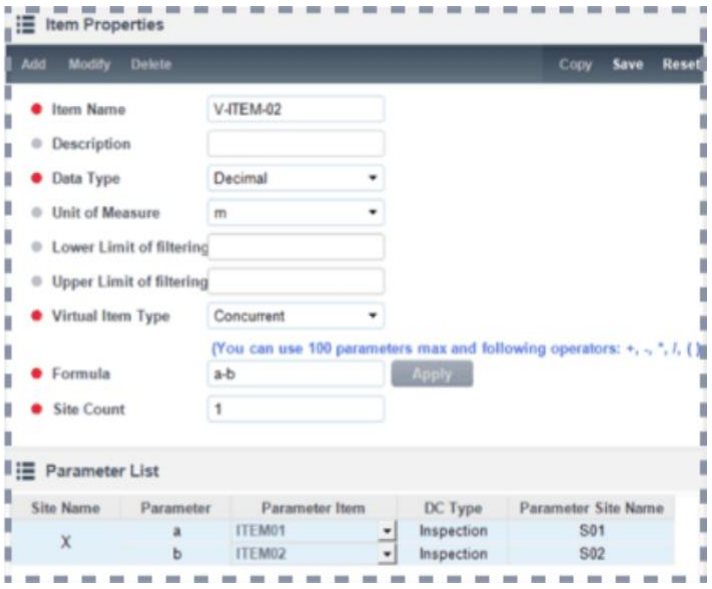
面向现场的优化服务

01 建模-定义控制项



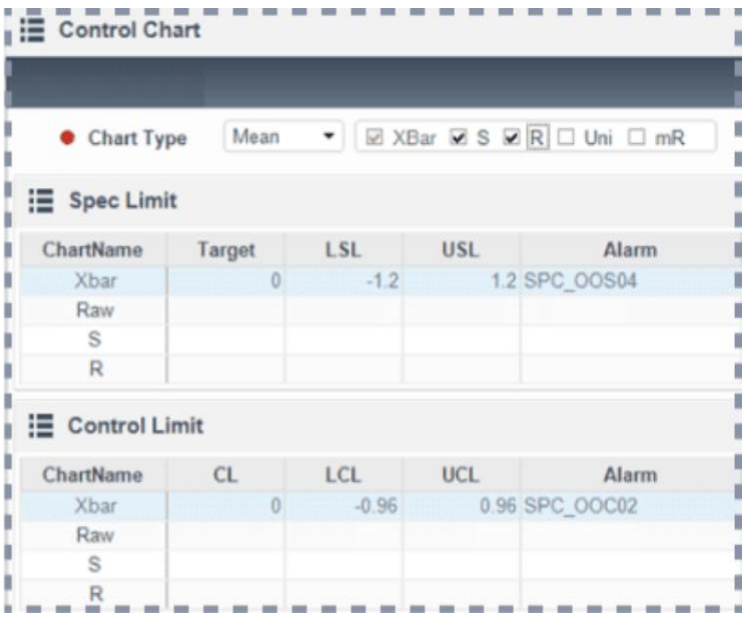
02 建模-虚拟项目

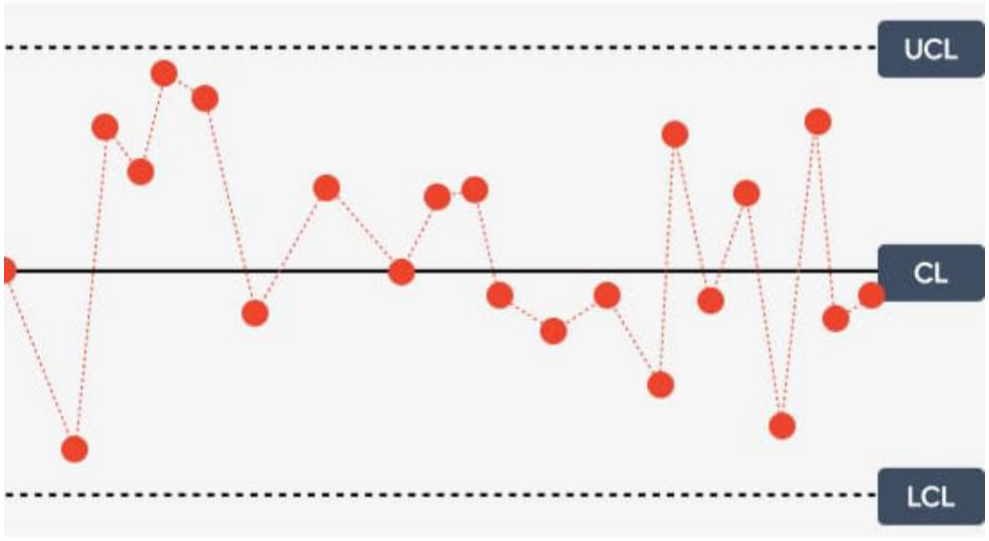
