Turning **insight** into **action**.

Reducing TCO by Using OSIsoft Infrastructure to Integrate Quality and Laboratory Information

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Quality Management, CEMEX Mexico

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About CEMEX

CEMEX is a growing global building-solutions company that produces, distributes, and markets **Cement, Ready-Mix Concrete, Aggregates**, and related building materials.

- Operations in **50+ countries**
- Cement: 96 million MT, 63 Plants
- Concrete: 54 million m^3 , over 2,000 Facilities
- Aggregates: 168 million MT, 391 Plants
- 223 Land-Distribution Centers
- 72 Marine Terminals

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PI System at CEMEX

- 1995 first PI System installed at CEMEX
- 2006 12 plants use the PI System
- In 2007 CEMEX become OSIsoft Enterprise Agreement (EA) customer
- The **PIMS** (**P**lant-wide **I**nformation **M**anagement **S**ystem) Project was an challenging deployment of a OSIsoft infrastructure in all cement facilities:
  - 58 Cement Plants
  - 12 Grinding Plants
  - 14 Countries
  - Executed in 20 months

For more about how we made the EA rollout, see CEMEX UC 2008 presentation

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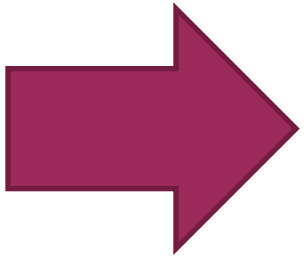
Moving forward in Quality…

Current Situation (2010)

- In-house QM (SICA) sends data to PI System
- 2 different systems to operate
- High TCO:
  - Hardware & Licensing
  - Support & Development
- No standard code naming

Do we need 2 different systems?



Desired Situation (2011)

- Single repository for Quality and Operational data
- Less TCO for Quality tools
- Plant & Corporate visibility
- Internal benchmarking
- Standard code naming
- High Reports flexibility

Could OSIsoft's infrastructure integrate both?

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Business Challenges

- Correlate quality and operations data
- Time to consolidate quality data from lab equipment
- Incorporate quality data to a real-time platform
- Standardize and simplify access to data
- Reduction of Total Cost of Ownership (TCO)

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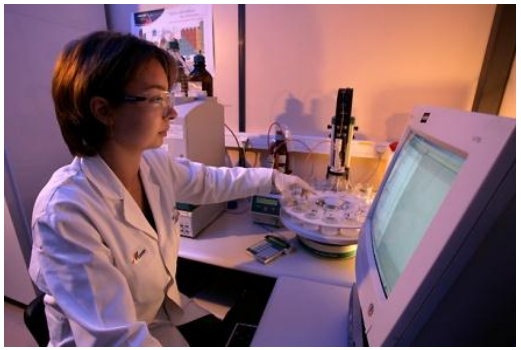
How we use the PI System?

- The PI System as keystone in our master plan:
  - **Quality**
  - Production
  - Maintenance
  - Environmental
  - Energy



- OSIsoft's Center of Excellence (CoE) is a key advisor to implement this master plan

Quality has been one of our priorities because we can reduce TCO

For more about how we are using the EA infrastructure, see CEMEX UC 2009 & 2010 presentations

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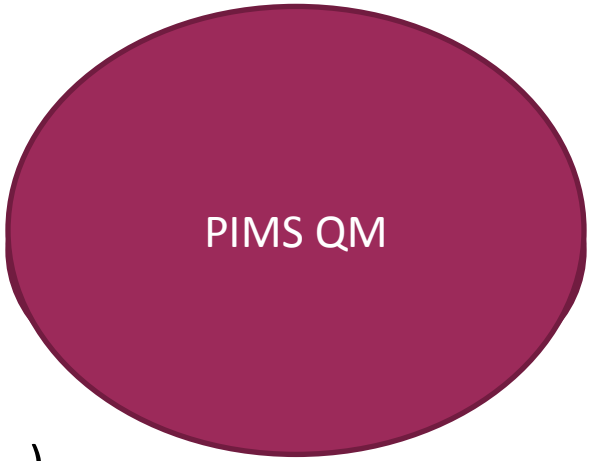
Solution ➡ PIMS-QM

Replace existing Quality system (SICA), with PIMS-QM (Quality Module) using OSIsoft's real-time infrastructure.

