

**BENEFÍCIOS ATRAVÉS DA
UTILIZAÇÃO DE
SOFTWARE DE
GERENCIAMENTO DE
ATIVOS**

Benefícios Econômicos com os Protocolos Digitais

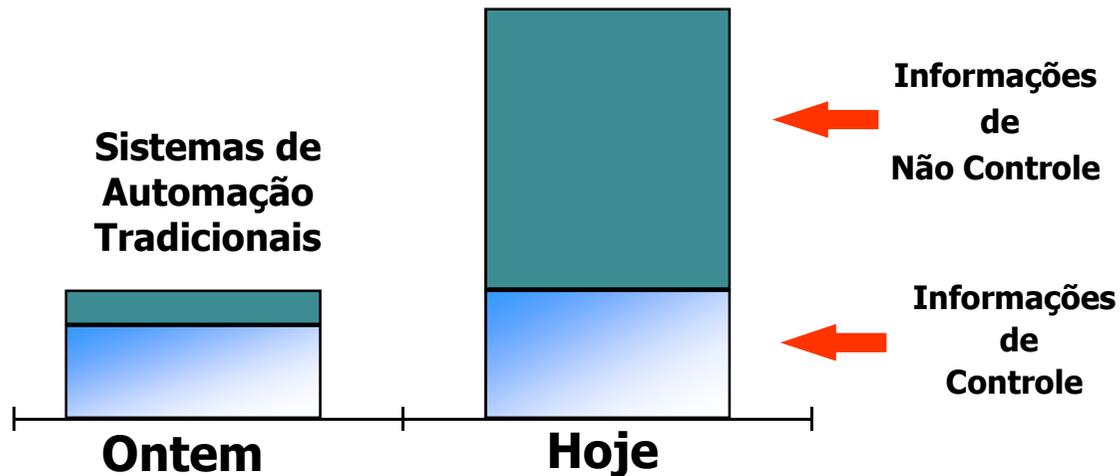
- ◆ 50% das atividades de manutenção das indústrias são ações corretivas
- ◆ 12% dos custos da manutenção são gerados em função de manutenção não necessárias
- ◆ 60% da manutenção executada em válvulas são desnecessárias

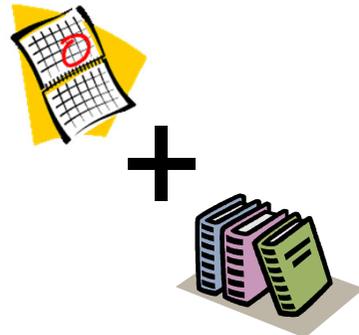
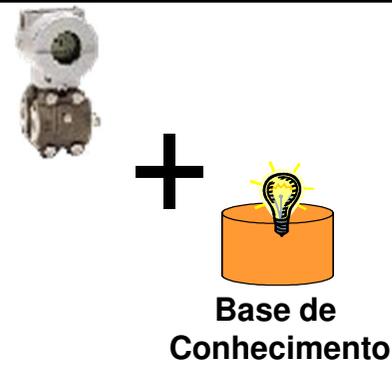
Software de Gerenciamento de Ativos

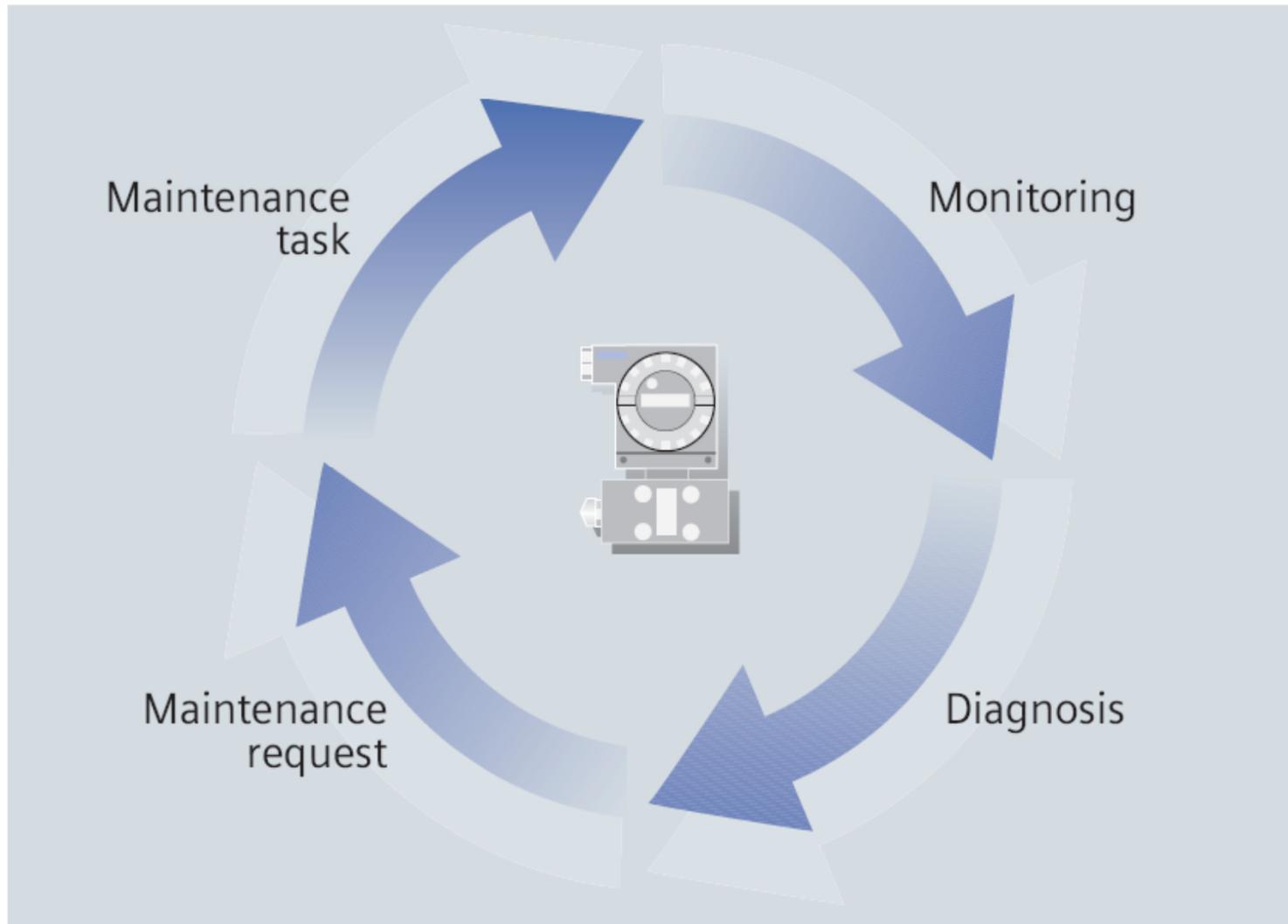
Fonte: ARC Advisory Group



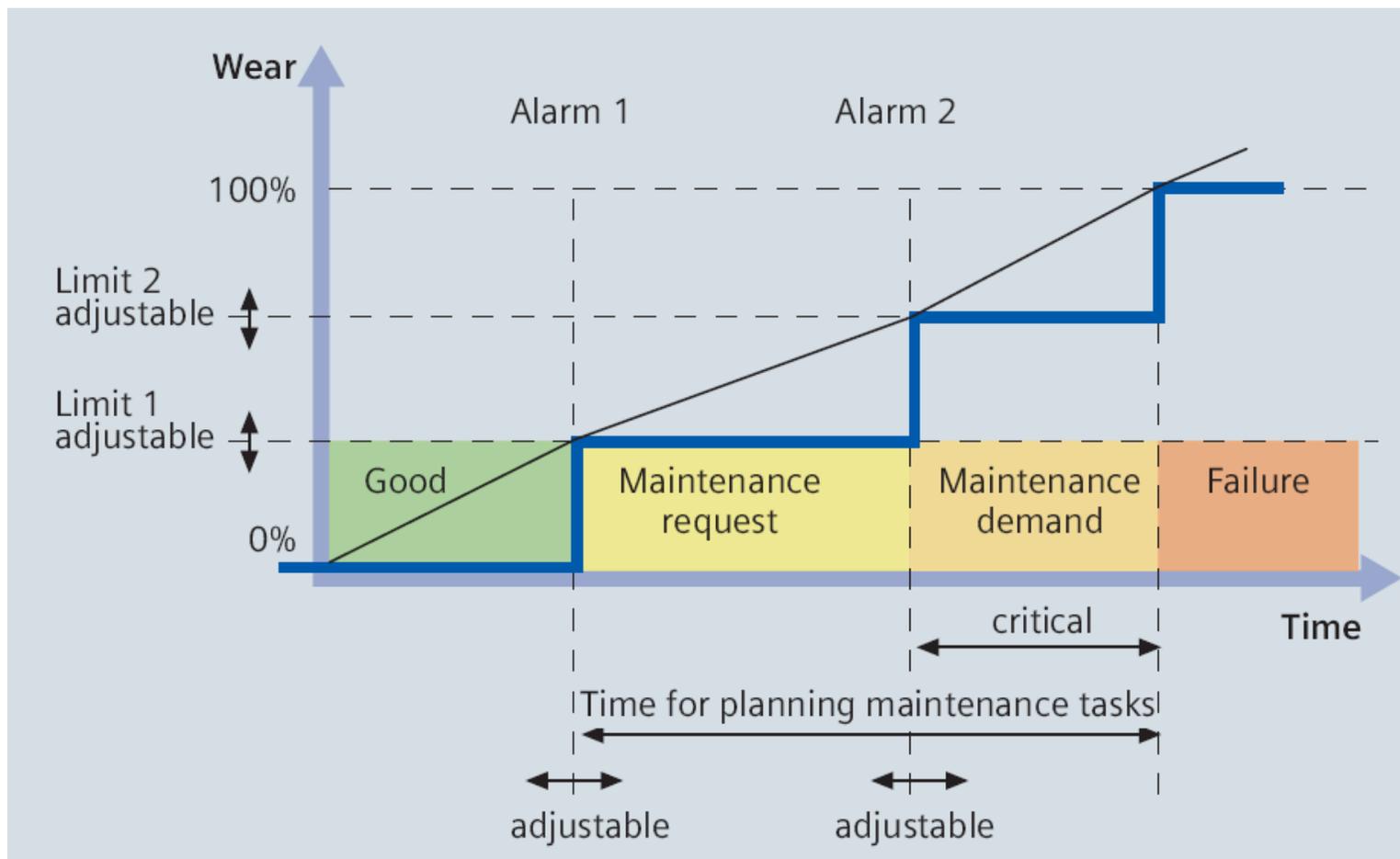
Sistemas de Automação baseados em Protocolos Inteligentes

