

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

Endress+Hauser 

People for Process Automation



# 工业4.0——数据资源时代



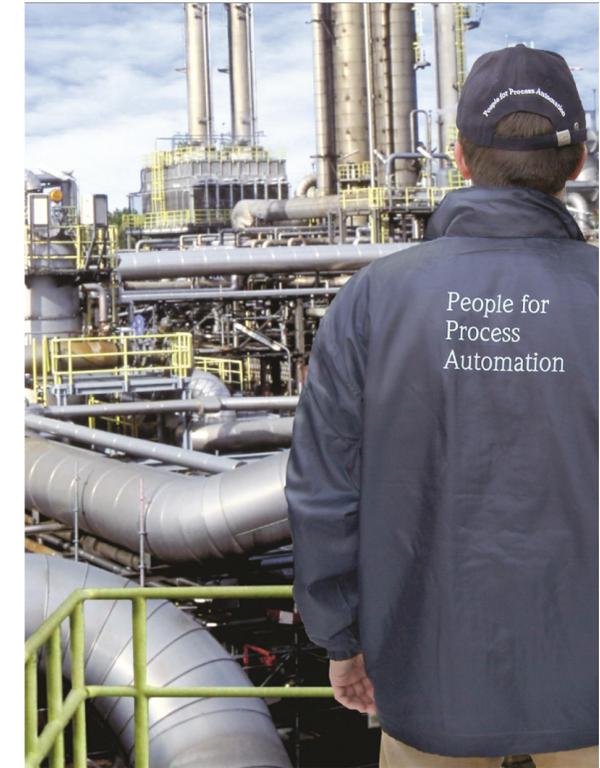
## 数据收集

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

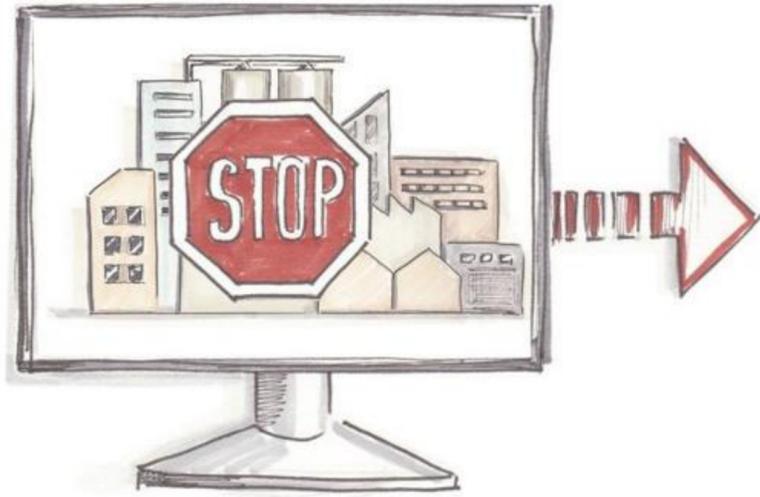


## 自检测

- 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