Define
Virtual Item



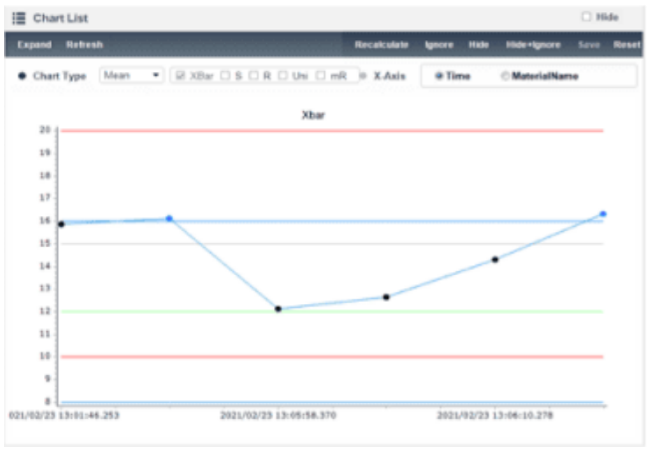
03 控制图表-图表规格

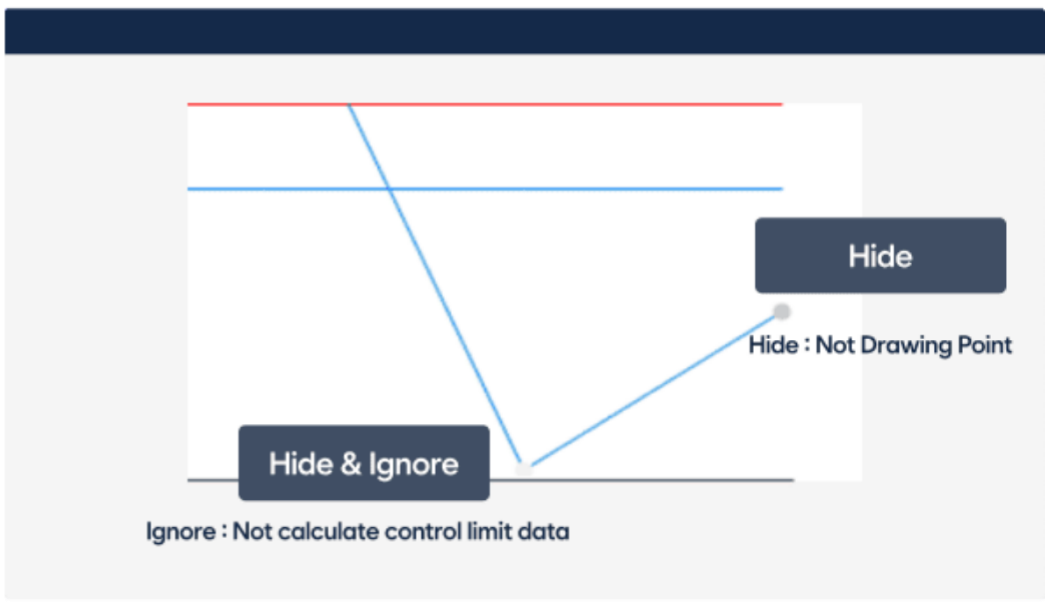
Define