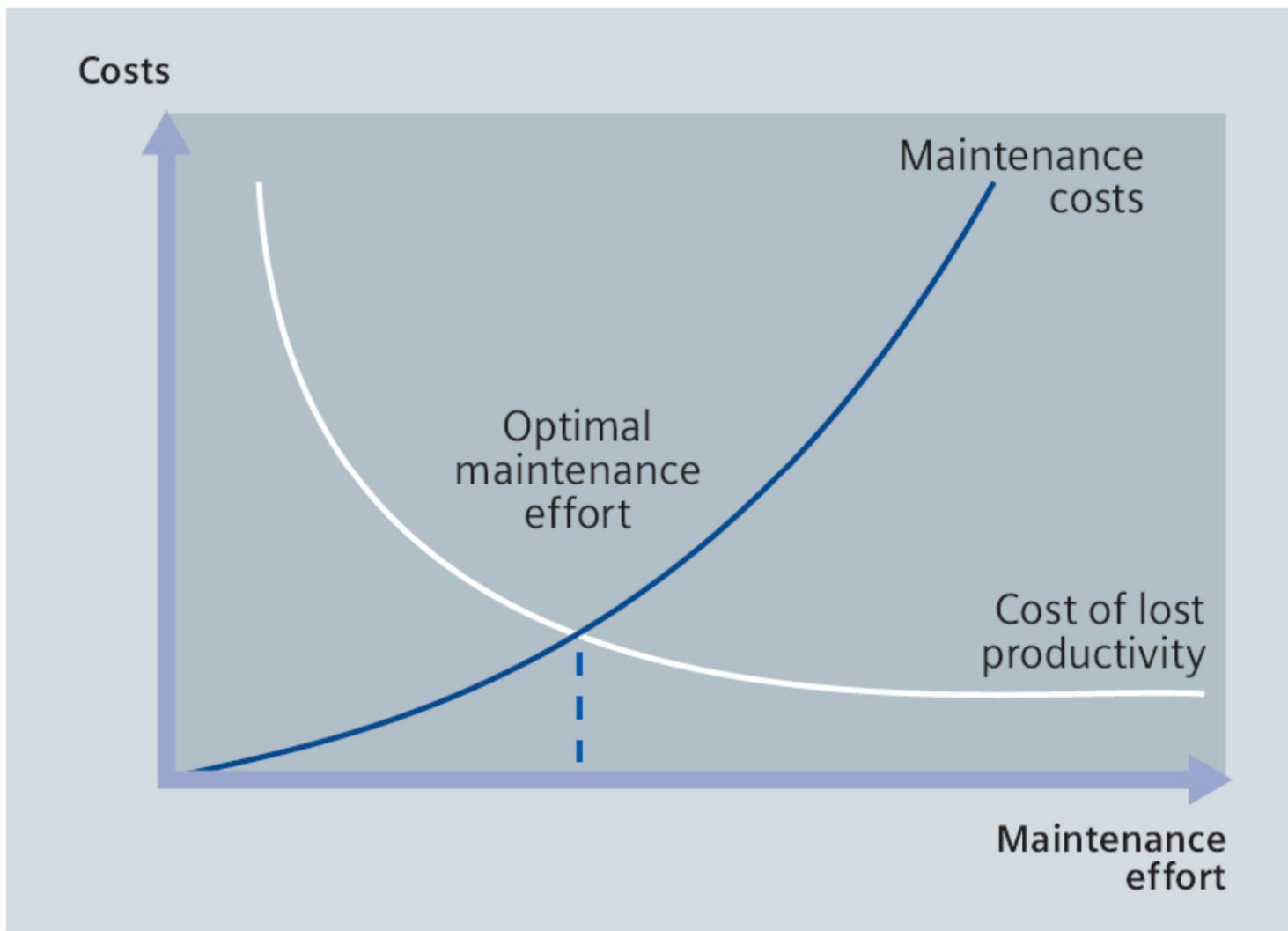


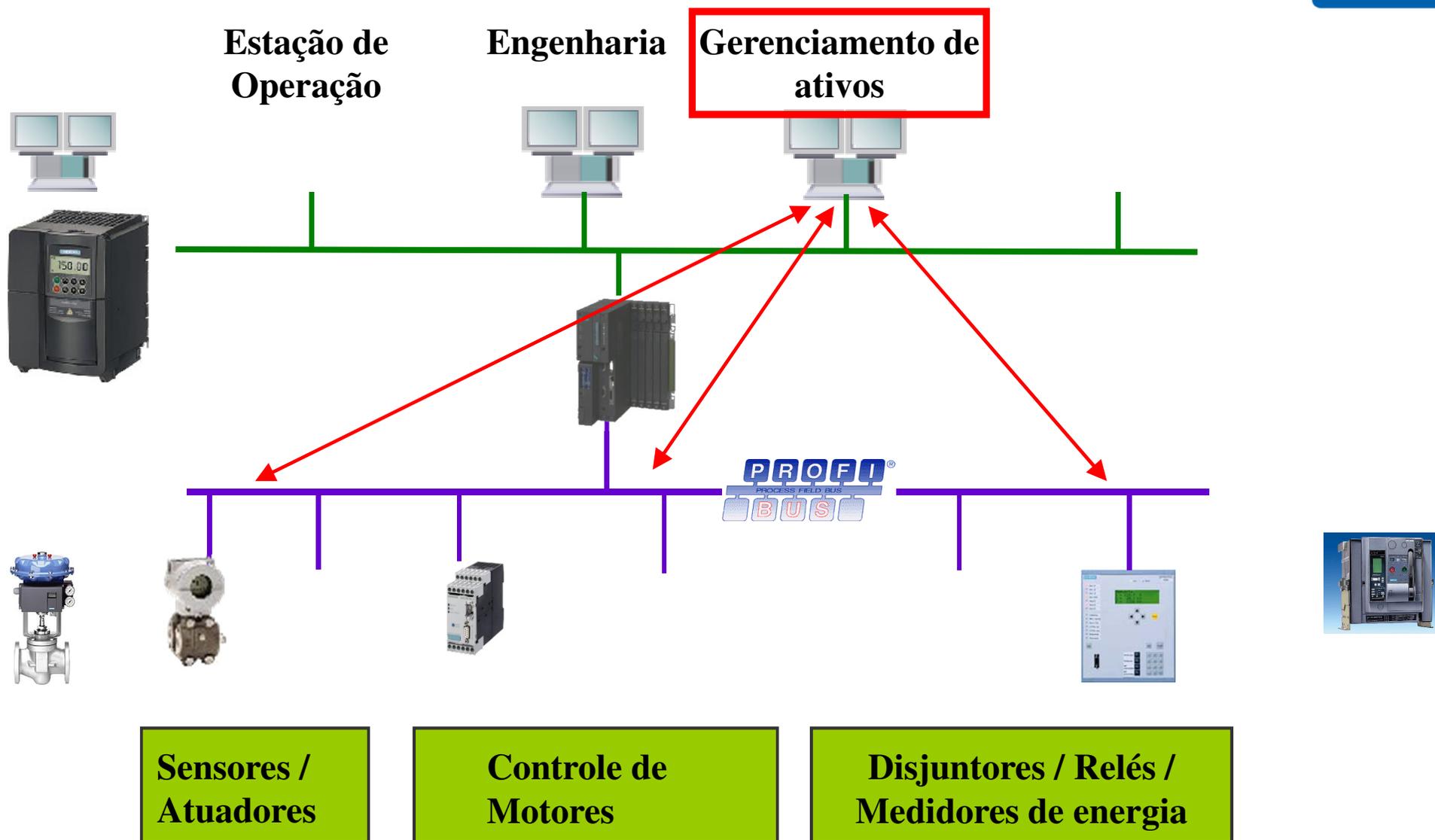
Manutenção			
REATIVA	PREVENTIVA	PREDITIVA	PROATIVA (Baseada em condições)
			
