

Endress+Hauser 

People for Process Automation

Heartbeat 技术助力制药安全

心跳技术助推智能运维与安全管理

Heartbeat
Technology

工业4.0——数据信息时代



- 工业大数据
- ERP/SAP系统
- 资产管理系统
- 工业控制系统
- 过程数据

工业4.0——数据资源时代



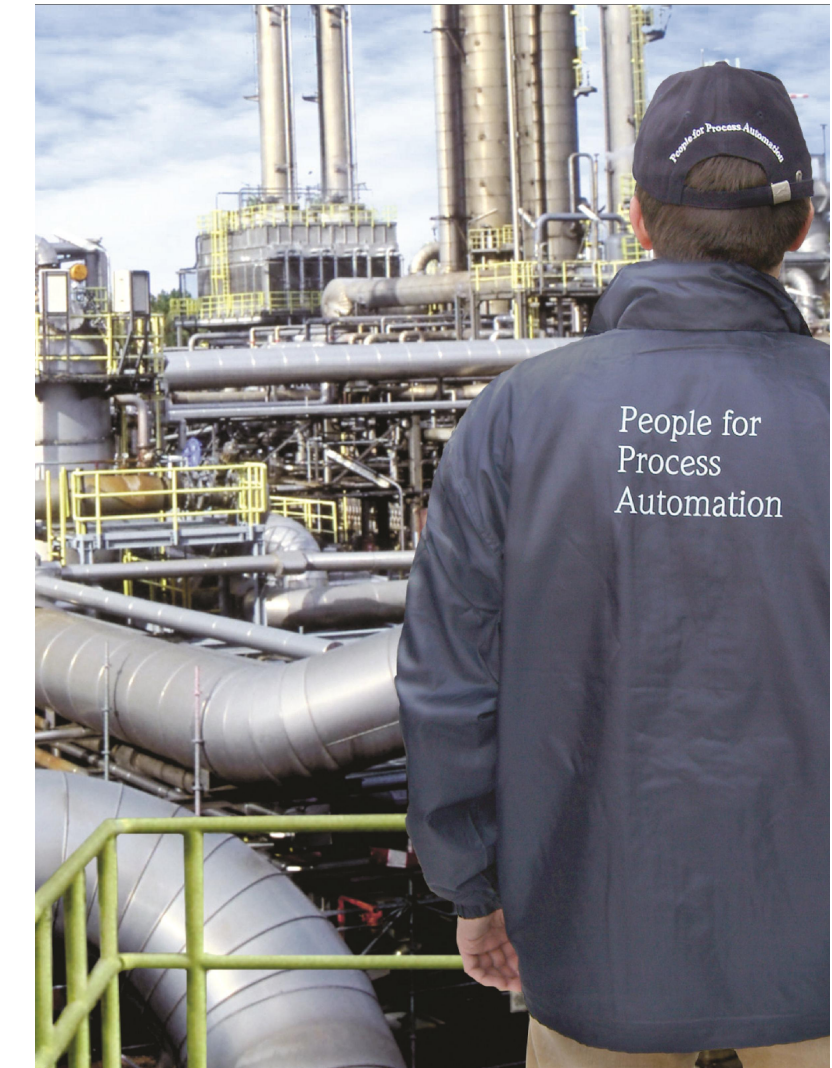
数据收集

流程数据
资产体征数据



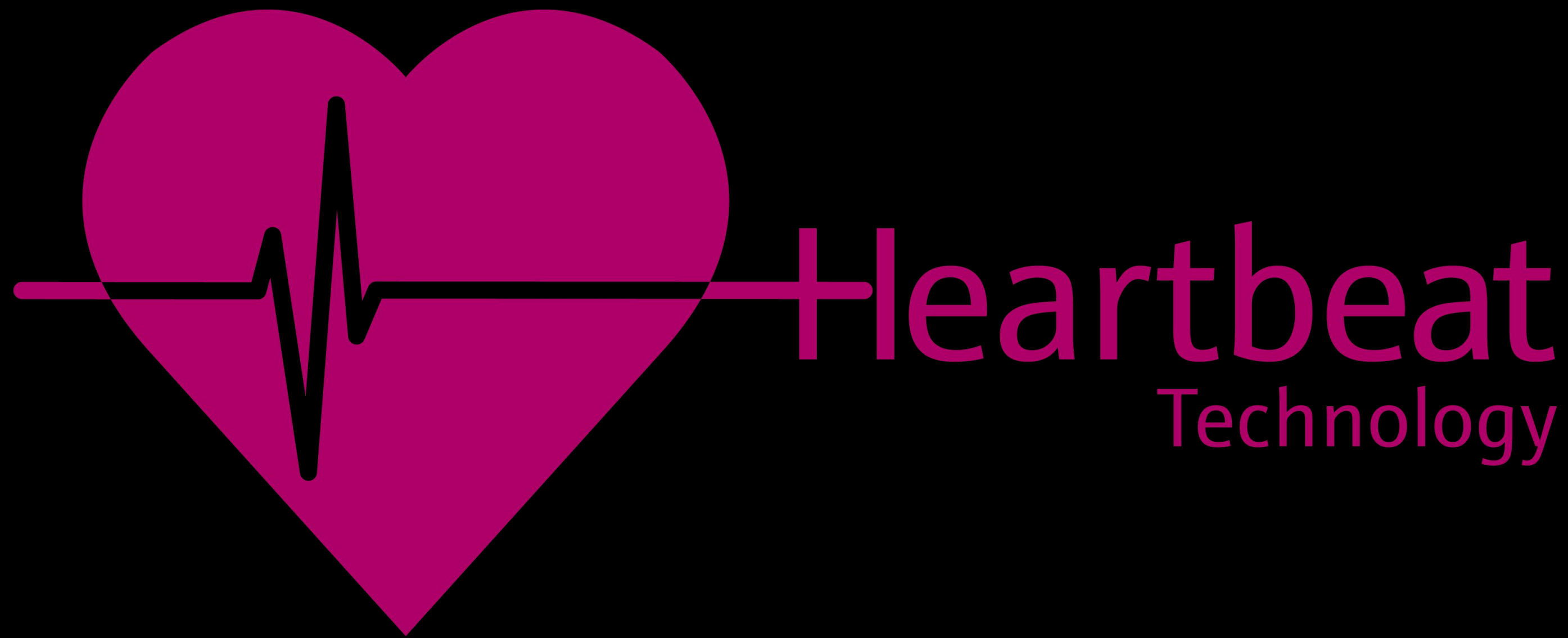
数据分析

在线、高效的数据分析
标准化的分析报告



数据价值

智能工厂运维
工厂安全保障



自诊断

自校验

自检测

Endress+Hauser工业4.0的时代利器——心跳技术

Heartbeat Technology 心跳技术



自诊断

- 设备连续自诊断，实时查看设备状态信息，覆盖范围广(>95%)
- 状态信号分类符合VDI/VDE 2650 标准和NAMUR 推荐的NE 107 标准
- 诊断信息可输出至现场显示单元或资产管理系统



自校验

- 无需中断工艺过程，验证测量设备的各项运行指标，给出√或×的结果
- 电子版标准报告符合法律法规要求，可用于第三方机构的质量评估
- 验证性测试可代替其他维护操作（如定期检查）或延长维护间隔



自检测

- 实时了解过程变量，记录相关参数值
- 仪表工作状态评估，基于检测信息给出预维护建议（如清洗/维护等）
- 仪表状态的趋势分析，量身订做备件计划
- 腐蚀检测、积垢检测、泡沫检测、粘附检测等...

