



# *1 year later:* From trends to real liquid food applications

Hej Jag heter : Eric Bonsignour

Date: March 20 - 2013

Place: Gavle Sweden



VÄLKOMNA

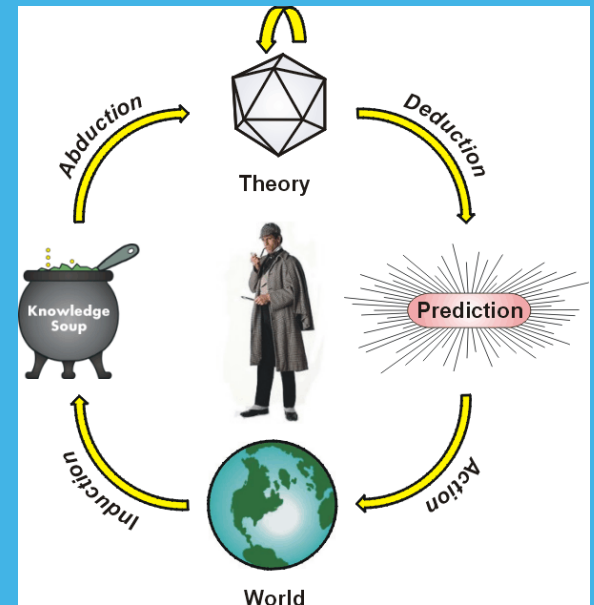
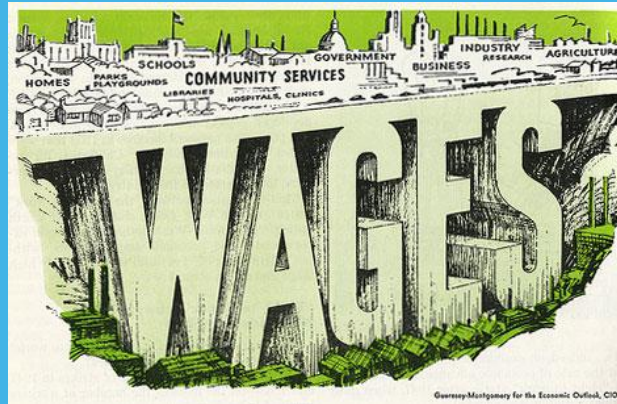
@ *M.T.F.*

# Agenda



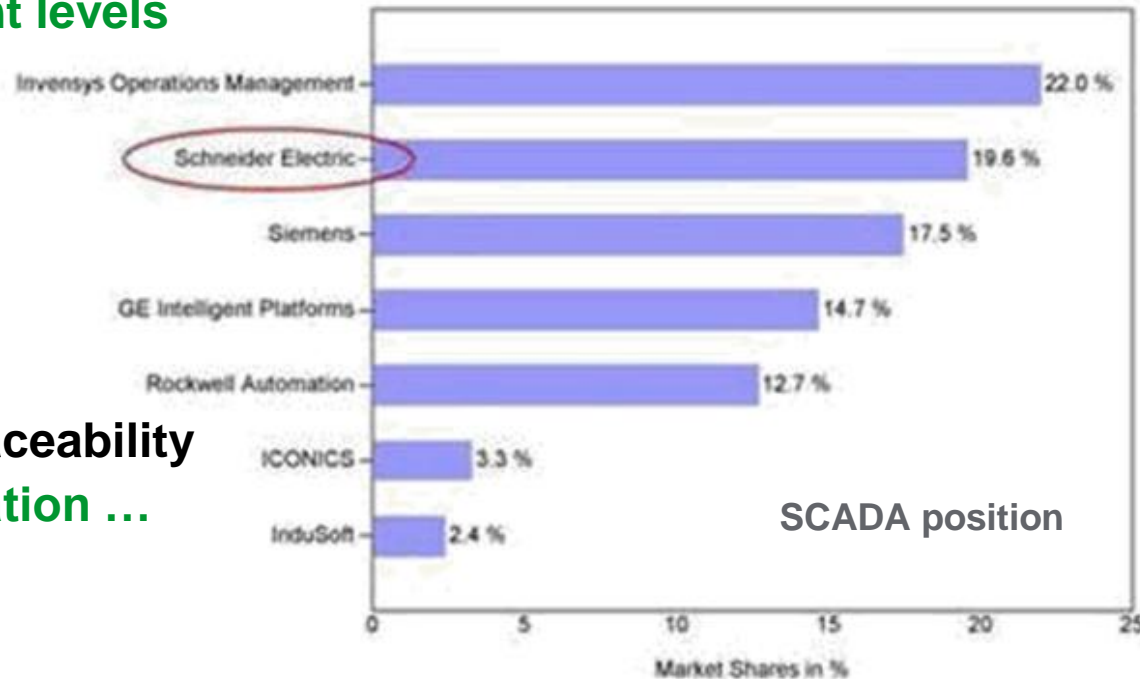
- **last year we introduce this trends**
  - Rising cost of energy
  - Carbon foot print
  - Food safety
  - Batch management
  - 7 Billion peoples moving fast to 9 in 2050
- **This year, some real solution examples**
  - CIP & Energy audits
  - Dairy Industrial Process
  - Dryer Advance industrial Process
  - Advance control optimization
  - Energy Monitoring
  - Energy & continuous Optimization

# Trends, Implications, Possibilities & Solutions

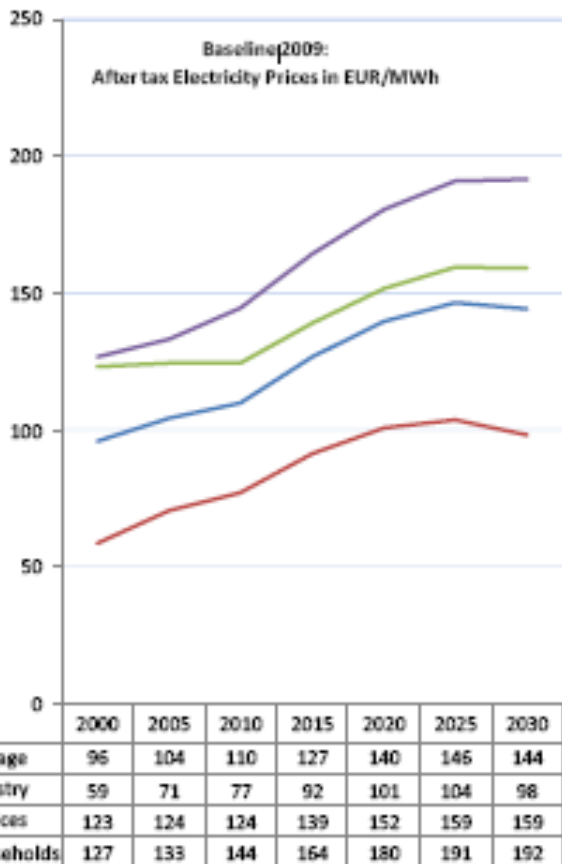


# Food safety

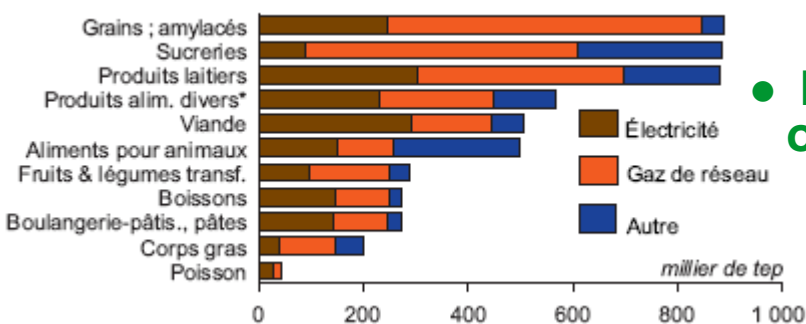
- **Food Safety is not negotiable.**
  - Chinese 5 years plan due by 2015
  - Some frequent bad stories in the newspapers ...
- **No companies is willing to cut corners anymore**
  - Recipe management is an issue for traceability
  - Large companies put on the market 3 to 4 new products every day
    - 91% will be stopped within 6 months
    - The other being copy within 6/9 months
- **Manage traceability at different levels**
  - At the supervision level &
  - In the core of the process
  - Optimize costs
- **Combine**
  - **SCADA** type traceability
  - Machine level HMI **local** traceability
  - **Data centers, CIP Optimization ...**



# WAGES cost



- **European Commission state that WAGES cost will increase by 80% from 2000 to 2030**
  - Green push from consumers through supermarkets, End Users, Process & machine OEMs specialists...
- **Reduce margin.**
  - WAGES is the last source of progress
  - Green push from consumers force to reduce energies year after years.
  - Ernst & Young 2012 report that 76% of the F&Bev companies report on Sustainability & 93% will within 5 years.
  - Dairy one of the most energy demanding F&Bev industry
- Invest to be continuously **sustainable** or wait & **solve in emergency** the profitability erosion



- **Monitor, analyze vs production, continuously optimize** because the only good watt is a **Negawatt!**

# Pragmatism & risk management

- Reduce CAPEX & TTM to be ready at dairy deregulation date
- Re-use global solutions from leaders.
  - Electrical portion of a typical CAPEX is between 3 & 5%
  - but represent 80% of the risks...
- Use leading partners already familiar with **EcoStruxure**
  - Process OEMs, Packaging / bagging M OEMs, SI
  - Build on other End Users examples
- Act as business partners :
  - Tested Architectures, solution support, Liquid Food library
  - Open network standard, CIP & advance control optimization
  - Open SCADA, **global** Energy Efficiency solutions (from Financial aspects, dynamic dashboard down to power-meters)
  - First class packaging solutions





- 7 Billion peoples moving to 9Bp in 2050
- 40% to 60% of the raw material is wasted in rich countries

# CIP & Energy audits







# CIP | Water and Chemical Savings

## • Project Goals:

- Double Production in next 4 years
- Improve Competitiveness + Reduce Energy Bill & flexibility
- Guarantee Food Safety
- Be more Sustainable and Green
- Improve Market Share



## Improvements

### Flowmeter :

- Potential improvement by setting rinsing volume rather than rinsing time
- Important leaks to fix
- Analog flow meter on outlet lines and replace digital flow switch on inlet lines by an analog flow meter



## Improvements

### Solutions sorting :

- 2 conductivity meters and one temperature transmitter out of order
- Better respond time of new generation of conductivity meter

## + Beneficies

- > Reduction in water & chemical consumption
- > Cleaning efficiency
- > Better solutions sorting  
Energy and chemical saving

# CIP | Savings by optimizing your asset



## Improvements

### Optimization of cleaning

- Value control and monitoring of trends
- Occurrence of cleaning equipment for monitoring gaps and warning of over-consumption
- Highlighting of dysfunctions

### Individualization of washes

- Setting for each line or tank (speed, time, volume)
- Value adjustment
- Overhaul cleaning procedures

### Occupancy rate of lines

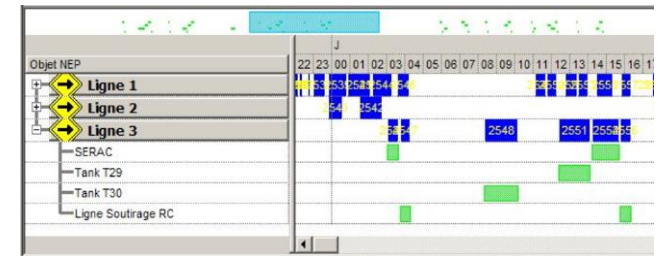
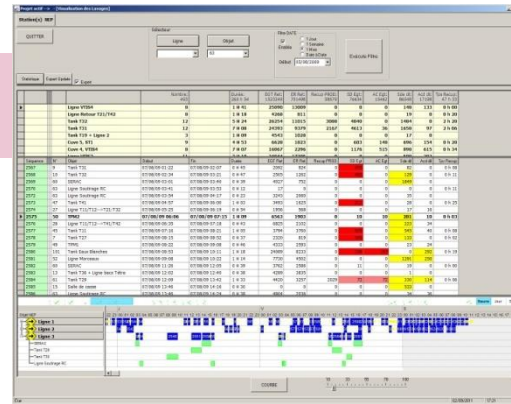
- Monitoring washes

### Traceability & compliance

- Report and database storage

### Complementary Energy Monitoring system

- Energy used monitoring (Wages, Chemical,...)