Virtual Item



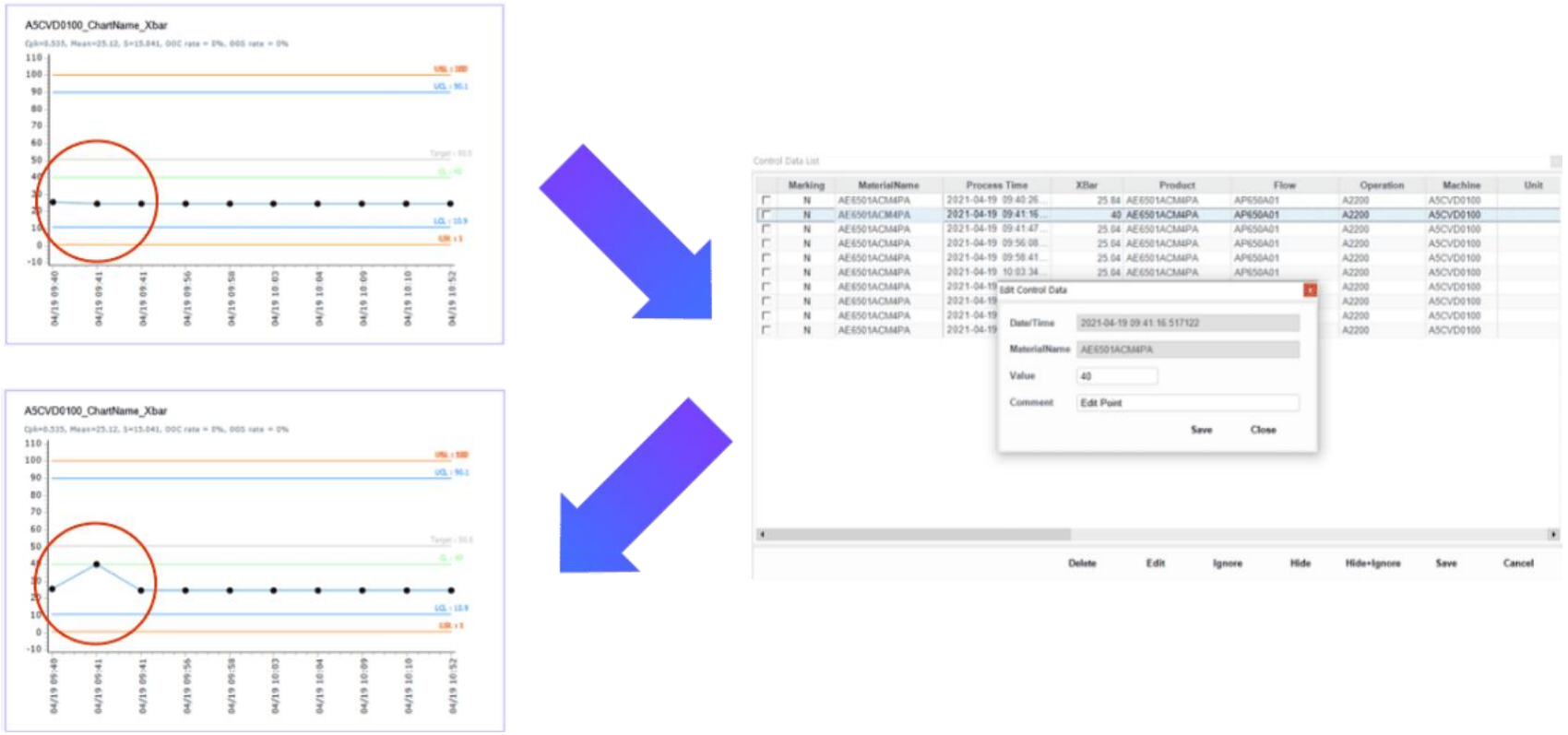


04 控制图表 – 图表点隐藏和忽略





05 处理控制数据-编辑、删除控制数据



06 提供业界通用的默认规则和自定义规则

基本西电规则作为标准提供