当前工厂的运维流程——耗时的“侦探”工作

Multiple on-site service interventions

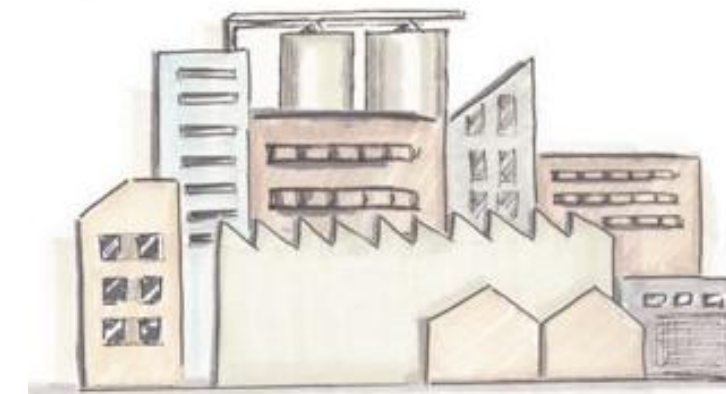


Maintenance Technician

lack of historic diagnostic data

missing information on inventory

difficult information access

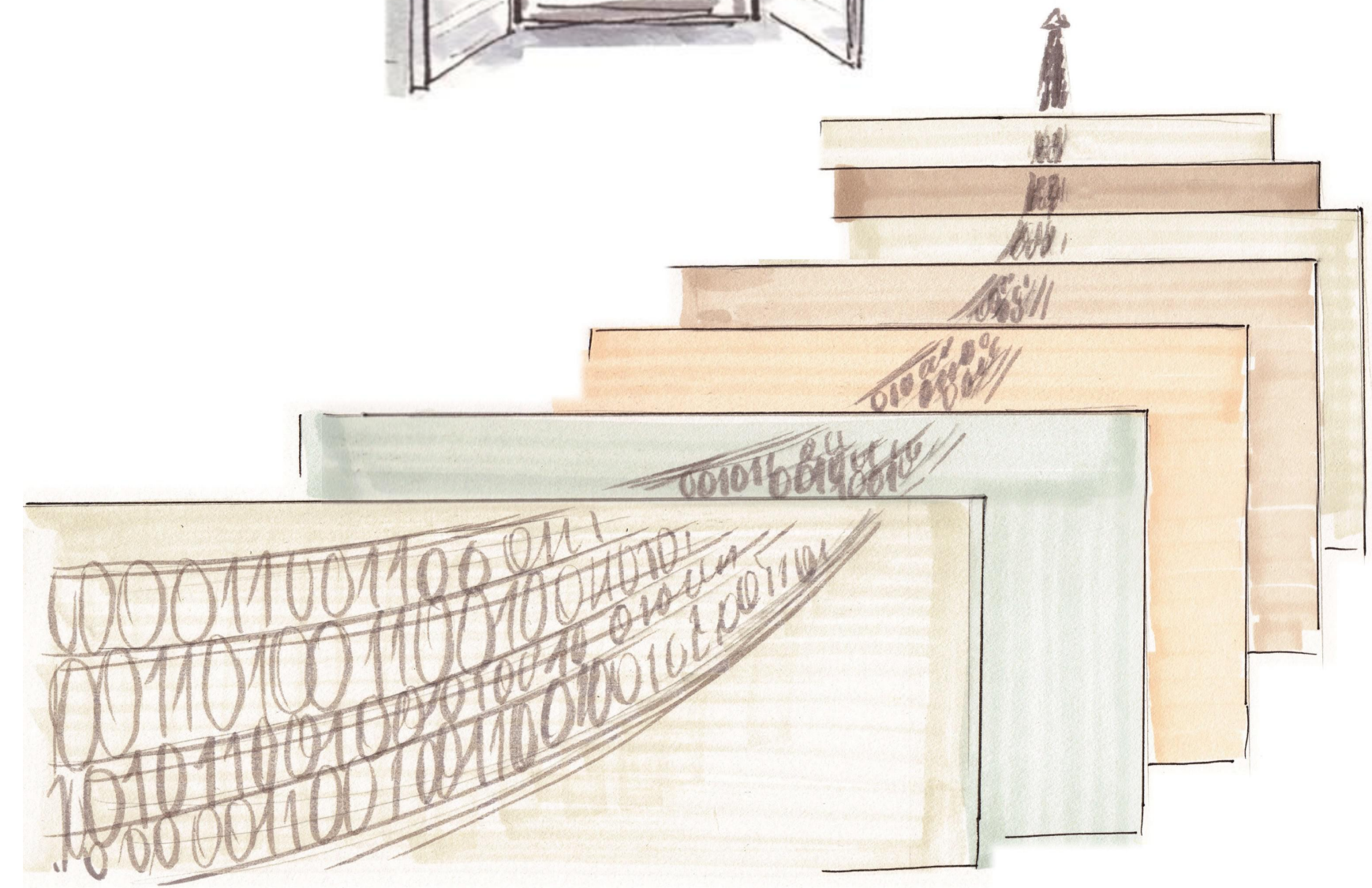
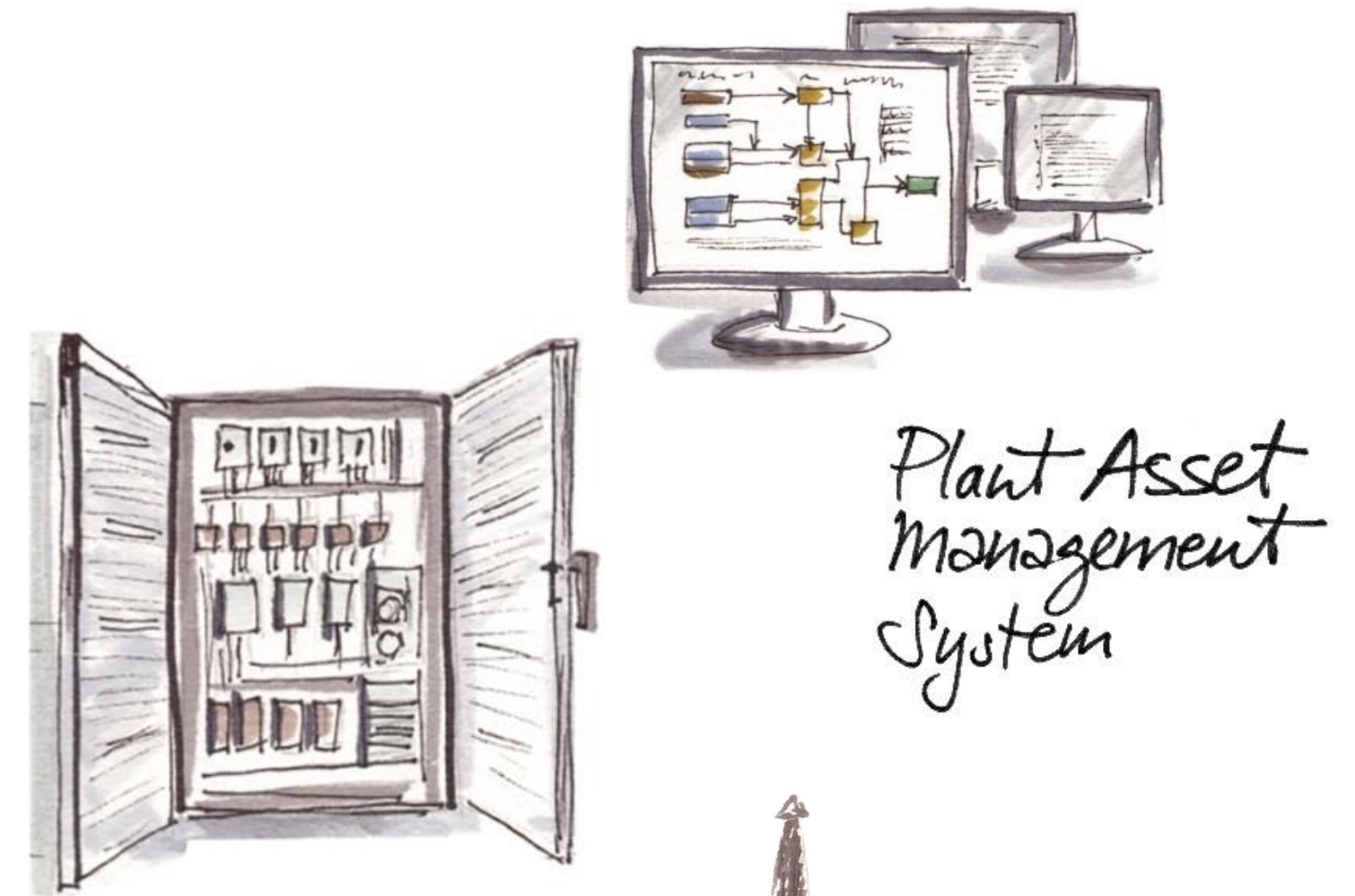
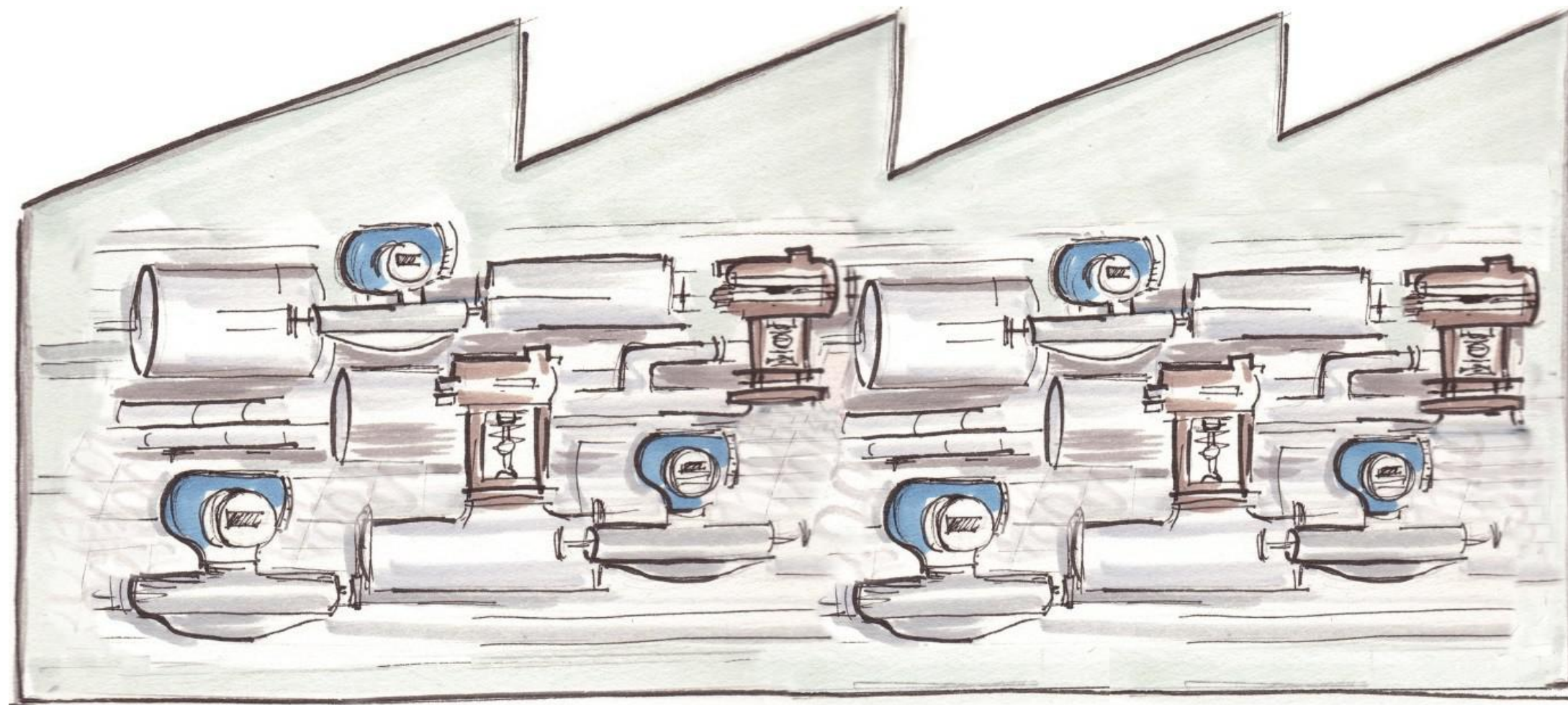


