



Improving Runtime Through Actionable Insights from the PI System

Presented by **José Aljovín**



Presentation Brief

- UNACEM is a Peruvian Corporation, that is a leader in the Cement and Concrete market, in continuous research and development.
- Innovation is the main focus for improving our process and quality.
- We will show how using the PI System, our expertise and innovation we improve profitability through actionable insights.

Agenda

- About UNACEM
- Business Challenge
- Use Case
- Implementation Details
- Results Obtained and Business Impact
- Conclusion



About UNACEM

About UNACEM

- UNACEM is a Peruvian Corporation, with presence in Ecuador, Colombia and the USA
- Main Products are Cement, Concrete and Energy
- Our Operations:
 - Perú Cement Plants
 - Lima's Coast (Atocongo)
 - Highlands over 3800 m.a.s.l. in Junin (Condorcha)
 - Cement Plants in Ecuador and in Arizona, USA
- The Cement Dispatch is in Bulk and bag packing

About UNACEM

The screenshot shows the UNACEM Corp website interface. At the top, there's a header with the UNACEM logo and a navigation bar with links like 'Home', 'About Us', 'Products & Services', 'Investors', and 'Contact Us'. Below the header, there are sections for different business units:

- CEMENT / Cement**: Represented by a red circle icon with a white factory silhouette.
- CONCRETO / Concrete**: Represented by a dark grey circle icon with a white concrete mixer truck silhouette.
- ENERGÍA / Energy**: Represented by a yellow circle icon with a white power transmission tower silhouette.
- UNACEM**: A large logo with the company name in a bold, sans-serif font.
- UNICON**: A logo featuring a white silhouette of a construction worker on a site.
- celepsa**: A logo with a stylized 'C' and 'S' symbol followed by the word "celepsa".
- ECUADOR**: A logo for UNACEM Ecuador, featuring the UNACEM monogram and the word "ECUADOR" below it.
- CONCREMAX**: A logo with the word "CONCREMAX" in a stylized font.
- Ambiand**: A logo with a circular swirl icon and the word "Ambiand" next to it.
- DRAKE CEMENT**: A logo with the word "DRAKE" above "CEMENT" and a small graphic element.
- Preansa**: A logo with a stylized 'P' icon and the word "Preansa".



Business Challenge

Business Challenges

- Face Increasing Market Competition
- Cost Reduction, Competitive Prices
- Maintain Our Well-Known Quality
- Operational Sustainability
- Advanced Process Control





Improving Cement Grinding

Production Process

- Mining (Limestone)
- Primary Crushing
- Secondary Crushing
- Pre-Homogenization
- Raw Grinding
- Heating and Cooling
- Cement Grinding
- Packing and Shipping



Production Process



For further information about our production process visit our website www.unacem.com.pe or click the next link to watch a video http://www.unacem.com.pe/?page_id=1717

Improving Cement Grinding

- Improve the Operational Performance
- Standardize Operational Process
- Reduce the Operator Workload
- Accurate Data Signals and Events
- Scope: Atocongo Plant Cement grinding
- Project Leveraged: PI Server, AF, SQC, Notifications, AFSDK, PI OLEDDB and BI App