Functionalities to cover:

- Data extraction (interface)
- Manual Input
- Plant configuration and templates manager
- Reports
- Calculated KPIs
- Interfaces to another systems (e.g. Plant Control System)



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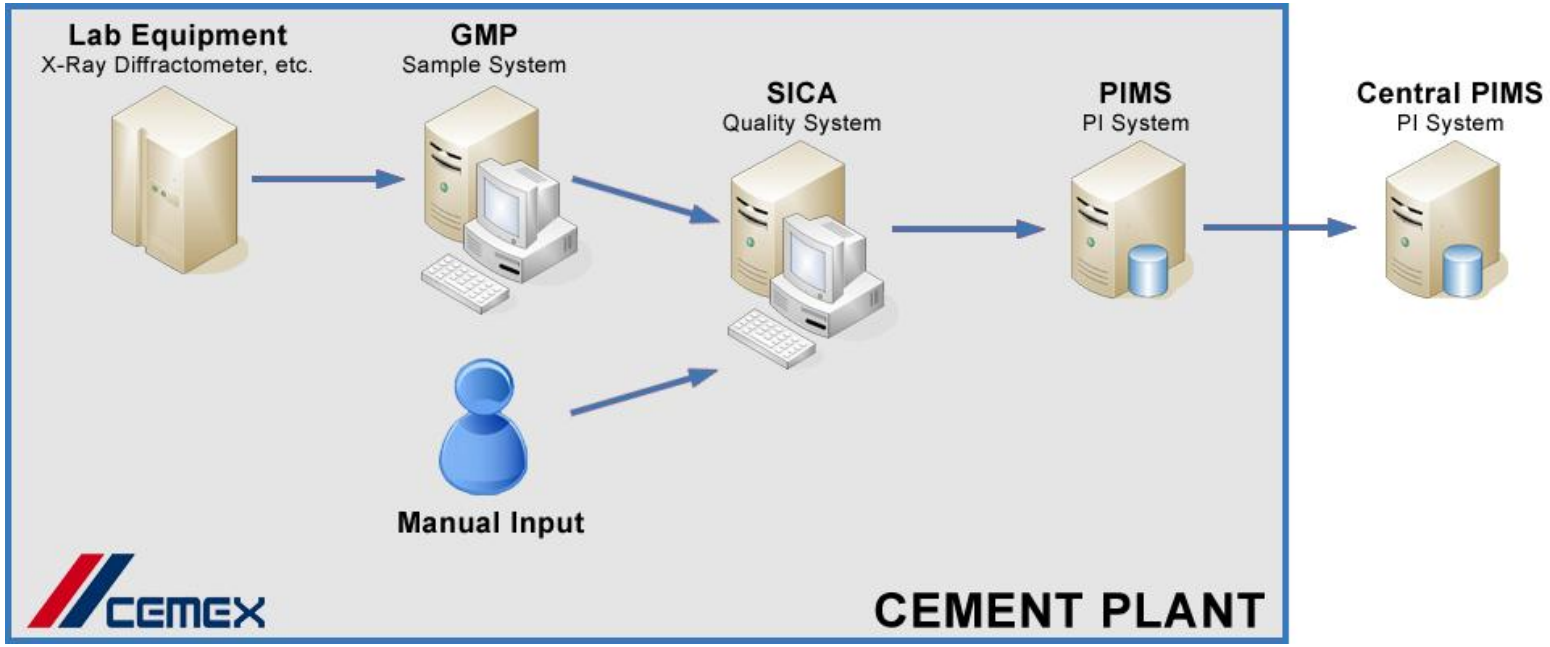
PI System Architecture