Unchanged plant availability

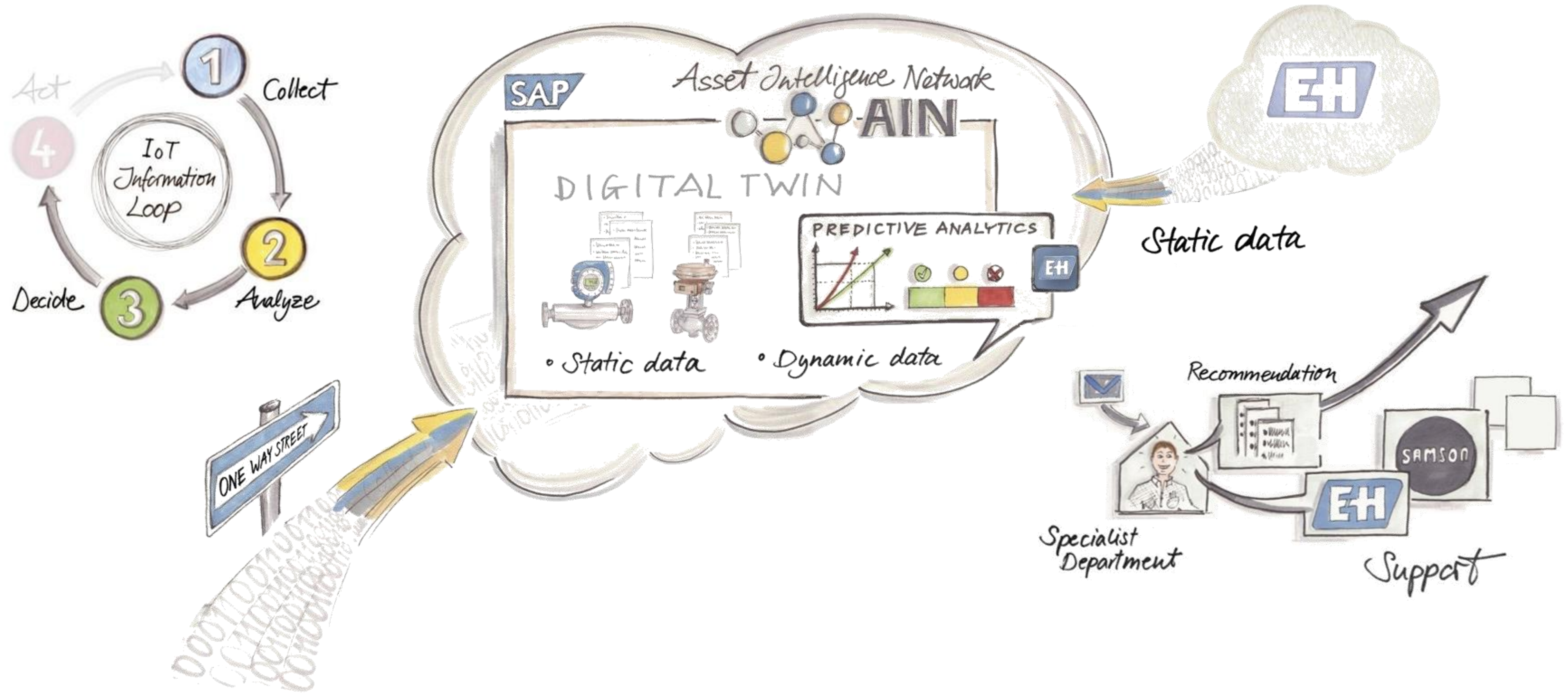


仪表资产的“体质报告”