Depois da Falha	Períodos de Tempo	Estatísticas	Monitoração On-line



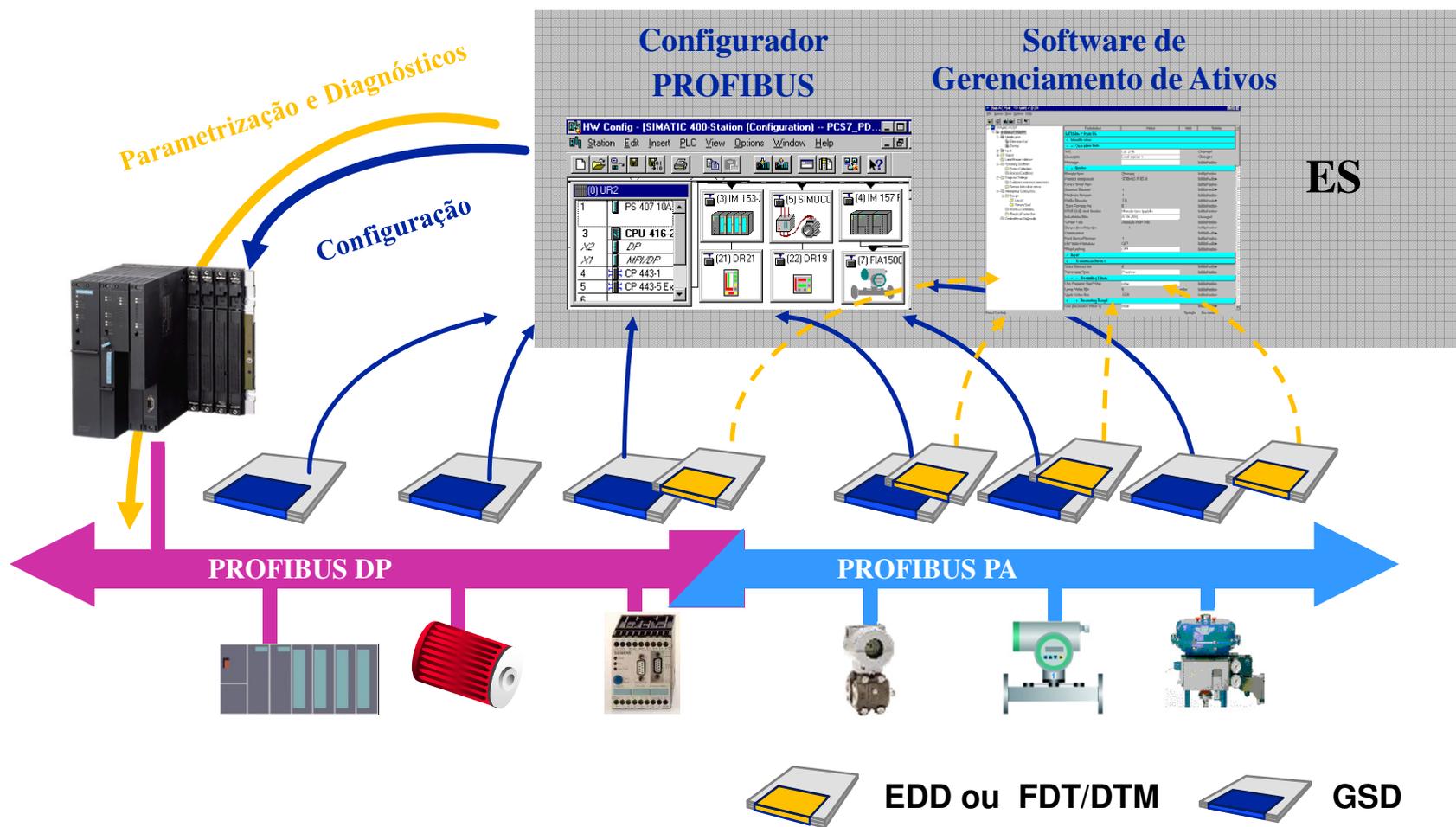
Curva de desgaste gradual



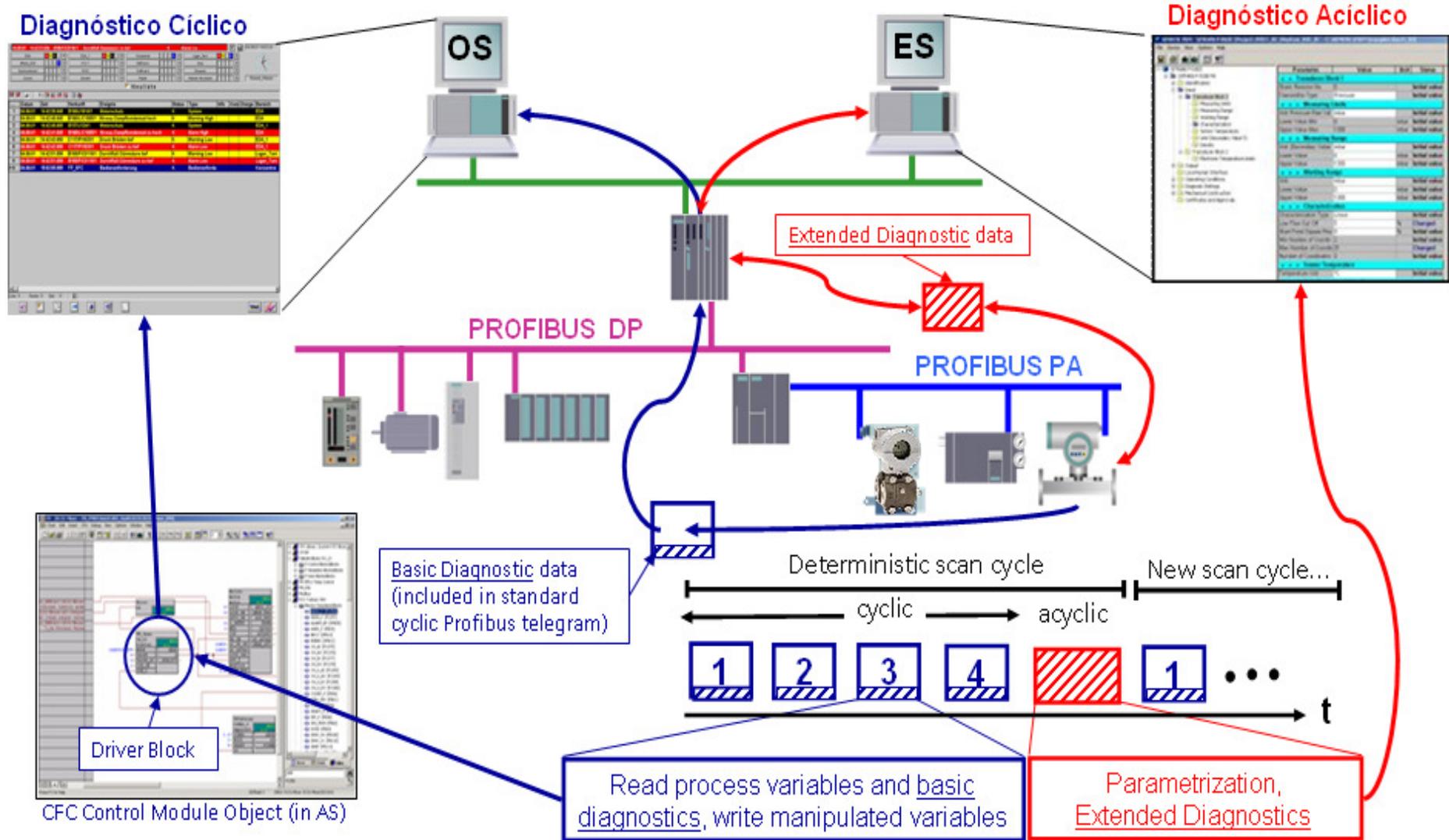


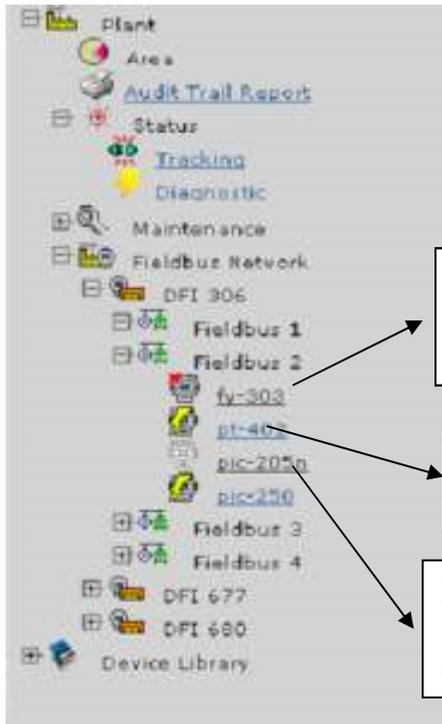


- Arquivos GSD contêm parâmetros de comunicação (Cíclica)
- Arquivos EDDL e FDT/DTM contêm parâmetros dos equipamentos (Acíclica)



Fluxo de informação para o Diagnóstico Cíclico e Diagnóstico Acíclico





Instrumento com problemas de comunicação.

Instrumento com eventos de diagnóstico.

Instrumento intencionalmente desconectado.

-  **Good**
-  **Simulation**
-  **local operation**
-  **Maintenance request (low)**
-  **Maintenance demand (medium)**
-  **Maintenance alert (high)**
-  **Maintenance not in progress**
-  **Maintenance is requested**
-  **Maintenance in progress**

LD303

LD303 - 9

- Blocks
 - Physical
 - Diagnosis**
 - Transducer
 - Auto Clamp
 - Upper/Lower
 - Characterization
 - Temperature
 - Analog Input
 - Simulate
 - Totalizer
 - Preset Total
 - Display
- Monitoring
- Read/Write Parameter
- Device Setting
- DataBase

Physical Block

- Hardware failure of the electronic
- Hardware failure mechanics
- Motor- temperature too high
- Electronic temperature too high
- Memory error
- Failure in measurement
- Device not initialized (No selfcalibration)
- Selfcalibration failed
- Zero point error (limit position)
- Power supply failed (electrical, pneumatic)
- Configuration not valid
- New-start-up (warmstart up) carried out.
- Re-start-up (coldstart up) carried out.
- Maintenance required
- Characterization invalid
- IDENT_NUMBER_Violation

Status Communication :

Help

LD303 (Online Parameterize)

Select in Network

smar
FIRST IN FIELDBUS

LD303

PROFIBUS
Process Automation

FDT

- Transducer
 - Analog Input
 - Totalizer
- Lower/Upper
 - Temperature
 - Charac...
- Display
- Identification
 - Maint
 - Factory

Transducer

Set Scale of Pressure Value

Lower [EU(0%)]

Upper [EU(100%)]

Pressure Unit(EU)

Set Scale of Output Value

Lower [EU(0%)]

Upper [EU(100%)]

Output Unit (EU)

Temperature Unit

Apply

Settings Scales / Units User Table

CALIBRATION CONFIGURATION DIAGNOSTIC IDENTIFICATION

DISPLAY



Manufacturer: SMAR
 Device Type: FY303
 Device Tag: FY-303-1

Device Operation Mode

Operation Mode:



LCP1 LCP2 LCP3 LCP4 LCP5 LCP6 LCP7

Block Tag 0:
 Parameter 0:
 End Value 0:
 Movement 0:
 Acc.Den 0:
 Second Point Mode 0:
 Accen 0:
 Alpha Mode 0:

CALIBRATION CONFIGURATION DEVICE VIEW DIAGNOSTIC DISPLAY IDENTIFICATION REHOME

CONFIGURATION



Manufacturer: SMAR
 Device Type: FY303
 Device Tag: FY-303-1

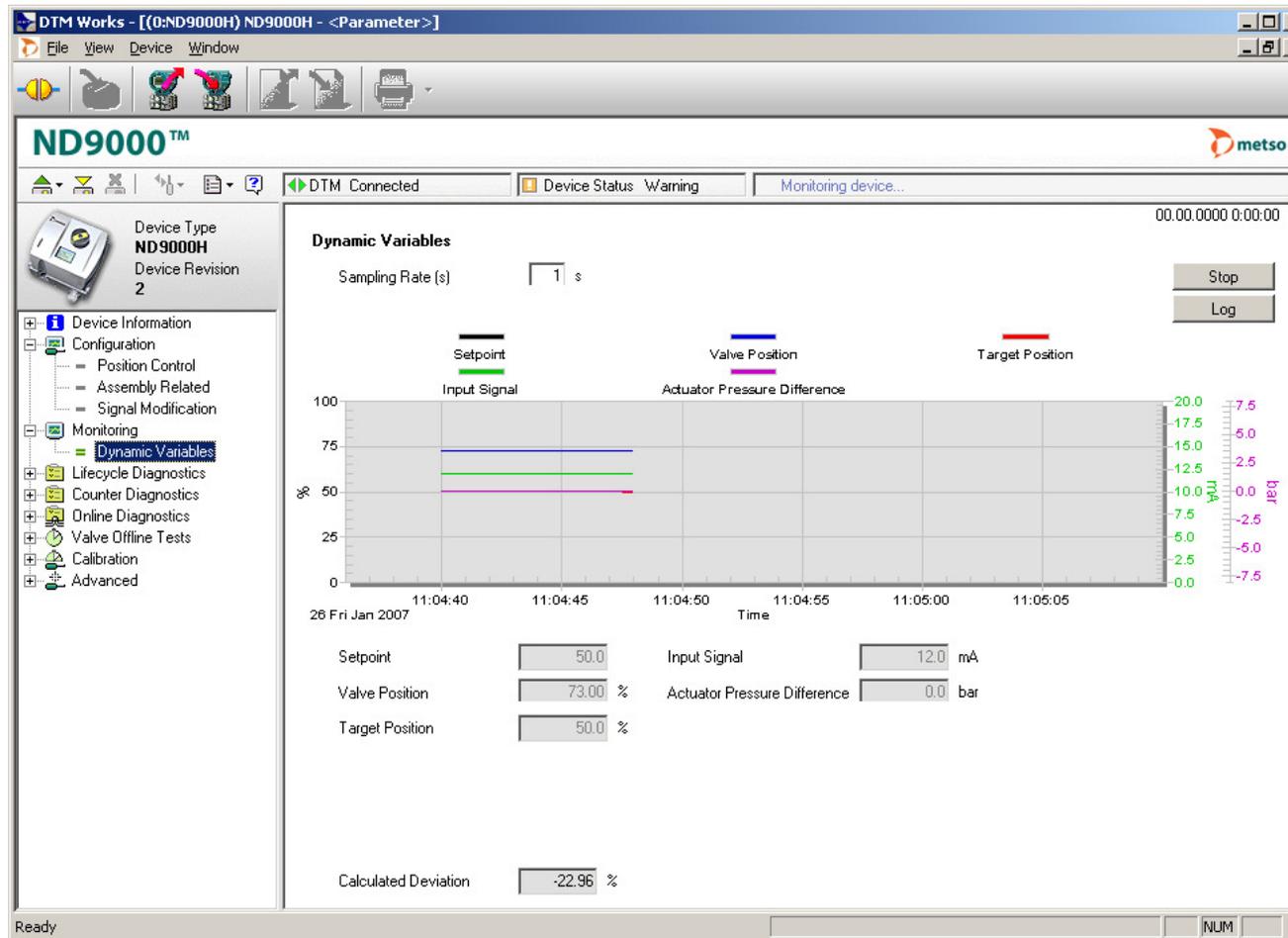
Device Operation Mode

Operation Mode:

Deviation Alert		Reversal Alert	
Deviation Enabled	<input type="text" value="False"/>	Reversal Enabled	<input type="text" value="False"/>
Deviation Time	<input type="text" value="1"/>	Reversal Limit	<input type="text" value="1.00"/>
Deviation Deadband	<input type="text" value="0"/>	Reversal Deadband	<input type="text" value="0"/>

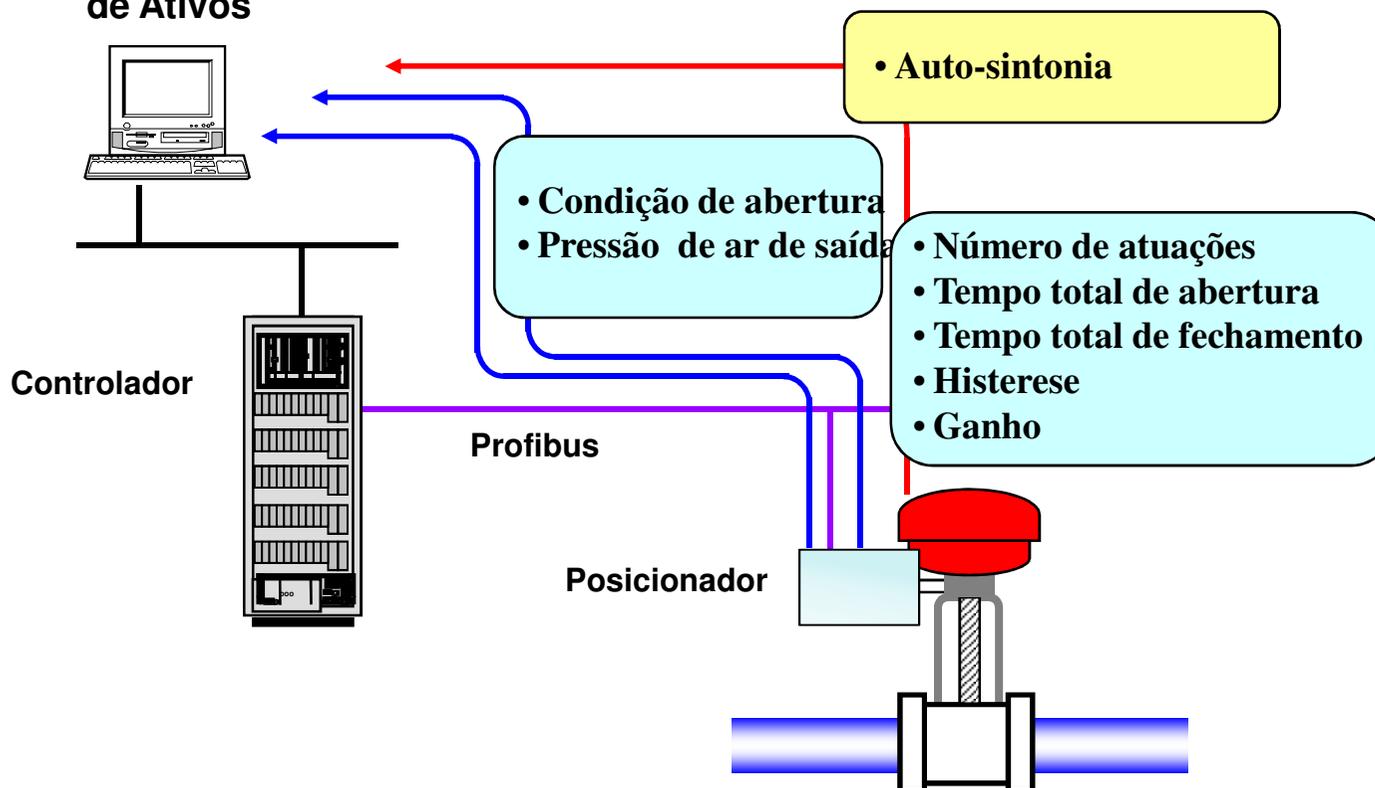
Travel Accum Alert		Sensor Pressure Alert	
Travel Enabled	<input type="text" value="False"/>	Sensor Pressure In High Limit	<input type="text" value="1.00"/> psi
Travel Limit	<input type="text" value="1.00"/>	Sensor Pressure In Low Limit	<input type="text" value="0"/> psi
Travel Deadband	<input type="text" value="1"/>		