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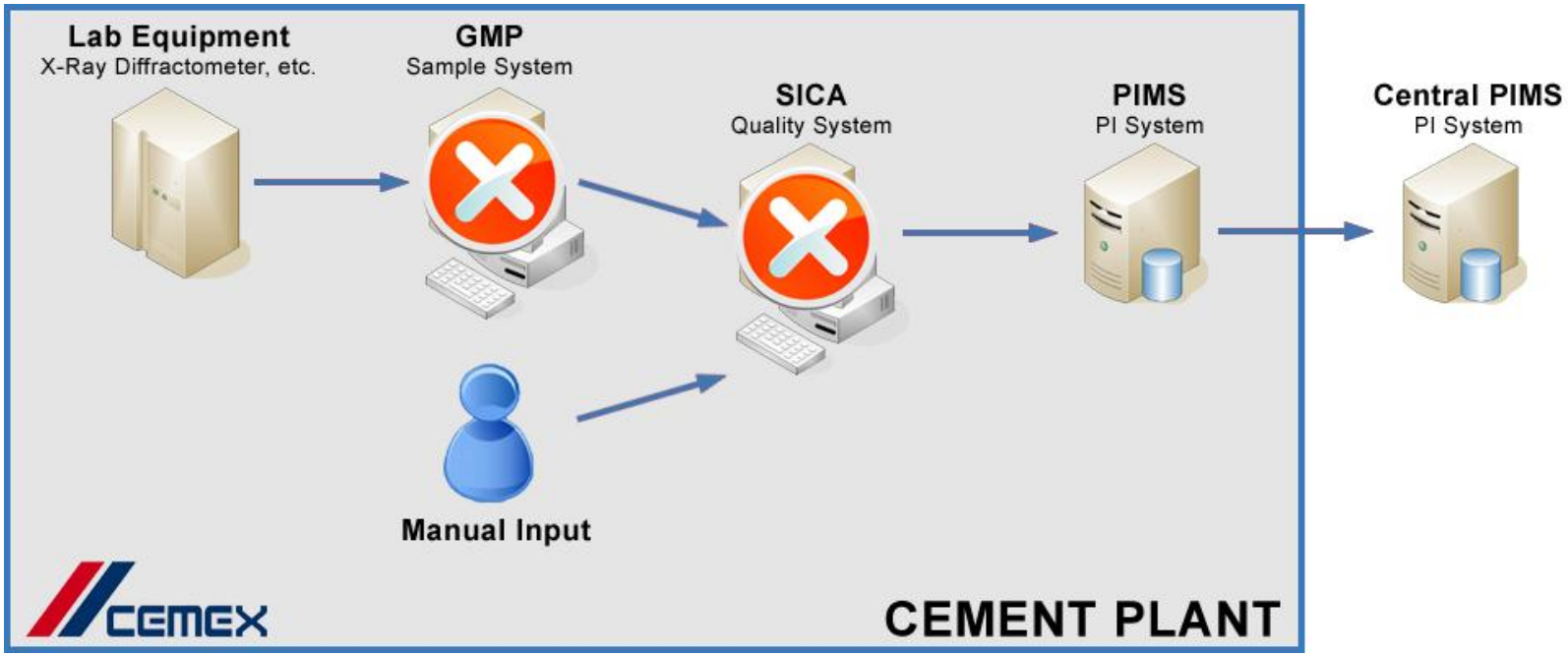
PI System Architecture



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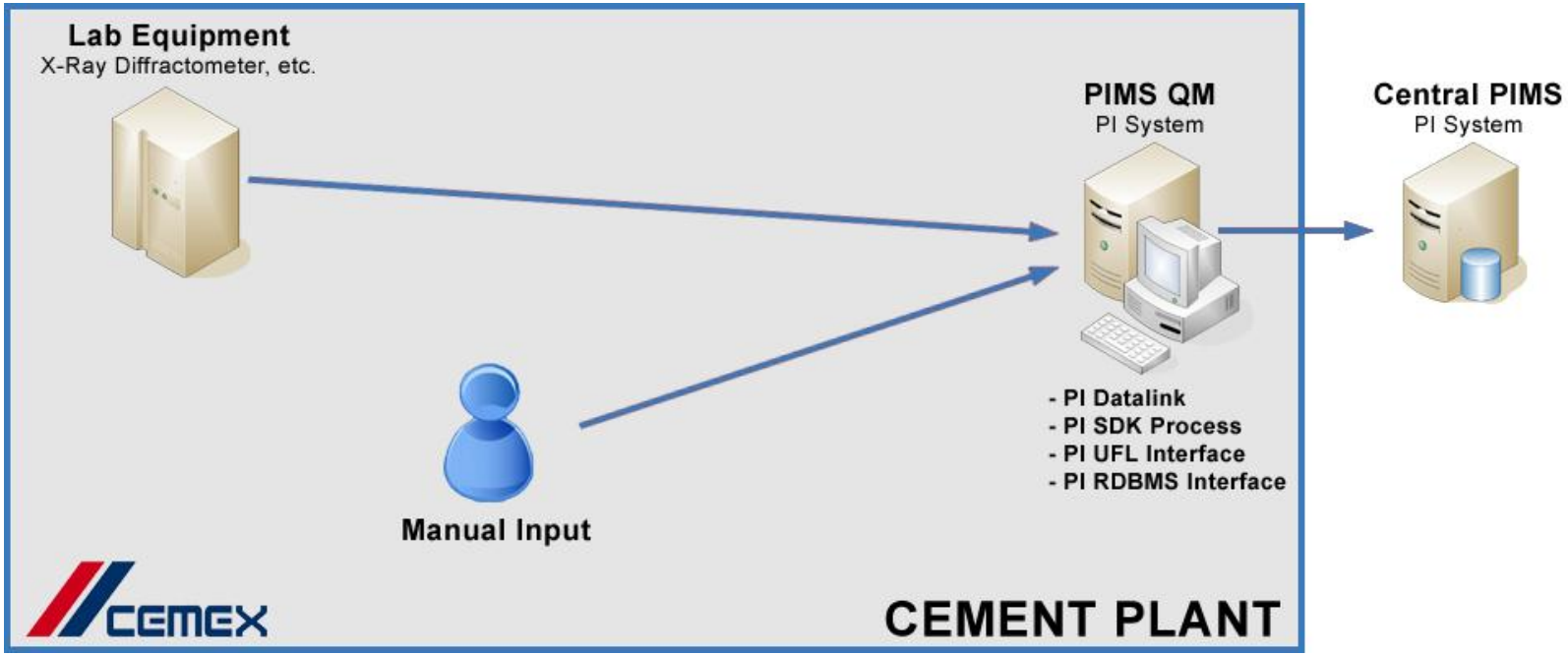
PI System Architecture