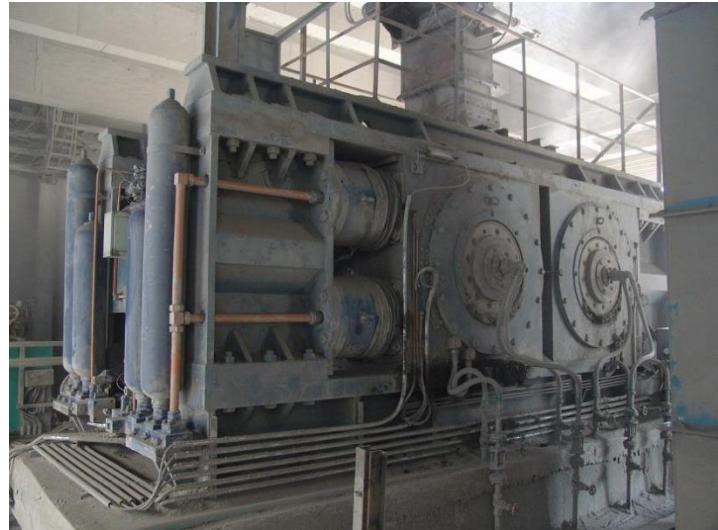


Improving Cement Grinding

Ball Mills



Roller Press





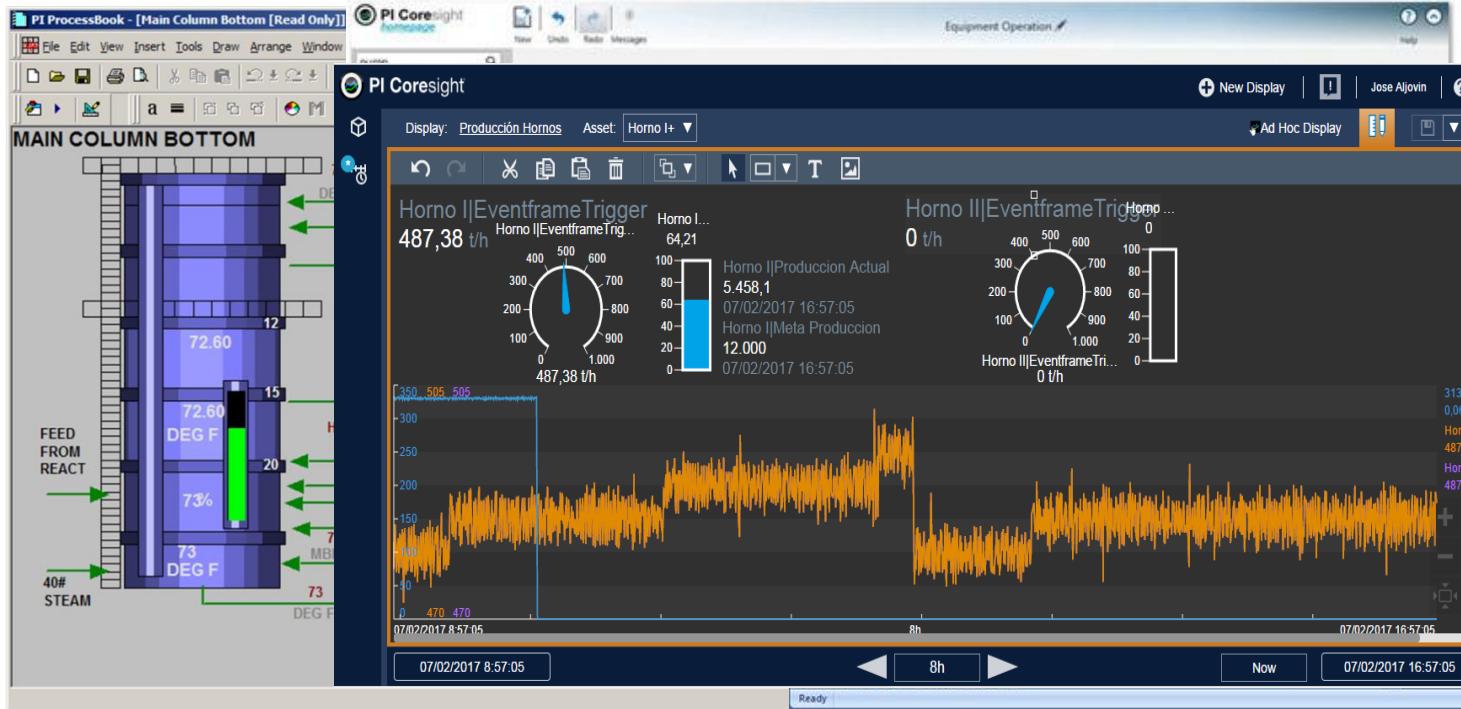
Implementation Details

Implementation Details

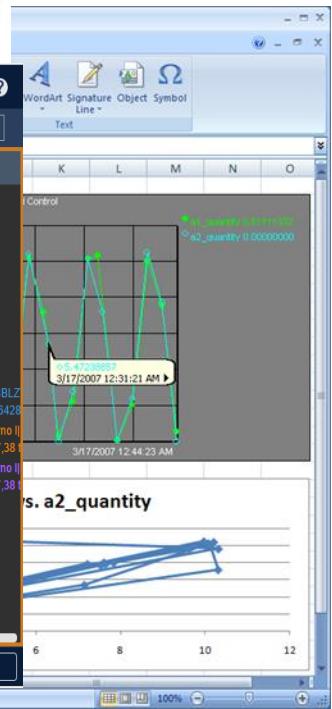
- Types of Display Visualization
- Road Map and Methodology
- Machine Status Redefinition
- KPI Definition
- Use Plants' Expertise

Types of Display Visualization

SCADA Visualization



Analytical Visualization



Road Map

The screenshot shows a web browser window with the URL <https://qualityinspection.org/factory-improve-efficiency/>. The page title is "5 steps for a Chinese factory to improve its efficiency". The post is by Renaud Anjoran on June 15, 2012. The content discusses the challenges faced by Chinese manufacturers, such as a focus on price over learning from mistakes. A hand holding a gear icon is visible on the right side of the page.

You are here: Home / In The Factory / 5 steps for a Chinese factory to improve its efficiency

JUNE 15, 2012 BY RENAUD ANJORAN

5 steps for a Chinese factory to improve its efficiency

g 2 Tweet in 27

The attitude of many Chinese manufacturers can be very frustrating.

The boss is usually focused on negotiating favorable prices and pushing production out the door. Not on learning from mistakes and looking for solutions. I explained all this in [Why few Chinese factories are adopting lean principles](#).

I am reading a practical guide called [Becoming Lean: Inside](#)

This blog is written by Renaud Anjoran, an ASQ Certified Quality Engineer who has been involved in Chinese manufacturing since 2005. Renaud's company performs factory audits/evaluations, product QC inspections, and factory process improvements.

[Contact Us!](#)

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<https://qualityinspection.org/factory-improve-efficiency/>

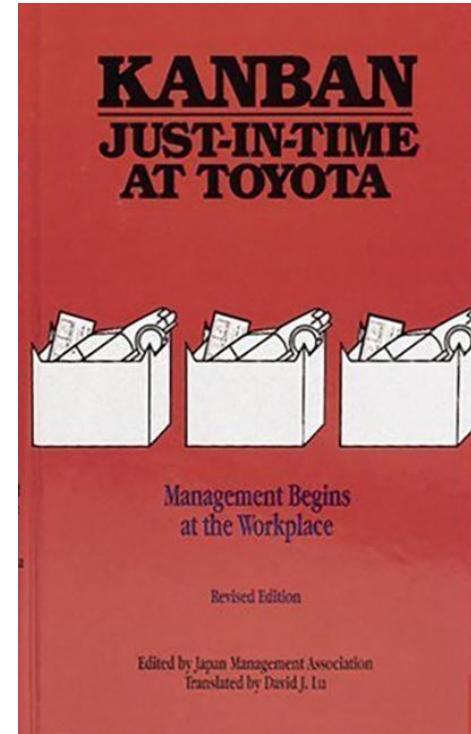
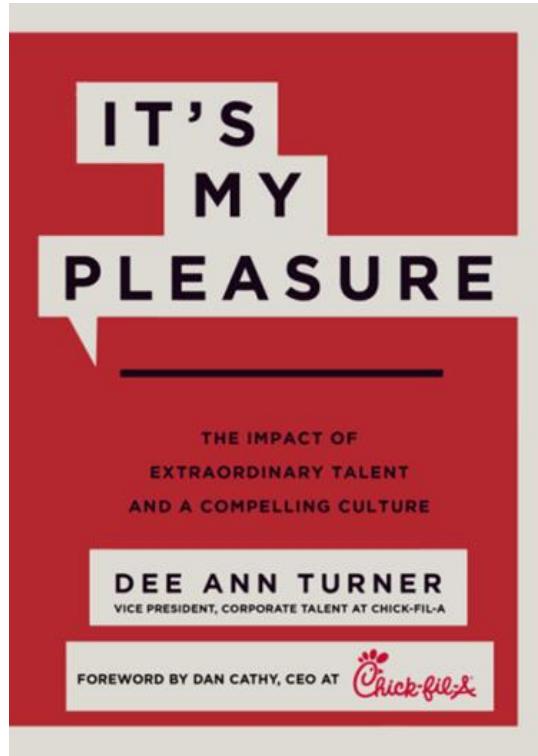
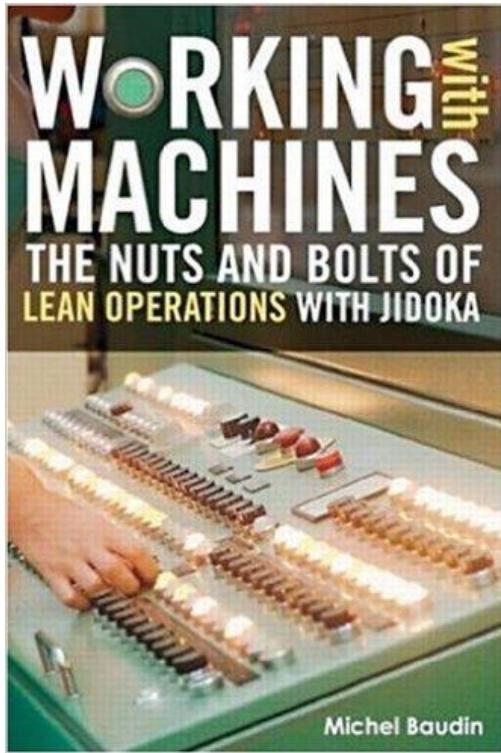
Road Map

