



ABTCP | 50^o Congresso Internacional de
2017 | Celulose e Papel
50th Pulp and Paper International Congress

23 a 25 de outubro
October 23th to 25th
Hotel Unique
São Paulo
Brasil / Brazil



Realização:



Correalização:



Industria 4.0 – Projeto Puma

Cleverson Torelli – Automação – Klabin



1,5 milhão de toneladas de celulose por ano - Autossuficiente em Energia Elétrica (270MW)

Dados de Automação - Projeto Puma

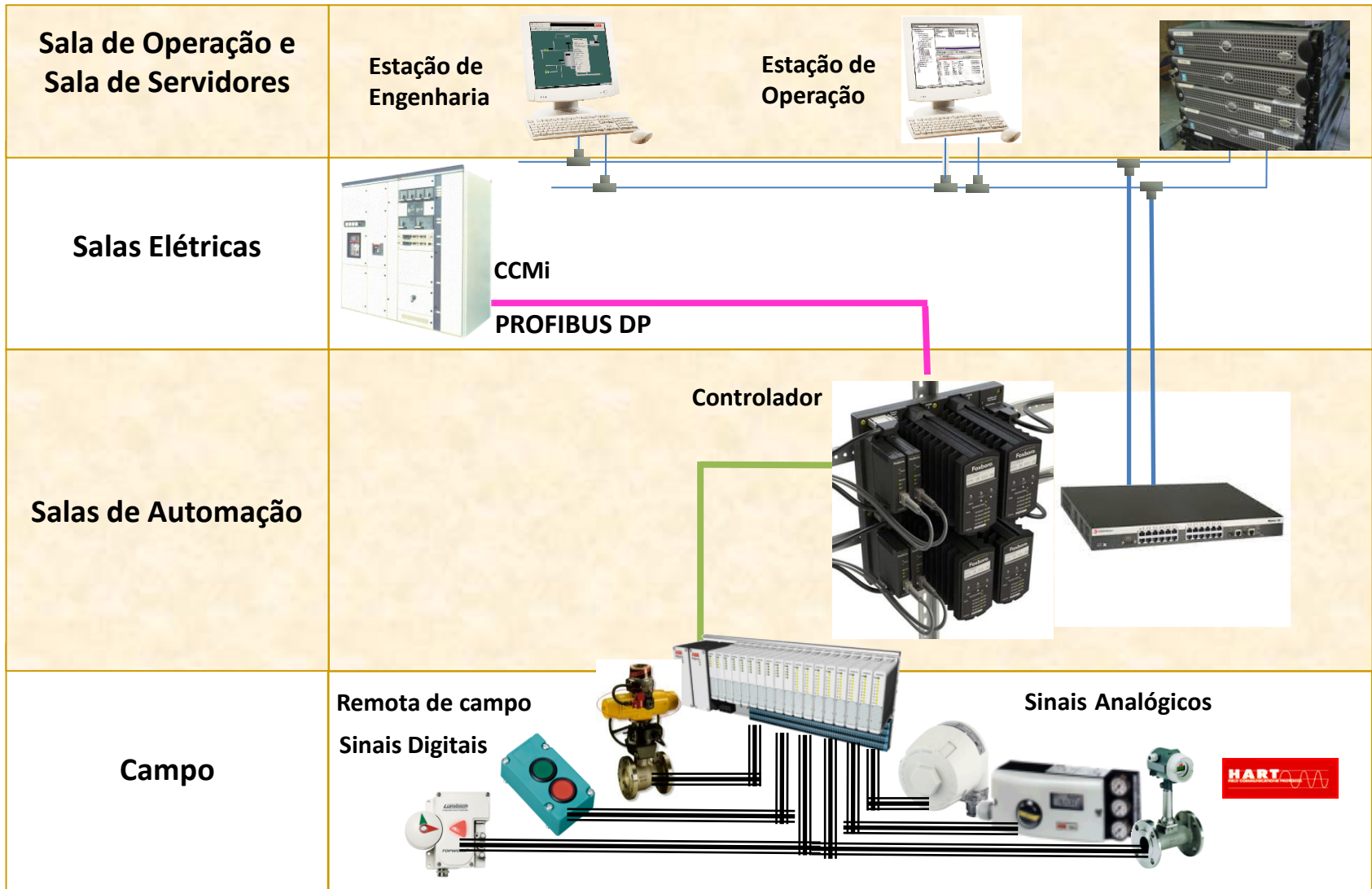
- **38 controladores redundantes - SDCD;**
- **14.900 pontos de I/O físicos;**
- **2.900 dispositivos interligados em Profibus-DP;**
- **130 em Modbus-RTU ;**
- **65 interligados em Modbus-TCP.**

Porte da Instrumentação

- Válvulas Automáticas– 1973;
- Instrumentos (Frame) – 2750 (pressão, temperatura, vazão e nível);
- Protocolo Hart.