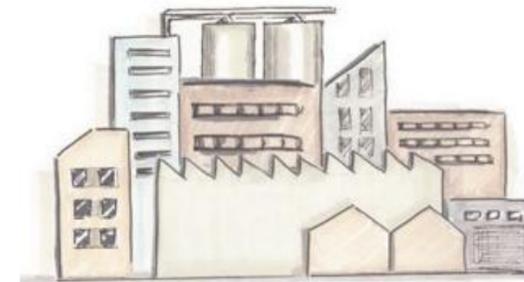
Maintenance Technician



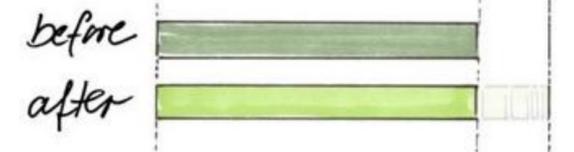
lack of historic diagnostic data

missing information on inventory

difficult information access

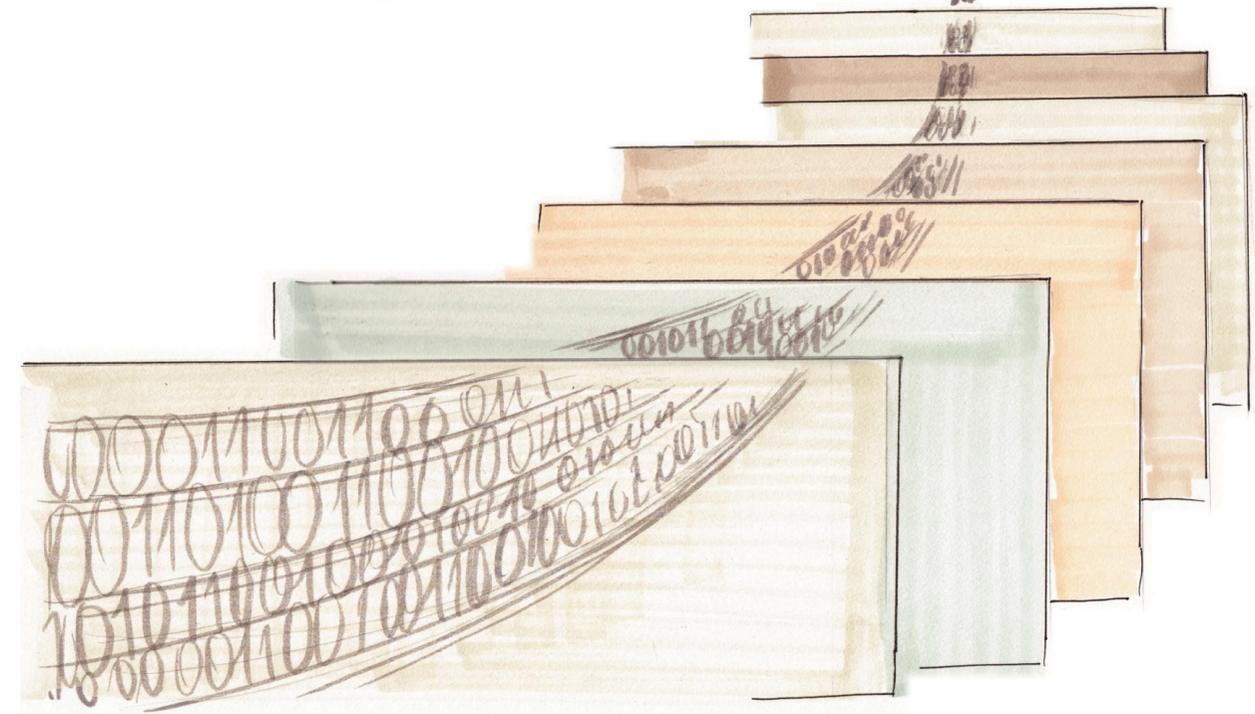
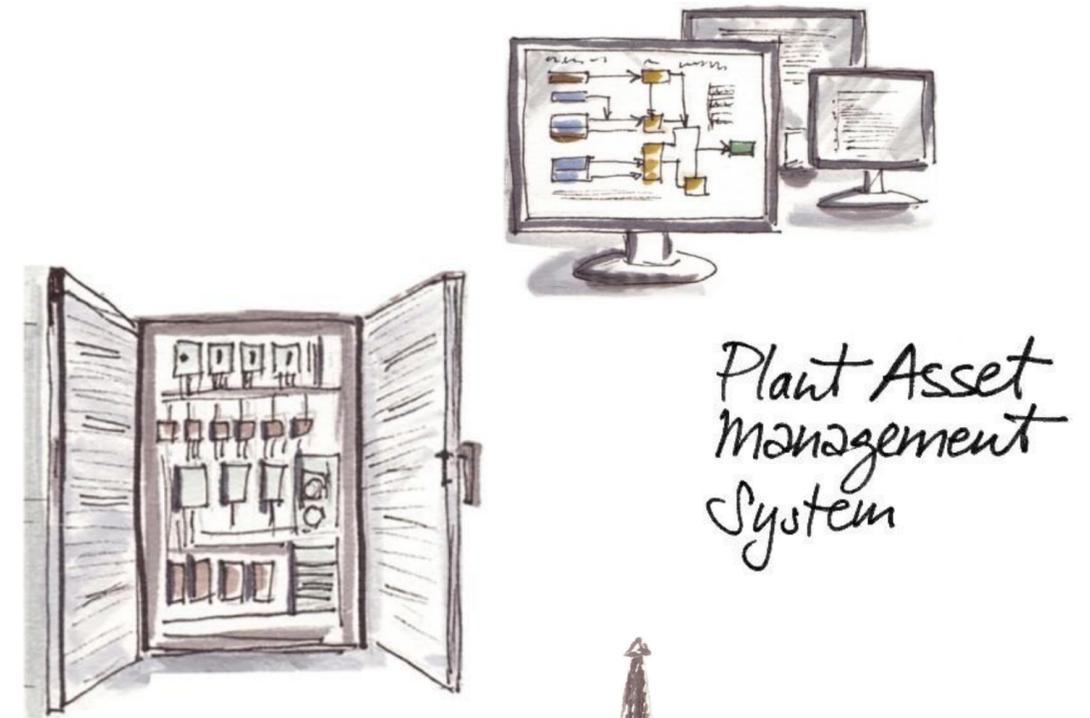
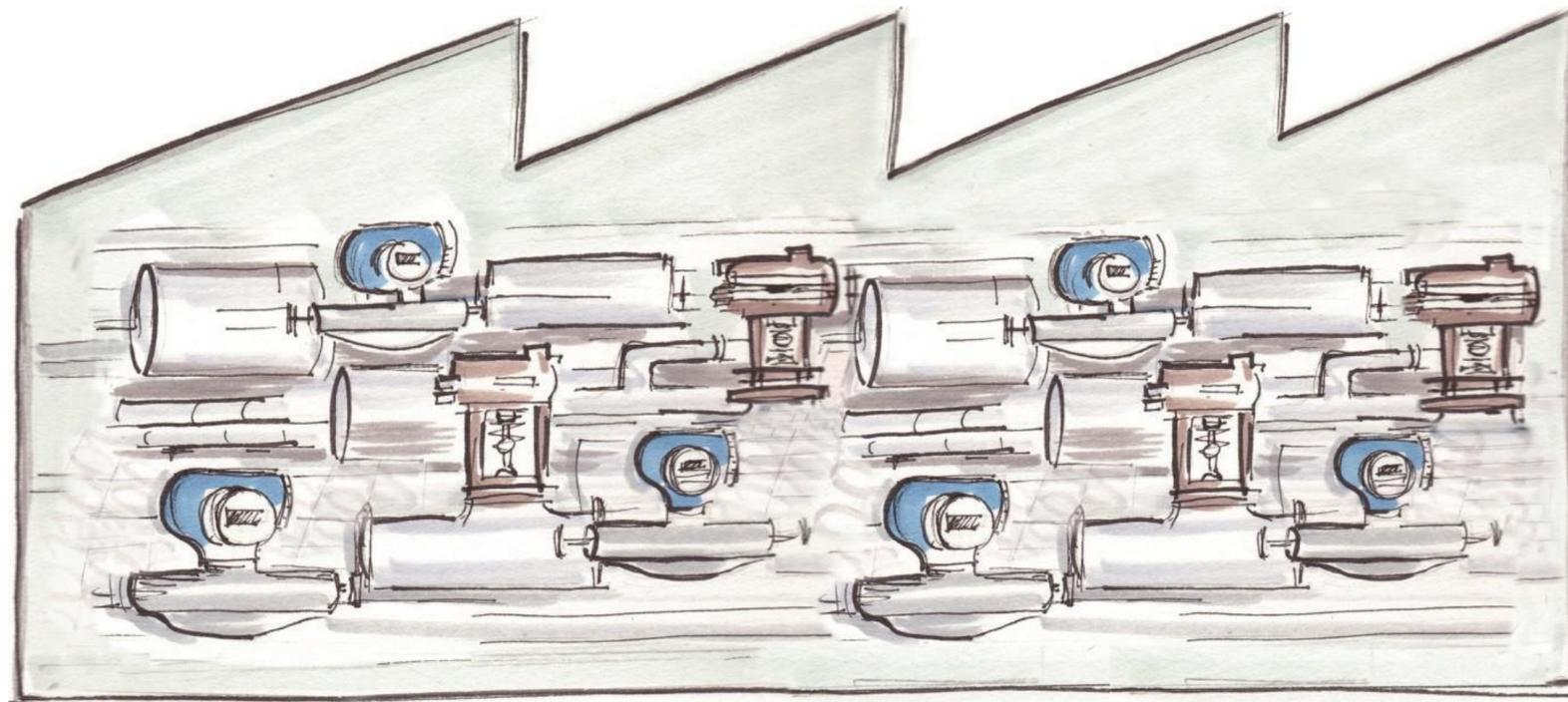