- Step 1: Stabilization of Processes
- Step 2: Improve the Product Flow
- Step 3: Products Follow a Certain Sequence
- Step 4: Pull, Don't Push
- Step 5: Try to Level Production

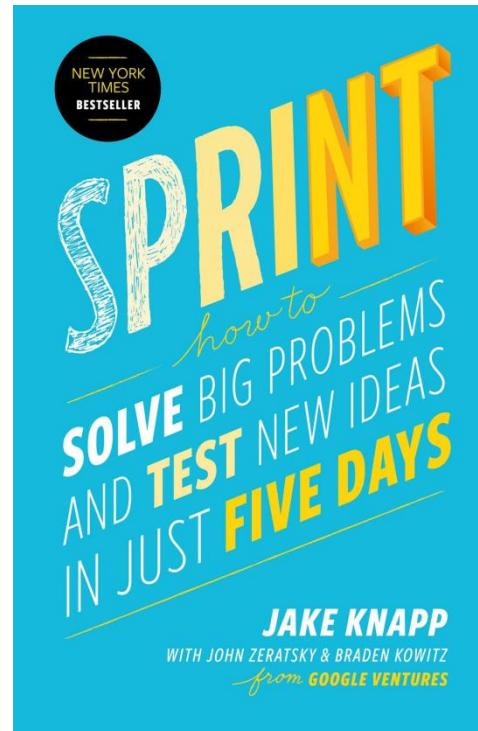
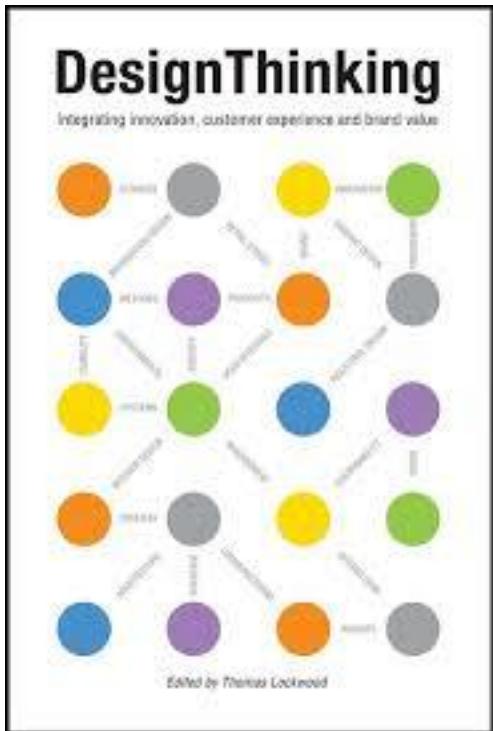
Road Map Step 1: Stabilization of Processes

- 1. Standardized Work Instructions
- 2. Jidoka
- 3. Product-Oriented Production Flow
- 4. Preventive Maintenance
- 5. Mistake Proofing
- 6. 5S, Kaizen, Just in Time