## + Beneficies

- > Optimization & traceability
- > Continuous Improvement
- > Better chemical sort
- > Improve productivity and availability

# CIP | Self cleaning & Piping design



## Improvements

### Self Cleaning :

- Food safety
- Compliance to regulation
- Tanks equipped with spray ball ? Must be verified.

### Solution 1:

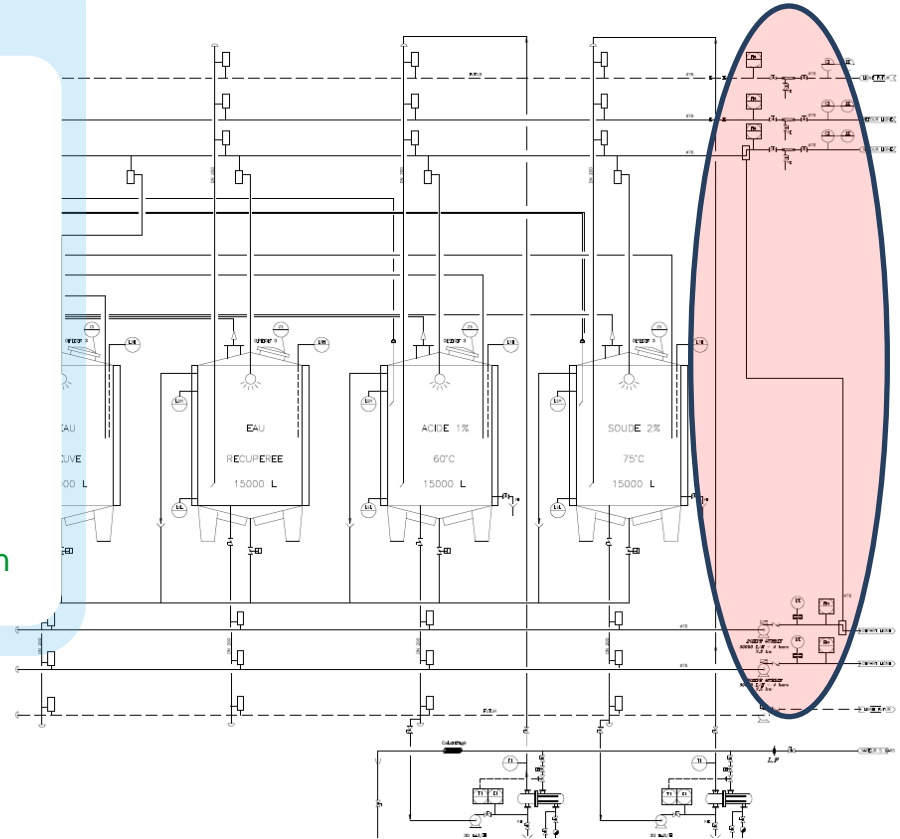
- The design of CIP must be study to allow this functionality.

### Reminder:

- Start a CIP line always with water (The line D was not design in such a way).

## + Beneficies

- > Food Safety
- > Easier & safer cleanability



# Electricity Savings | VSD in CIP Pumps



## Improvements

### Adjusting Flow Rates:

- Introduction of variable speed drives (6 potential VSDs - 4 CIP lines pumps and 2 recirculation pumps )
- replacing proportional valves.
- Adjustment of sending flow rates with independent cleaning recipe parameter
- Adjust the flow due to process flow needs.

### Pump Power

- VSD Installation

**Note :** Verification of power of pumps installed. The power must be adapted to flow and pressure required.



2 x Pumps 9 kW  
1 x Pump 7kW  
1 x Pump 5kW  
2 x Pumps 2kW

Consumption – 215 MWh/year

Savings up to – **60 MWh/year**

ROI: 1 ~ 5 years.



## Benefits

- > Reduction in Energy Consumption
- > Better use of soda and acid in CIP
- > Energy Savings due to flow control.

# Electricity Savings | EMS



## Improvements

### Energy Manager System:

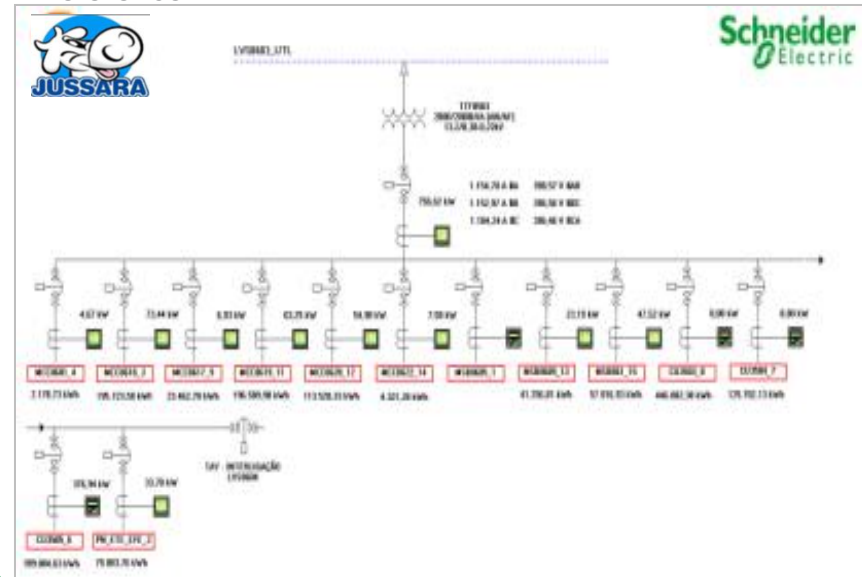
- 01 x Energy Enterprise | SPM7.0;
- 03 x Steam Meters;
- 02 x Water Meters;
- 01 x ION 7550 (electric meter with quality analyses);
- 05 x Power Meters | PM710);
- 01 x Power Meter | Enercept 1600A (Generators Set)

## + Beneficies

- > Control all consumption utilities (electricity, water, steam)
- > Control de quality of the energy offer to the dealer (CPFL)



Reference:



# Electricity Savings | Cooling Tower System



## Improvements

### Adjusting Flow Rates:

Introduction of variable speed drives in Colling Towers Fans and Pumps sending flow rates with factory needs.

### Pump and Fan Power

- VSD Installation

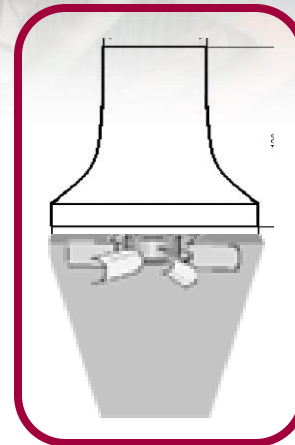
### Exhaust Extension

- Install that to have the exhaust condensantion over the Wall

### Grill in the Wall

- Install the Grid in tha Wall to have better air recirculation

- Note** : Verification of power of pumps installed.  
The power must be adapted to flow and pressure required.



## + Benefits

- ++ **Better efficiency of CT System**  
(The right speed for the equipment)
- + **Water Savings**
- + **Mechanical wear**
- +++ **Reduce Power Consumption**
- + **lower footprint** (ATV32 book form factor)



# Electricity Savings | NH<sub>3</sub> Compressors



## Improvements

### Compressors NH<sub>3</sub> | HVAC System:

- Apply Variable Speed Drive (VSD) to flow control, balance the operations modulating the VSD function to supply with the real necessity to the process



## + Beneficies

- > Power factor
- > Mechanical wear



# Electricity Savings | Internal Ligthing



## Improvements

### Internal Lighting | TLD 40W:

- Change the fluorescent (02 x TLD 40W) and ballasts from 02 x T5 25W & Hi efficiency ballasts keeping the same luminance level

## + Beneficies

- > Life of cicle (> 25.000h)
- > Hi level quality of reproduction colors
- > Keeping the fixtures e infrastructure





# Electricity Savings | Internal Ligthing



## Improvements

### Internal Lighting | TLTRS 110W:

- Change the fluorescent (02 x TLTRS 110W) and ballasts from 02 x T5 73W & Hi efficiency ballasts keeping the same iluminance level



## + Beneficies

- > Life of cicle (> 25.000h)
- > Hi level quality of reproduction colors
- > Keeping the fixtures e infrastructure



# Electricity Savings | Internal Ligthing (Warehouse)



## Improvements

### Internal Lighting | Hi Intensity Discharge (HID) | Warehouse:

- Change the fixtures with Metal Halide to **LED Schneider** fixtures with **127W** dimmable , IP 65



## + Beneficies

- > Life of cicle (> **100.000h L70**)
- > Hi level quality of reproduction colors
- > Keeping the fixtures e infrastructure



# Electricity Savings | ETA Pumps



## Improvements

### ETA Pumps:

- Apply Variable Speed Drive (VSD) to control the pumps between the two tanks with 322.000 l and the plant



## + Beneficies

- > Flow control to deliver the factory the real water emand
- > Mechanical wear



# Electricity Savings | Compressed Air Dryer

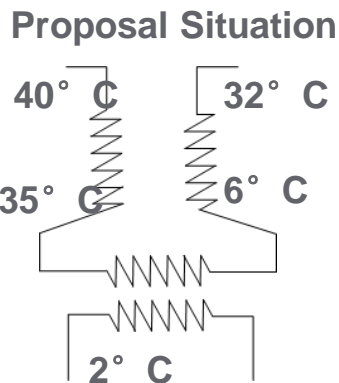
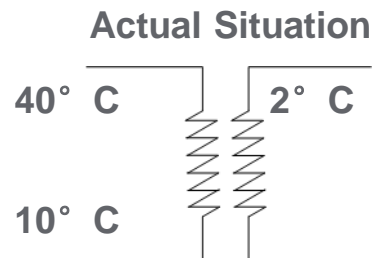


## Improvements

- Change the Heat Exchanger design and pipes.
- Better Dried Air with less losses.
- Savings due to a better use of available temperature
- Heat Recover in the right cycle to make the most with the DEW Point temperature and pression.

## + Benefits

+++ Energy Savings in Chilled Water Process due to a better use of the DEW point pressure and temperature from the Compressed air.



# Fuel Savings | Whole System



## Improvements

- Boiler heat recovery to new central HW system
- Steam leak elimination
- Condensate management
- Insulation
- Use new central hot water system for heating instead of steam for select loads
- Power generation?