Unchanged plant availability

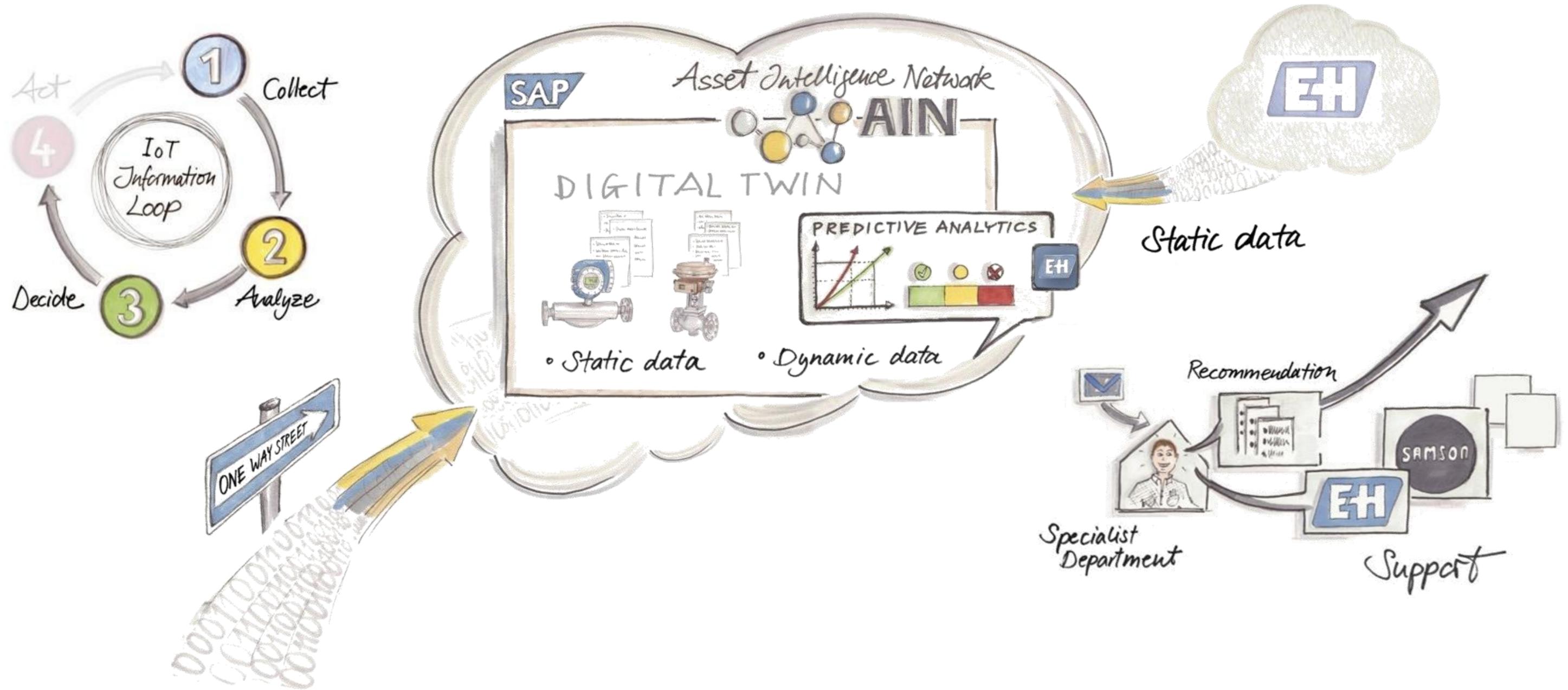


## 仪表资产的“体质报告”

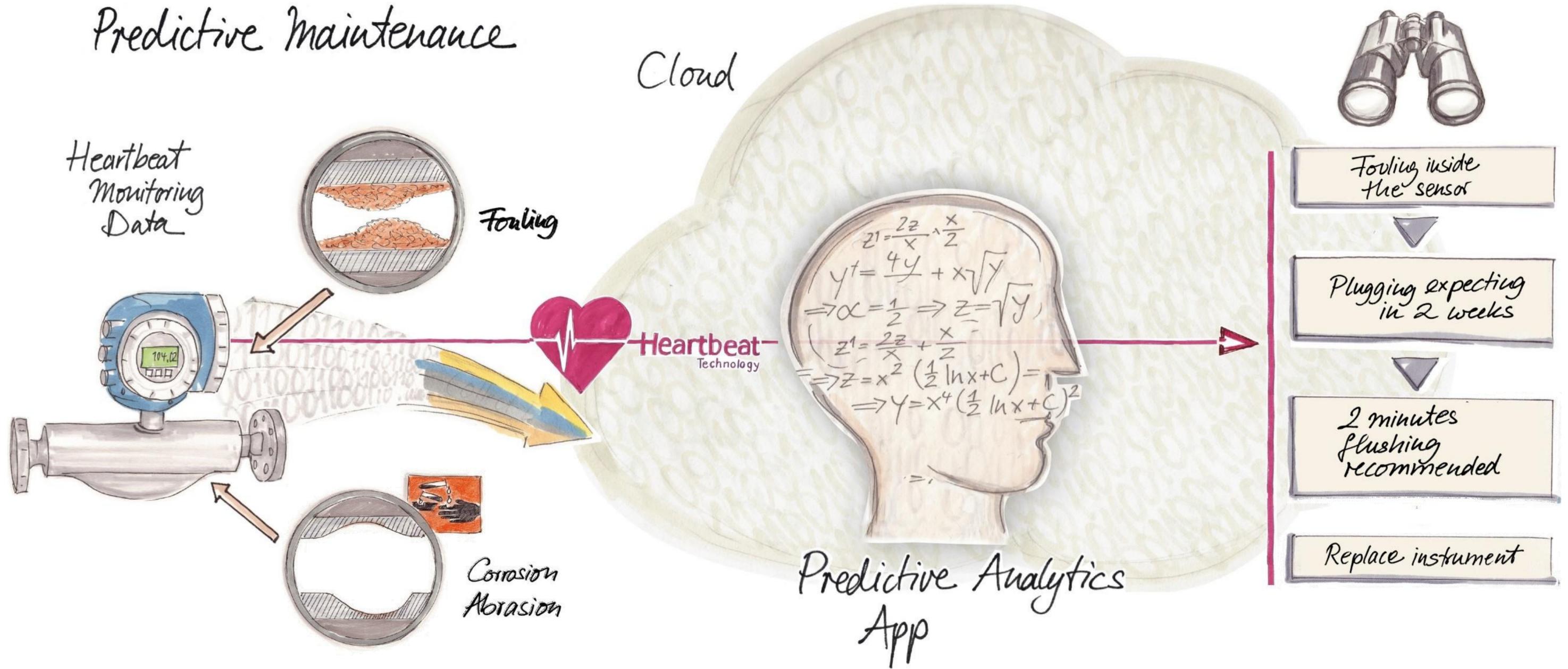
- 标准报告在线生成
- 不中断工艺，上传至上位管理系统



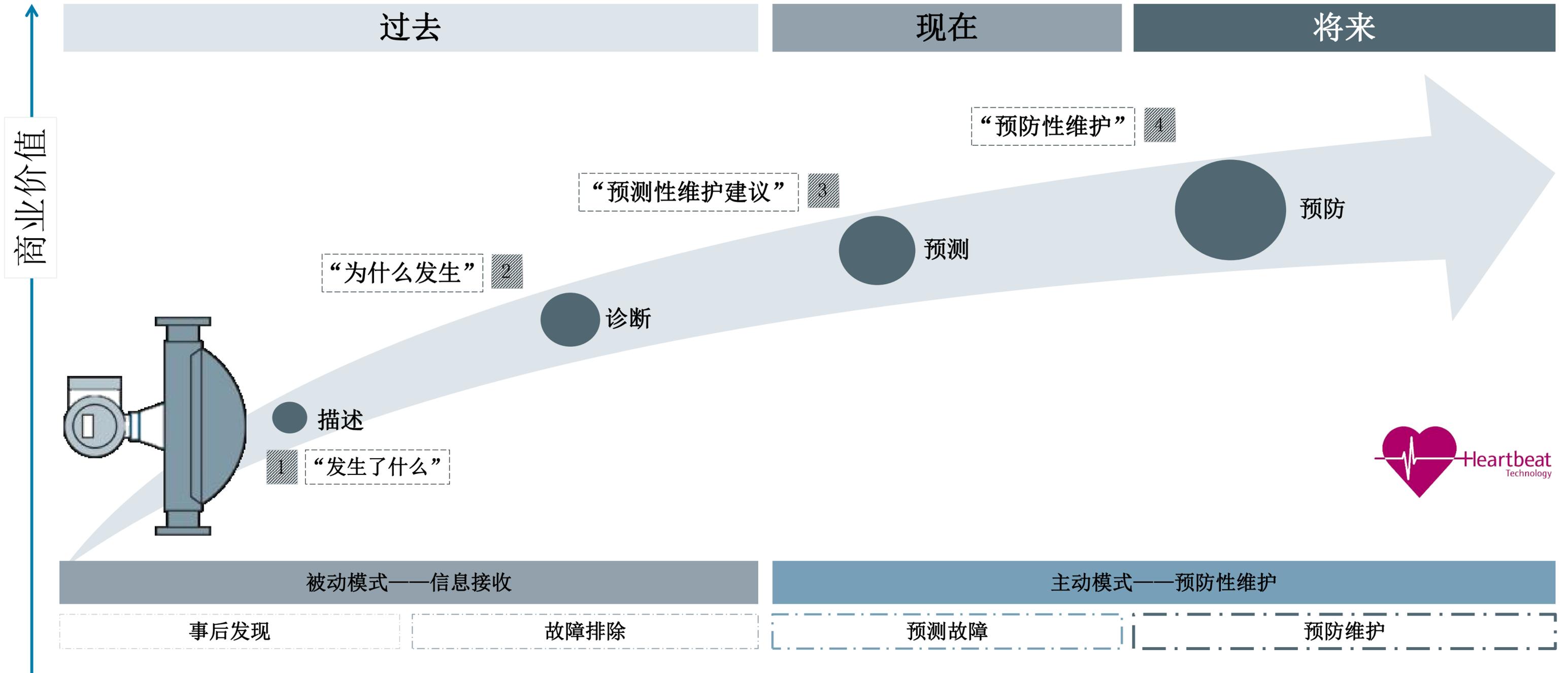