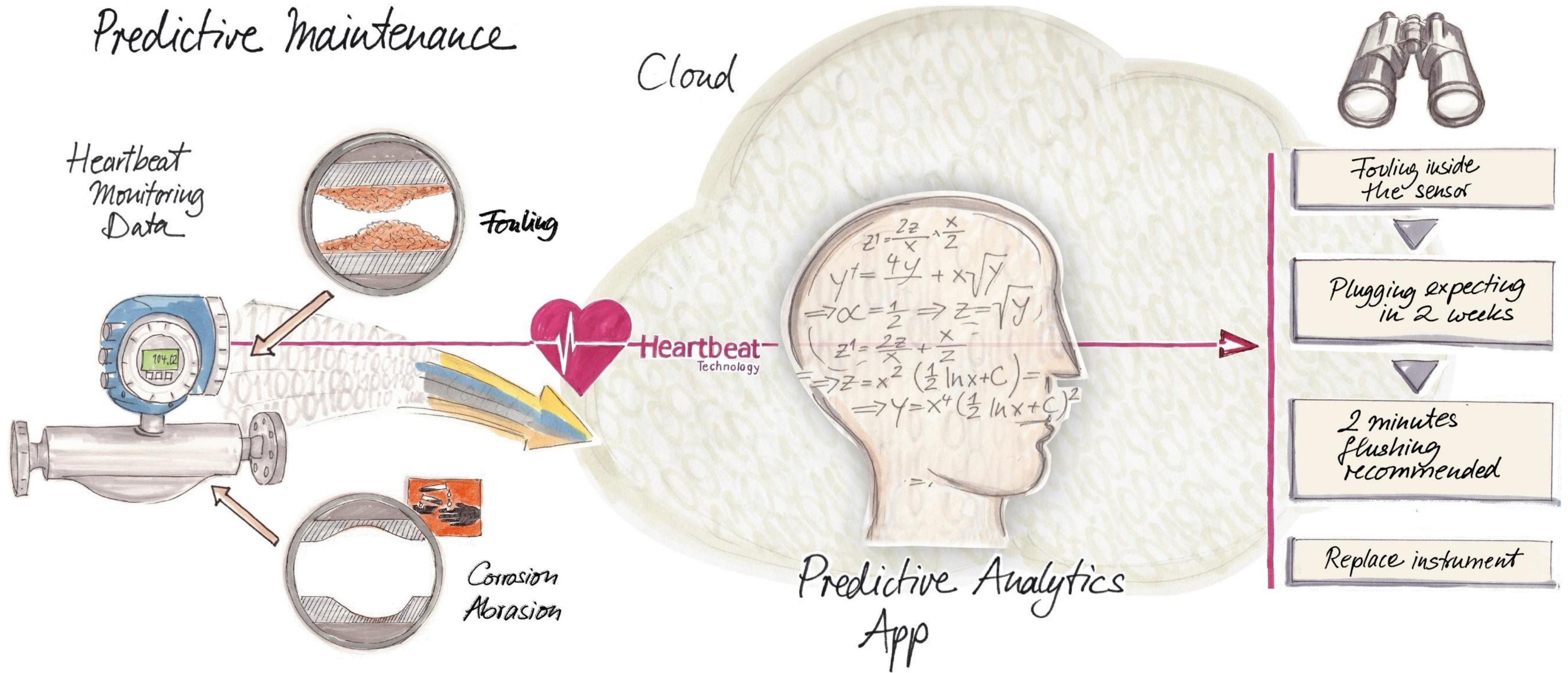
- 标准报告在线生成
- 不中断工艺，上传至上位管理系统



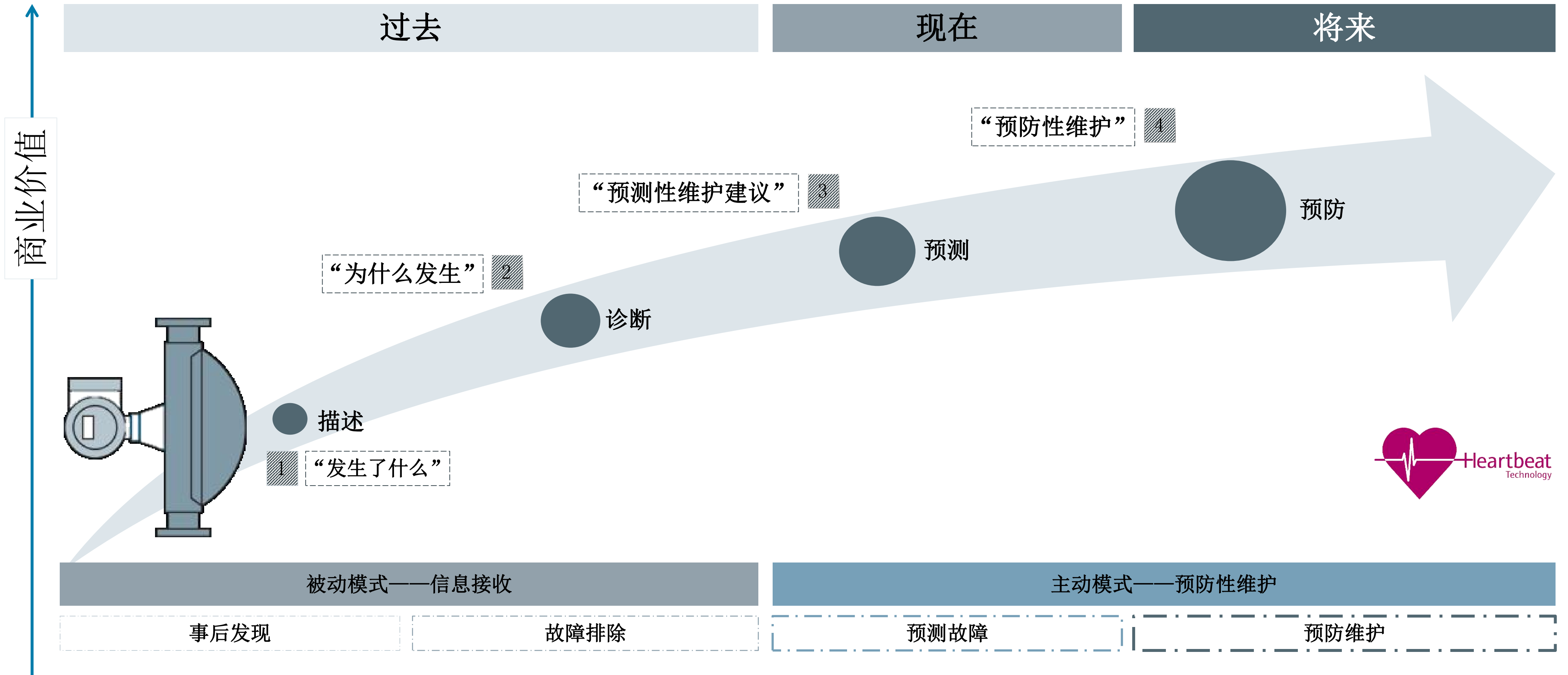
Heartbeat Technology 心跳技术——工厂运维的决策参考



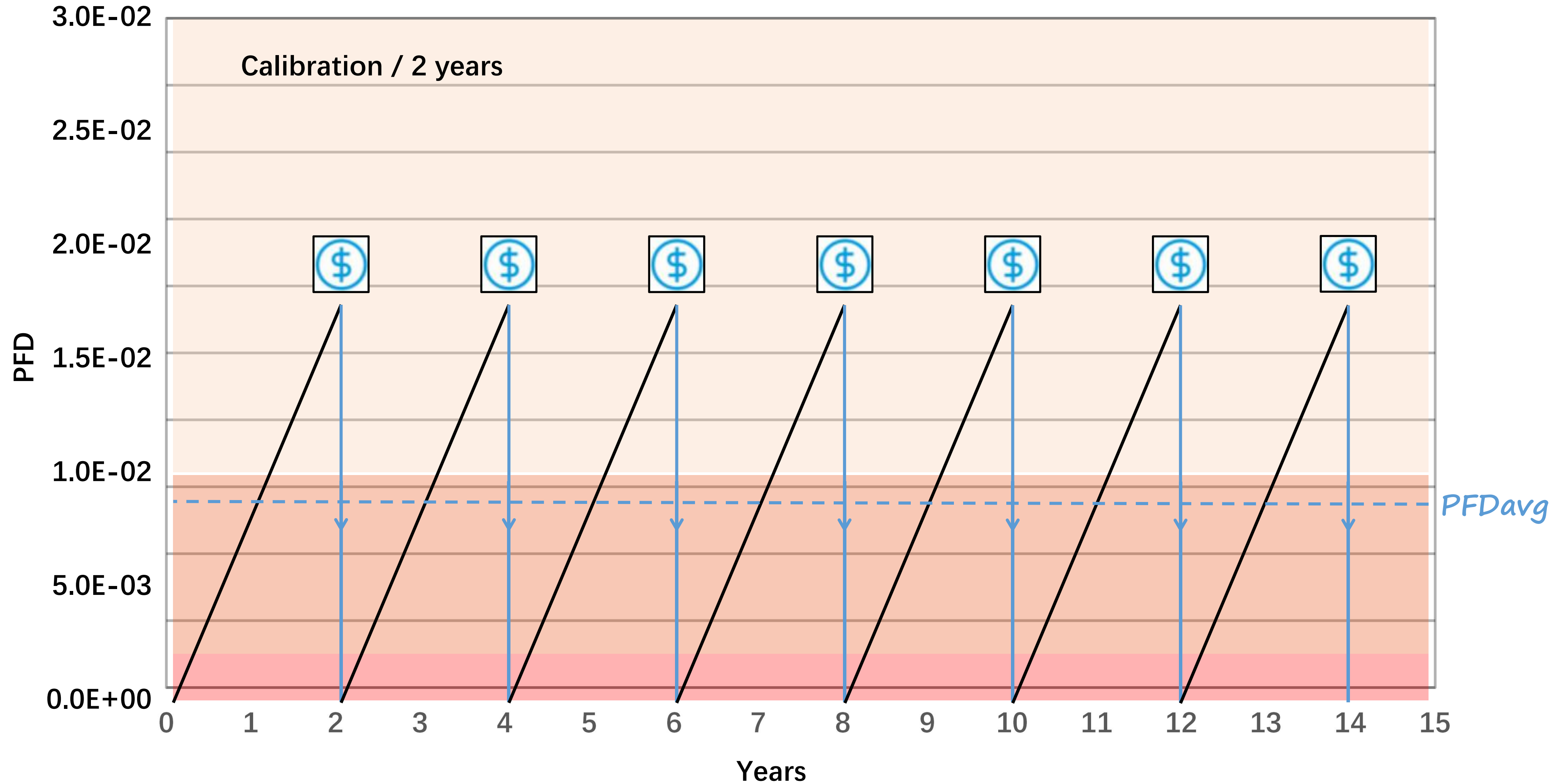
Heartbeat Technology 心跳技术——仪表设备的预防性维护



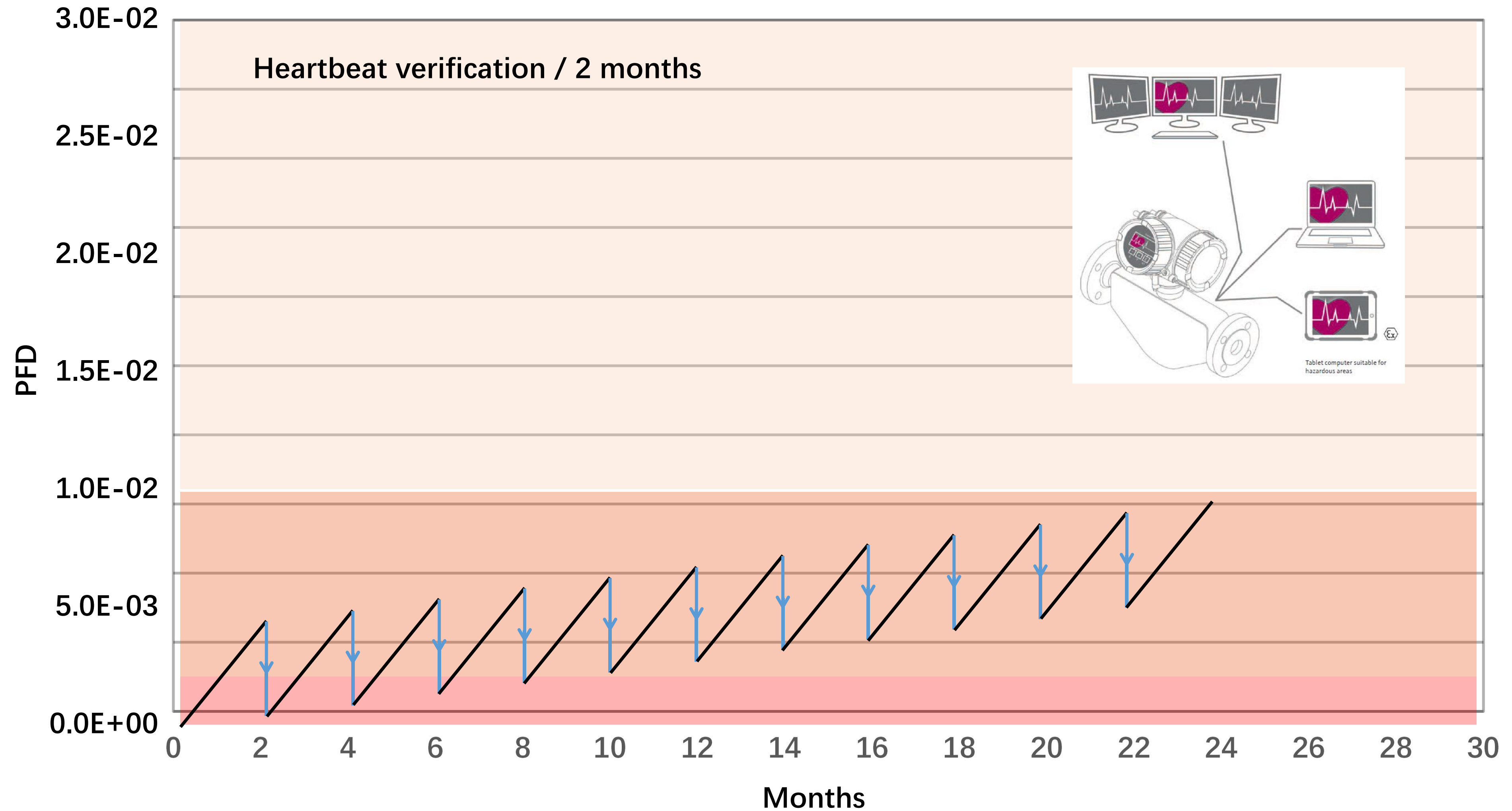