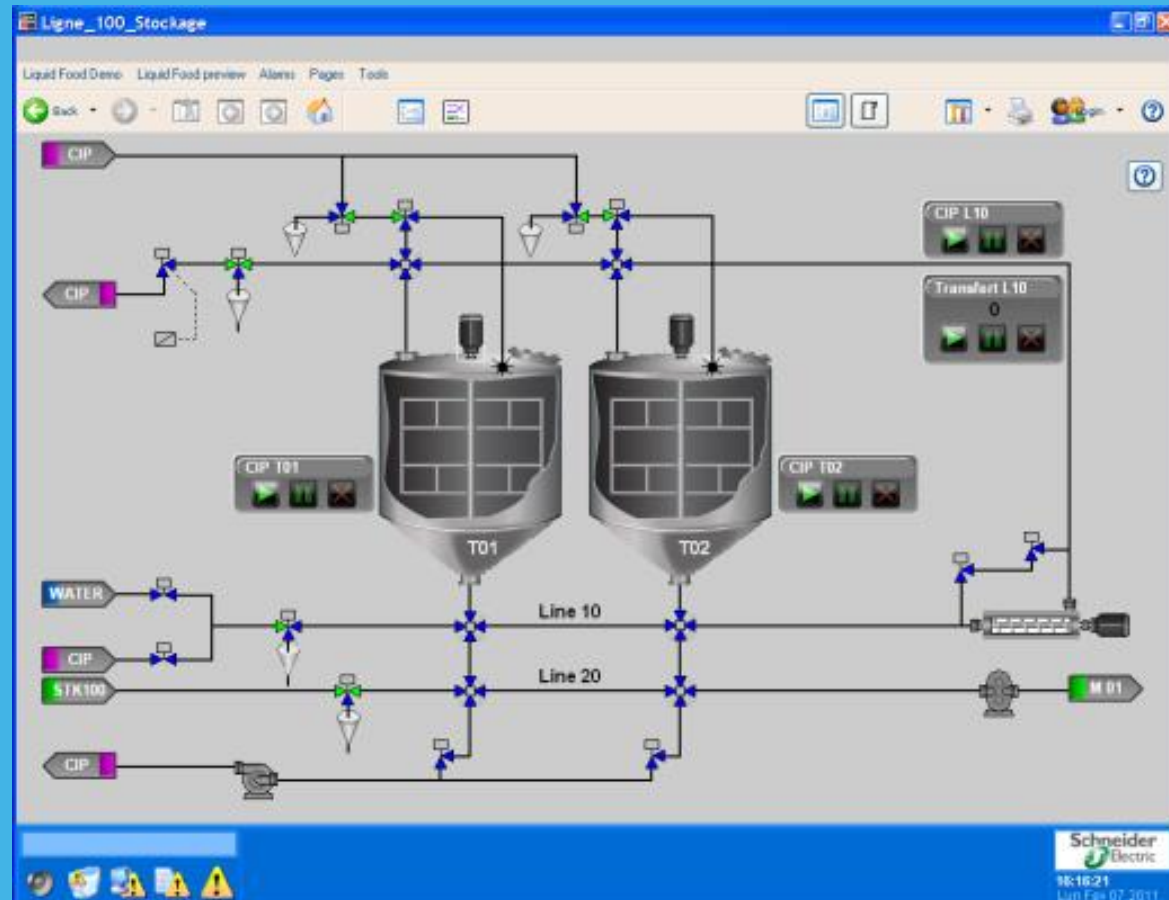
## + Benefits

+++ Safety, comfort, reduced energy and emissions, fuel available for other uses



up to  
**50%**  
energy saving

# Dairy Industrial Process

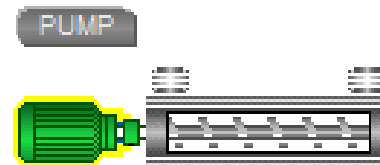
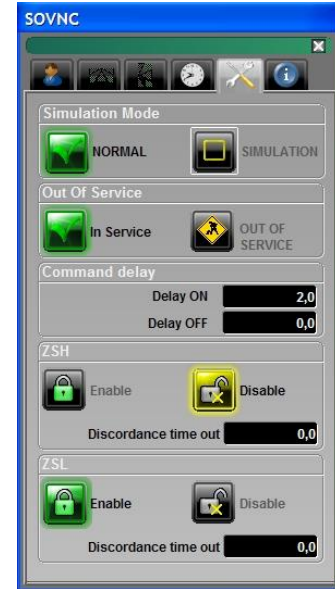


# Liquid Food Library

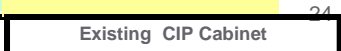
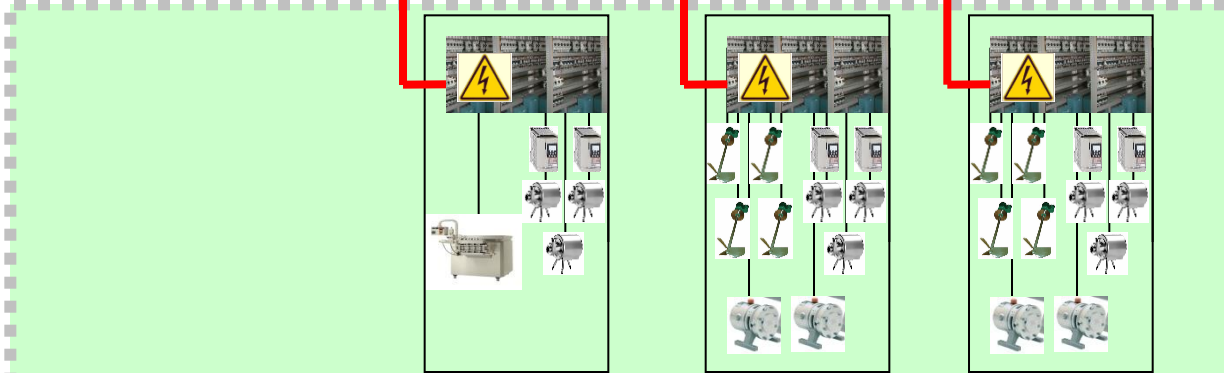
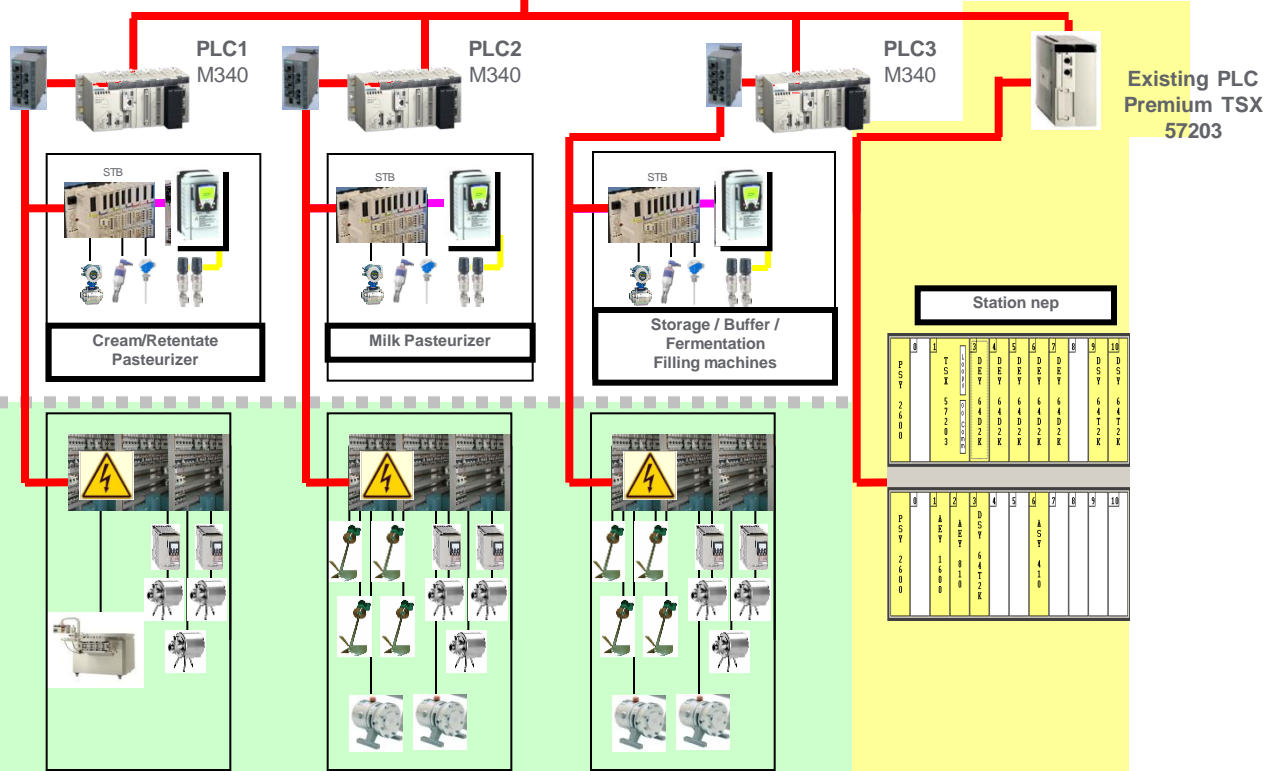
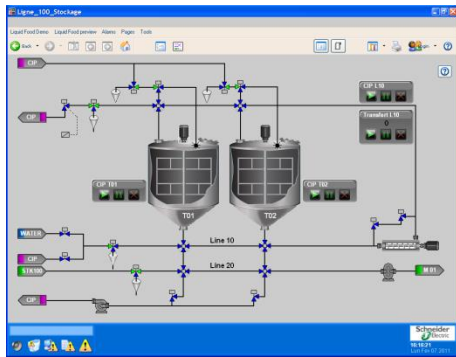
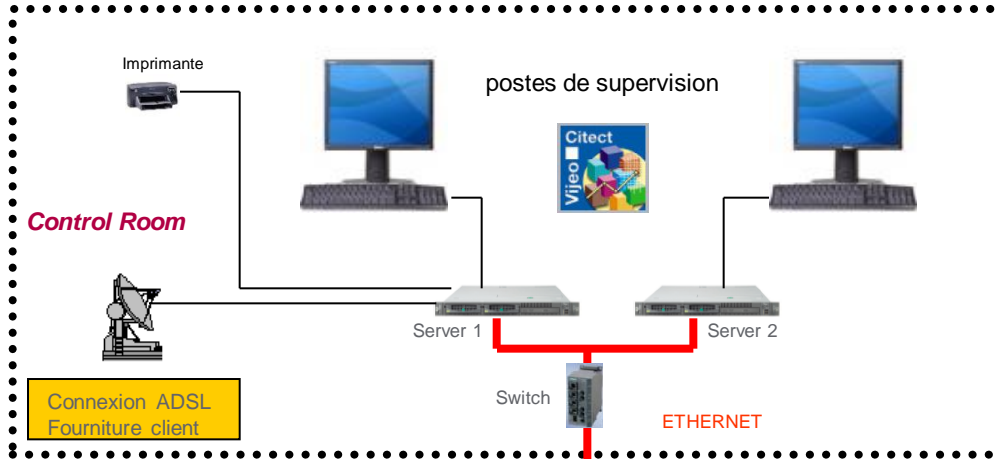
- Add Liquid Food Specific Valves and Motors
- Add process + supervision + fault management blocks
- Add CIP & WAGES related blocks

- To:

- Simplified Butterfly and Shut-off valves
- Change-Over valves (3 or 4 ways) with indication of fluid direction
- Mixproof valves (3 or 4 ways) with leakage chamber cleaning
- Agitator and Pumps with cyclic operation
- ...