# Heartbeat Technology 心跳技术——工厂运维的决策参考



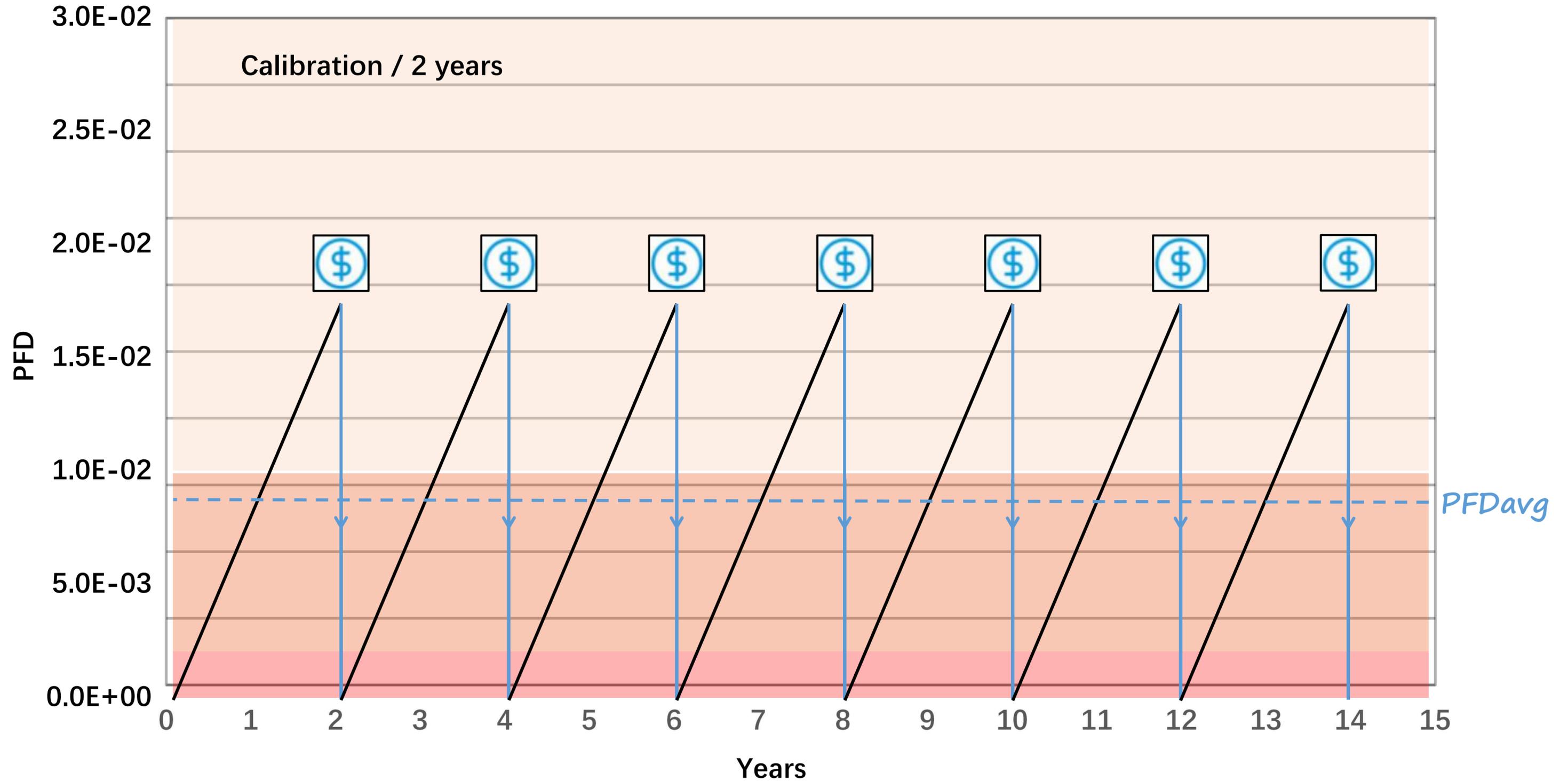
# Heartbeat Technology 心跳技术——仪表设备的预防性维护



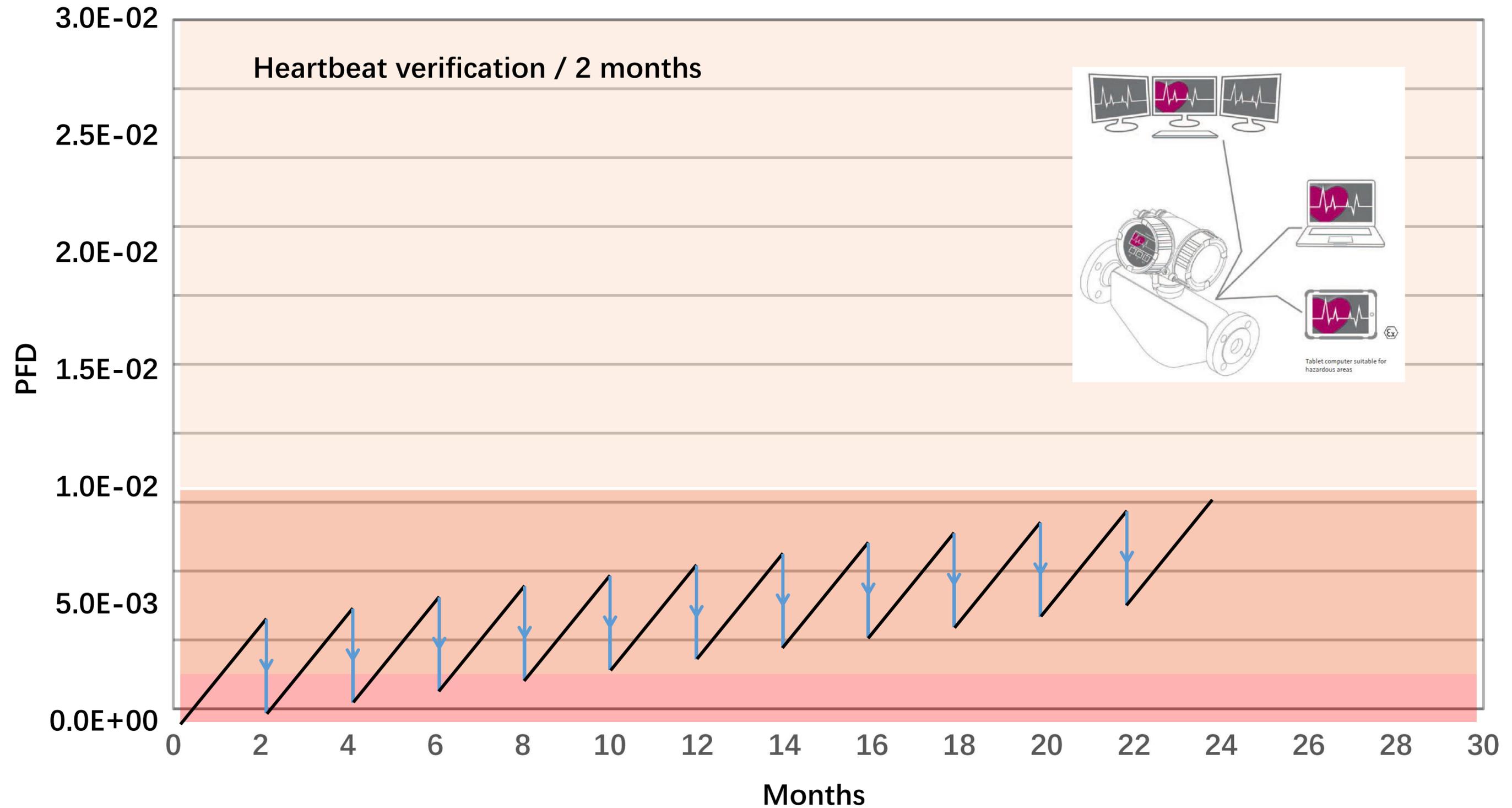
# Heartbeat Technology 心跳技术——助推工厂智能运维