Methodology



Methodology – Proposal and Testing



5S Explanation



Sort



Set in Order



Shine



Standardize



Sustain

When in doubt,
move it out –
Red Tag
technique

A place
for
everything
and
everything
in its
place

Clean and
inspect
or
Inspect
through
cleaning

Make up
the rules,
follow and
enforce
them

Part of
daily work
and it
becomes
a habit

Road Map Step 1: Stabilization of Processes



Machine Status Redefinition

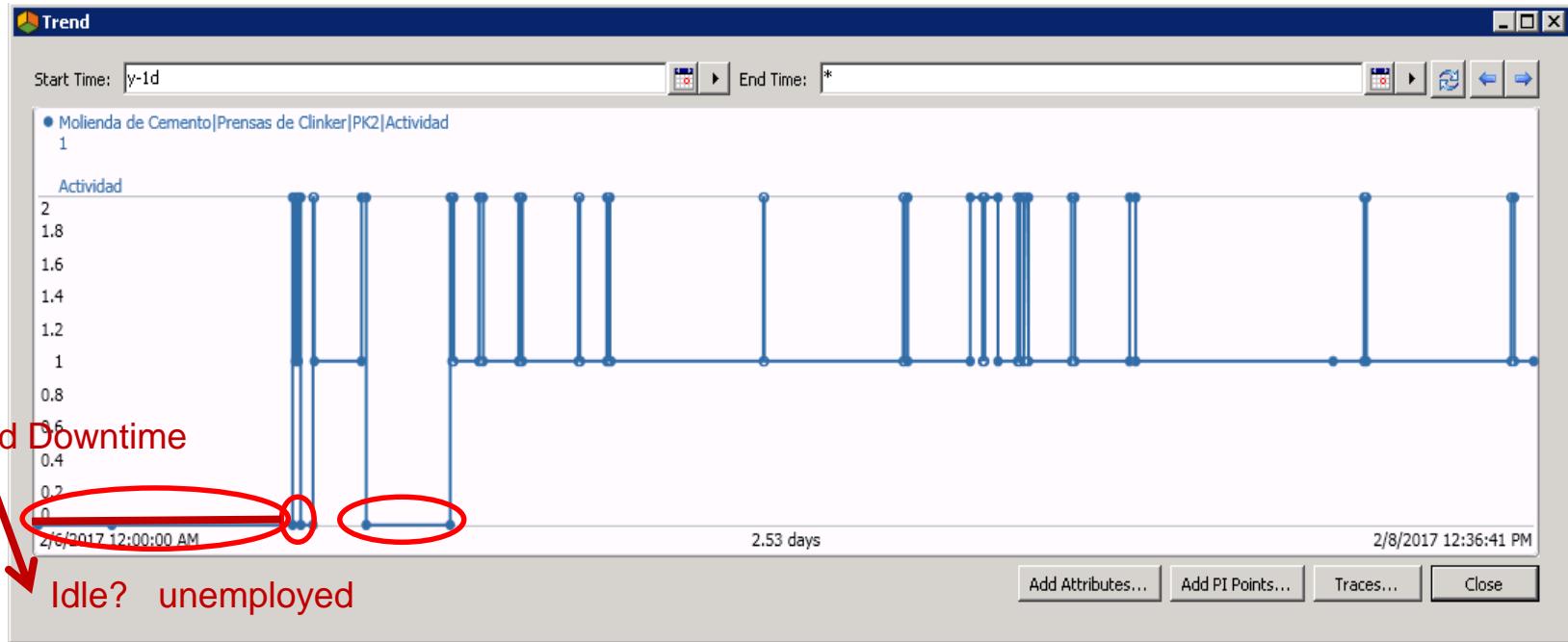
Running without a load

Running

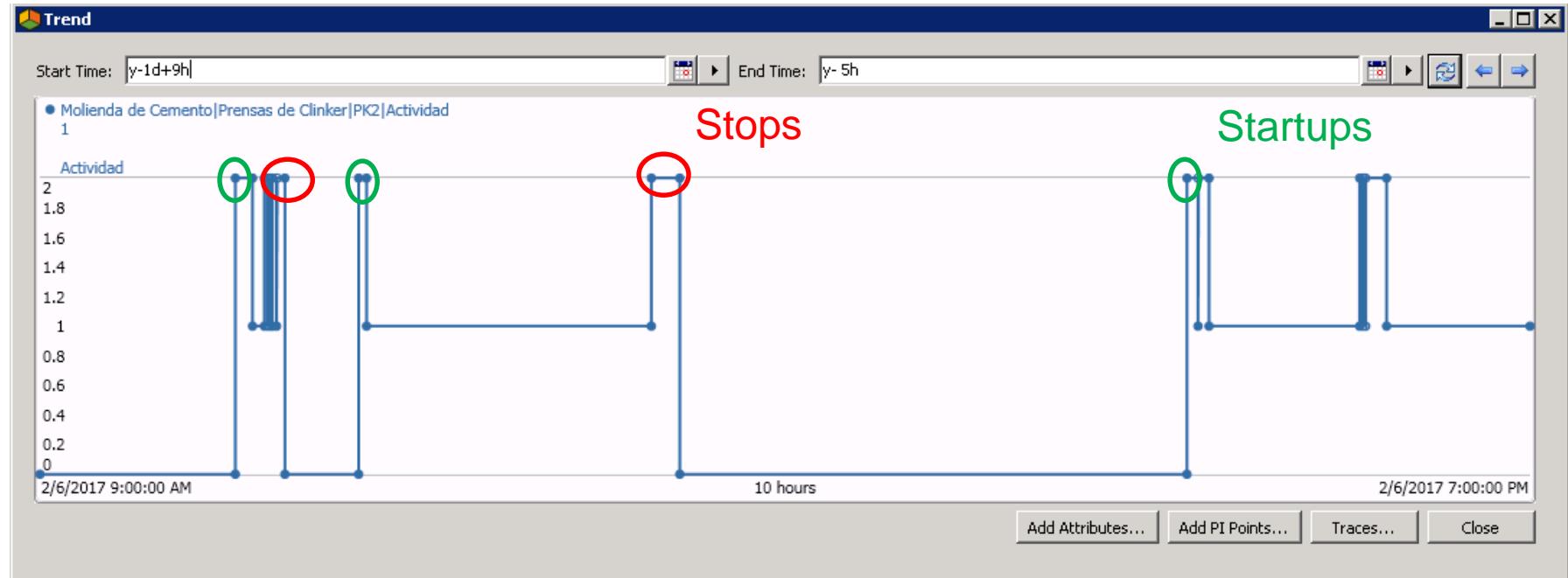
Planned Downtime

Downtime

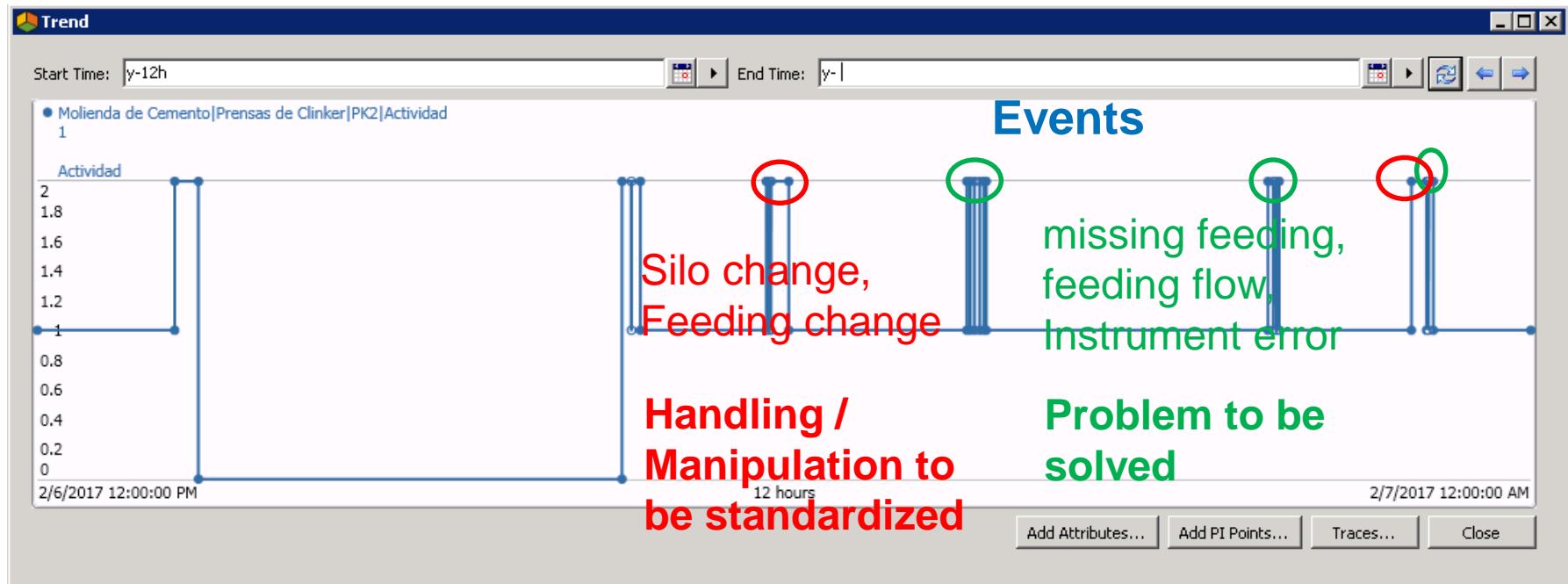
Idle? unemployed



Machine Status – Well-Known Behaviors



Machine Status – Looking for Behaviors



KPI's definition

- OEE (Overall Equipment Effectiveness)
- Real-Time Production Data
- Real-Time Events
 - Downtime, Out of Control, Running Without Load
- Online Totalizers (day, shift, hour)
- Self-Service KPIs and Operational Intelligence