From 60 to 200t/d





2/7/2011 10:08:31 AM

Comunicación PLC1   Comunicación PLC2   Comunicación PLC3   Comunicación PLC4   Comunicación PLC5   Comunicación PLC6

Vista TLC   **Tanques Leche Concentrada 18%**   **Agua Pasto**   **Tanques Leche Mezclada**

Info. Tanques   Info. Lineas

Orden Validacion MP TLC 1  
Orden Validacion MP TLC 2

S451ZS01 0.0%   S451XME01   S452ZS01 0.0%   S452XME01

Regulación S402FC01

**Regulación del Caudal S402FT01**

Agua Helada   Agua   X103XVB72 0.0%   X104XVB72 0.0%   X1B1XVB61

Param Deposito de agua.  
Param Enjuague L1   Param Enjuague L2  
Param Vaciado agua L1   Param Vaciado agua L2  
Param Vaciado agua L1

I201XS01 Paro de Emergencia

POLVO PREPARACION 5 T/h   I201LSH01   I201LSL01   I201XME01   I201XVB01   I201XV69   Agua Descalcificada   I201XME02

POLVO PREPARACION 5 T/h   I202LSH01   I202LSL01   I202XME01   I202XVB01   I202XV69   Agua Descalcificada   I202XME02

Acete vegetal 10.0°C 500l

TN1/2   S602 XVB02   S603 XVB02   T1 à 7

Regulación P.I.D

CONSIGNA PLC	0.0 m³/H
MODO	AUTO.F
SUP	AUTO.F
PLC	AUTO
CONSIGNA SUP	0.0 m³/H
SALIDA PLC	0.0 %
SALIDA SUP	0.0 %

Regulación P.I.D

P	I	D
0.00	0.00	0.00

Validación   Cancelar

Orden Llenado   Param Llenado   Orden traslado L1   Param Traslado L1  
Orden Empuje Llenado   Param Empujes Llenado.  
Orden Vaciado   Param Vaciado.  
Orden Empuje Vaciado   Param Empujes vaciado.

Linea 2   Linea 3   Linea 4   Linea 6

Acido / Sosa Concentrados

administrador INGENIEUR

Recepción   Maduración   Almacenamiento

10:48:04 ALM\_FCT\_08evision Agt\_LS Fondation Suspensie - Agt\_3383

10:48:04 ALM\_FCT\_08evision Agt\_LS Fondation en Coup - Agt\_3383

10:48:04 ALM\_FCT\_08evision Agt\_LS Fondation en 45min - Agt\_3383

Nom :

E.A. NEP LC NEP Usine

E.N. L1 L2 L3 LA LB LC

### CO PASTO LAIT

STOCKAGE LAIT CRU S151	STOCKAGE LAIT CRU S152
0,00	0,00
47960,00	0,00

STOCKAGE LAIT PASTEURISE S251	STOCKAGE LAIT PASTEURISE S252	STOCKAGE LAIT PASTEURISE S253	STOCKAGE LAIT PASTEURISE S254
0,00	0,00	0,00	0,00
7000	0	0,00	0,00

**PASTO P1 20 000 L/h**

- LAVAGE PASTO
- DEMARRAGE
- MISE EN CONDITIONS
- PRODUCTION
- RECIRCULATION
- POUSSE A L'EAU
- ATTENTE
- ARRET

BAM

#### CONDUITE

- Accueil
- NEP
- Réception
- Pasto Lait
- Pasto Crème

#### SYNOPTIQUE

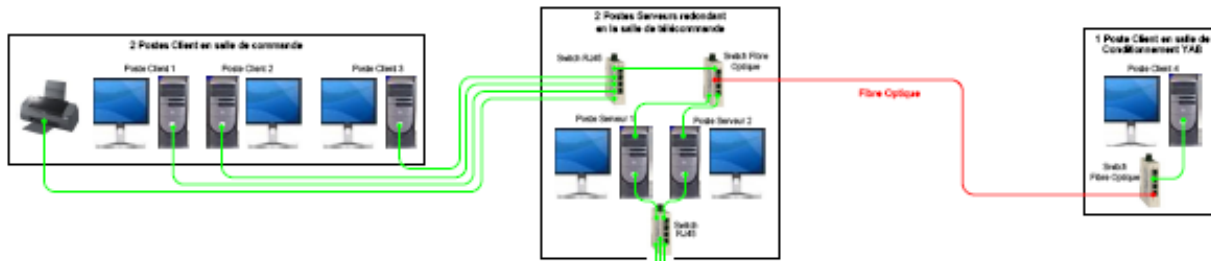
- NEP
- Réception
- Pasto Lait
- Pasto Crème
- Stk Lait Past.
- Stk Cr Past

#### DIVERS

- Doc.
- Courbes
- Aides
- Param. NEP

NEP	F	M	D
Proc1	F	M	D
Proc2	F	M	D
Proc3	F	M	D
Cru	F	M	D

06/04/2011 14:08:35



# Dryer Advance industrial Process



# First joint TPM application

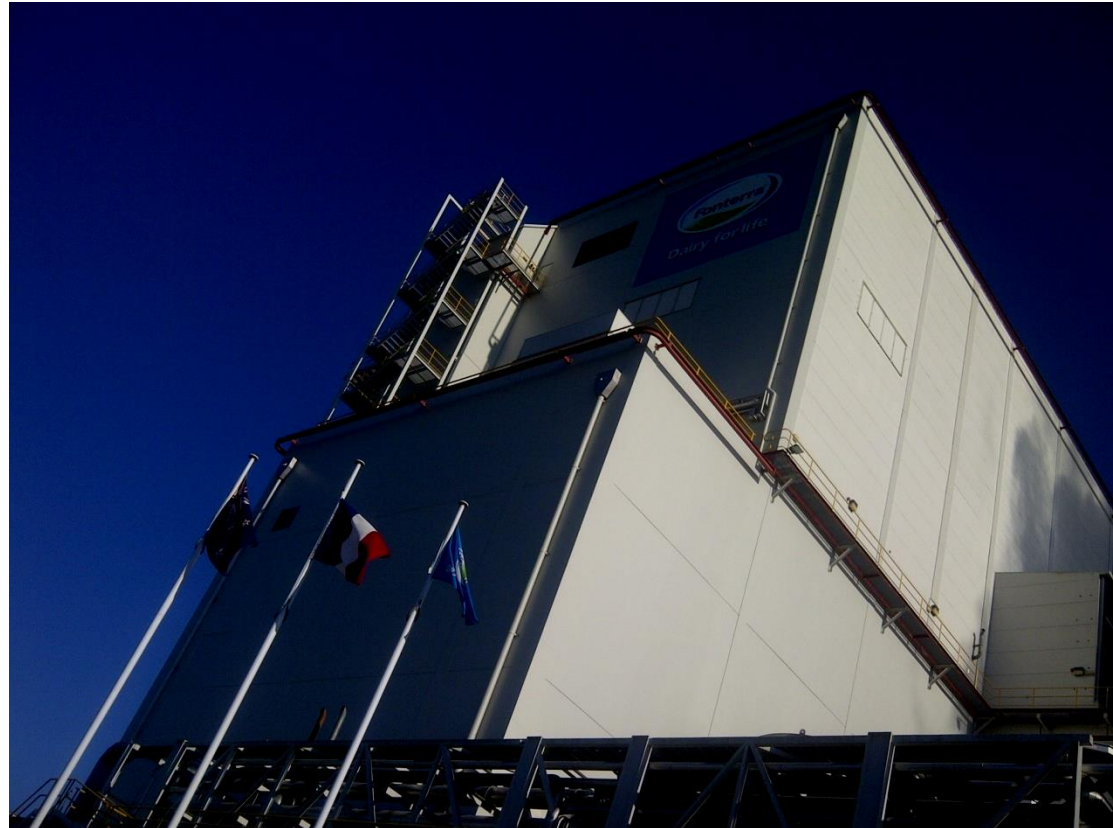
- Produce infant and adult nutritional formulations, functional food ingredients, and other specialized health-focused products.
  - Processes more than 500 million litres of milk each year.
  - Capable of processing 3.2 million litres of raw milk per day
  - From which up to 340 tonnes of milk powder can be produced.
- **Tetra Plant Master solution** is built on **Schneider controllers & system**
- 
- ***Tetra Pak contact Person:***
  - *Mattias Johansson, Mats Hellman, Steve Griffiths*



- The N°1 Dairy cooperative in the world
  - Expanding from New Zealand to world wide

- Business & technology partnership

- Support on Specifications
- Propose alternative OEMs
- Increase plant productivity
- Commissioning capability
- Install Base services
- Revamping
- Energy optimization
- Form factor correction
- Energy monitoring....