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PIMS-QM Screenshots

Manual Input Templates

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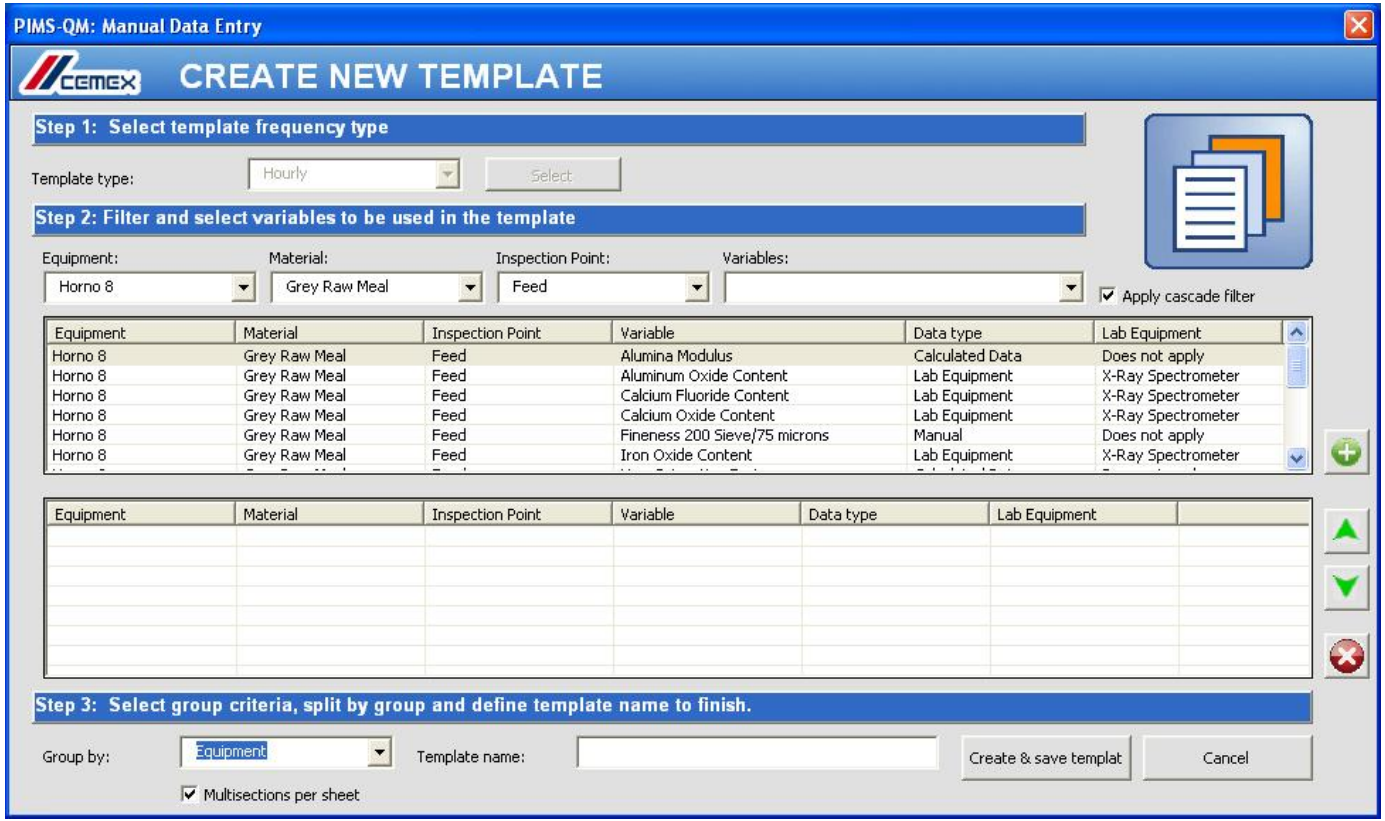
PIMS-QM Screenshots