Heartbeat Technology 心跳技术——助推工厂智能运维



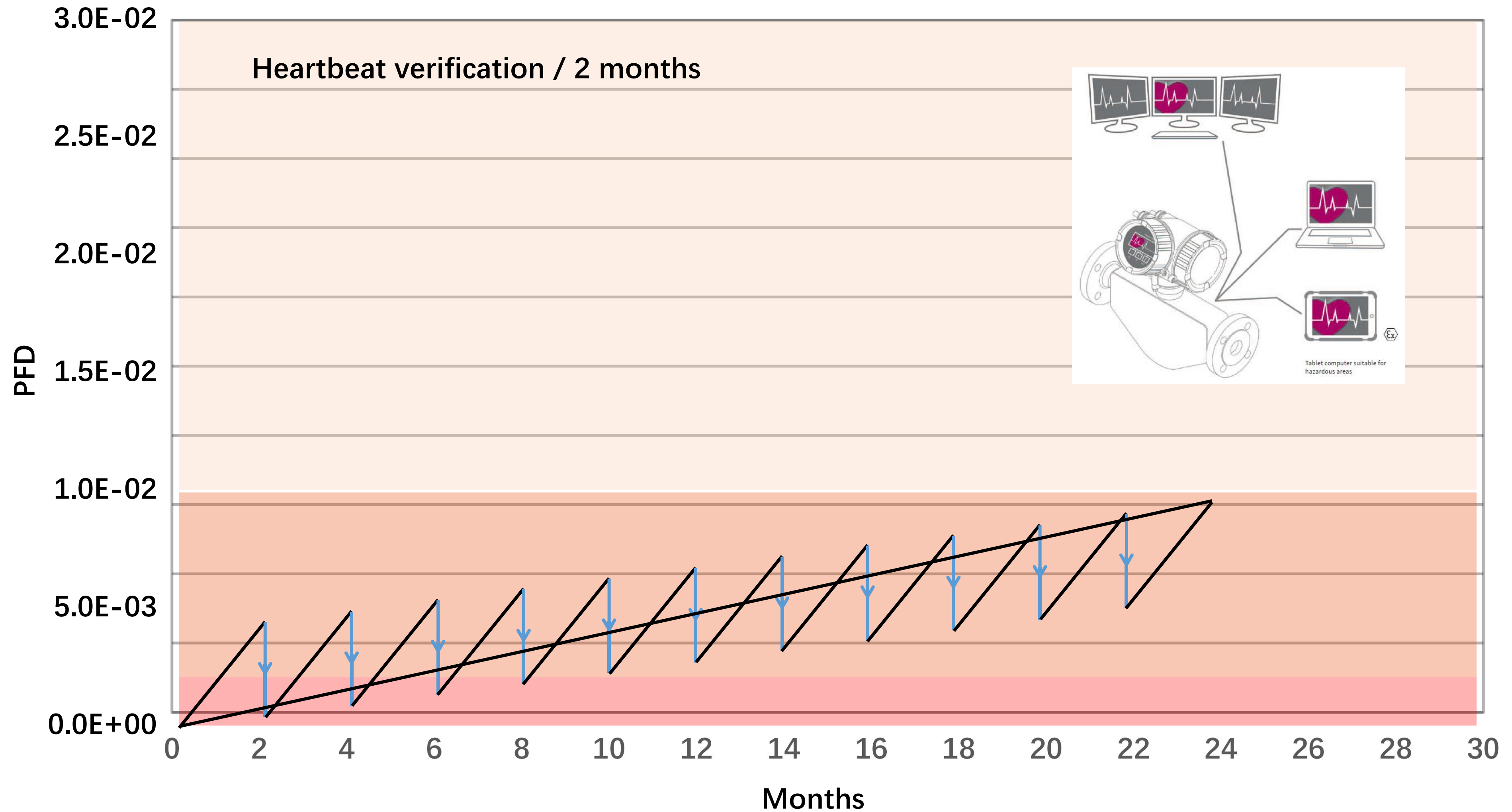
Heartbeat技术延长校准周期 - 没有Heartbeat时



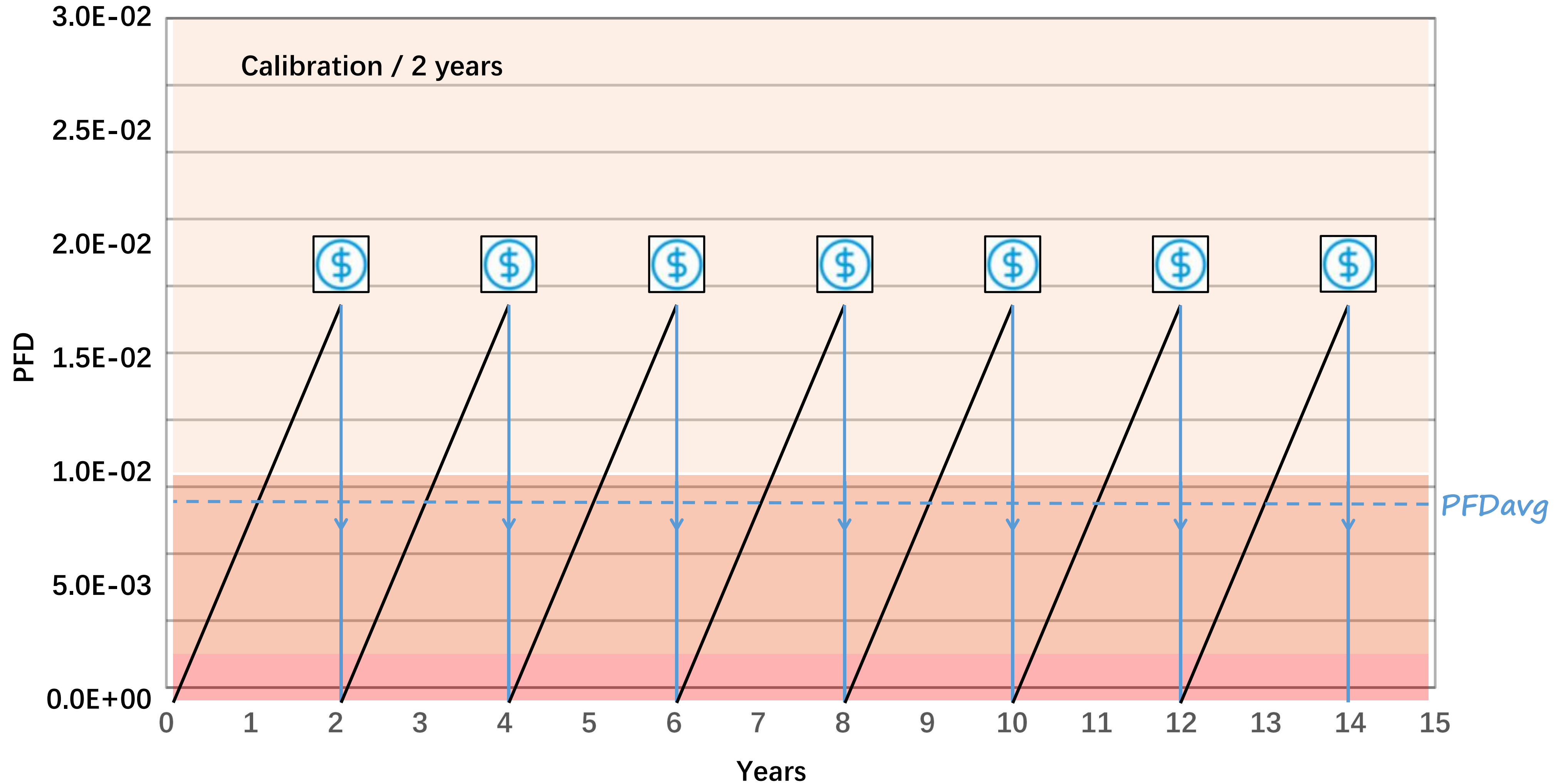
Heartbeat技术延长校准周期 - 有Heartbeat时



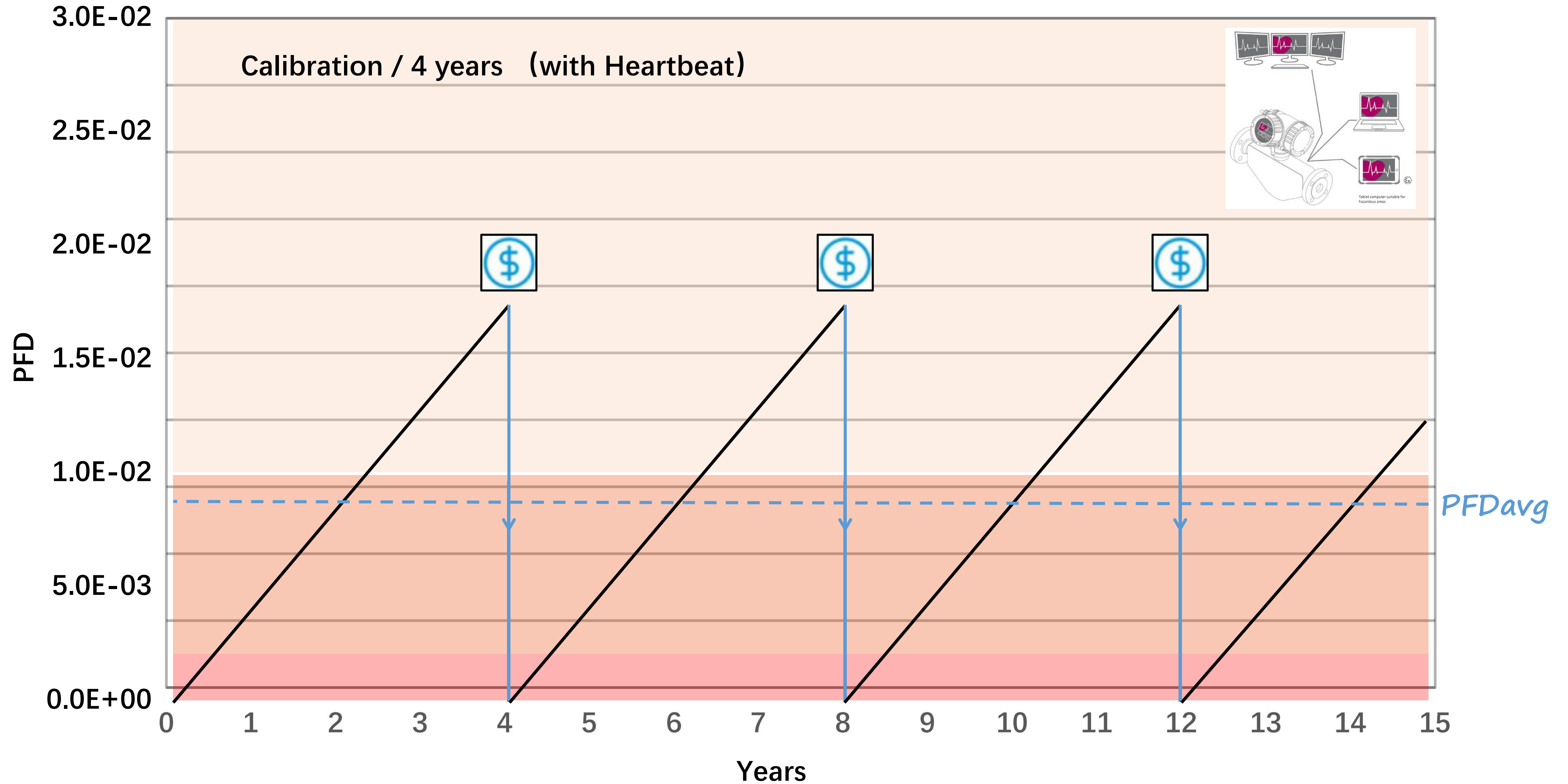