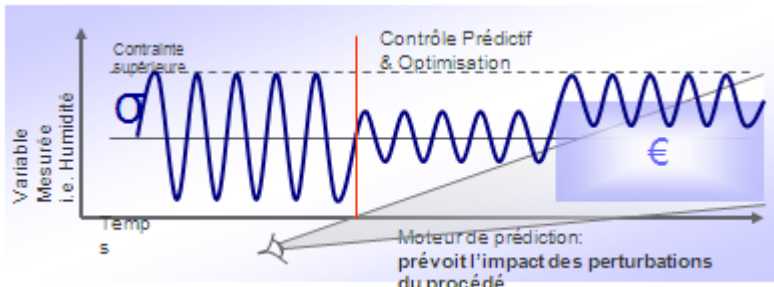


# Advance control optimization



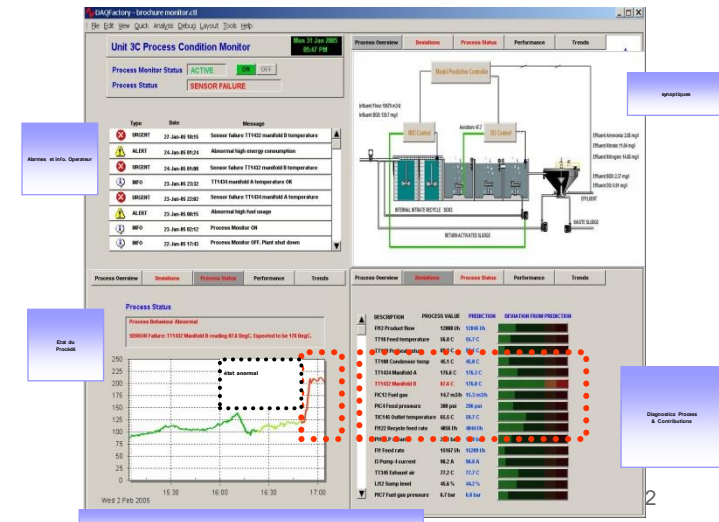
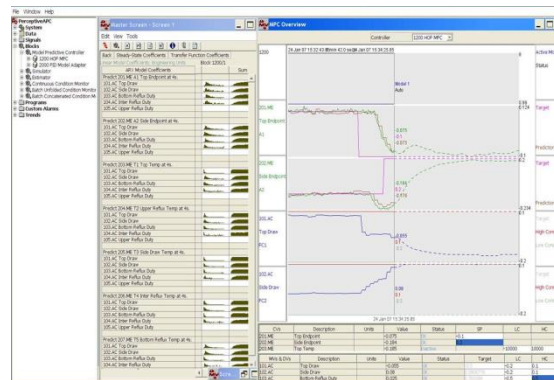
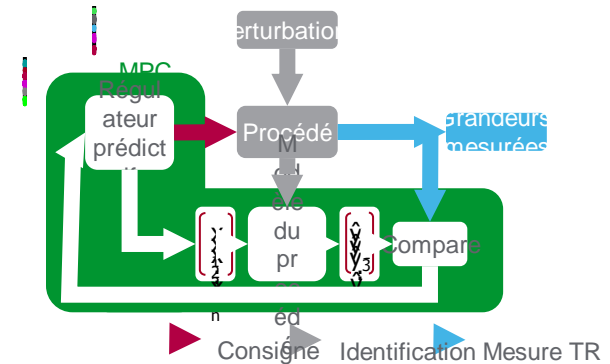
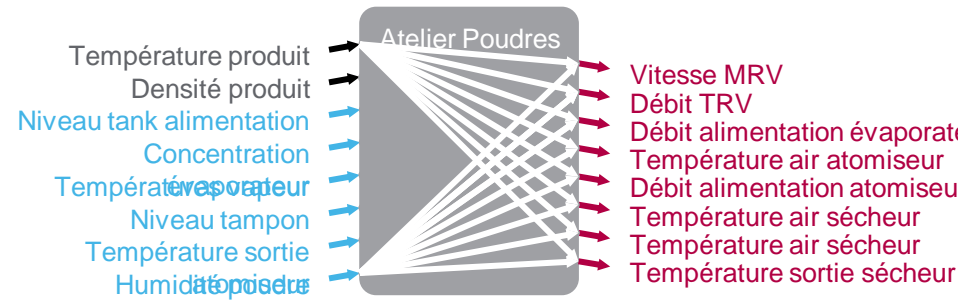
# Complex production system

- All system can't be optimized by a succession of PID regulators



- Advance control is about all the other regulation systems

- Multi variable control
- Predictive regulator
- Internal process model
- On line diagnostic & optimization
- ...





# Results (infantil formula)

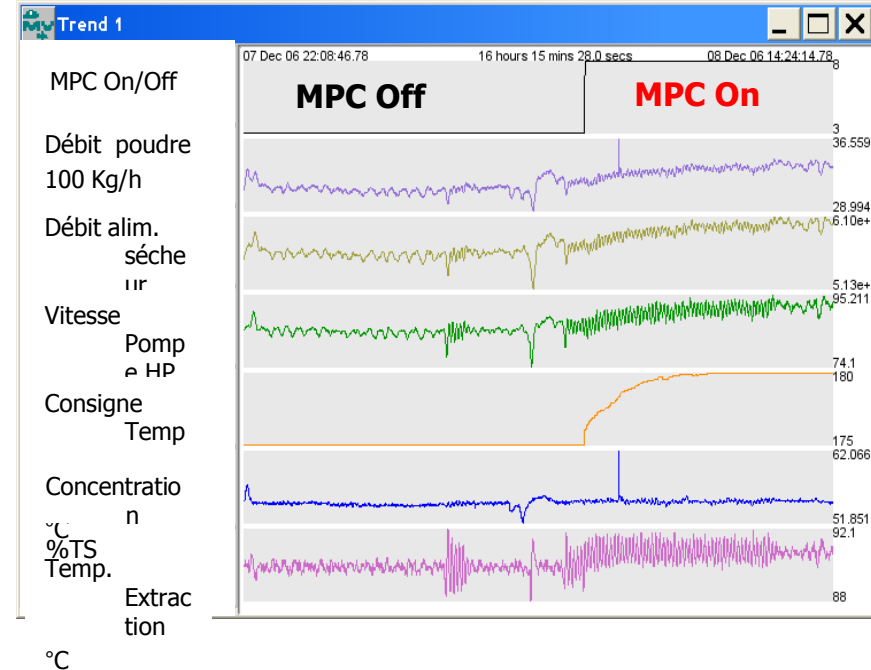
## ● Evaporator / Dryer 1

- Capacity before: 3240 kg/h
- Capacity after advance control: 3480 - 3530 kg/h
- Production increased by 7 - 9%
- Consummation decrease by 7%

## ● Evaporator / Dryer 2

- Capacity before: 3900 kg/h
- Capacity after advance control: 4200 kg/h
- Production increase by 7.7 %
- Consummation decrease by 7%

## ● ROI < 3 months



# Some other few references



## ● Dairy pasteurizers, dryers, ...:

- Abbott (Ireland, Spain, Netherlands, USA, Singapore)
- Arla Foods (Denmark)
- Nutricia, DairyGold, Glanbia (Ireland)
- Nestlé, Murray Goulburn (Australia)
- LAÏTA (France)
- Fonterra (Nouvelle Zealand)
- Meadow Foods (UK)
- Saint Père (France)
- Lactalis (France)
- ...



## ● Other

- Boilers (Xstrata, RWE, ANL, Drax)
- Water treatment (United Utilities, Thames, Anglian)
- ...



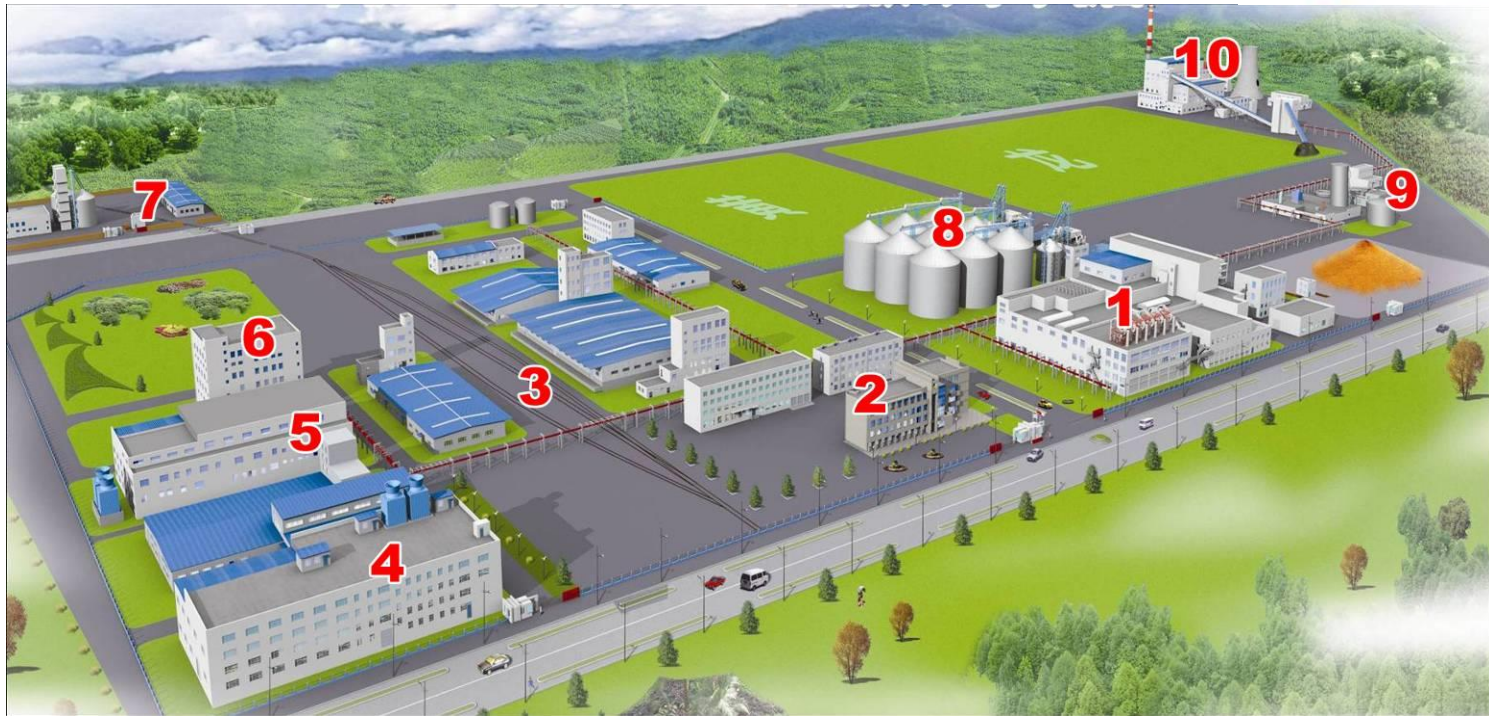
# Energy Monitoring



# EMS Introduction



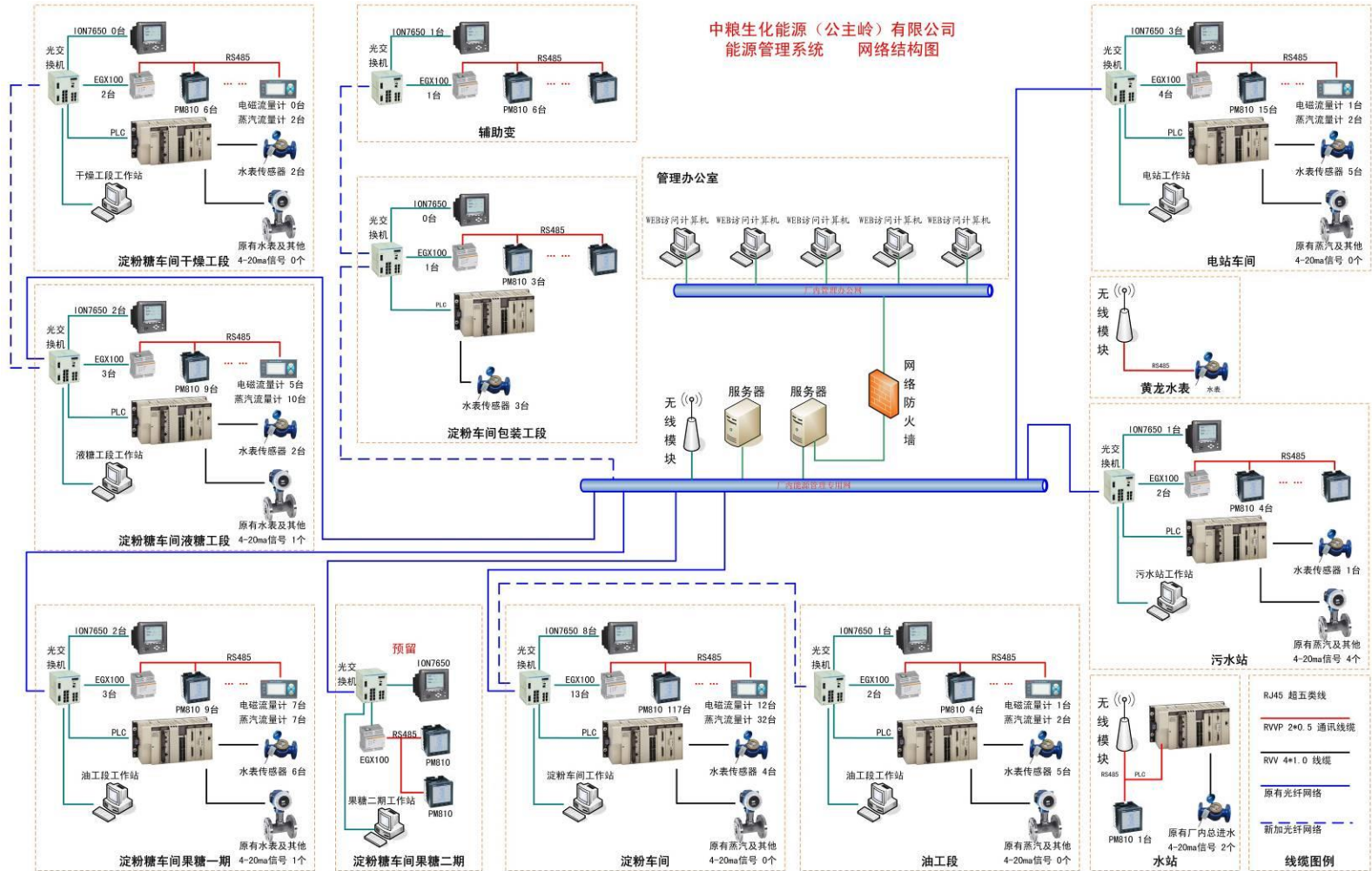
中糧  
COFCO  
自然之聲 重慶你強



- 1、 Corn starch workshop
- 2、 Office building
- 3、 Railway
- 4、 Malt sugar workshop
- 5、 Liquid sugar workshop