KPI Definition

The screenshot shows the PI System Explorer interface for the 'Atocongo - PI System Explorer (Administrator)' database. The left pane displays a tree view of elements under 'PK1', including 'Calcinación', 'Chancado Primario', 'Chancado Secundario', 'Envase', 'Molienda de carbon', 'Molienda de Cemento' (with sub-items 'Molinos de cemento' and 'Prensas de Clinker'), 'Molienda de Crudo', 'PreHomogeneization', 'Recuperacion', and 'Element Searches'. Several items in the tree view are circled in red. The right pane shows a table titled 'PK1' with columns 'Name', 'Value', and 'Settings...'. The table lists various KPIs and their values:

Name	Value	Settings...
Cumplimiento Meta T	91.423322448786 %	\SRVPI02\PK1.Cumplimiento Meta T;pointtype=base
1T	88.765552356992 %	\SRVPI02\PK1.Cumplimiento Meta T.1T;pointtype=base
2T	92.755594043669 %	\SRVPI02\PK1.Cumplimiento Meta T.2T;pointtype=base
3T	92.7539503845696 %	\SRVPI02\PK1.Cumplimiento Meta T.3T;pointtype=base
Eficiencia Maquina T	128.91579425811497	\SRVPI02\PK1.Eficiencia Maquina T;pointtype=base
1T	131.89397306424873	\SRVPI02\PK1.Eficiencia Maquina T.1T;pointtype=base
2T	127.53894139725447	\SRVPI02\PK1.Eficiencia Maquina T.2T;pointtype=base
3T	127.5366877878319	\SRVPI02\PK1.Eficiencia Maquina T.3T;pointtype=base
Horas Trabajadas T	28.10307548383334	\SRVPI02\PK1.Horas Trabajadas T;pointtype=base
Produccion T	3017.0260640809925	\SRVPI02\PK1.Produccion T;pointtype=base
EventframeTrigger	127.6973876953125	\SRVPI02\525BLZTC1
Meta Produccion	3300	
Produccion Actual	786.82130888429583	Molienda de Cemento\Prensas de Clinker\PK1\Produccion A...
Produccion de ayer	3031.1304334038778	Molienda de Cemento\Prensas de Clinker\PK1\Produccion d...
Ubicacion Tecnica Sup.	A050305	A050305
Ubicacion Tecnica Superior Descrip.	PRENSA DE CLINKER 1	SELECT PLTXT FROM [Ubicaciones Tecnicas] WHERE TPLNR ...

Statistical Analysis

- Downtime analysis
- Utilization monitoring

The screenshot displays a QlikView interface with several data visualizations:

- Detalle de Paradas:** A table showing a single entry: FECHA 03/04/2016, Cod... P328, Dscr.Parada FALTA DE MATERIAL, Duración (h) 0.60, Comentario FALTA DE MATERIAL.
- Alimentación Prensa de Clinker 1 (PK1):** A histogram titled "SQCAlimentacion PK1 : [Individuals]" showing the distribution of values around a mean of 136.126. The x-axis ranges from 132.928 to 136.126. The y-axis ranges from 0 to 73. A normal distribution curve is overlaid on the histogram. Chart details: Chart Tag: 525BLZTC1, Prensa Clinker 1 - Alimentacion, Value: 147.203, Eng. Units: ton, Sigma: 0.53295, Cpk: N/A.
- Time Series Plot:** A line graph showing a process variable over time. The y-axis ranges from 0 to 160. The x-axis shows two time points: 03/04/2016 07:00:00.68201 a.m. and 03/04/2016 07:59:59 a.m. The plot shows a sharp dip from approximately 134.527 down to about 10 before returning to its baseline level.
- Legend:** A legend on the left side lists various equipment and processes:
 - ENV. ROTATIVA N° 4 AUTOMATICA
 - ENV. ROTATIVA N° 5 AUTOMATICA
 - ENV. ROTATIVA N° 6 AUTOMATICA
 - ENV. ROTATIVA N° 7 AUTOMATICA
 - ESTACION DE CARGA Y APIADO
 - MOLINO 2 (SWING)
 - MOLINO 3 (CEMENTO)
 - PRENSA DE CLINKER 2
 - PRENSA DE CRUDO 2
 - PRENSA DE CRUDO 3
 - PRENSA DE CRUDO 4
 - RECUPERACION PREHOMOGENIZACION
 - SIST. DESP. A GRANEL 1 DEL MULTISILO

Events in BI Tool

Main

Centros AÑO MES DIA

UE01 - ATOCONGO 2017 01 02 03 04 05 06 07 08 09 10 11 12 01 02 03 04 05 06 07 08 09 10 11 12 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Grp.Parada Total (s) Distribucion Porcentual

E M N P R Circuito

DURACIÓN (h)

Cod.Parada P304 13.77% P390 86.23%

PreNSA DE CLINKER 2 ALIMENTACION Y MOLIENDA No. 1 DE CARBON ALIMENTACION Y MOLIENDA No. 2 DE CARBON APIAMIENTO PREHOMOGENIZACION ARRASTRE Y TRANSPORTE A TOLVA CHANCADORA HISCHMANN CHANCADORA PENNSYLVANIA CHANCADORA SECUNDARIA EMBOLSADURA Nº 5 EMBOLSADURA Nº 4 EMBOLSADURA Nº 2 ESTACION DE CARGA Y DESCARGA MOLIENDA DE CEMENTO MOLINO 2 (SWIN MOLINO 1 PRENSA DE CLINKER PRENSA DE CLINKER PRENSA DE CRUDO 2 PRENSA DE CRUDO 3 RECUPERACION PREHO ALMACENAMIENTO MOL ALMACENAMIENTO MOL

Detalle de Paradas Duración... / Comentario

FECHA Cod... Dscr.Parada 06/02/2017 P390 FALTA DE VIA 3.55 FALTA DE VIA 06/02/2017 P304 ATORO 0.57 ATORO

Tendencia de paros Duración (h)