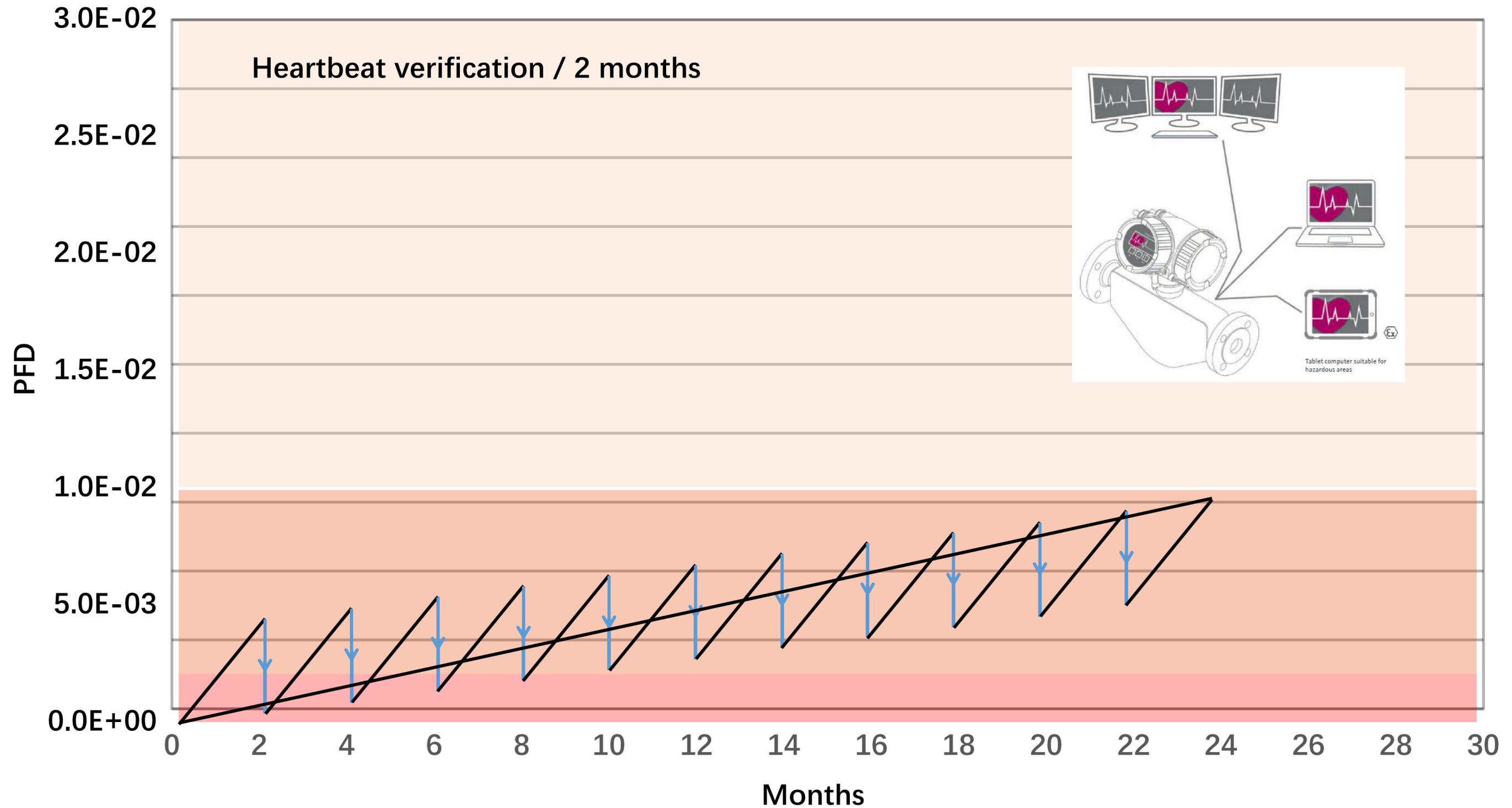
# Heartbeat技术延长校准周期 - 没有Heartbeat时



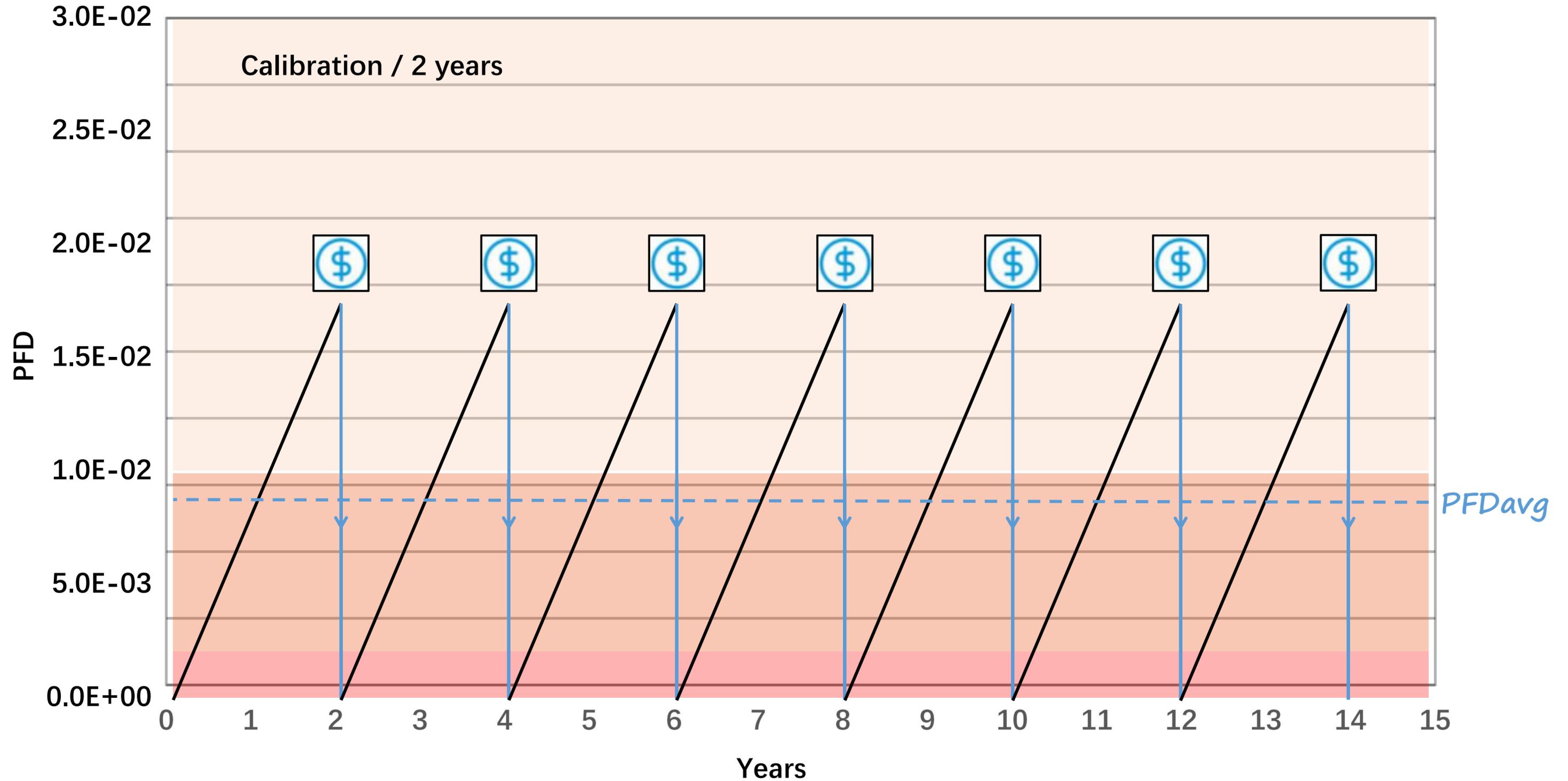
# Heartbeat技术延长校准周期 - 有Heartbeat时



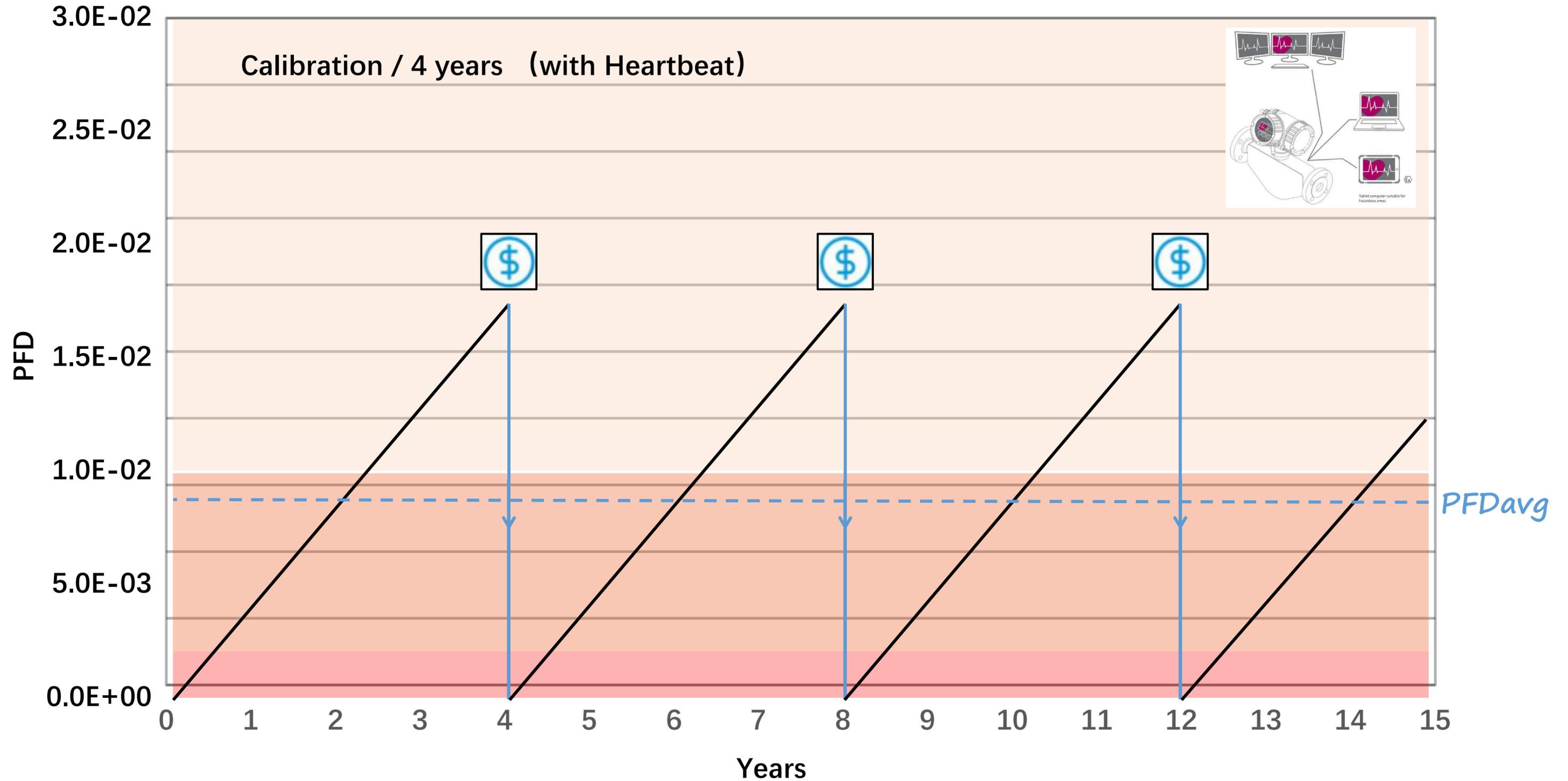