- 6、 Dextrin workshop
- 7、 Corn drying workshop
- 8、 Corn silo
- 9、 Waste water treatment
- 10、 Power plant

# Schneider EMS introduction



# EMS solution scope

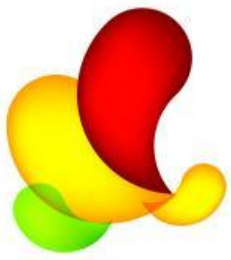
- Software Platform: EOS, PLS, ION-E
- Hardware:
 

ION7650	18
PM810MG	190
EGX100	32
PLC	9
- Collecting data: Power, water, steam, raw material, coal.
- KPI calculation and analysis
- Dashboard for operator
- Dashboard for manager



# Energy & continuous Optimization





# Project's Different Aspects

SABB

SISTEMA DE ALIMENTOS  
E BEBIDAS DO BRASIL 

- SAP, Lots, Product Id and Threshold limits relationship
- Reporting Point with multiple data sources
- Lot traceability
- Dynamic Threshold and Limits
- CIP Traceability with Gantt Chart

The Linhares's Site is responsible for the production of 400 millions liters / year



# SAP transfer all Lot information to the process planning module

Production Order (PO), Product Description, Lot, Product Id (Cod Granel SAP) and Product Code. Here is the source information to most of the Reporting Points.

The screenshot displays the SAP Production Analyst interface. The main window shows a table of production orders with columns for Planned End Time, Actual Start Time, Actual End Time, OP, ActivityId, Lote, Produto, CodGranelSAP, CodProdutoSAP, and State. A red circle highlights the Lote, Produto, CodGranelSAP, and CodProdutoSAP columns. Below the table is a Planning Gantt Chart showing activity bars for various production orders over a period from July 2-12, 2012. The Gantt chart shows activity bars for various production orders, with some bars starting on Monday and others on Tuesday. The interface includes a navigation pane on the left with a hierarchy of folders (SABB, Produtos, Linhares, Planejamento, Produção) and a bottom taskbar with icons for Downtime, Metrics, Planning, and Production. The system tray at the bottom right shows the date and time as 10:13 AM on 7/9/2012.

Planned End Time	Actual Start Time	Actual End Time	OP	ActivityId	Lote	Produto	CodGranelSAP	CodProdutoSAP	State
7/12/2012 4:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166831	1166831	4248	POWERADE...	10000262	2137017021	Available
7/11/2012 9:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166820	1166820	4240	POWERADE...	10000261	2137017017	Available
7/10/2012 10:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166877	1166877	4268	NECTAR CAJÚ...	10000069	2101002020	Available
7/9/2012 6:00:00...	6/22/2012 12:00...	6/22/2012 12:00...	1167600	1167600	4259	NECTAR CAJÚ...	10000071	2102002020	Available
7/10/2012 6:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166845	1166845	4262	NECTAR LAR....	10000087	2102020022	Available
7/10/2012 3:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166850	1166850	4267	KAPO...	10000093	2106025024	Available
7/10/2012 3:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166849	1166849	4267	KAPO...	10000093	2106025024	Available
7/10/2012 2:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166841	1166841	4258	NECTAR...	10000072	2101002000	Available
7/10/2012 3:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166843	1166843	4260	NECTAR UVA...	10000078	2101119009	Available
7/10/2012 4:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166846	1166846	4263	NECTAR...	10000072	2101003000	Available
7/10/2012 2:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166844	1166844	4261	BURN...	10000088	2105026025	Available
7/10/2012 7:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1167526	1167526	4252	PREPARADO...	10000095	2108028010	Available
7/9/2012 1:00:00...	7/7/2012 5:00:0...	6/22/2012 12:00...	1166815	1166815	4237	NECTAR UVA...	10000078	2101119009	Available
7/10/2012 3:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166810	1166810	4233	POWERADE...	10000261	2137017017	Available
7/10/2012 7:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166847	1166847	4264	NECTAR...	10000072	2101005000	Available
7/7/2012 12:00:0...	7/4/2012 11:00:0...	6/22/2012 12:00...	1166821	1166821	4232	BURN...	10000088	2105026025	Available
7/12/2012 9:00:0...	6/22/2012 12:00...	6/22/2012 12:00...	1166835	1166835	4251	NECTAR CAJÚ...	10000069	2101002020	Available

Lot comes from automation system

Product Description, Product Id (CodGranel) and Product Cod SAP are filled up by Code Item. The code item looks on the Planning Module to find those information base on the Lot.

The screenshot displays the 'Production Analyst' application window. The main area shows a table titled 'Quality - SABB.Linhares.Processo.APV2.Pasteurizador.Pasteurizador'. The table is filtered to show records from the last 10 days. The columns include Sample Period, Turno, Lote, Produto, CodProduto, CodGranel, Batelada, and Pressão. A red box highlights the 'Lote' column, and another red box highlights the 'Produto', 'CodProduto', and 'CodGranel' columns. A code snippet is overlaid on the chart area, showing how the 'Lote' value is split into these three fields.

Sample Period	Turno	Lote	Produto	CodProduto	CodGranel	Batelada	Pressão...
7/9/2012 9:28:30 AM	Turno 1	4259	NECTAR CAJÚ LIGHT TP 1000ML 6x1	2102002020	10000071	01	-400 mmHg
7/9/2012 9:00:00 AM	Turno 1	4259	NECTAR CAJÚ LIGHT TP 1000ML 6x1	2102002020	10000071	01	7 mmHg
7/9/2012 8:00:00 AM	Turno 1	4259	NECTAR CAJÚ LIGHT TP 1000ML 6x1	2102002020	10000071	01	7 mmHg
7/8/2012 9:00:00 AM	Turno 1	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	7 mmHg
7/8/2012 8:00:00 AM	Turno 1	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	7 mmHg
7/8/2012 7:00:00 AM	Turno 1	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	6 mmHg
7/8/2012 6:00:00 AM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	6 mmHg
7/8/2012 5:00:00 AM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	6 mmHg
7/8/2012 4:00:00 AM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	6 mmHg
7/8/2012 3:00:00 AM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	6 mmHg
7/8/2012 2:00:00 AM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	6 mmHg
7/8/2012 1:00:00 AM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	6 mmHg
7/8/2012 12:00:00 AM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	7 mmHg
7/7/2012 11:00:00 PM	Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	10	7 mmHg

```
string[] words = BuscaProduto(record["Lote"].ToString()).Split(';');
record["Produto"] = words[0];
record["CodProduto"] = words[1];
record["CodGranel"] = words[2];
```

The chart below the table shows 'Volume' on the y-axis (0.00 to 600,000.00) and 'Passo' on the x-axis. The highest volume is observed for the 'Partindo Bomba BC-1107-014' step.

Fields to Chart: Volume (checked), Pressão Desaer, Temp Pré Aquec, Vazão, Temp Entrada Re, Temp Saída Rete, Pressão Homoge, Nível do desaer. Show Target: True, Show Budget: True, Group by: Passo. Analyze: Analyze by: <none>, Show: Together, Use Equipment Id.

Each Threshold Values and limits depends on the Product Id, therefore depends on SAP information.

The screenshot displays the 'Production Analyst' application interface. The top navigation bar shows the current process: 'Quality - SABB.Linhares.Processo.APV2.Tanque Formulação.Tanque Formulação'. The main data table is filtered to show records where the 'Sample Period is Current Dia Or Last 5 Dia'.

Turno	Lote	Produto	CodProduto	CodGrane	pH	Batelada	Tanque
Turno 1	4259	NECTAR CAJÚ LIGHT TP 1000ML 6x1	2102002020	10000071		04	03
	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	3.34	10	04
Turno 1	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	3.33	09	03
Turno 1	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068		07	04
	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	3.43	08	
Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	3.4	06	03
Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	3.49	05	04
Turno 2	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068	3.41	04	03
Turno 2	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068		03	04
Turno 2	4180				3.5	01	03
	4239	NECTAR PESSEGO TP 1000ML 6x1	2101002000	10000072	3.63	04	
Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068		03	04
Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068		03	04
Turno 3	4242	NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068		02	03
		NECTAR LARANJA TP 1000ML 6x1	2101002011	10000068			
		NECTAR LARANJA TP 1000ML 6x1	2101002011	10000072.28			

Below the table, a 'Frequency Distribution for: Brix' chart is shown. The chart displays a histogram with a normal distribution curve overlaid. The x-axis represents 'Samples' (11 to 16) and the y-axis represents 'Count' (0 to 8). Two vertical lines indicate specification limits, with 86% of the data to the left and 14% to the right. The SPC (Statistical Process Control) panel on the right shows various control rules (Mean, 1 Sigma, 2 Sigma, 3 Sigma, USL, LSL, Cpk) and indicates that 'WECO Rules' are 'Failed'. The 'Select chart' panel on the right offers options for different chart types, with 'Frequency Distribution chart' selected.

# Customer needs - Traceability in less than 2 hours

- There is many quality checks on each production step
  - such as: bottle integrity, leak on tap...
- Most of checks are done by the operators
  - Manual samplings on the production line & check consistency
  - On each check, they manually enter information (checkbox).
- Before this automated process, those checks where recorded in paper forms.

Automatic Information from process system and SAP – Code Item.