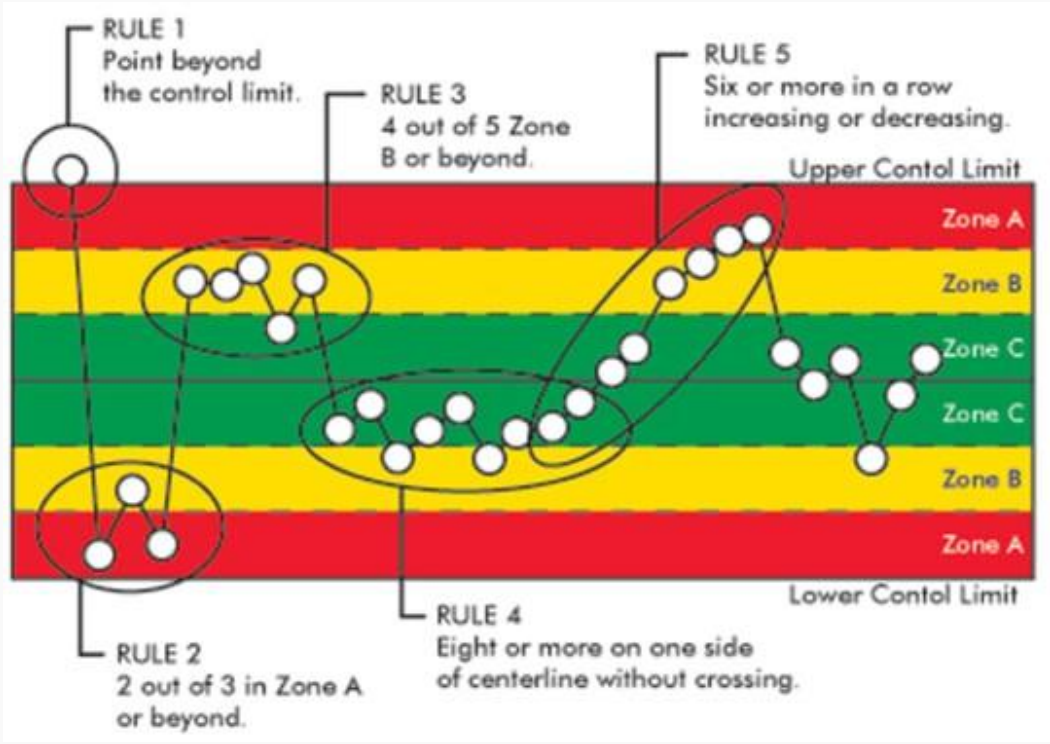
- Zone rules for symmetric data (4 types)
  R-chart rules for asymmetric data (7 types)
- Trend rules (2 types)