Heartbeat技术延长校准周期 - 有Heartbeat时



Heartbeat技术延长校准周期 - 没有Heartbeat时



Heartbeat技术延长校准周期 - 有Heartbeat时



案例——温度仪表的在线自校验

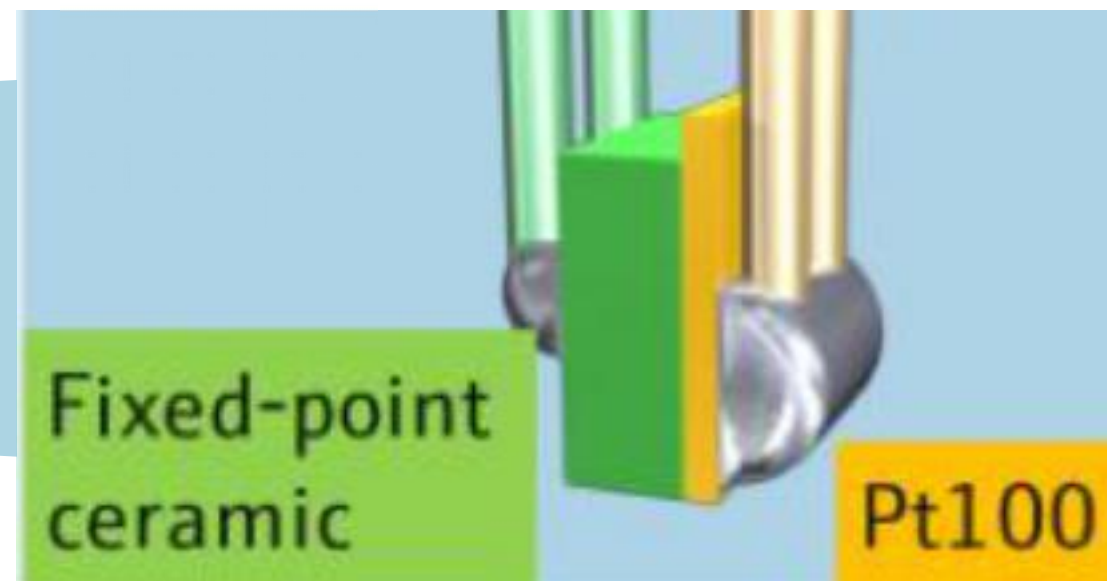
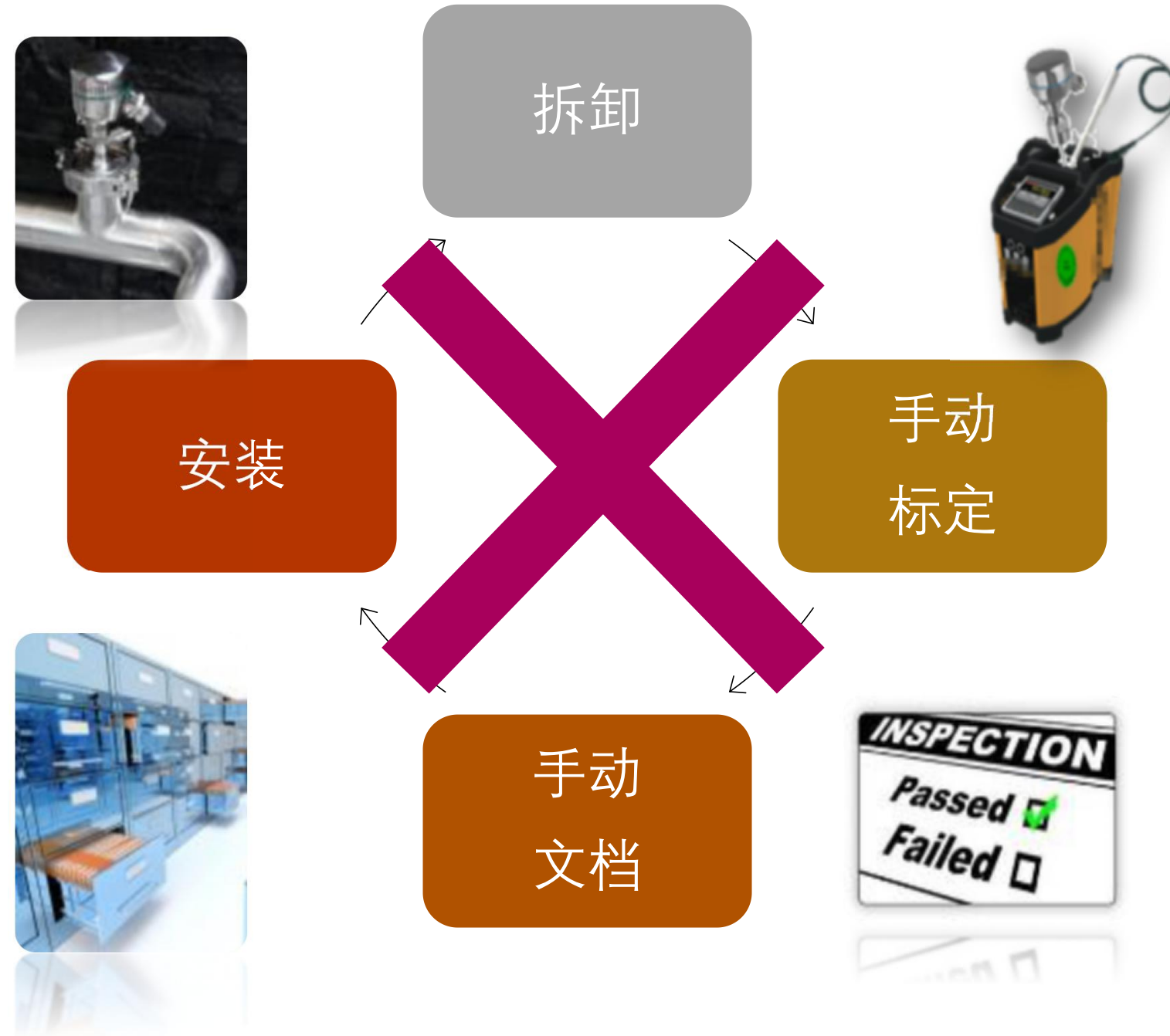
“Offline” calibration vs. temperature measurement in the process