# Heartbeat技术延长校准周期 - 有Heartbeat时



# 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

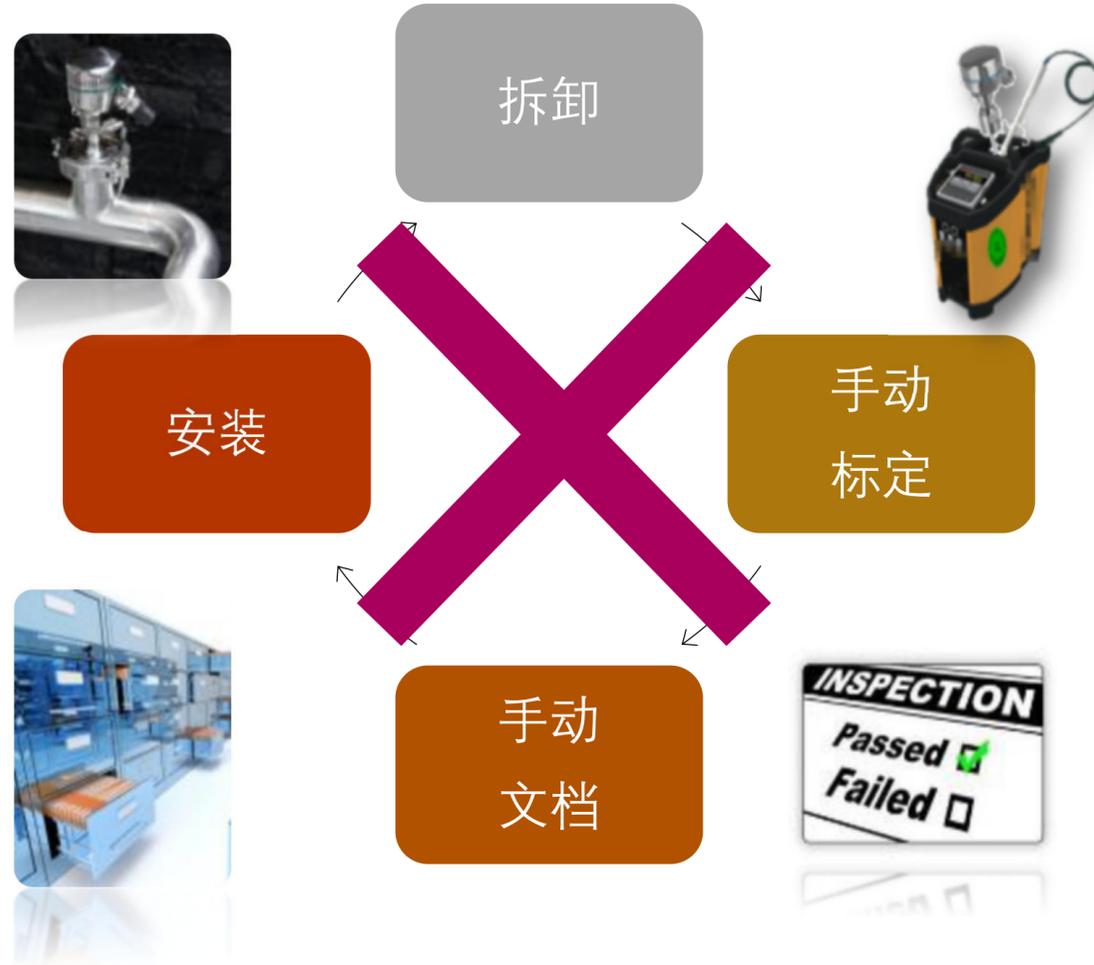
“Offline” calibration vs. temperature measurement in the process