1.2
1.0

Path / Track missing

Obstruction / blockage

FECHA

Detalle de Paradas

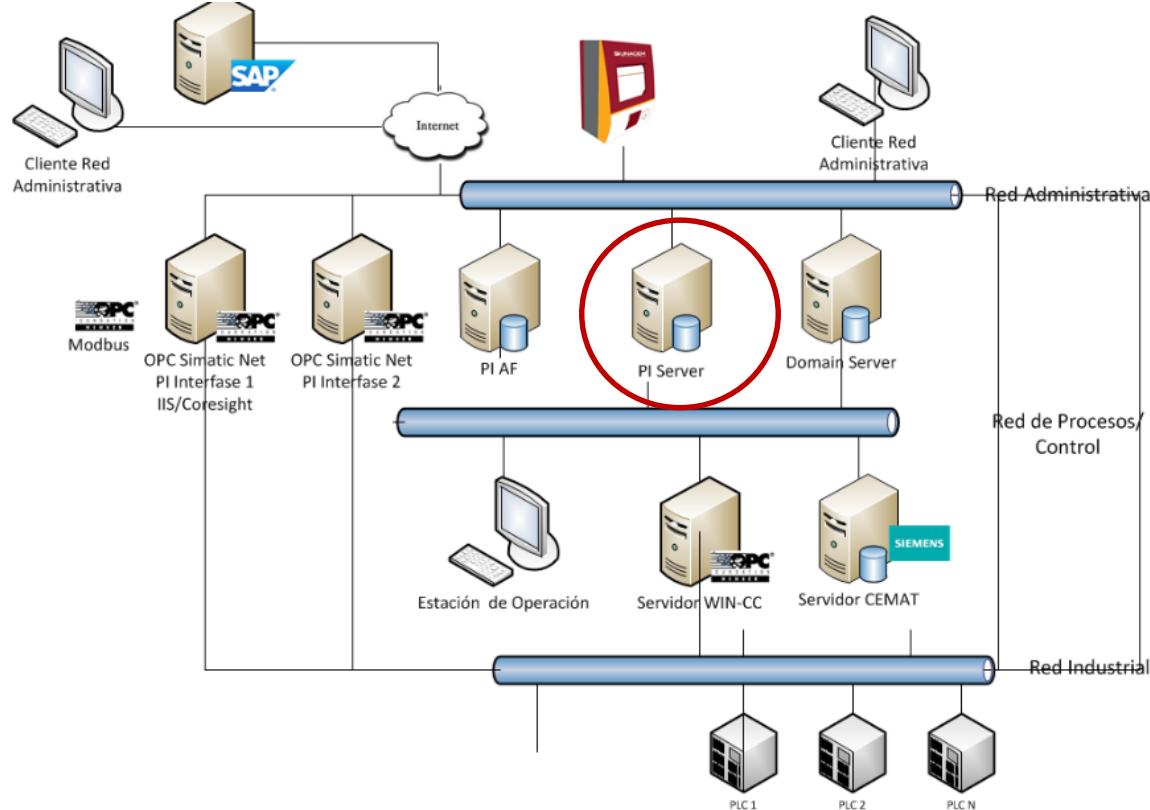
FECHA Cod... Dscr.Parada Duración... / Comentario

06/02/2017 P390 FALTA DE VIA 3.55 FALTA DE VIA 06/02/2017 P304 ATORO 0.57 ATORO



How Individual Product Capabilities Solved Your Business Challenge

PI System Architecture



Asset Hierarchy

The screenshot shows the OSIsoft PI System interface for managing asset hierarchy and data points.

Elements Browser: On the left, the "Elements" browser tree shows the following structure:

- Elements
 - Calcinación
 - Contraste horario GN
 - Horno I
 - Horno II
 - Chancado Primario
 - Chancado Secundario
 - Envase
 - Molienda de carbon
 - Notificaciones DMPA
 - 931VE025RI01
 - Molienda de Cemento
 - Molinos de Cemento
 - MC
 - MCRUDO
 - MS
 - Prensas de Clinker
 - PK1
 - PK2
 - Notificaciones DMPA
 - PK3
 - PK4
 - Molienda de Crudo
 - PreHomogeneización
 - Recuperación
 - Element Searches
- Event Frames
- Library
- Unit of Measure

Asset View (PK2): The central pane displays the asset PK2 with its properties and data points.

Properties:

- Name: Horas Continuas
- Description: Horas Continuas
- Properties: <None>
- Categories: <None>
- Default UOM: <None>
- Value Type: Double
- Value: 16.16
- Data Reference: Analysis

Data Points: A table lists the data points categorized by type:

Category	Name	Value	Time Stamp	Source
Category: <None>	Horas Continuas	16.16	2/10/2017 9:23:54.685 AM	'Molienda...
	Producción Efectiva	0	2/10/2017 9:23:54.801 AM	'Molienda...
	Última Parada	2/9/2017 5:14:21.524 PM	2/9/2017 5:14:21.524 PM	\SRVPIO...
Category: Availability	Actividad	2	2/10/2017 9:23:01.873 AM	\SRVPIO...
	Status	Funcionando sin carga	2/10/2017 9:23:01.873 AM	A=Activi...
	Turno	1	2/10/2017 9:23:54.607 AM	'Molienda...
Category: Downtime Event	EventframeTrigger	0	2/10/2017 9:23:50.577 AM	\SRVPIO...
Category: Performance	% Alcance	26.58	2/10/2017 9:23:54.685 AM	'Molienda...
	Alcance Actual	1375	2/10/2017 9:23:54.685 AM	'Molienda...
	Datos x Turno		1/1/1970 12:00:00 AM	
	Producción Actual	365.45027308647144	2/10/2017 9:23:54.685 AM	'Molienda...
	Producción de ayer	2404.5157326611643	2/10/2017 9:23:54.717 AM	'Molienda...
Category: Specification	Meta Producción	3300	1/1/1970 12:00:00 AM	

Right Panel: Configuration panel for the selected asset.