纳尔逊规则作为标准提供

- 8 types of symmetric & asymmetric rules

支持自定义规则

- Limit out type
- Bias type
- Trend type
- Oscillation type
- 按类型定制管理限制并应用运行时间

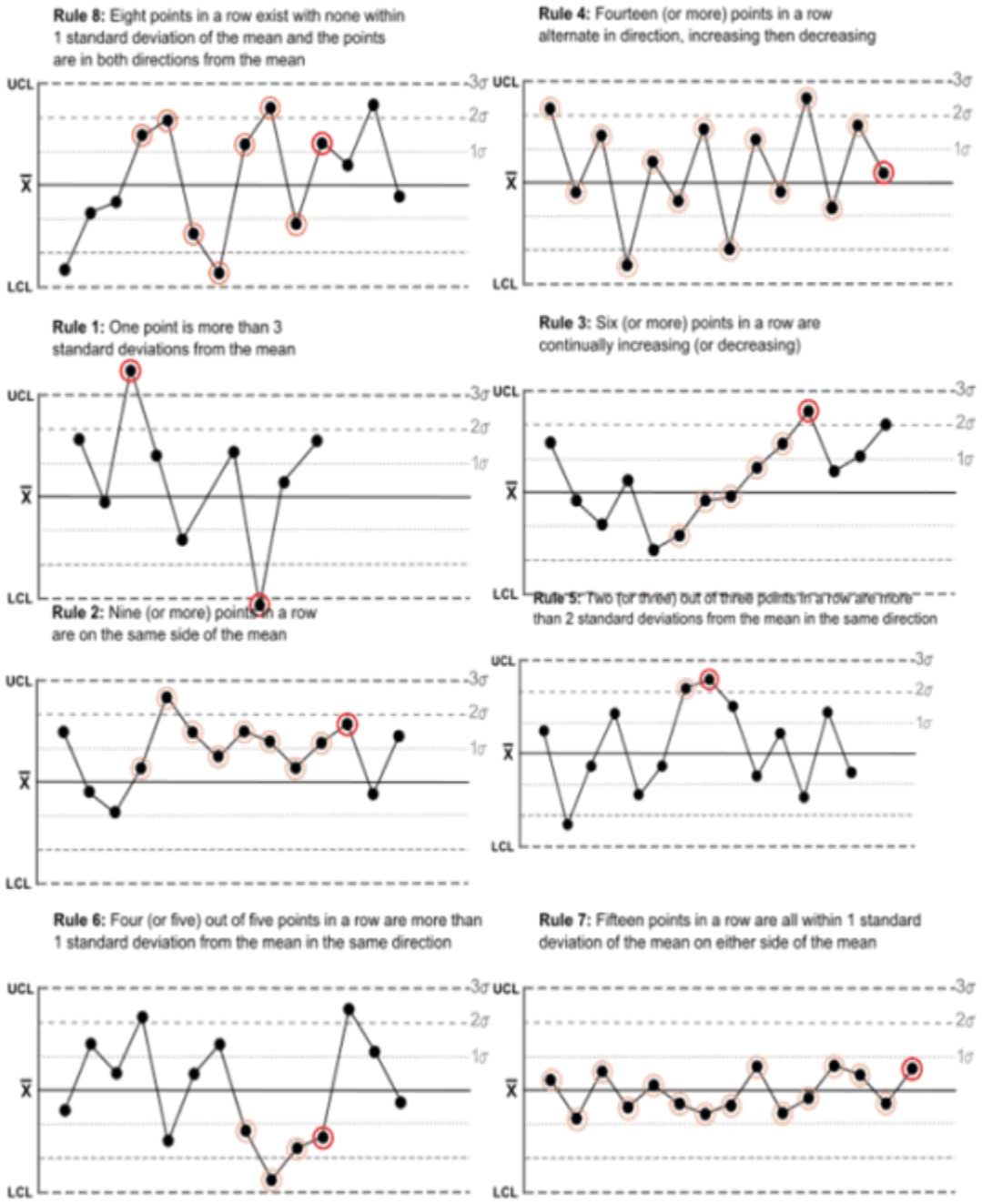


07 规则 - 西电规则

Cate	No.	Description	适用Ch
Zone Rule	R1	Any single data point falls outside the 3σ limit from the centerline (i.e., any point that falls outside Zone A, beyond either the upper or lower control limit)	– Symmetricdata 适用 (X-bar chart..)
	R2	Two out of three consecutive points fall beyond the 2σ limit (in zone A or beyond), on the same side of the centerline	
	R3	Four out of five consecutive points fall beyond the 1σ limit (in zone B or beyond), on the same side of the centerline	
	R4	Eight consecutive points fall on the same side of the centerline (in zone C or beyond)	
R-Chart Rule	R5	Any single data point falling above the +3σ limit	– Smallsub-groupsample(<5) – Asymmetricdata适用(R-chart,p-chart,..)
	R6	Two consecutive points falling above the +2σ limit (in the upper zone A or above)	
	R7	Three consecutive points falling above the +1σ limit (in the upper zone B or above)	
	R8	Seven consecutive points falling above the centerline (in the upper zone C or above)	
	R9	Ten consecutive points falling below the centerline (in the lower zone C or below)	
	R10	Six consecutive points falling below the -1σ limit (in the lower zone B or below)	
	R11	Four consecutive points falling below the -2σ limit (in the lower zone A)	
Trend	R12	6 in a row trending up or down	–
	R13	14 in a row alternating up and down	

08 规则 – 纳尔逊规则

	No.	Description	적용 Chart
Rules	R1	One point is more than 3 standard deviations from the mean.	**X-bar, R-chart**
	R2	Nine (or more) points in a row are on the same side of the mean	
	R3	Six (or more) points in a row are continually increasing (or decreasing).	
	R4	Fourteen (or more) points in a row alternate in direction, increasing then decreasing.	
	R5	Two (or three) out of three points in a row are more than 2 standard deviations from the mean in the same direction.	**X-bar chart 适用**
	R6	Four (or five) out of five points in a row are more than 1 standard deviation from the mean in the same direction.	
	R7	Fifteen points in a row are all within 1 standard deviation of the mean on either side of the mean.	
	R8	Eight points in a row exist with none within 1 standard deviation of the mean and the points are in both directions from the mean.	