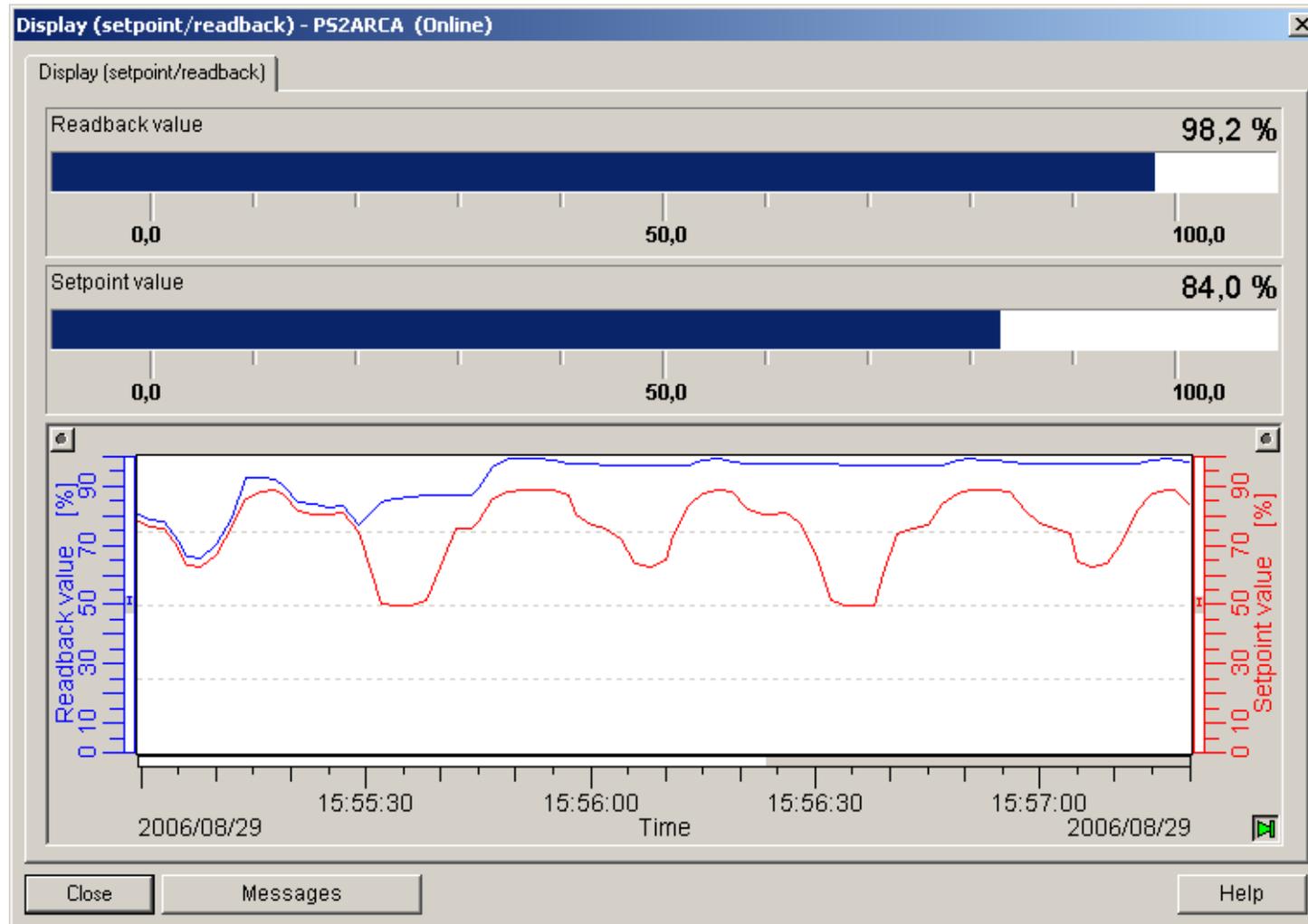
Travel Control			
Characterization Type	<input type="text" value="Table"/>	Final Value Cutoff Low	<input type="text" value="0"/>
Curve System	<input type="text" value="Time"/>	Final Value Cutoff High	<input type="text" value="1.00"/>
Curve Length	<input type="text" value="1.0"/>	Travel Limit Low	<input type="text" value="0"/>
	(MIN 0 / MAX 1)	Travel Limit High	<input type="text" value="1.00"/>

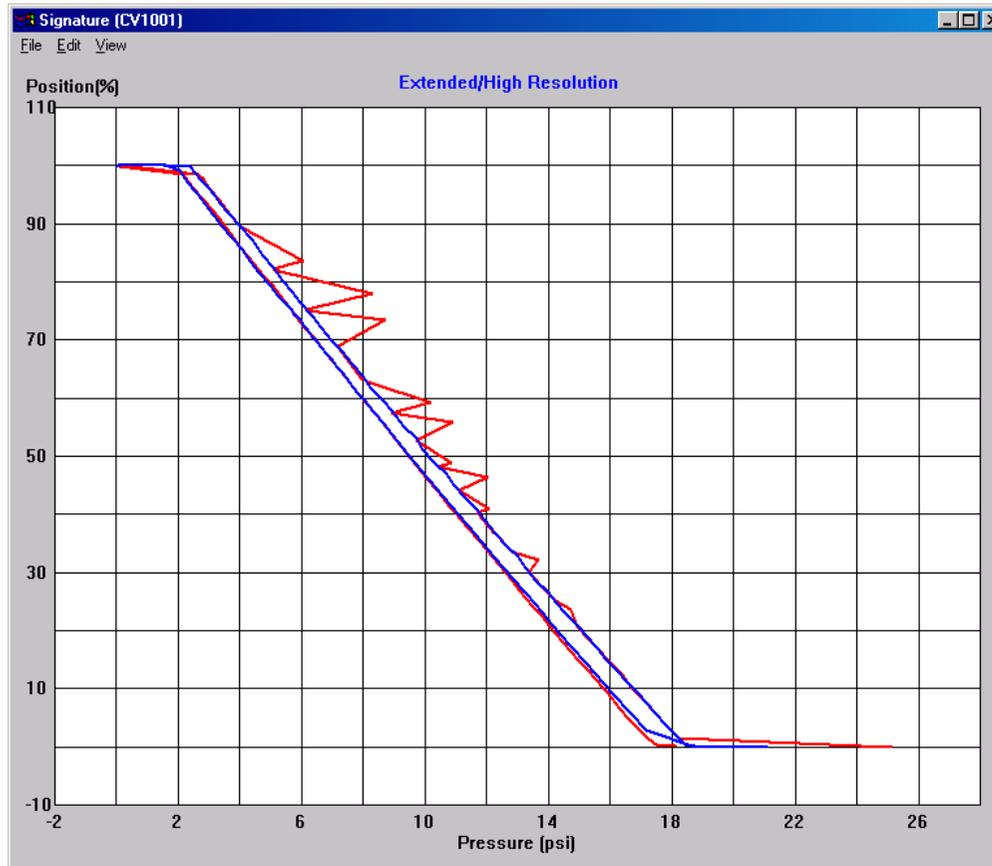


- Execução de auto-sintonia do servomecanismo do posicionador e da calibração de parâmetros, como zero, span, range.
- Acesso aos parâmetros contínuos da válvula, como número de atuações, o total de cursos acumulado, o tempo total de abertura e fechamento ou então a condição de "near close" .

Software de Gerenciamento de Ativos

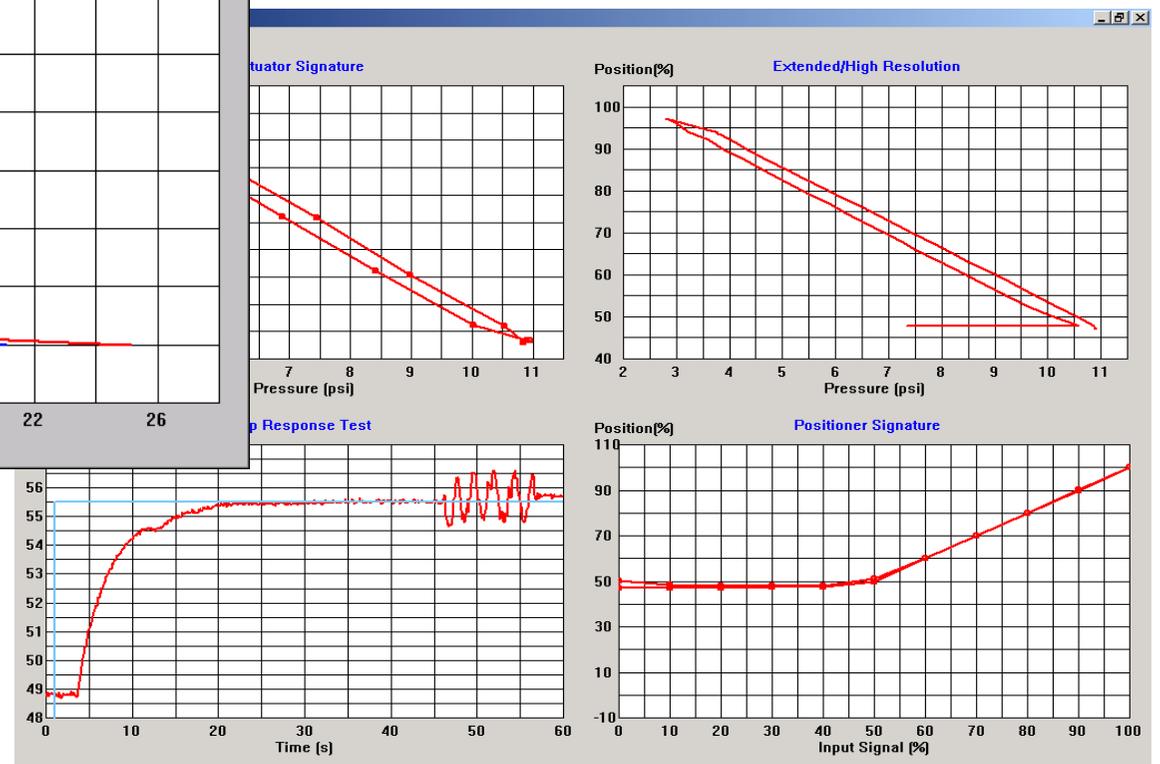




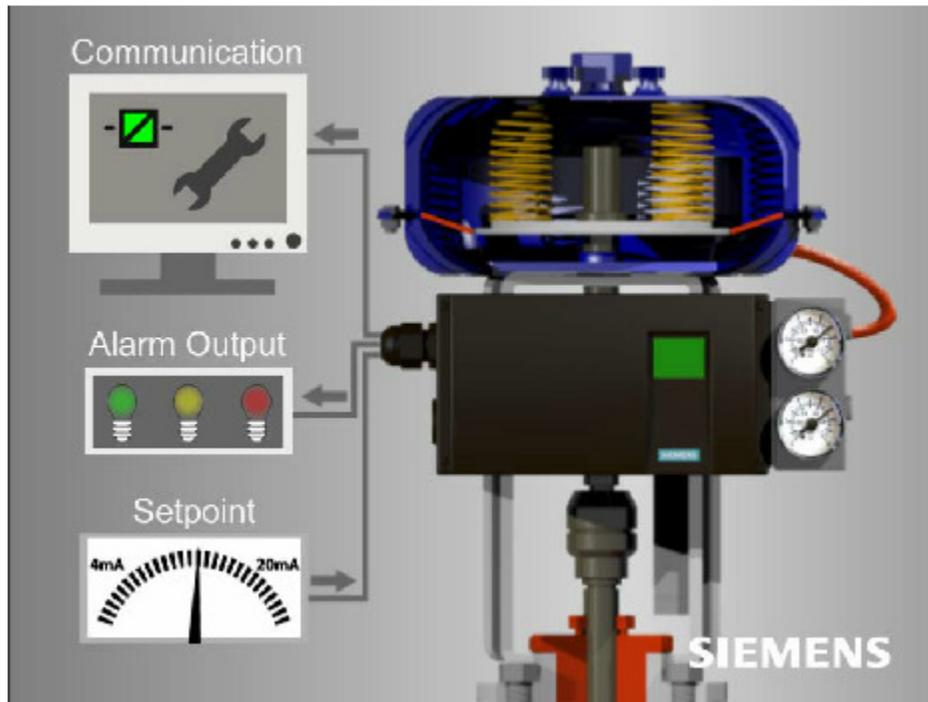


Diagnósticos:

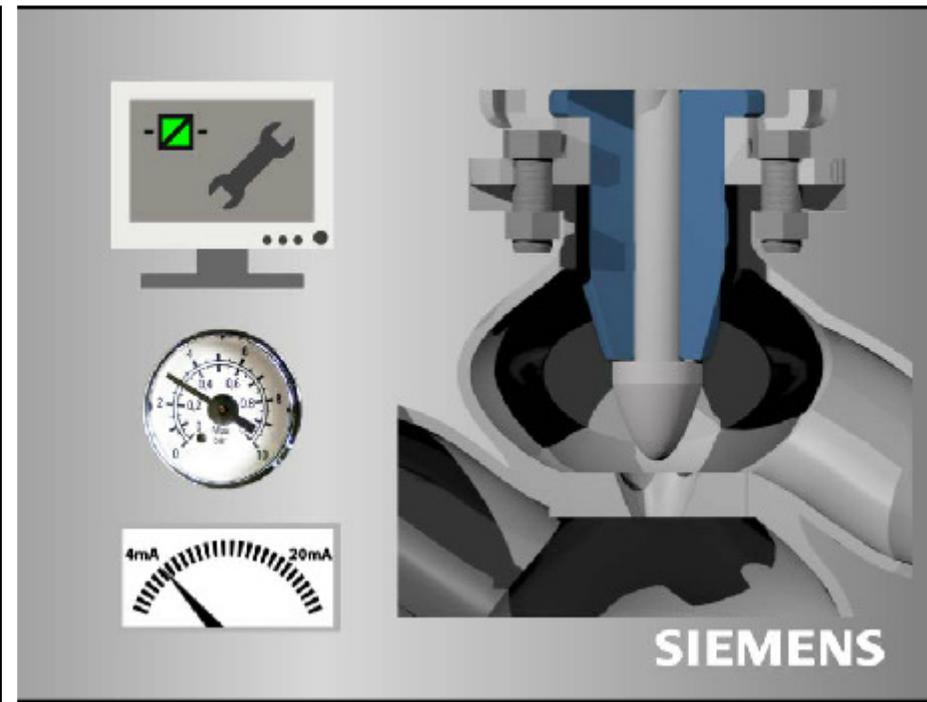
- Vazamento de ar (diafragma, tubing)
- Desgaste/Corrosão da haste
- Cavitação
- Agarramento
- Vibração
- Mola quebrada



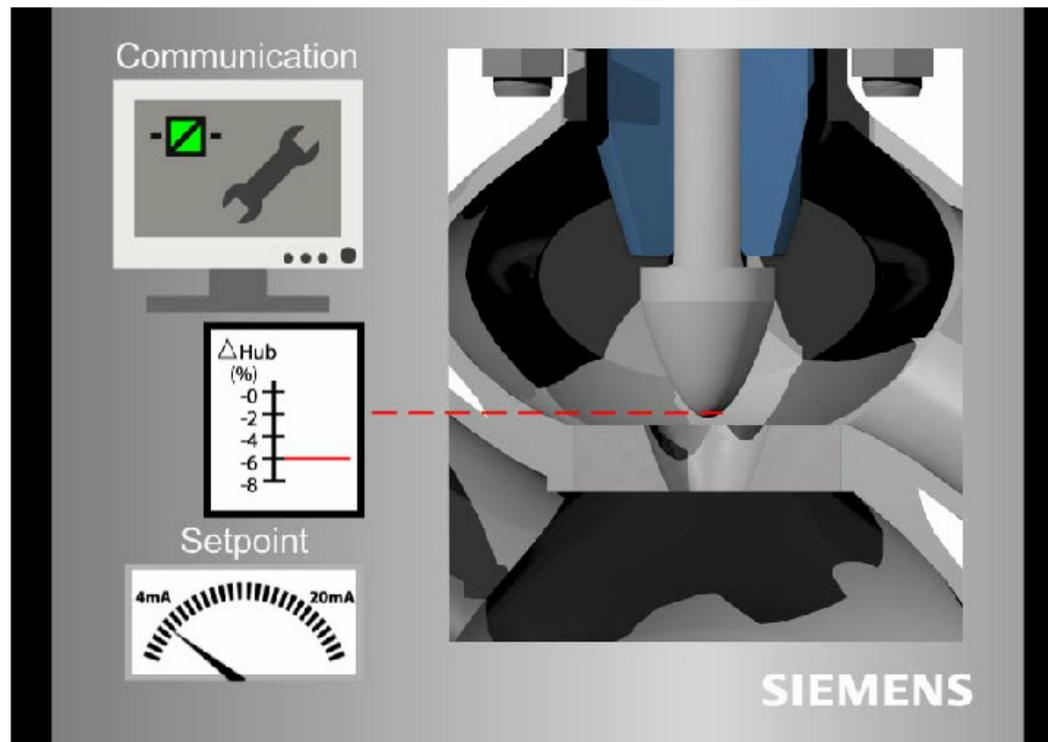
Vazamento de Ar

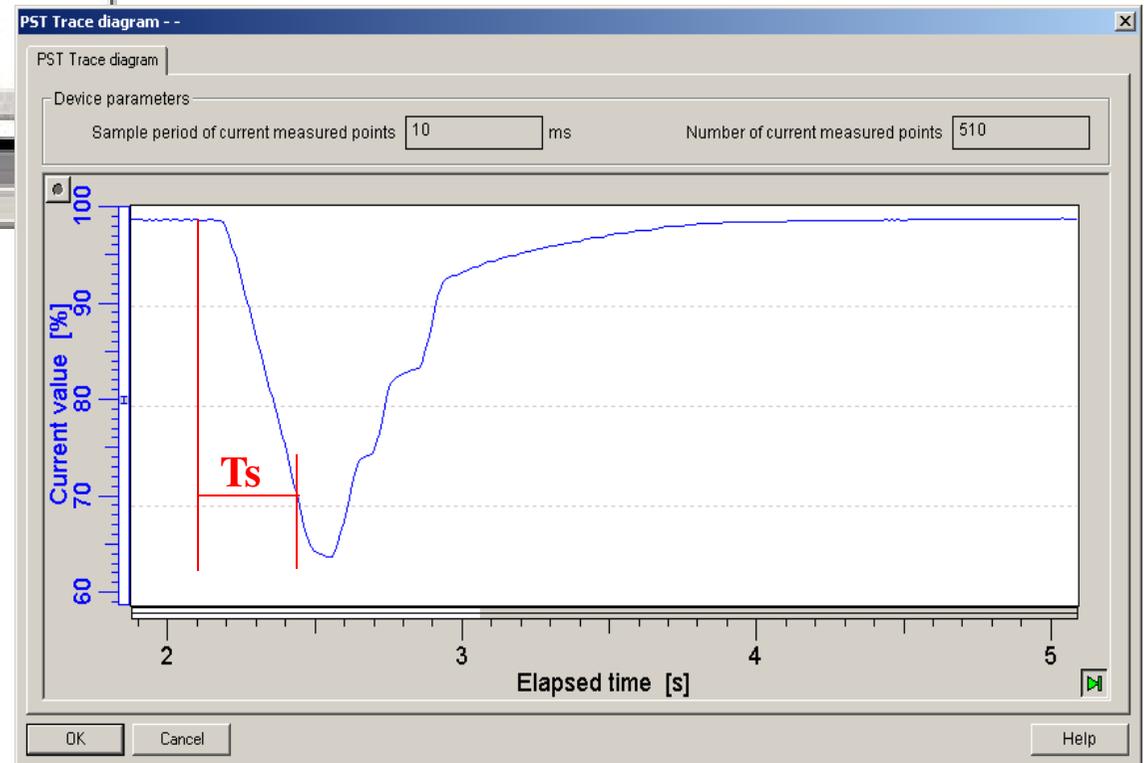
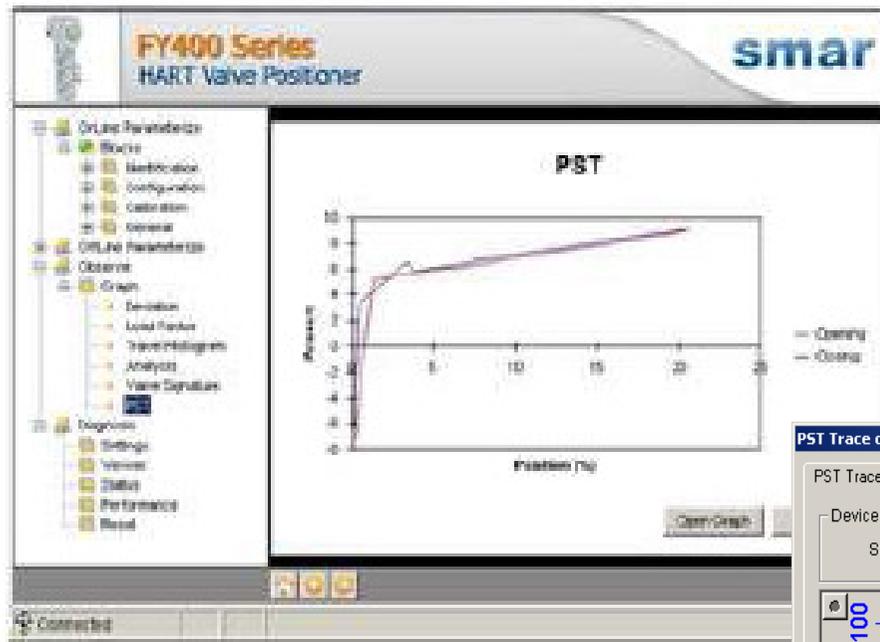