# 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

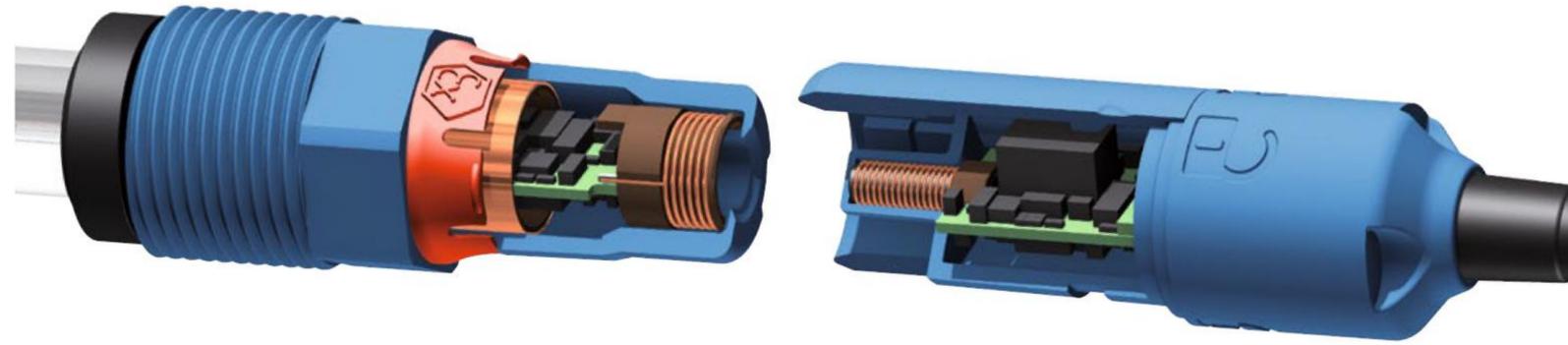


Higher safety, higher plant uptime, fully compliant  
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## 案例——pH电极的智能管理和预维护



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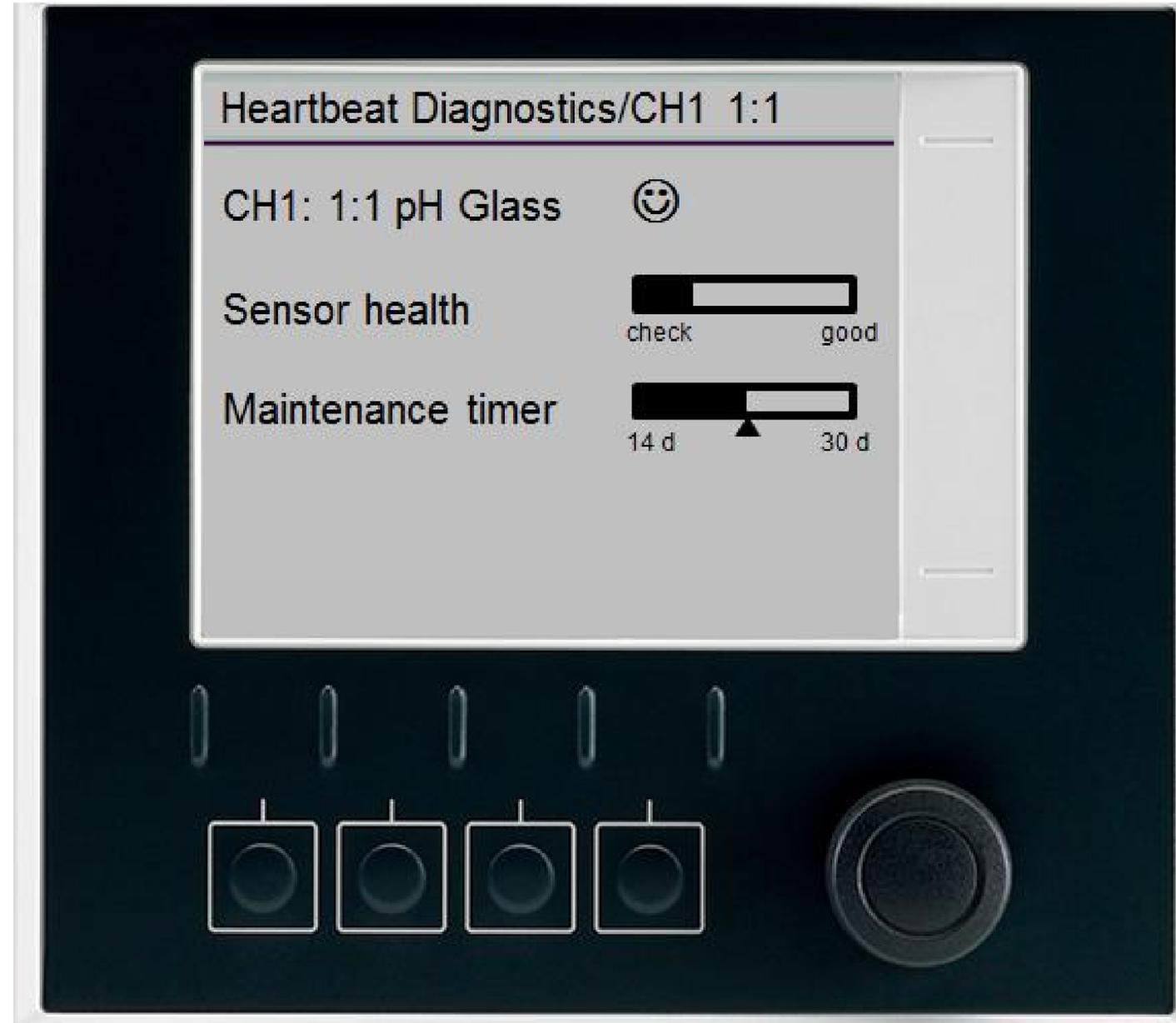
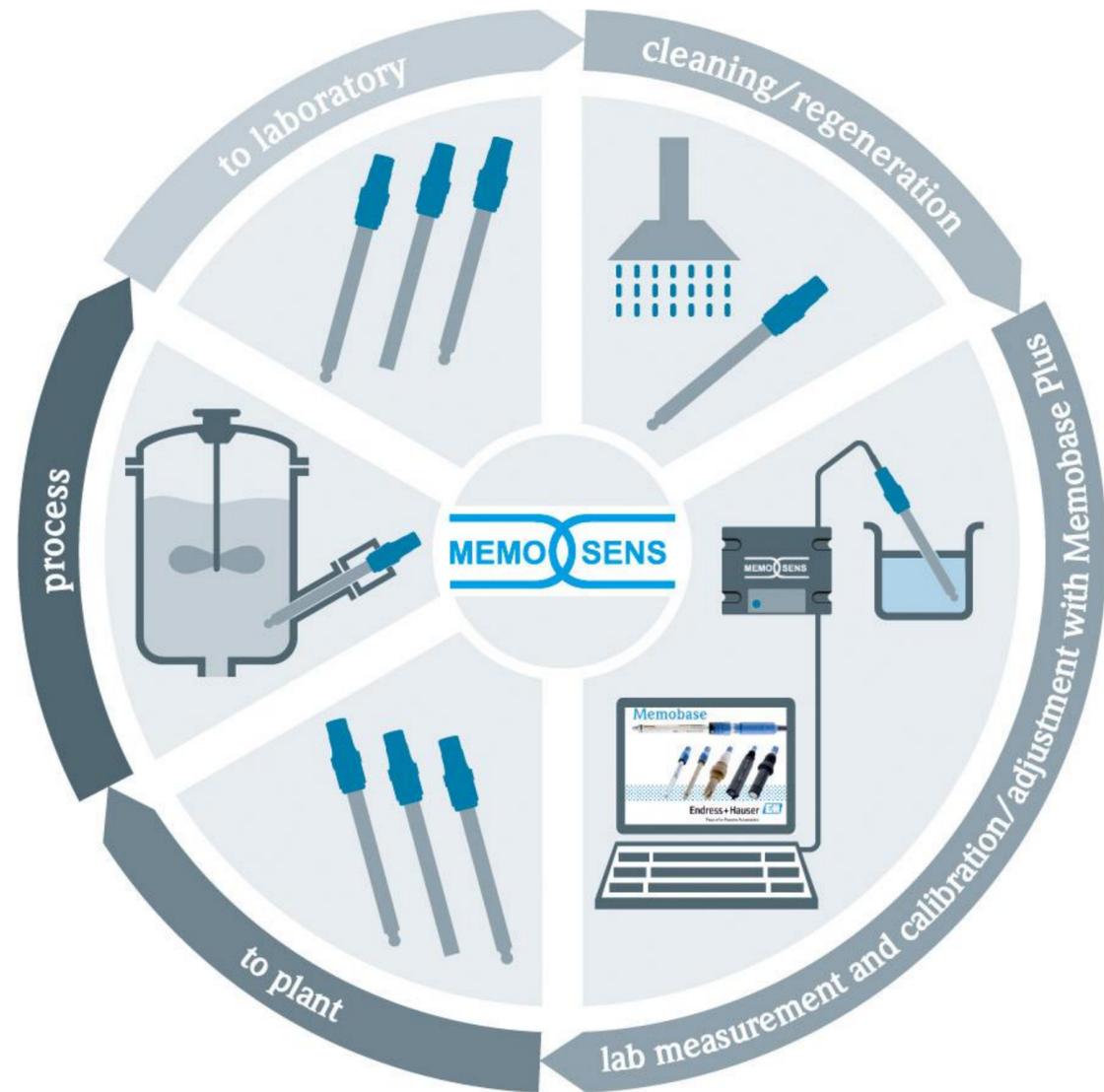