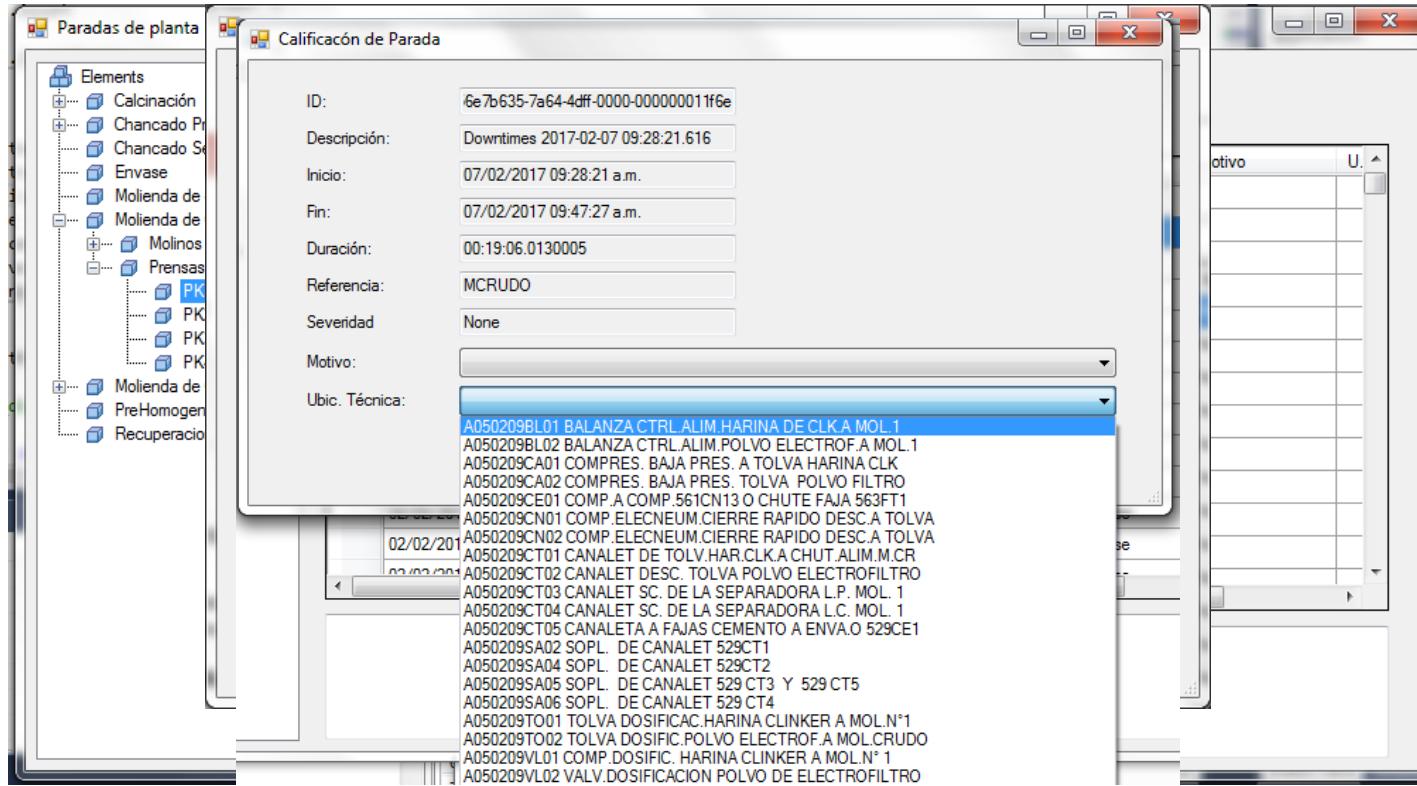
Group by: Category Template

Properties:

- Name: Horas Continuas
- Description: Horas Continuas
- Properties: <None>
- Categories: <None>
- Default UOM: <None>
- Value Type: Double
- Value: 16.16
- Data Reference: Analysis

Message: 'Molienda de Cemento\Prensas de Clinker\PK2\Horas Continuas' is mapped as an output for: 'Horas Continuas'.

AFSDK Application



PI Web API Application

The screenshot shows a Microsoft Edge browser window displaying a PI Web API application. The URL in the address bar is `localhost:34385`. The page has a header with tabs for `Data Base`, `Elements`, and `Lista Equipos`. Below the header, there are search fields for `Inicio` and `Fin`, and a dropdown for `Index` set to `3`. A table with columns `Eventos` and `Atribut` is visible. The developer tools are open, specifically the `Sources` and `Console` panels. The `Sources` panel shows files like `(index)`, `jquery-3.1.1.js`, `app.js`, and `piwebapifunctions.js`. The `Console` panel shows log entries for PI objects (PK4, PK1, PK2, PK3, PK4) with their details and timestamps.

```
var starttime = $("#starttime").val();
var endtime = $("#endtime").val();
```

Eventos	Atribut
PK4	E0NbbnV
PK1	E0NbbnV
PK2	E0NbbnV
PK3	E0NbbnV
PK4	E0NbbnV

```
Events https://E0NbbnVmR6_02ARW28EepwmwIqT4gAS05RGfIOzBuyo1_gU1jHJEkuwfNxBVE90T05HT1xNT0xJRUEQSBERSB0RULFT1RPXFBSRU5TQVmREUGQ0xJTkxFU1xQ5zQ
PK1 Downtimes 2016-12-15 12:10:12.718 2016-12-15T17:10:12.7180023Z 2016-12-15T17:13:36.0340118Z
PK1 Downtimes 2016-12-17 08:57:38.032 2016-12-17T13:57:38.0320129Z 2016-12-18T08:06:23.7250061Z
PK1 Downtimes 2016-12-19 07:51:52.482 2016-12-19T12:51:52.4820098Z 2016-12-19T13:21:01.6430053Z
PK1 Downtimes 2016-12-19 08:23:03.355 2016-12-19T13:23:03.3550109Z 2016-12-19T15:26:21.6720123Z
PK1 Downtimes 2016-12-19 10:29:31.322 2016-12-19T15:29:31.32200627Z 2016-12-19T20:36:32.3880130Z
```

PI Coresight

The screenshot displays the PI Coresight application interface. On the left, there's a large visualization area with two yellow numerical values: 22,87 and 9,06. Below these values is a timestamp: 09/02/2017 8:52:23. In the center, there's a navigation pane titled "Assets" which includes a search bar and a tree view of assets: Home, Atocongo, Calcinación, Chancado Primario, Chancado Secundario, Envase, and Molienda de carbon. Below the tree is a section titled "Attributes". To the right of the navigation pane is a detailed view of the "Estado de Molienda Cemento v1.... (read-only)" display. This view includes a table of data points and two time-based data tables. At the bottom, there are time selection tools and a timeline.

Display: Estado de Molienda Cemento v1.... (read-only) Asset: MC+ ▾

New Display | Jose Aljovin | ?

Ad Hoc Display

Assets

Search in Atocongo

Home
Atocongo
Calcinación
Chancado Primario
Chancado Secundario
Envase
Molienda de carbon

Attributes

Name ▲	Description	Value	Trend
MC Horas Continuas	Horas Continuas	10,53	
MC Status	Estado	Funcionando	
MCI Ultima Parada	Fecha de Termino de ultima Parada	30/11/2016 2:25:53,746002	
MCRUDO Horas Continua	Horas Continuas	7,86	
MCRUDO Status	Estado	Parado	
MCRUDO Ultima Parada	Fecha de Termino de ultima Parada	30/11/2016 5:05:53,818008	
MSI Horas Continuas	Horas Continuas	7,86	
MSI Status	Estado	Parado	
MSI Ultima Parada	Fecha de Termino de ultima Parada	30/11/2016 5:05:53,818008	

Name ▲	Description	Value	Trend
PK1 Horas Continuas	Horas Continuas	8,69	
PK1 Status	Estado	Funcionando	
PK1 Ultima Parada	Fecha de Termino de ultima Parada	30/11/2016 4:16:01,167999	
PK2 Horas Continuas	Horas Continuas	7,71	
PK2 Status	Estado	Parado	
PK2 Ultima Parada	Fecha de Termino de ultima Parada	30/11/2016 5:15:41,739013	
PK3 Horas Continuas	Horas Continuas	16,78	
PK3 Status	Estado	Funcionando	
PK3 Ultima Parada	Fecha de Termino de ultima Parada	29/11/2016 20:10:33,30101	