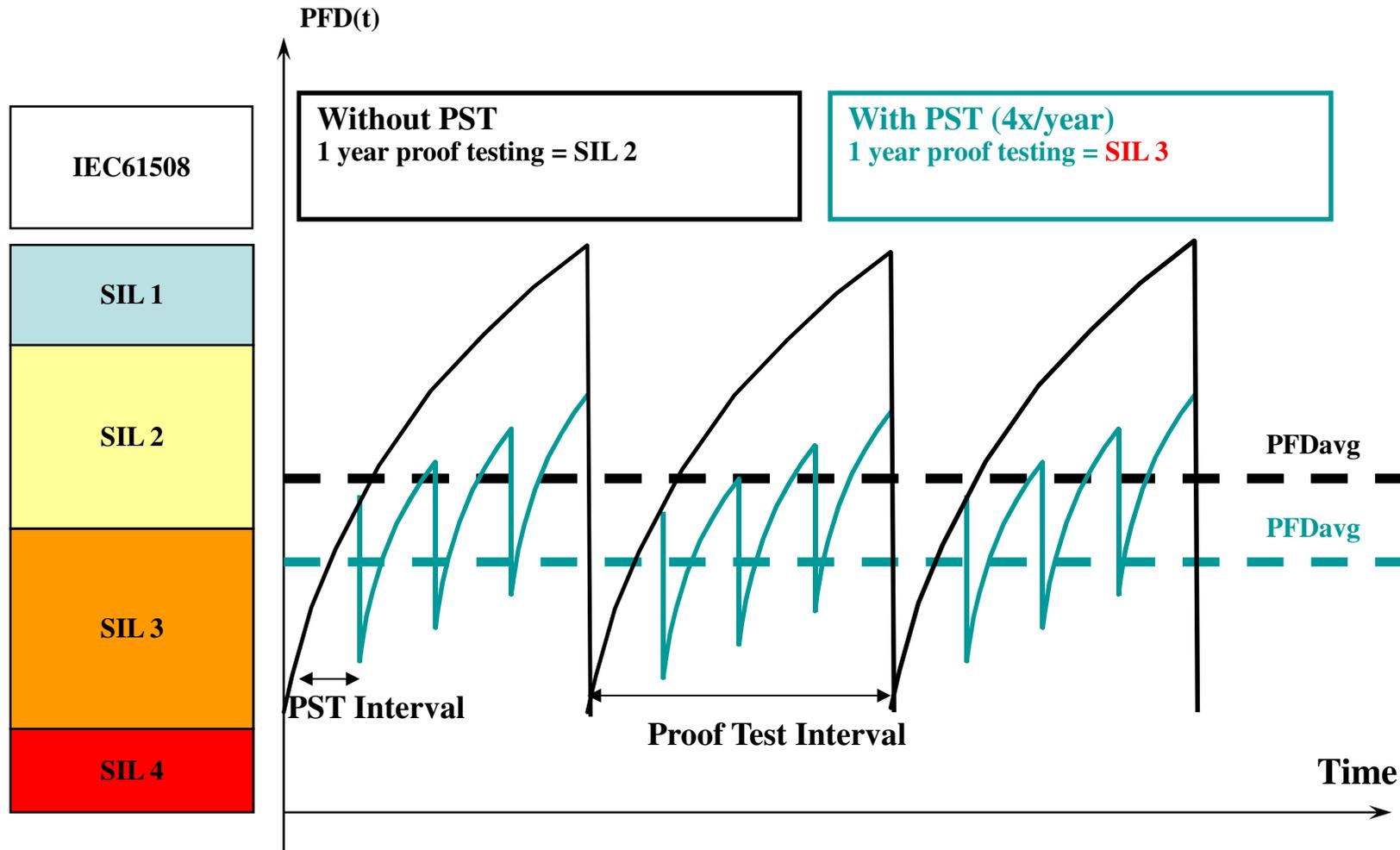
Aumento da Fricção Interna



Desgastes devido a cavitação







Parametrização

- Lógicas
- Limites
- Parâmetros

Mensagens:

- Status / modo
- Warnings
- Falhas
- Erros de parâmetros

Controles:

- ON / OFF / Reset

Diagnósticos:

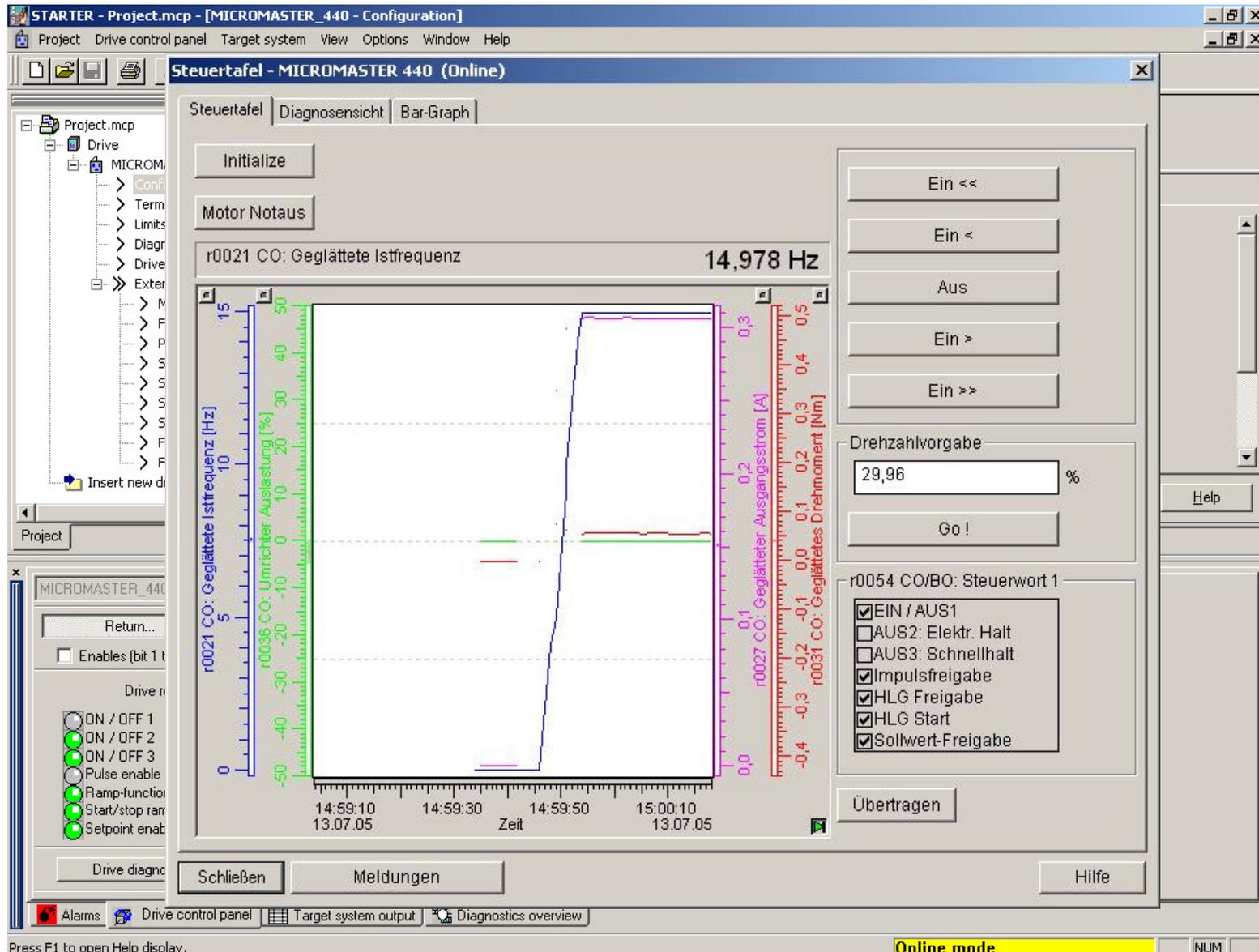
- Cool down time
- Tripping current
- Número de trip de sobrecarga

Dados Estatísticos

- Número de inicializações
- Horas de operação

Monitoramento On-line:

- Corrente do motor em A





Message Diagnostic PA Slave DP V0 link DP_Mastersystem

S7-Programm(1)/@(11)/Pointek_CLS200_2

maintenance

Components	Request number	Request Operator
maintenance demanded	0815	<input type="radio"/> Alarm <input checked="" type="radio"/> Demand <input type="radio"/> Request <input type="radio"/> In progress <input type="radio"/> Completed <input type="radio"/> Cancel