Conceito das Redes de Controle



Asset Management



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14 | of 1 | 100% | Find | Next

VOLTAR

Alertas em Instrumentos - 9/19/2017 12:00:00 AM

ALARMES
MANUAL
FORCES

Status das Areas (Somente Falha)

- Caldeira de Força
- Caldeira de Recuperação
- Caustificação e Fornos
- Forno de Cal
- BOP
- Distribuição Vapor
- ETA + Captacao
- ETE + Emissario
- ETAC
- Evaporação
- Fibras EUCA Cozimento
- Fibras EUCA Branqueamento
- Fibras PINUS Branqueamento
- Fibras PINUS Cozimento
- Planta Quimica
- Preparo de Madeira
- Secagem - Area Comum
- Secagem MC-25
- Secagem MC-26

Alertas Totais por Area

PLANTA_QUIMICA	18
LAVAGEM_DESLIG_SW	8
BRANQUEAMENTO_SW	8
DEPURACAO_SW	6
DEPURACAO_HW	3
LAVAGEM_DESLIG_HW	2
COZIMENTO_HW	2
BRANQUEAMENTO_HW	2

Severidades Namur 107

Severidade	Contagem
Failure	12
Function Check	2
Maintenance	26
Out of Spec	9

Falhas por Fabricante - Historico

Fabricante	Contagem
ABB	1144
FLOWSERVE	26
SIEMENS	36
Unknown	36
WEG	36
YOKOGAWA	36

Alertas semanais - 7 dias - Historico

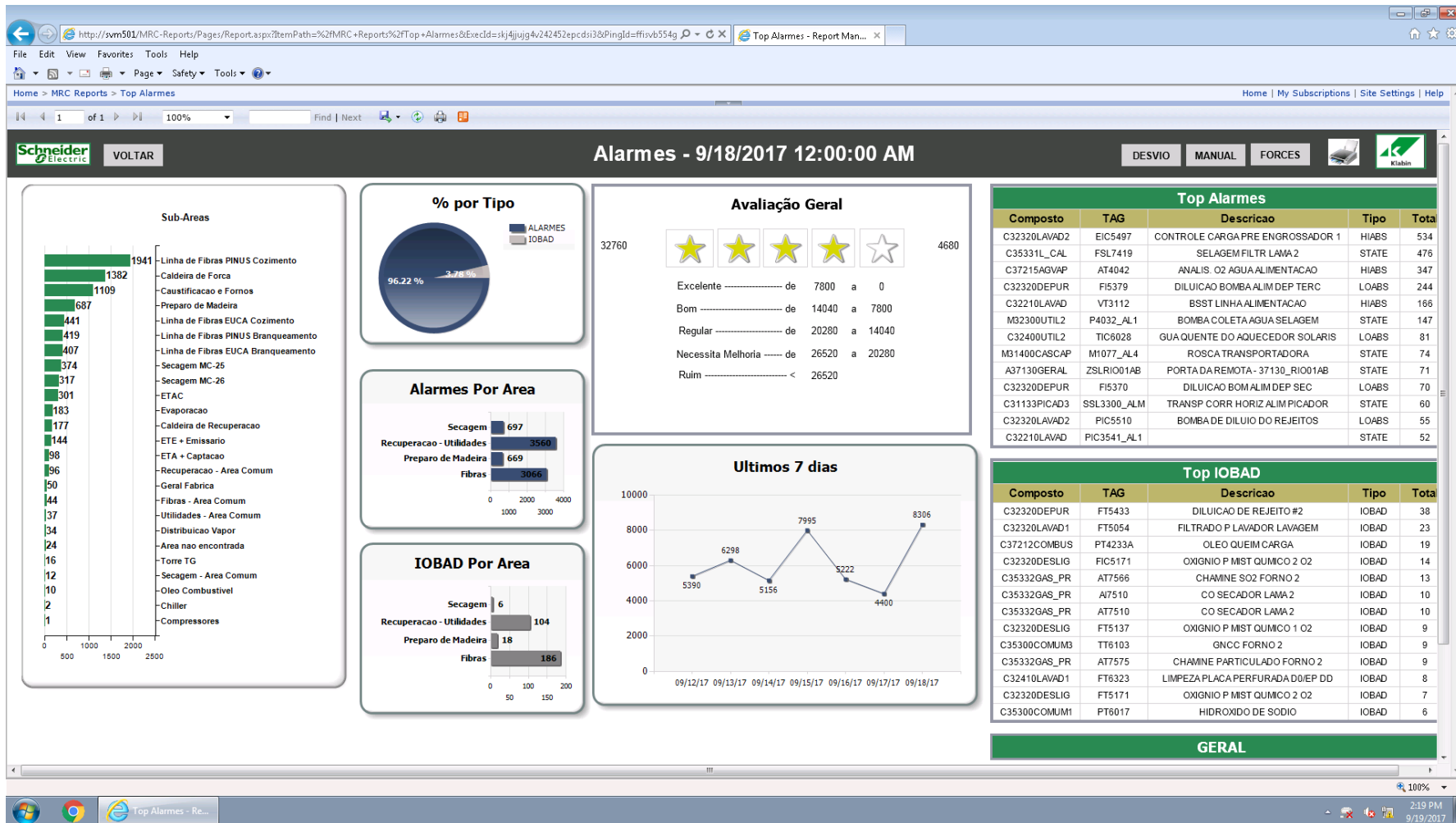
Axis Title	Alertas
13	300
14	368
15	330
16	327
17	374
18	486
19	258