Manual Check:  
Quality of Bottle label (printed);  
Sealing of secondary box;  
Integrity of secondary box;  
5s on cardboard and divider check

Field	Value
Sample Period	Mon 7/9/2012 11:28:22 AM
Lote	4242
Produto	NECTAR LARANJA TP 1000ML 6x1
CodProduto	2101002011
CodGranel	10000068
Qualidade Impressão Secundária	<input checked="" type="checkbox"/>
Selagem Abas Embalagens Secundárias	<input checked="" type="checkbox"/>
Integridade das Embalagens Secundárias	<input type="checkbox"/>
5s Cardboard - Divider	<input checked="" type="checkbox"/>
Observações	

DataSource: Process control

DataSource: SAP (Planning + Code Item)  
– Defines the Product Id for Thresholds

DataSource: qLims System quality system  
Lot and Batch Filter Fields

The screenshot displays the 'Production Analyst' software interface. On the left is a navigation tree with categories like 'Parametros de Controle', 'Insumos Xarope', 'APV2', 'Extracção Polpa', 'Envase', and 'DE'. The main window shows a data table titled 'Quality - SABB.Linhares.Processo.APV2.Tanque Formulação.Tanque Formulação'. The table is filtered to show records where 'Deleted is False and Sample Period is Current Dia Or Last 3 Dia'. The table columns include 'Sample Period', 'Lote', 'Água', 'Polpa', 'Batelada', 'Produto', 'CodProduto', 'CodGranel', 'Tanque', and 'Brix'. A red box highlights a specific row: 7/7/2012 3:28:13 PM, Lote 4242, with values 26156.66, 2752.95, 04, and 12.56. Below the table is a chart titled 'Out of Threshold Count Chart'. The chart shows a bar for 'Filtro Integro' at a count of 12, and a bar for 'pH' at a count of 2. The x-axis is labeled 'Fields' and the y-axis is 'Count'. A red line connects the top of the 'Filtro Integro' bar to the top of the 'pH' bar. A large green text overlay reads 'Reporting Point with multiple data sources.' To the right of the chart is a 'Select chart' menu with options: X-Bar chart, R chart, Frequency Distribution chart, Out of Threshold count chart, Multi-field chart, Summary chart, Rate chart, and No chart. The bottom of the screen shows a Windows taskbar with the Start button, several application icons, and a system tray showing 'PT', '11:04 AM', and '7/9/2012'.

Sample Period	Lote	Água	Polpa	Batelada	Produto	CodProduto	CodGranel	Tanque	Brix
7/9/2012 9:28:30 AM	1359	8433.92	1803.38	04	NECTAR CAJU - 3HT TP...	2102002020	10000074	03	
7/7/2012 3:28:13 PM	4242	26156.66	2752.95	10	NECTAR LARANJA TP...	2101002011	10000068	04	12.56
7/7/2012 11:58:07 AM	4242	25263.95	3676.78	09	NECTAR LARANJA TP...	2101002011	10000068	04	12.58
7/7/2012 9:24:35 AM	4242	26924.32	2343.71	07	NECTAR LARANJA TP...	2101002011	10000068	04	
7/7/2012 7:12:18 AM	4242			08	NECTAR LARANJA TP...	2101002011	10000068		12.47
7/7/2012 3:16:42 AM	4242	26676.90	2487.31	06	NECTAR LARANJA TP...	2101002011	10000068	03	12.49
7/7/2012 12:56:52 AM	4242	27876.31	2270.99	05	NECTAR LARANJA TP...	2101002011	10000068	04	12.52
7/6/2012 9:26:13 PM	4242	26207.00	2651.15	04	NECTAR LARANJA TP...	2101002011	10000068	03	12.51
7/6/2012 7:07:47 PM	4242	19907.18	11922.56	03	NECTAR LARANJA TP...	2101002011	10000068	04	
7/6/2012 2:54:02 PM	4180	24346.43	4665.38	01				03	13.18
7/6/2012 5:52:39 AM	4239			04	NECTAR PESSEGO TP...	2101002000	10000072		13.11
7/6/2012 3:14:14 AM	4242	19907.18	11922.56	03	NECTAR LARANJA TP...	2101002011	10000068	04	
7/6/2012 3:05:59 AM	4242	19295.33	11867.74	03	NECTAR LARANJA TP...	2101002011	10000068	04	
7/6/2012 1:27:19 AM	4242	19936.77	8401.94	02	NECTAR LARANJA TP...	2101002011	10000068	03	
7/6/2012 12:20:14 AM	4242	19936.77	10420.32	02	NECTAR LARANJA TP...	2101002011	10000068	03	12.51

# Easy & automatic quality issue detection

- Acceptance by management via a check box with access control

Out of Specification quality check

The screenshot displays the 'Production Analyst' software interface. On the left is a navigation tree with a hierarchy of folders including 'APV2', 'Envase', and 'Linha B'. The main window shows a data table with columns: Sample Period, Lote, Produto, CodProduto, CodGranel, CardBoard, Qualidade..., Selagem Abas..., and Integridade das... The table contains two rows of data. The second row is highlighted in yellow, and a red box is drawn around the 'Integridade das...' column for this row, which contains a checkmark. An arrow points from the text 'Out of Specification quality check' to this checkmark. Below the table is a chart titled 'Out of Threshold Count Chart' showing a single blue bar at a count of 1. A red horizontal line with a triangle marker is drawn above the bar. A 'Select chart' panel on the right lists various chart types, with 'Out of Threshold count chart' selected. The bottom of the screen shows the Windows taskbar with the Start button, system tray, and the date/time '11:43 AM 7/9/2012'.

Sample Period	Lote	Produto	CodProduto	CodGranel	CardBoard	Qualidade...	Selagem Abas...	Integridade das...
7/9/2012 11:41:44 AM	4242	NECTAR LARANJA TP...	2101002011	10000068	CardBoard...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7/9/2012 11:28:22 AM	4242	NECTAR LARANJA TP...	2101002011	10000068	CardBoard...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

# Traceability tree management

- Track all issues within the Specific Lot in less than 1 minute

Use sub-locations

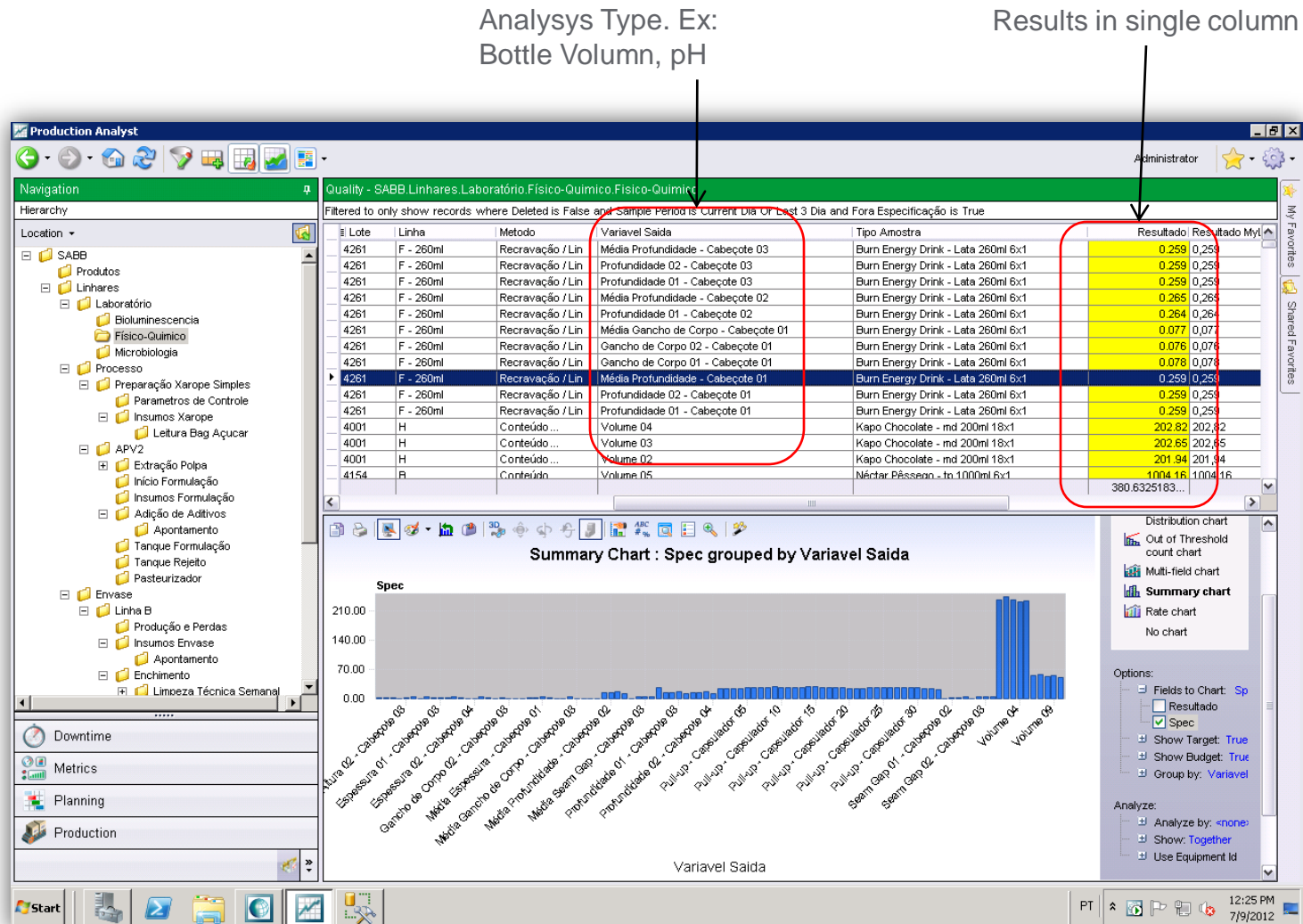
Filter by Lot

The screenshot displays the 'Production Analyst' software interface. On the left, a 'Navigation' pane shows a 'Hierarchy' tree with 'Location' expanded to 'Envase' and 'Linha B'. A red box highlights a sub-location icon. The main window shows a table titled 'Quality - SABB Linhares Envase Linha B with recurse'. A red box highlights the filter 'Lote is 4242'. The table contains data for 'Sample Period', 'Lote', 'Produto', 'CodProduto', 'CardBoard', 'CodGranel', 'Concentração', 'Produção Envase', and 'Produção R'. Below the table is an 'Out of Threshold Count Chart' showing a bar chart for 'Count' and 'Concentração' with a red dashed line indicating a threshold. A red box highlights the 'Count' bar, with an arrow pointing to it labeled 'Quality Issues'. A 'Select chart' panel on the right lists various chart types, including 'Out of Threshold count chart'. The Windows taskbar at the bottom shows the date and time as 11:49 AM on 7/9/2012.