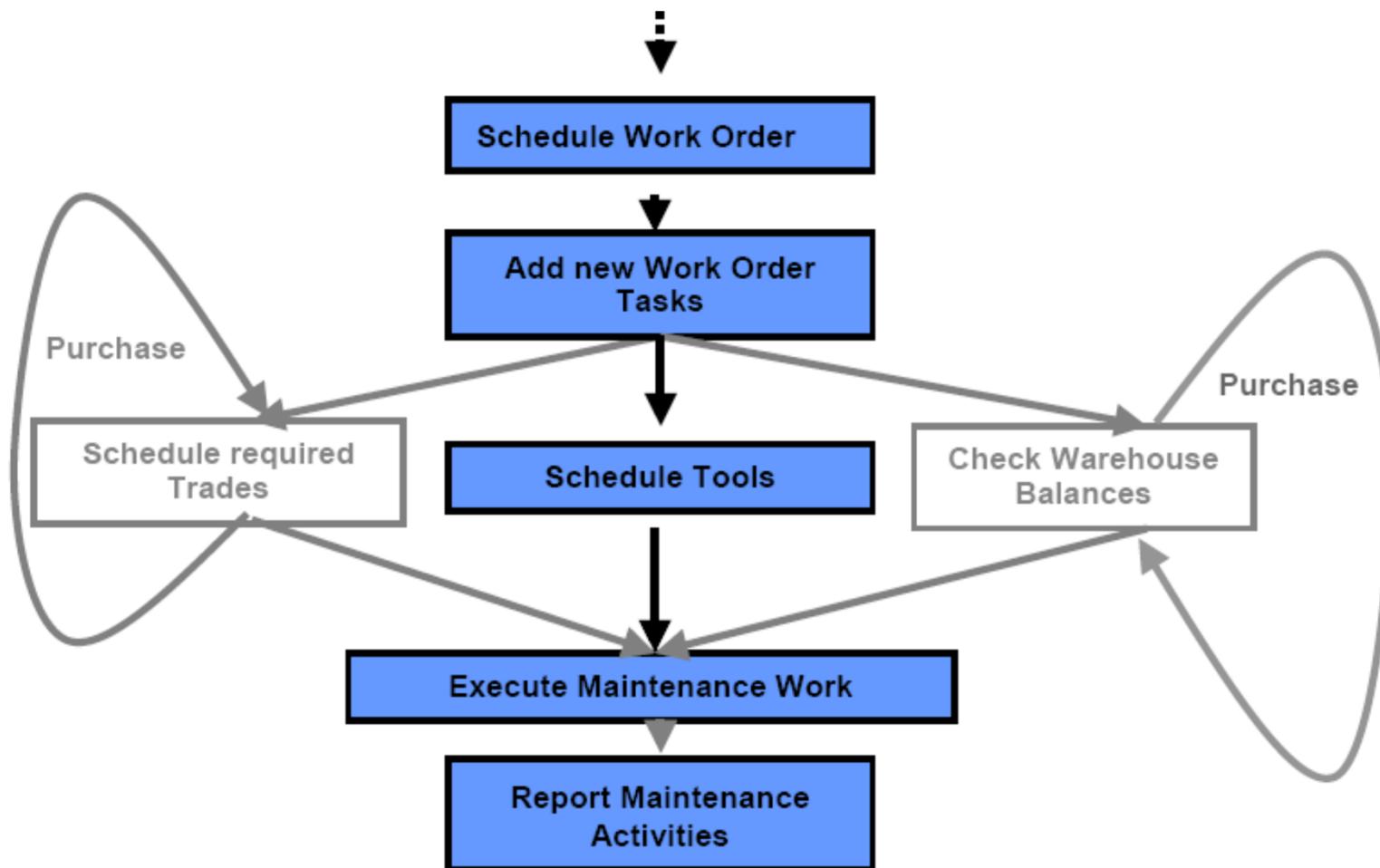
note

Pointek CLS200 change sensor on 2005.09.05

Request via

printer

Request status set by the user





Smart Assistant - Microsoft Internet Explorer

Address: http://localhost:3000/

Maintenances List

Type	DeviceTag	Description	Actions
Preventive	pk-100	LD-302 (Fieldbus) Sample Preventive Maintenance	[Icons]
Preventive	pk-100	LD-302 (Fieldbus) Sample Preventive Maintenance	[Icons]
Preventive	pk-100	LD-302 (Fieldbus) Sample Preventive Maintenance	[Icons]
Preventive	pk-100	(N/A)	[Icons]
Preventive	pk-101	LD-302 (Fieldbus) Sample Preventive Maintenance	[Icons]
Preventive	pk-101	LD-302 (Fieldbus) Sample Preventive Maintenance	[Icons]
Preventive	pk-101	LD-302 (Fieldbus) Sample Preventive Maintenance	[Icons]
Corrective	TAG_DEFAULT_104	Maintenance from Diagnostic - TAG_DEFAULT_104 - TA ...	[Icons]
Preventive	TT-1	TT300 (Hart) Sample Preventive Maintenance	[Icons]
Preventive	TT-1	TT300 (Hart) Sample Preventive Maintenance	[Icons]
Preventive	TT-1	TT300 (Hart) Sample Preventive Maintenance	[Icons]
Preventive	TT-1	TT300 (Hart) Sample Preventive Maintenance	[Icons]

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USER INFORMATION
 Renato (Engineer)
 manafoxcm@isa.com.br

Local intranet



Message Diagnostic PA Slave DP V0 link DP_Mastersystem

S7-Programm(1)/@(11)/Pointek_CLS200_2

Chg Report

Point of time	Action	Comment
2005-09-05 09:47:54,312	Read online diagnostics	-
2005-09-05 09:47:33,796	Check device identification	Check Identification
2005-09-05 09:46:41,546	Save modified device parameter in project data storage	-
2005-09-05 09:46:35,515	Read online diagnostics	-
2005-09-05 09:46:14,609	Check device identification	Check Identification

- **Contém:**
 - **Diagnósticos e mensagens de erro**
 - **logs dos operadores**
 - **requisições de manutenção**

Date	Time	Class	Status	Event	Batch name
05/09/05	12:51:21.540	PLC proceQS		Device 2/5/26: bad, maintenance alarm	
05/09/05	12:51:21.540	PLC proceQS		Device 2/ 5/ 26: Failure	
05/09/05	12:52:17.604	PLC proceC		Device 2/5/26: uncertain, maintenance request	
05/09/05	12:57:29.000	Operator I C		OHIO Completed Request number = 0815	
05/09/05	12:57:32.296	Operator I C		OHIO: Acknowledgment PLC process control mess	
05/09/05	12:57:32.311	PLC proceQS		Device 2/5/26: uncertain, maintenance request	
05/09/05	12:57:32.531	Operator I C		OHIO: Acknowledgment PLC process control mess	
05/09/05	12:57:32.734	Operator I C		OHIO: Acknowledgment PLC process control mess	
05/09/05	14:00:24.596	PLC proceQS		Device 2/5/26: bad, maintenance alarm	

Segundo a Associação Brasileira de Manutenção, os custos com manutenção no País representam 4,2% do PIB e 4% do faturamento bruto das empresas é gasto em ações de manutenção.

Produtividade Operacional

Em uma empresa, aqui no Brasil, que produz cimento:

Caso haja algum problema com um dos fornos, será necessário esperar 32 horas para que ele esfrie antes que a equipe de manutenção possa solucionar o problema, perdendo aproximadamente 64 horas de produção.

Aumentando a disponibilidade da atual linha de produção, estas empresas podem crescer mais 5% ou 10%, sem ter que investir milhões de dólares.

Produtividade Operacional

Segundo o COPIMAN - Comitê Panamericano de Engenharia de Manutenção, as empresas que utilizam metodologia preventiva e proativa possuem entre **48% a 78% a mais de eficiência operacional.**

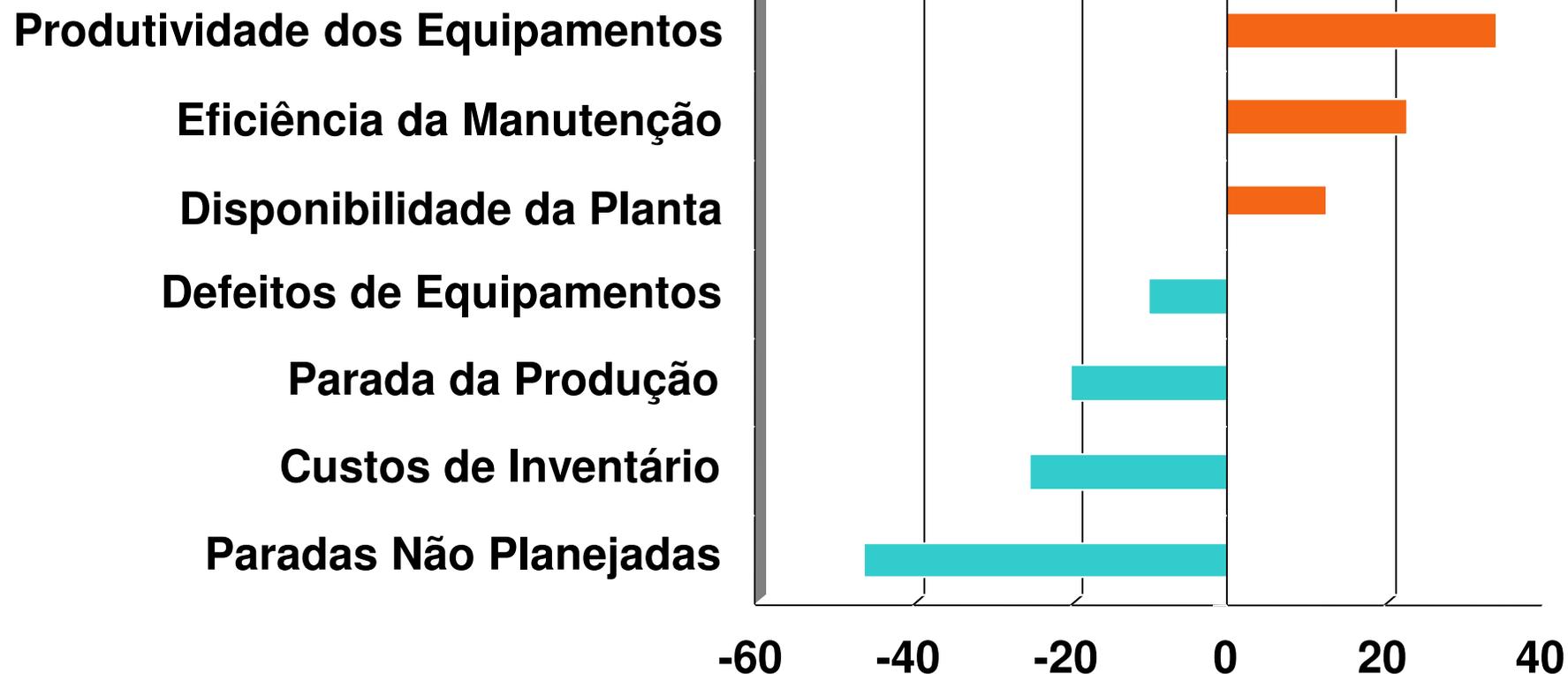
Gerenciamento dos custos de Manutenção

Uma empresa do segmento químico tinha procedimento de manutenção preventiva de válvulas de controle, onde 188 válvulas eram retiradas a cada ano para manutenção.

Após um ano de manutenção preditiva, das 188 válvulas diagnosticadas, 57 não requeriam nenhuma manutenção, 117 puderam ser reparadas sem serem removidas do campo e somente 14 válvulas tiveram que ser retiradas.

Resultado: uma economia de 60% nos gastos de manutenção.

% Melhorias vs Manutenção



A redução dos custos pode exceder 20% do budget da manutenção

Obrigado!

Marco Padovan
Engenharia de Aplicações - Sense