TAG	Alertas	Area
FT0024	6	PLANTA_QUIMICA
FT1376	5	LAVAGEM_DESLIG_SW
	5	PLANTA_QUIMICA
HV2685	2	DEPURACAO_HW
TV2632	2	PLANTA_QUIMICA
FV2322	1	LAVAGEM_DESLIG_HW
PT5413	1	DEPURACAO_SW
LV5559	1	DEPURACAO_SW
HV6030	1	DEPURACAO_SW
HV6025	1	DEPURACAO_SW
FV5498	1	DEPURACAO_SW
	1	DEPURACAO_SW
HV2469	1	DEPURACAO_HW
TV4303	1	COZIMENTO_HW
TV4302	1	COZIMENTO_HW
TC3101	1	BRANQUEAMENTO_SW
PT6318	1	BRANQUEAMENTO_SW
HV6433	1	BRANQUEAMENTO_SW
HV6342	1	BRANQUEAMENTO_SW
HV6005	1	BRANQUEAMENTO_SW

HISTORICO DE ALARMES



Alarm Management



100%

2:19 PM
9/19/2017



Loop Performance

http://172.17.81.25/Treemap.aspx?context=0

Suggested Sites Get more Add-ons

metso Performance Treemap

Plant Performance Dashboard

Headlines Reports Analysis Alerts, Events, Tickets Support Log Out Help

Rectangle size: All Assessments, Economic Importance
 Rectangle color: All Assessments, Avg abs error
 Color scheme: Red-yellow-green, Color weight: 1

0 Loops Snoozed

Refresh periodically Show: EVAP1 Restore defaults

Current values View Treemap in Its Own Window

KLABIN PUMA: EVAP1

35110LIC4360	35112FIC4022	35112FIC4077	35112FIC4078	35112FIC4107	
35111FIC4004	35112FIC4109	35112LIC4015	35112LIC4030	35112LIC4038	
35111FIC4368	35112LIC4049A	35112LIC4081	35112LIC4113	35112PIC4083	35112PIC4092
35111FIC4385	35112LIC4049B	35112LIC4082	35112PIC4121	35113FIC4601	35113FIC4652
35111TIC4139	35112LIC4060	35112LIC4112	35112PIC4129	35115LIC0421	35110LIC4001

Last refreshed at 9/19/2017 2:42 PM E. South America Standard Time

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 Technology protected under US Patents 6,993,396, 7,358,773 and 8,762,301. Other patents pending.