09 为每个数据属性提供7种基本控制图表

Category	Attribute	Defect type	Chart type	Sample Siz
Variable (Quality)	Measurable (thickness, temp., pressure,..)		X, mR Chart (Individuals and moving range)	Sub group (point) 별 sample = 1
			Xbar, RChart (Average and range)	Sub group (point) 별 sample 2~10
			Xbar, SChart (Average and STdev)	Sub group (point) 별 sample > 10
Attribute (Defects)	Countable (defect, defective product, ..)	Defective Unit	np Chart (number defective)	sample size constants (每100个CST的不良产品数量)
			p Chart (proportion defective)	sample size varies (每个CST的不良产品数量)
		Defects	c Chart (defects per subgroup)	sample size constants (每100个样本的不良点数量)
			u Chart (defects per unit)	sample size varies (各期间的不良点数量)

10 可查询并模拟过去和最近数据的Cp / Cpk报告

查询条件

- 自定义查询条件
- 按时间段查询，最多6个查询条件

Cp/Cpk 报告

- 提供任意用户时段（每日 / 每周 / 每月）的制程能力指数统计数据
- 提供多个项目的统计数据，而不是单项数据。
- 提供Cp，Cpk，Pp，Ppk，CA，CPM，Cnpk指标

模拟

- 针对收集的数据，提供多个不同的管理图、控制限值和规则应用模拟功能
- 规格限值 / 控制限值估计

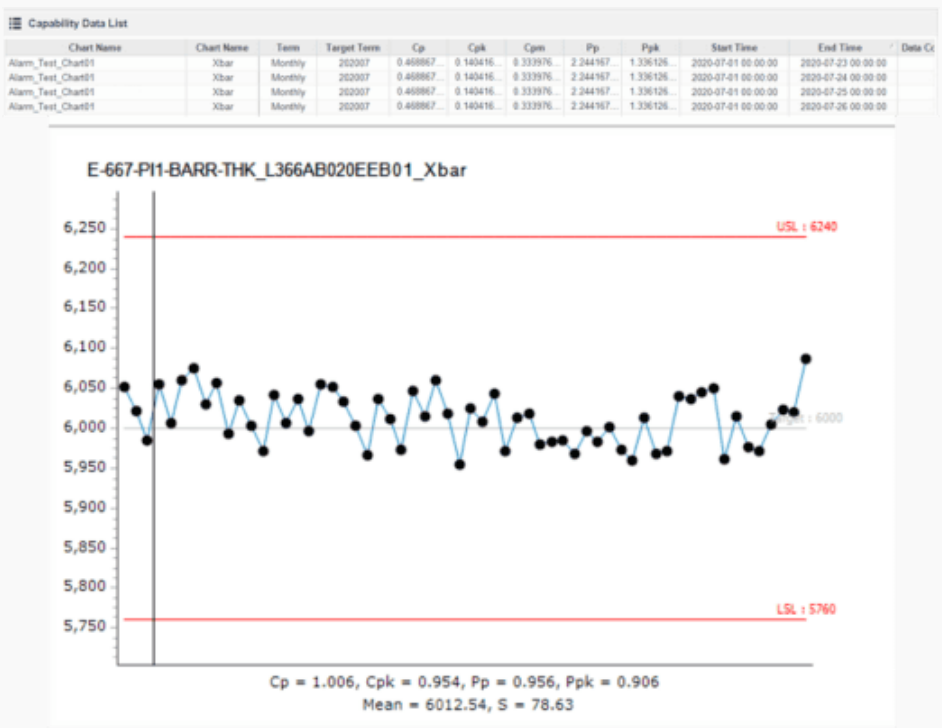
Excel 导出 / 打印

- 将原始数据、统计数据保存到 Excel 文件中
- 图表打印

11 将SPC数据分组，按时间段生成Cp / Cpk报告、报警报告

Cp/Cpk 指数报告

- 根据用户自定义条件进行分组，
  提供每日、每周、每月的制程能力指数报告功能



报警指数报告

- 根据用户自定义条件进行分组，
  提供每日、每周、每月的报警发生率报告功能