Manual Input Template Editor



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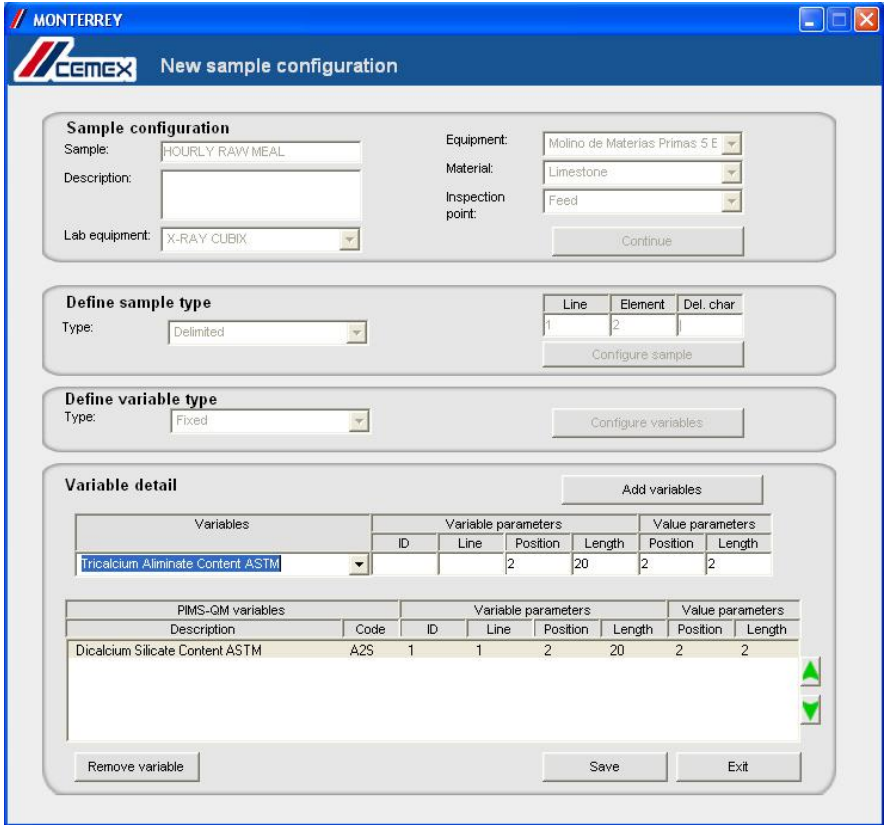
PIMS-QM Screenshots

Lab Equipment Interface Config.