案例——温度仪表的在线自校验



iTHERM
TrustSens



案例——温度仪表的在线自校验

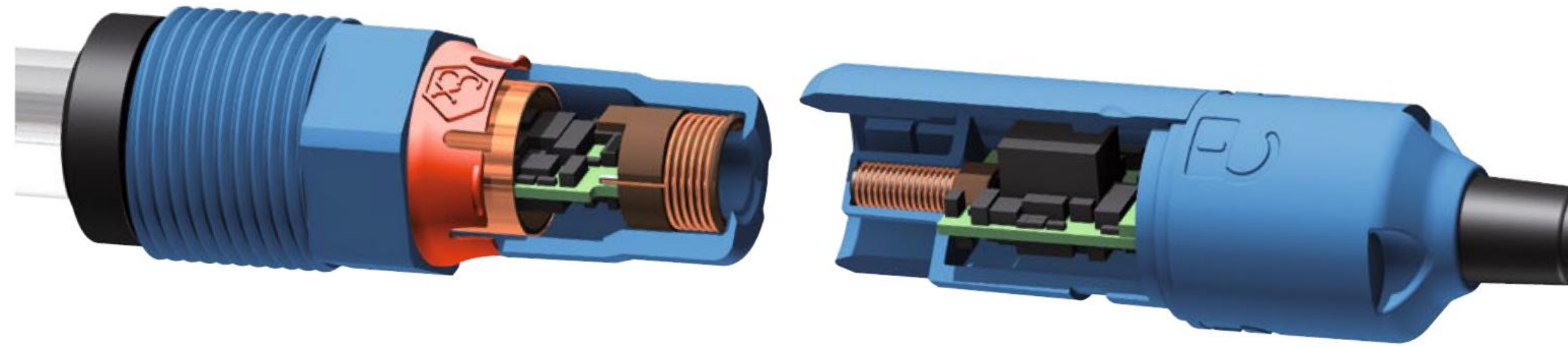


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案例——pH电极的智能管理和预维护



案例——pH电极的智能管理和预维护

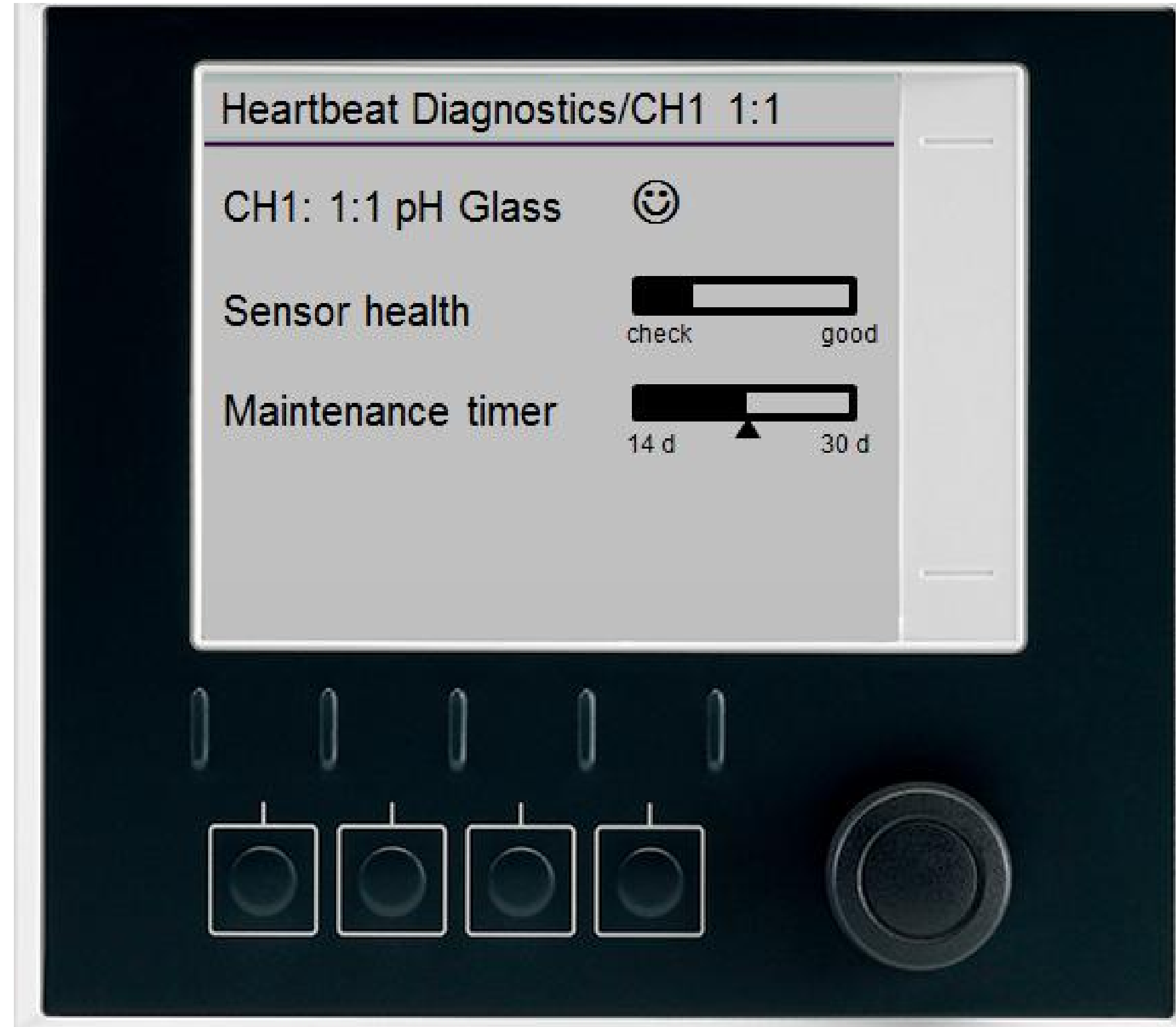
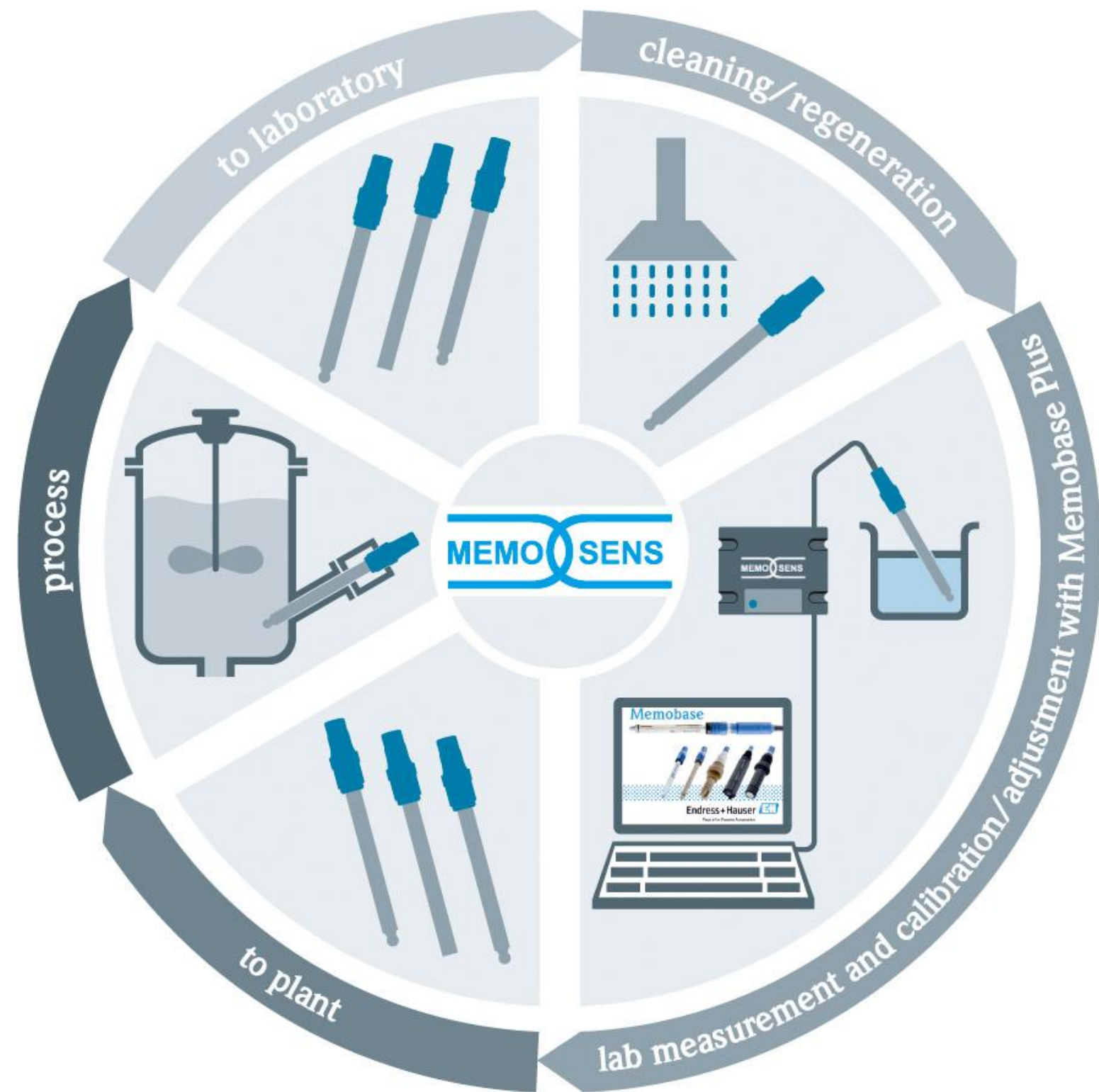