PlantTriage browser interface version: 13.01.4314 Database version: 13.1.10.118
 PlantTriage server: PLUM1776-N06 Serial: 87633

http://172.17.81.25/ReportEntity.aspx?report=23&MPC=0&etype=et.Loop&id=455&site=.&time=tp.Snapshot_atSnapshotNow,&seEndingNow,2017,9,19

Suggested Sites Get more Add-ons

Alerts, Events, Tickets Support This page Log Out Help

Values at 02:44 PM, 19 Sep 2017

Process Variable Trend Loop PV vs. CO - Last Assessment Period

Loop Health Components %T

Avg abs error	1000
Setpoint	500
Service factor	0
Oscillation significance	0

Assessment Hot Spots (°T) - Past 7 Days

Variance	
Variability	
SP changes	
Settling time	
Integral absolute error, steady state	
Integral absolute error (IEI)	

Cross Correlation of PV and CO

Cross correlation data not available. There is not enough movement of the Controller Output to provide accurate analysis.

Transmitter Performance

(current values)	Value	%T
Sensor health	58 %	30%
Noise band	0 %	0%
Sensor - Spiking	3.8	33%

Process Model

Process model not available -

Valve Metrics 1

(past 7 days)	Value	%T
Valve reversals	25 times/day	0.23%
Valve travel	441.3 % per day	15%
Stiction	-	-

Loop Diagnostic

(current values) Loop diagnosis full

Valve (or CO) at limit. Loop unable to hold SP

Current Tuning

P	350	PB
I	0.2	min/rep
D	0	min
F	N/A	sec

Valve Metrics 2

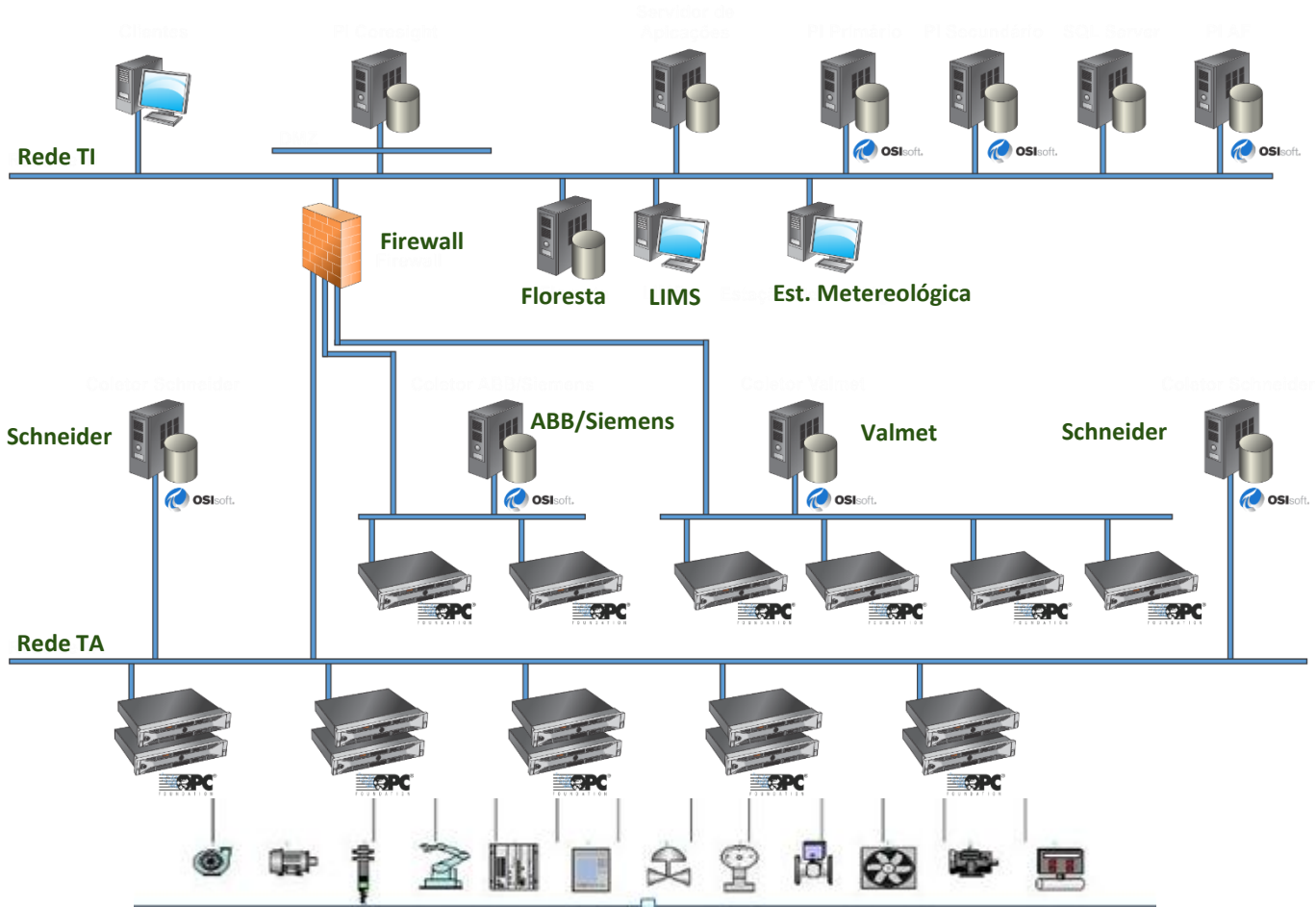
(past 7 days)	Value	%T
Ons - Valve	2.381E-05 %	2.8E-05%
CO noise band	0 %	0%