30/11/2016 4:58:57 | Now | 30/11/2016 12:58:57

22/03/2016 1:14:24 | 8h | 7d | Now | 29/03/2016 1:14:24

09/02/2017 8:52:23

22/03/2016 1:14:24 | 8h | 7d | Now | 07/02/2017 16:57:05

07/02/2017 8:57:05 | 8h | 7d | Now | 07/02/2017 16:57:05

PI ODBC & PI OLEDB Enterprise

The screenshot displays two windows side-by-side. On the left is the QlikView interface, showing a list of elements like PK2, 2do Piso NOX, etc., and a summary table for 'PK2' with columns 'Año' (Year) and 'Sum(Duración)' (Duration). On the right is the 'Edit Script' window for a script named 'PIAF_Downtimes.qvw'. The script contains SQL queries for selecting elements and calculating downtime durations. Below the script editor is a configuration panel for connecting to a database (OLE DB) or files. To the right of the script editor is a preview pane showing a list of log entries with dates and times.

```
20 SQL SELECT
21     [name] as Element
22     ,[description] as Ruta
23     ,[strrid]
24 FROM PIFD.dbo.AFElement
25 WHERE rid > 0;
26
27 SQL SELECT
28     name
29     , description
30     , StartTime
31     , EndTime
32     , [Fecha] = CONVERT(VARCHAR(10), DATEADD(SECOND, ((starttime/10000000) - 62135596800 - 5*60*60), '19700101'), 20)
33     , [Año] = DATEPART(yy, DATEADD(SECOND, ((starttime/10000000) - 62135596800 - 5*60*60), '19700101'))
34     , [Mes] = DATEPART(MM, DATEADD(SECOND, ((starttime/10000000) - 62135596800 - 5*60*60), '19700101'))
35     , [Dia] = DATEPART(dd, DATEADD(SECOND, ((starttime/10000000) - 62135596800 - 5*60*60), '19700101'))
36     , [F.Inicio] = DATEADD(SECOND, ((starttime/10000000) - 62135596800 - 5*60*60), '19700101')
37     , [F.Fin] = DATEADD(SECOND, ((endtime/10000000) - 62135596800 - 5*60*60), '19700101')
38     , [Duración] = CONVERT(DECIMAL(12, 4), DATEDIFF(SECOND, DATEADD(SECOND, ((starttime/10000000) - 62135596800 - 5*60*60),
39     , DATEADD(SECOND, ((endtime/10000000) - 62135596800 - 5*60*60), '19700101')) / 60) / 60
40     ,[fkprimaryreferencedelement] as [strrid]
41
42 FROM PIFD.dbo.AFEEventFrame
```

04:39:59 AM 02/02/2017 04:46:52 AM
10:41:12 AM 03/02/2017 01:53:57 PM
04:15:01 PM 03/02/2017 04:51:02 PM
05:15:33 PM 04/02/2017 05:21:58 PM
05:48:58 PM 05/02/2017 02:37:53 AM
11:41:00 AM 05/02/2017 12:20:11 PM
06:59:16 PM 06/02/2017 10:18:40 AM
10:38:36 AM 06/02/2017 11:08:20 AM
01:17:38 PM 06/02/2017 04:41:52 PM
04:09:41 PM 08/02/2017 06:18:56 PM

Notifications

 ▼ 

Correo ▾ ◀ ⬇ ! trash 📁 tag Más ▾ 35 de 975

REDACTAR Alarma DMPA TAG: 421EX2VI2 📁 Recibidos x 🖨️ ⎙

Recibidos (5)
Destacados
Enviados
Borradores
Capacitacion
Comunicados
Concreteras
Condorcocha

 PISystem@unacem.com.pe 2 feb. (hace 5 días) star ◀ ▼
para mí ▼

Evento: High Level Alarm 2017-02-02 12:13:08.596
Ubicación: Calcinación\Horno I\Notificaciones DMPA\421EX2VI2\EXHAUSTOR II DEL HORNO (1ER. PISO) Vibracion chumacera ventilador lado libre
TAG: 421EX2VI2
Valor Señal: 5.06
Valor Límite Alto: 5

Nombre: Alarma DMPA
Hora Inicio: 2/2/2017 12:13:08 PM SA Pacific Standard Time (GMT-05:00:00)

 Jose +



Results Obtained and Business Impact

Operational increase

Circuito	Paradas Total (h)	Paradas por no Requerido (h)	% del total de paradas	Dias de analisis	Horas trabajadas teoricas	Total de Horas Teoricas	% de paradas respecto del teorico	No requerido respecto del teorico	INCREMENTO OPERATIVO
MOLINO 2 (SWING)	7258.62	6194.95	85.35	333	24	7992	90.82	77.51	13.31
MOLINO 3 (CEMENTO)	5420.36	4483.69	82.72	333	24	7992	67.82	56.10	11.72
PRENSA DE CLINKER 1	1921.25	670.87	34.92	333	24	7992	24.04	8.39	15.65
PRENSA DE CLINKER 2	1940.13	847.00	43.66	333	24	7992	24.28	10.60	13.68
PRENSA DE CLINKER 3	2123.53	736.93	34.70	333	24	7992	26.57	9.22	17.35
PRENSA DE CLINKER 4	1824.19	596.17	32.68	333	24	7992	22.83	7.46	15.37
Total general	20488.08	13529.60				47952	42.73	28.21	



Conclusion

Conclusion

- Accurate, Reliable Data
- Quantitative Analysis
- Standardize Process and Handing
- Identify Best Shift and Operator
- Leadership & Democratization
- Addressing to achieve the Advanced Process Control (APC)

Improving Runtime Through Actionable Insights from the PI System

COMPANY and GOAL

UNACEM's priority is to maintain a portfolio of high-quality cement products at competitive prices to meet all of our customers' needs.



CHALLENGE

Face the increasing market competition, reducing production cost and standardizing process.

- Silos availability.
- New products.
- APC.

SOLUTION

Choose the process directly involved with our challenges, grinding cement, and use the powerful of AF.

- Found a Road Map and agile Methodology.
- Generate and analysis data to identify trend, standardize time, relevant signal and process operation.

RESULTS

We achieve an improvement between 11 and 17% in cement grinding, it means profits of US\$ 6 millions in a first year.

- This methodology can be use in all the process of our factories.
- We can continue improving our profits.

Contact Information

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Functional Consultant

UNION ANDINA DE CEMENTOS S.A.A.

Questions

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감사합니다

Merci

Danke

谢谢

Gracias

ありがとうございます

Спасибо

Obrigado

Thank You