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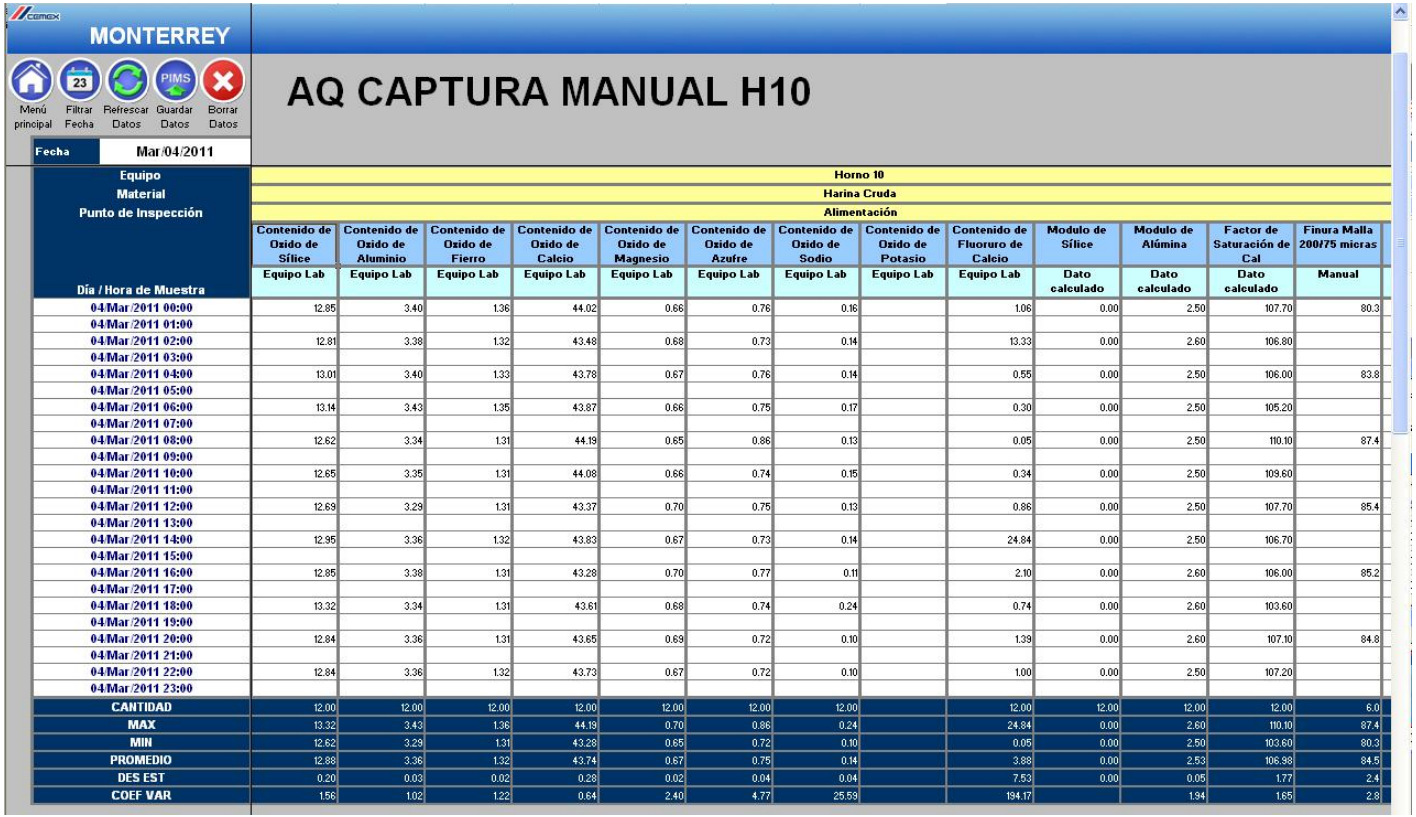
PIMS-QM Screenshots