svy501 - Remote Desktop Connection

PI – Process Information

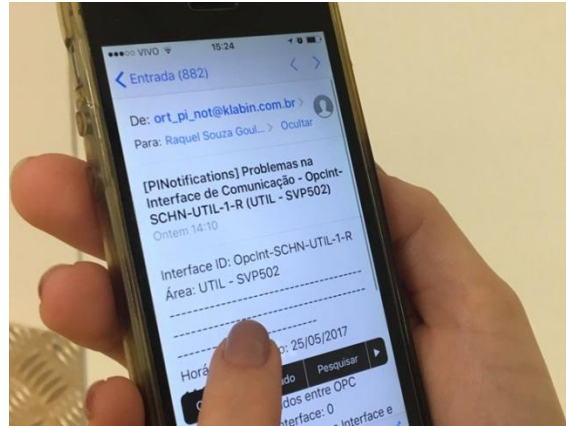
Integração total

7
5
0
0
0
T
a
g
s

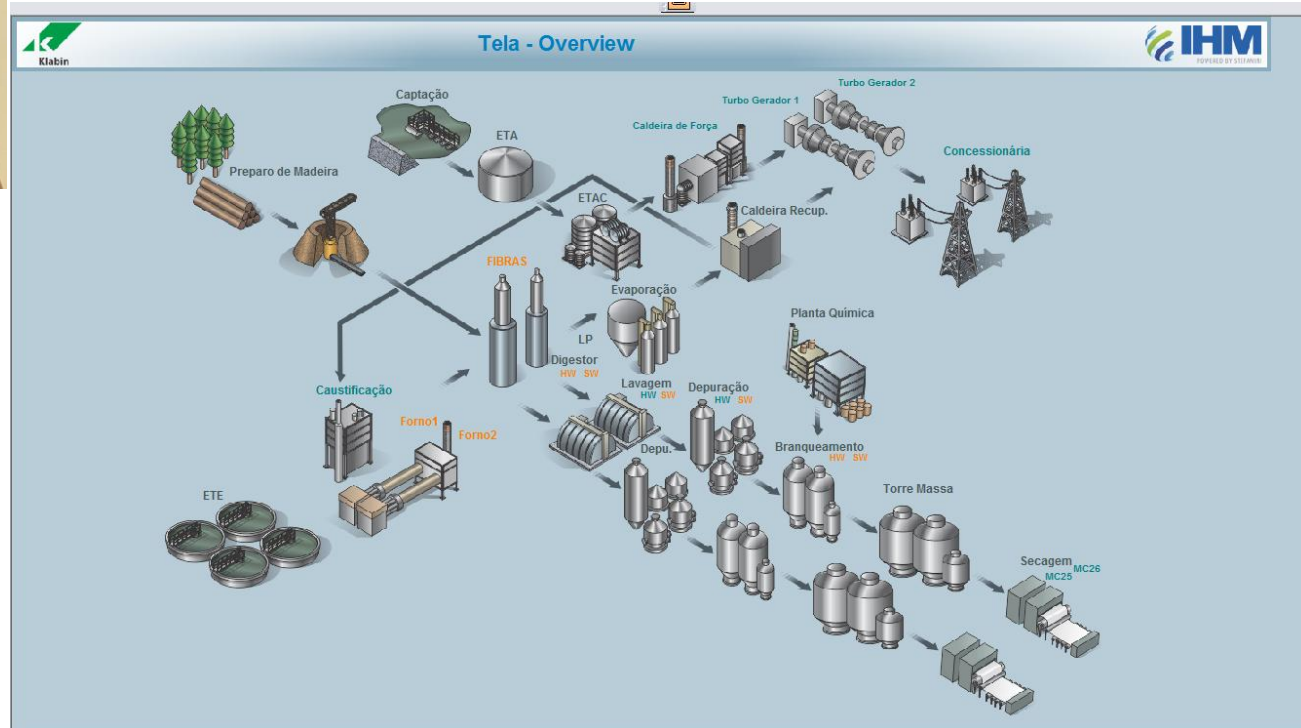


PI – Process Information

Informação na palma da mão!



Telas de Processo



PI – Process Information KPI's

IND_Geral - Savcor Wedge Edição Padrão

Arquivo Editar Opções Ferramentas Análises Ajuda

Processo: 27.8.2017 14:38:00 - 28.8.2017 14:38:00 | 1 minuto | Todos dados

Variáveis no diagrama

Todas as variáveis do servidor

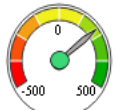
Esconder

Indicadores de Processo – PUMA

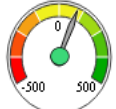


Klabin

Geral



DESVIO PROD MC-25



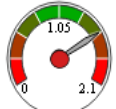
DESVIO PROD MC-26



Consumo Esp Água

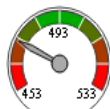


Consumo Esp Efluente

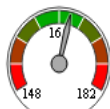


GERAÇÃO TSS/TSA

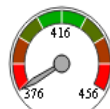
Madeira



DBM EUCA FLO



DA EUCALIPTO

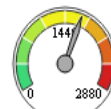


DBM PINUS FLO



DA PINUS

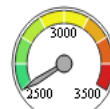
Meio Ambiente



DQO ENTRADA ETE



DQO SAÍDA ETE

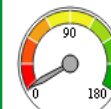


CONDUIT ENT

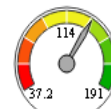


PERDA FIBRAS TOT

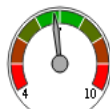
Utilidades



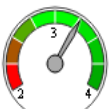
GERAÇÃO TG1



GERAÇÃO TG2



PH ÁGUA DESMI

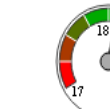


T VAP / TBIOM

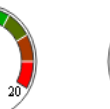