Memosens电极芯片可以储存：

- 出厂数据：电极型号，序列号，订单号，制造日期等
- 标定数据：标定日期，零点，斜率，标定次数等
- 应用数据：温度范围，最高温度，最高、低pH使用时间，消毒次数等

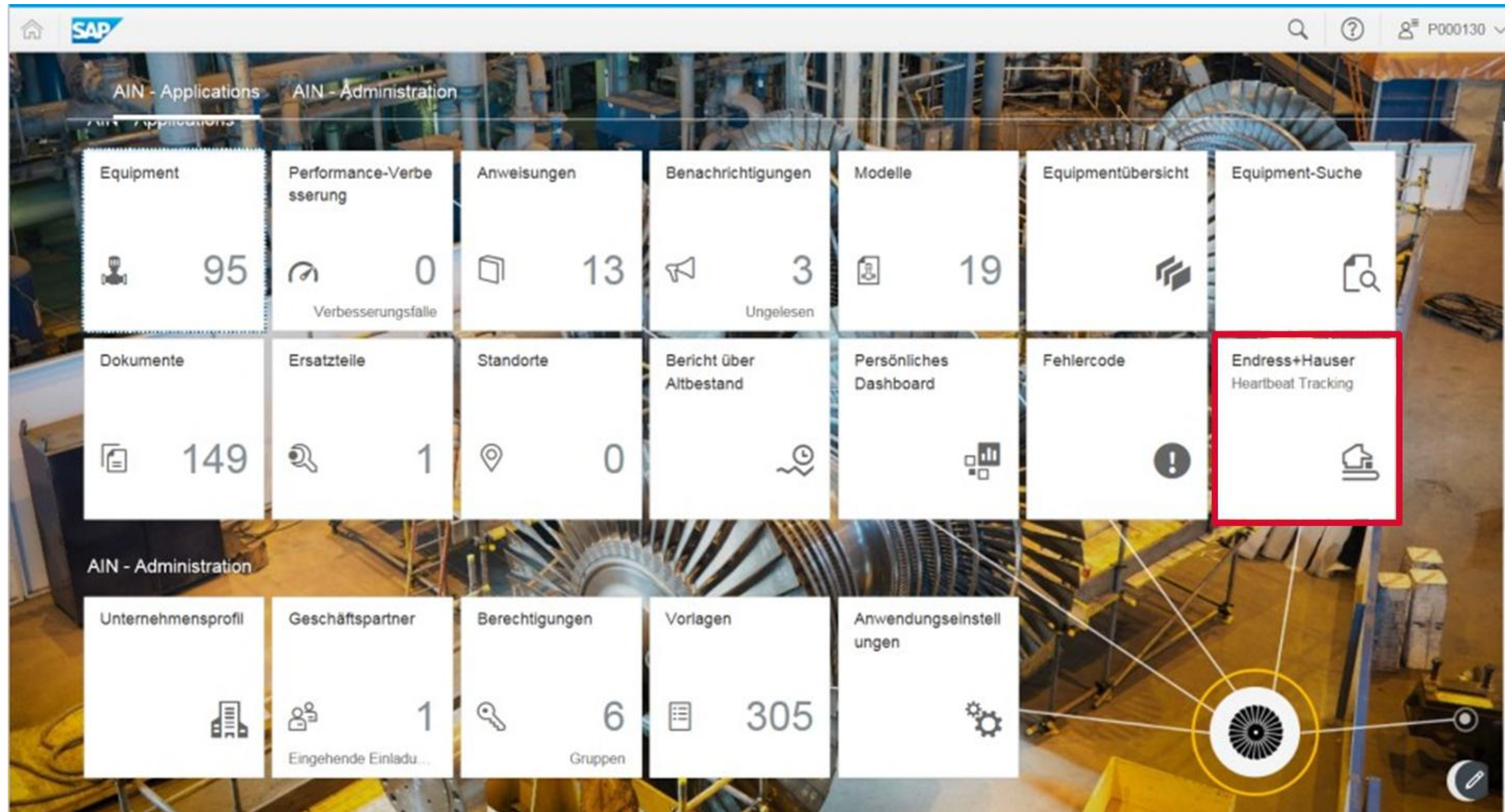


案例——pH电极的智能管理和预维护



案例——仪表的全生命周期管理

Integrating E+H Instruments into SAP HANA Cloud Platform



案例——仪表的全生命周期管理

Integrating E+H Instruments into SAP HANA Cloud Platform

The screenshot displays a web interface for managing equipment. The title bar shows 'Endress+Hauser E+H' and a search icon. The main content area is titled 'Equipment' and contains a list of items. Each item row includes a checkbox, an icon, a name, a manufacturer, a category, a type, a model, a status, a date, a user, a star icon, a progress bar, and two dates. The 'F-TestEqui' row is highlighted with a red border.

Equipment ID	Manufacturer	Category	Type	Model	Status	Date	User	Progress (%)	Start Date	End Date
T74006		Input devices	Temperature	TMT84	Veröffentlicht	16.11.2016	Endress+Hauser user	37%	16.11.2016	16.11.2016
T92206		Input devices	Temperature	TMT84	Veröffentlicht	16.11.2016	Endress+Hauser user	37%	16.11.2016	16.11.2016
UC500-30GM-I UEP-IO-V15	UC500-30GM-I UEP-IO-V15-4 000002707778 5	Detecting element	Industrial sensor	UC500-30GM-I UEP-IO-V15	Veröffentlicht	15.11.2016	Pepperl+Fuchs	41%	20.09.2016	15.11.2016
F71001	flowmeter	Input devices	Flow	83F_first prototype	In Bearbeitung	07.11.2016	Endress+Hauser user	59%	11.11.2016	11.11.2016
F-TestEqui	Promass I 300	Input devices	Flow	8138	In Bearbeitung	07.11.2016	BASF SE	62%	07.11.2016	10.11.2016
F32005	BASF Ludwigshafen	Input devices	Flow	83F	Veröffentlicht	07.11.2016	Endress+Hauser user	34%	27.10.2016	07.11.2016
F5803		Input devices	Flow	83F_first prototype	Veröffentlicht	07.11.2016	Endress+Hauser user	69%	20.10.2016	07.11.2016
F11002		Input devices	Flow	83F	Veröffentlicht	05.10.2016	Endress+Hauser user	56%	05.10.2016	05.10.2016
F11004		Input devices	Flow	83F	Veröffentlicht	05.10.2016	Endress+Hauser user	31%	05.10.2016	05.10.2016
F20005		Input devices	Flow	83F	Veröffentlicht	05.10.2016	Endress+Hauser user	31%	05.10.2016	05.10.2016
F20101		Input devices	Flow	83F	Veröffentlicht	05.10.2016	Endress+Hauser user	31%	05.10.2016	05.10.2016

案例——仪表的全生命周期管理

Integrating E+H Instruments into SAP HANA Cloud Platform

The screenshot displays the SAP HANA Cloud Platform interface for equipment management. The main navigation bar includes 'INFORMATIONEN', 'STRUCTURE AND PARTS', 'ANWEISUNGEN', 'DOKUMENTE' (highlighted with a red box), 'BENACHRÜTIGUNGEN', 'MESSPUNKTE', 'VERBESSERUNGSFÄLLE', 'ASSET DATA', 'HEARTBEAT VERIFICATION', and 'HEARTBEAT MONITORING'. The 'DOKUMENTE' section is active, showing two tables: 'Dokumente zu Modell' and 'Dokumente zu Equipment'. The 'DOKUMENTE zu Modell' table contains one entry: 'TI01274DDE_0116.pdf' (Technical Information, Vorgang phase, Betriebshandbuch category, 7438 KB). The 'DOKUMENTE zu Equipment' table contains two entries: '20161010-093836766-0138-German.pdf' (Parameter Information, Einbau phase, Plan zur Inbetriebnahme category, 41 KB) and 'BA01487DDE_0116.pdf' (BA01487DDE_0116, Einbau phase, Plan zur Inbetriebnahme category, 8396 KB). Below these tables is the 'BENACHRÜTIGUNGEN' section, which shows a notification table with one entry: 'Freimark' (Änderung der Modellinformationen, 10.11.2016, Hoch priority, Veröffentlicht status).

Name	Beschreibung	Phase	Kategorie	Sprache	Quelle	Zuordnungen	Dateigröße
TI01274DDE_0116.pdf	Technical Information	Vorgang	Betriebshandbuch		Endress+Hauser	Zuordnung(en)	7438 KB

Name	Beschreibung	Phase	Kategorie	Sprache	Quelle	Zuordnungen	Dateigröße
20161010-093836766-0138-German.pdf	Parameter Information	Einbau	Plan zur Inbetriebnahme	Deutsch	Endress+Hauser	Zuordnung(en)	41 KB
BA01487DDE_0116.pdf	BA01487DDE_0116	Einbau	Plan zur Inbetriebnahme	Englisch	Endress+Hauser	Zuordnung(en)	8396 KB

Name	Typ	Veröffentlicht am	Priorität	Status
Freimark	Änderung der Modellinformationen	10.11.2016	Hoch	Veröffentlicht

心跳技术，您最佳的选择

■ Safety

■ Reliability

■ Availability

INNOVATE
+ACCELERATE



Endress+Hauser 

People for Process Automation

Heartbeat 技术助力制药安全