Data Acquisition Report



MONTERREY

Menú principal | Filtrar Fecha | Refrescar Datos | Guardar Datos | Borrar Datos

AQ CAPTURA MANUAL H10

Fecha: Mar/04/2011

Equipo / Material / Punto de Inspección / Día / Hora de Muestra	Horno 10 / Harina Cruda / Alimentación												
	Contenido de Oxido de Sílice	Contenido de Oxido de Aluminio	Contenido de Oxido de Fierro	Contenido de Oxido de Calcio	Contenido de Oxido de Magnesio	Contenido de Oxido de Azufre	Contenido de Oxido de Sodio	Contenido de Oxido de Potasio	Contenido de Fluoruro de Calcio	Modulo de Sílice	Modulo de Alúmina	Factor de Saturación de Cal	Finura Malla 200/75 micras
	Equipo Lab	Equipo Lab	Equipo Lab	Equipo Lab	Equipo Lab	Equipo Lab	Equipo Lab	Equipo Lab	Equipo Lab	Dato calculado	Dato calculado	Dato calculado	Manual
04/Mar/2011 00:00	12.85	3.40	1.36	44.02	0.66	0.76	0.16		1.06	0.00	2.50	107.70	80.3
04/Mar/2011 01:00													
04/Mar/2011 02:00	12.81	3.38	1.32	43.48	0.68	0.73	0.14		13.33	0.00	2.60	106.80	
04/Mar/2011 03:00													
04/Mar/2011 04:00	13.01	3.40	1.33	43.78	0.67	0.76	0.14		0.55	0.00	2.50	106.00	83.8
04/Mar/2011 05:00													
04/Mar/2011 06:00	13.14	3.43	1.35	43.87	0.66	0.75	0.17		0.30	0.00	2.50	105.20	
04/Mar/2011 07:00													
04/Mar/2011 08:00	12.62	3.34	1.31	44.19	0.65	0.86	0.13		0.05	0.00	2.50	110.10	87.4
04/Mar/2011 09:00													
04/Mar/2011 10:00	12.65	3.35	1.31	44.08	0.66	0.74	0.15		0.34	0.00	2.50	109.60	
04/Mar/2011 11:00													
04/Mar/2011 12:00	12.69	3.29	1.31	43.37	0.70	0.75	0.13		0.86	0.00	2.50	107.70	85.4
04/Mar/2011 13:00													
04/Mar/2011 14:00	12.95	3.36	1.32	43.83	0.67	0.73	0.14		24.84	0.00	2.50	106.70	
04/Mar/2011 15:00													
04/Mar/2011 16:00	12.85	3.38	1.31	43.28	0.70	0.77	0.11		2.10	0.00	2.60	106.00	85.2
04/Mar/2011 17:00													
04/Mar/2011 18:00	13.32	3.34	1.31	43.61	0.68	0.74	0.24		0.74	0.00	2.60	103.60	
04/Mar/2011 19:00													
04/Mar/2011 20:00	12.84	3.36	1.31	43.65	0.69	0.72	0.10		1.39	0.00	2.60	107.10	84.8
04/Mar/2011 21:00													
04/Mar/2011 22:00	12.84	3.36	1.32	43.73	0.67	0.72	0.10		1.00	0.00	2.50	107.20	
04/Mar/2011 23:00													
CANTIDAD	12.00	12.00	12.00	12.00	12.00	12.00	12.00		12.00	12.00	12.00	12.00	6.0
MAX	13.32	3.43	1.36	44.19	0.70	0.86	0.24		24.84	0.00	2.60	110.10	87.4
MIN	12.62	3.29	1.31	43.28	0.65	0.72	0.10		0.05	0.00	2.50	103.60	80.3
PROMEDIO	12.88	3.36	1.32	43.74	0.67	0.75	0.14		3.88	0.00	2.53	106.98	84.5
DES EST	0.20	0.03	0.02	0.28	0.02	0.04	0.04		7.53	0.00	0.05	1.77	2.4
COEF VAR	1.56	1.02	1.22	0.64	2.40	4.77	25.59		194.17		1.94	1.65	2.8

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OSIsoft Products applied

- Existing PI System infrastructure at each plant cover by the Enterprise Agreement
- Standard tool for all cement plants.
  - PI System
  - PI DataLink / MS Excel
  - PI ProcessBook
  - PI UFL Interface for X-Ray analyzers
- No tag license limitation
- No extra licenses required

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Results

- Single Platform for Quality and Production data
- Standardization
- Real-time Quality KPI's
- Faster data gathering process
- Enhanced data security
- Easy corporate consolidation
- Cross business visibility

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Intangible Benefits

- Keep quality practices standardized
- Business unit benchmarking
- Production and quality data correlation
- Integrate X-ray equipment from different vendors
- Eliminate risk of technology obsolescence
- Easy integration with company ERP (SAP)

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Tangible Benefits

- Reduce TCO of previous in-house system by USD $ 800 k/year approx.
- Calculated ROI is 6 months
- No extra cost for OSIsoft licenses, all are included in the Enterprise Agreement

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Future Plans and Next Steps

- PIMS-QM Application Development – Completed
- PIMS-QM Implementation:
  - Mexico – 90%, Stabilization phase in progress
  - Europe – Starting in 2011
  - Asia – Scheduled for 2012
  - Americas – Scheduled for 2012

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Questions

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Thank you

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