Recuperação



SST TQ EUCA



SST TQ PINUS



SST ENT CR



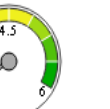
GRAU RED LV



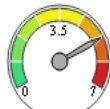
T VAPOR / TSS



ECONOMIA VAPOR



ESTOQUE ÁLCALI



ÁLCALI EFETIVO

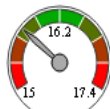


SULFIDEZ

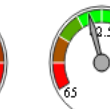
Linha de Fibras – Eucalipto



CARGA ALC TOT



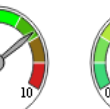
KAPPA SAÍDA DIGES



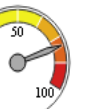
SELETIVIDADE DIGES



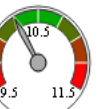
ESP LICOR



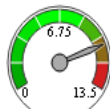
SELETIVIDADE DESLIG



KAPPA ENTRADA BQ



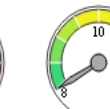
ESP DIÓXIDO CLORO



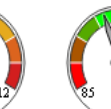
ESP PERÓXIDO



ESP NAOH BQ

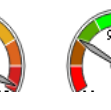
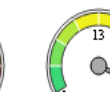
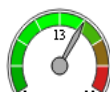
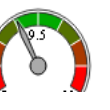
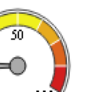
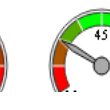
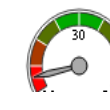
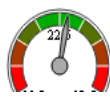


ALVURA SAÍDA BQ



TEMP POLPA

Linha de Fibras – Pinus



Utilização de Robôs



Utilização de Robôs



Resultados

- ✓ Agilidade na tomada de decisão;
- ✓ Disponibilidade de informações tratadas;
- ✓ Comunicação online de eventos;
- ✓ Confiabilidade das informações;
- ✓ Impulsiona a otimização operacional;
- ✓ Foco na manutenção Preditiva;
- ✓ Integração dos Sistemas.

Obrigado!