Memosens电极芯片可以储存：

- 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

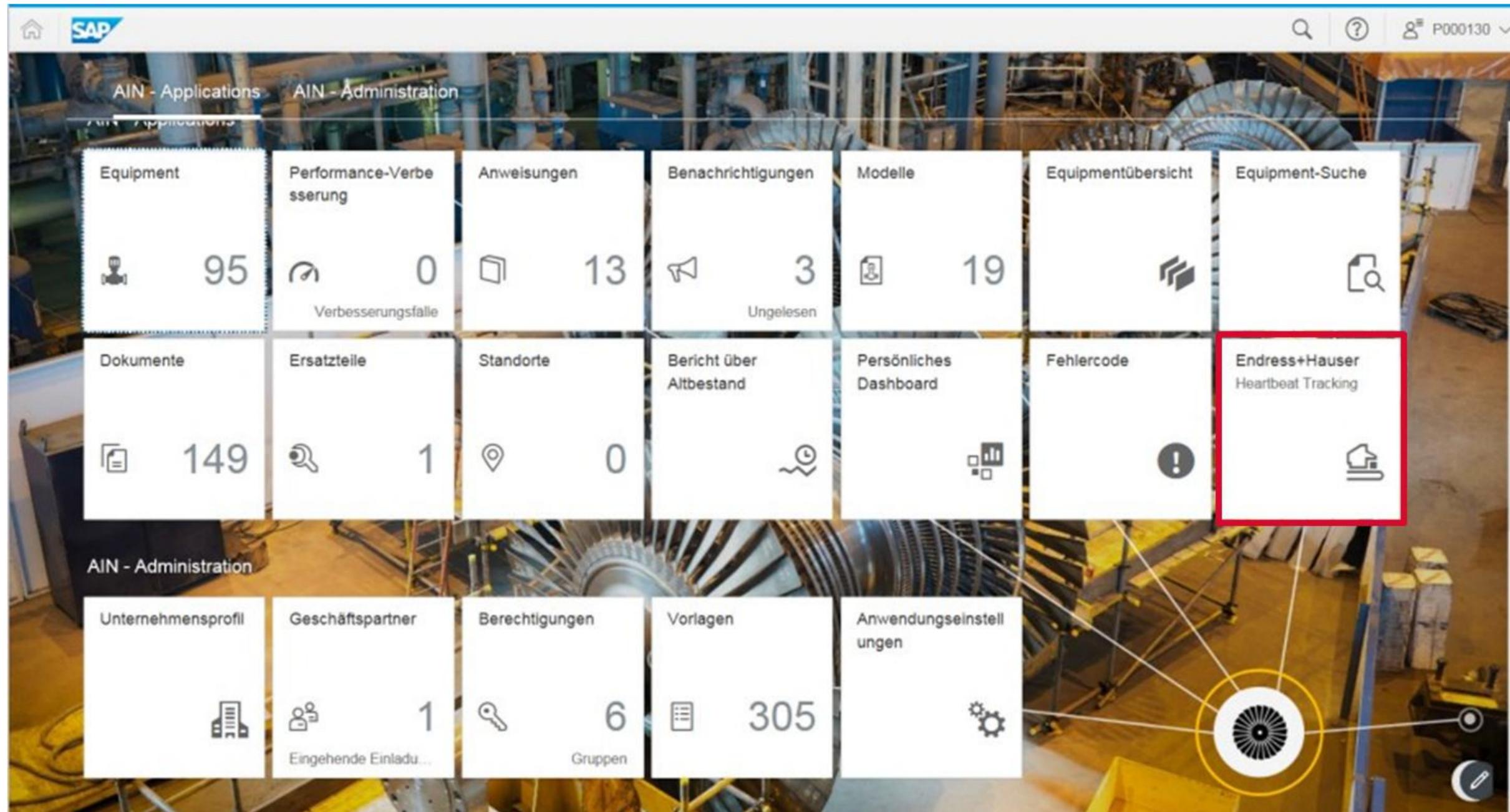


# 案例——pH电极的智能管理和预维护



# 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 'Equipment' and a search icon. The main content is a table with columns for selection, icon, ID, manufacturer, type, function, model, status, user, date, progress bar, and dates. The 'F-TestEqui' row is highlighted with a red border.

	Icon	ID	Manufacturer	Type	Function	Model	Status	User	Date	Progress	Start Date	End Date
<input type="checkbox"/>		T74006		Input devices	Temperature	TMT84	Veröffentlicht	Endress+Hauser	16.11.2016	37%	16.11.2016	16.11.2016
<input type="checkbox"/>		T92206		Input devices	Temperature	TMT84	Veröffentlicht	Endress+Hauser	16.11.2016	37%	16.11.2016	16.11.2016
<input type="checkbox"/>		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	Pepperl+Fuchs	15.11.2016	41%	20.09.2016	15.11.2016
<input type="checkbox"/>		F71001		flowmeter	Input devices	Flow	83F_first prototype	In Bearbeitung	Endress+Hauser	59%	11.11.2016	11.11.2016
<input checked="" type="checkbox"/>		F-TestEqui	Promass I 300	Input devices	Flow	83B	In Bearbeitung	BASF SE	Endress+Hauser	62%	07.11.2016	10.11.2016
<input type="checkbox"/>		F32005	BASF Ludwigshafen	Input devices	Flow	83F	Veröffentlicht	Endress+Hauser	07.11.2016	34%	27.10.2016	07.11.2016
<input type="checkbox"/>		F5803		Input devices	Flow	83F_first prototype	Veröffentlicht	Endress+Hauser	07.11.2016	69%	20.10.2016	07.11.2016
<input type="checkbox"/>		F11002		Input devices	Flow	83F	Veröffentlicht	Endress+Hauser	05.10.2016	56%	05.10.2016	05.10.2016
<input type="checkbox"/>		F11004		Input devices	Flow	83F	Veröffentlicht	Endress+Hauser	05.10.2016	31%	05.10.2016	05.10.2016
<input type="checkbox"/>		F20005		Input devices	Flow	83F	Veröffentlicht	Endress+Hauser	05.10.2016	31%	05.10.2016	05.10.2016
<input type="checkbox"/>		F20101		Input devices	Flow	83F	Veröffentlicht	Endress+Hauser	05.10.2016	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 header shows 'Equipment' and 'F-TestEqu Promass I 300'. A navigation menu includes 'INFORMATIONEN', 'STRUCTURE AND PARTS', 'ANWEISUNGEN', 'DOKUMENTE', 'BENACHRÜTIGUNGEN', 'MESSPUNKTE', 'VERBESSERUNGSFÄLLE', 'ASSET DATA', 'HEARTBEAT VERIFICATION', and 'HEARTBEAT MONITORING'. The 'DOKUMENTE' menu item is highlighted with a red box.

Under 'Dokumente zu Modell', there is a search bar and a table with the following data:

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

Under 'Dokumente zu Equipment', there is a search bar and a table with the following data:

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

Under 'BENACHRÜTIGUNGEN', there is a search bar and a table with the following data:

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**



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