Sample Period	Lote	Produto	CodProduto	CardBoard	CodGranel	Concentração	Produção Envase	Produção R
7/9/2012 11:41:44 AM	4242	NECTAR LARANJA TP...	2101002011	CardBoard...	10000068			
7/9/2012 11:30:19 AM	4242	NECTAR LARANJA TP...	2101002011		10000068			
7/9/2012 11:28:22 AM	4242	NECTAR LARANJA TP...	2101002011	CardBoard...	10000068			
7/9/2012 11:26:50 AM	4242							
7/9/2012 11:25:35 AM	4242							
7/9/2012 11:00:00 AM	4242	NECTAR LARANJA TP...	2101002011		10000068		0	
7/9/2012 10:00:00 AM	4242	NECTAR LARANJA TP...	2101002011		10000068		1531	
7/8/2012 9:00:00 AM	4242	NECTAR LARANJA TP...	2101002011		10000068		0	

# A systems including a large number of different analysis.

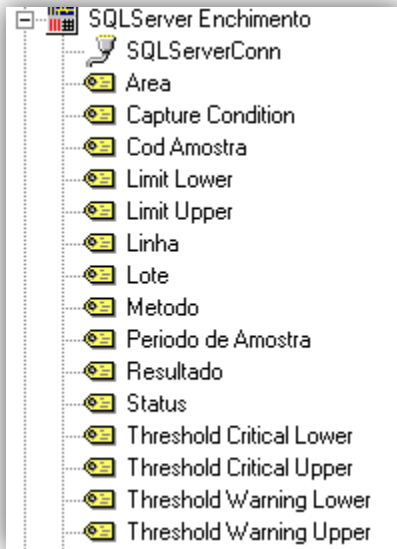
- Automatic import into the tool to save time & increase data quality
- Consistent data sorting (Pivoted table) no matter what is the batch & recipe





# Type of analysis & specific threshold values

- Automated integration & storage procedures every 20s
- Guaranty threshold consistency before saving into the database
- If a new recipe / threshold is added, no changes into the process & display system



Kapo Chocolate - md 200ml 18x1	201.94	201,94	3
Néctar Pêssego - tp 1000ml 6x1	1004.16	1004,16	3
Néctar Pêssego - tp 1000ml 6x1	1004.37	1004,37	3
Néctar Pêssego - tp 1000ml 6x1	1004.37	1004,37	3
Néctar Pêssego - tp 1000ml 6x1	1007.33	1007,33	3
Néctar Pêssego - tp 1000ml 6x1	1007.33	1007,33	3
Néctar Pêssego - tp 1000ml 6x1	1007.33	1007,33	3
Néctar Laranja Caseira - pr 1000ml 6x1	1011.98	1011,98	3
Néctar Laranja Caseira - pr 1000ml 6x1	1015.76	1015,76	3
Néctar Laranja Caseira - pr 1000ml 6x1	1015.76	1015,76	3
Néctar Laranja Caseira Light - pr 1000ml 6x1	1007.7	1007,70	3
Néctar Laranja Caseira - pr 250ml 18x1	257.13	257,13	3
Néctar Laranja Caseira - pr 250ml 18x1	257.13	257,13	3
Néctar Laranja Caseira - pr 250ml 18x1	744.44760		3

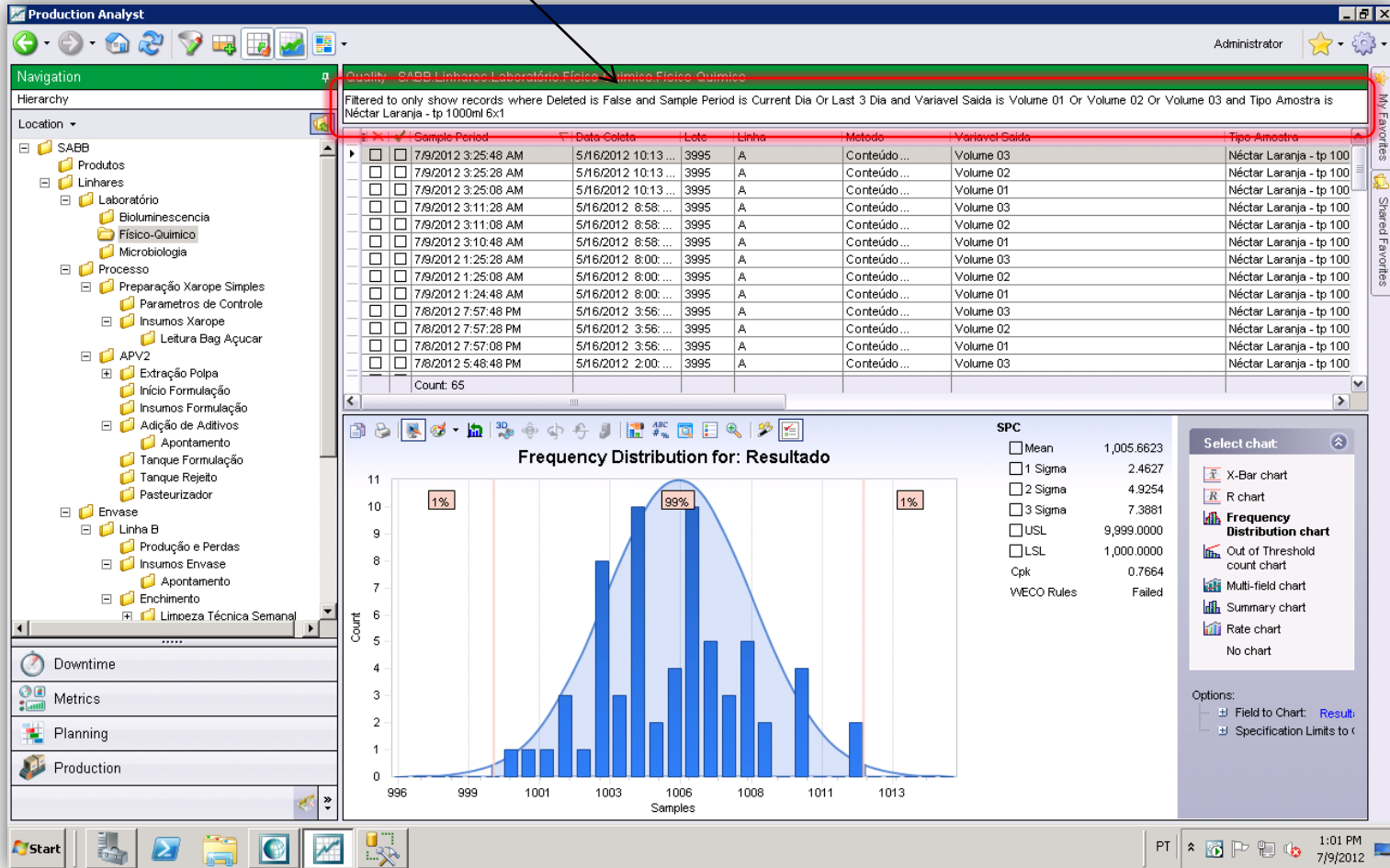
Threshold:  
Level = Warning  
Upper Limit = 252  
Lower Limit = 250

Kapo Chocolate - md 200ml 18x1	201.94	201,94	
Néctar Pêssego - tp 1000ml 6x1	1004.16	1004,16	
Néctar Pêssego - tp 1000ml 6x1	1004.37	1004,37	
Néctar Pêssego - tp 1000ml 6x1	1004.37	1004,37	
Néctar Pêssego - tp 1000ml 6x1	1007.33	1007,33	
Néctar Pêssego - tp 1000ml 6x1	1007.33	1007,33	
Néctar Pêssego - tp 1000ml 6x1	1007.33	1007,33	
Néctar Pêssego - tp 1000ml 6x1	1007.33	1007,33	
Néctar Laranja Caseira - pr 1000ml 6x1	1011.98	1011,98	
Néctar Laranja Caseira - pr 1000ml 6x1	1015.76	1015,76	
Néctar Laranja Caseira - pr 1000ml 6x1	1015.76	1015,76	
Néctar Laranja Caseira Light - pr 1000ml 6x1	1007.7	1007,70	
Néctar Laranja Caseira Light - pr 1000ml 6x1	1007.7	1007,70	

Threshold:  
Level = Warning  
Upper Limit = 1002.2  
Lower Limit = 1000

# Complete quality analysis capability via data filtering feature.

- For example: frequency distribution of Net Content in a Bottles of a specific product



# CIP & downtime modules are used to trace information on equipment's cleaning.

**Production Analyst** Administrator

Navigation  
Hierarchy

- Location
- SABB
  - Produtos
  - Linhares
    - CIP
      - Preparação Xarope Simples
      - APV2
        - CIP
        - Linha CIP 4
          - CIP 4
          - Linha CIP 5
            - CIP 5
            - Envase

Equipment List:  
Pasteurizer, Tank, etc.

Downtime - SABB.Linhares.CIP.APV2.CIP.CIP

Filtered to only show records where Deleted is False and Sample Period is >= 7/5/2012 1:09 PM And < 7/6/2012 1:09 PM

	Cond Min	Cond Med	Cond Max	Temp Min	Temp Med	Temp Max	Vazão Água	Vol Água	Observações
	0.50 mS/cm	0.60 mS/cm	1.46 mS/cm	27.31 °C	29.77 °C	45.04 °C	28776.07 l/h	2399.18 l	
	1.30 mS/cm	46.64 mS/cm	74.51 mS/cm	45.04 °C	57.42 °C	60.66 °C	27946.56 l/h	452.94 l	
	74.19 mS/cm	76.73 mS/cm	94.70 mS/cm	28.31 °C	56.86 °C	60.66 °C	27941.96 l/h	6993.01 l	
	0.50 mS/cm	0.68 mS/cm	1.62 mS/cm	28.21 °C	32.55 °C	65.71 °C	26997.10 l/h	1506.48 l	
	1.62 mS/cm	50.44 mS/cm	74.03 mS/cm	65.71 °C	82.87 °C	85.74 °C	27642.84 l/h	468.18 l	
	0.00 mS/cm	35.72 mS/cm	111.35 mS/cm	0.00 °C	58.30 °C	93.53 °C	755028.09 l/h	124375.06 l	Count: 30

Equipamento Gar

Cleaning Step:  
Initial Flush; Acid Cleaning,  
Alkali Cleaning; Final Flush, etc.

Select chart

- Gantt chart
- Pareto chart
- Pie chart
- No chart

Options:

- Group by: Equipamento
- Color by: Passo
- Display: Use Equipmer
- Filter Period Only

Passo

- Enxague Final
- Enxague Inicial
- Enxague Intermediario
- Recirculando Acido
- Recirculando Soda
- Recolhimento da Soda
- Recolhimento do Acido

7/5/2012 3:00:00 PM 7/5/2012 6:00:00 PM 7/5/2012 9:00:00 PM

Start

PT 1:11 PM 7/9/2012

# Easily check of the CIP process & status

- All steps where applied on the cleaning
- Correct parameters (4Ts) used on each steps and equipments

Cleaning parameters

The screenshot displays the 'Production Analyst' software interface. The top navigation bar shows the current view: 'Downtime - SABB.Linhares.CIP.APV2.CIP.CIP'. Below this, a table lists cleaning parameters for various lots (Último Lote 4242). The table columns include Cond Min, Cond Med, Cond Max, Temp Min, Temp Med, Temp Max, Vazão Água, and Vol Água. A red box highlights the data rows. Below the table is an 'Equipamento Gantt' chart showing the usage of various pieces of equipment over time. The chart includes a legend for 'Passo' (Step) with colors corresponding to different cleaning stages. A red box highlights a specific bar for 'Equipamento: Pasteurizador 17000' during the 'Recirculando Soda' step, with a tooltip showing the time range from 7/5/2012 5:42:18 PM to 7/5/2012 6:33:01 PM. On the left, a navigation pane shows a hierarchy of locations and steps, with 'Equipment and Step Details' text pointing to it. On the right, a 'Select chart' panel offers options for Gantt, Pareto, Pie, and No chart, along with filtering options.

Último Lote	Cond Min	Cond Med	Cond Max	Temp Min	Temp Med	Temp Max	Vazão Água	Vol Água
4242	0.50 mS/cm	0.60 mS/cm	1.46 mS/cm	27.31 °C	29.77 °C	45.04 °C	28776.07 lh	2399.18 l
4242	1.30 mS/cm	46.64 mS/cm	74.51 mS/cm	45.04 °C	57.42 °C	60.66 °C	27946.56 lh	452.94 l
4242	74.19 mS/cm	76.73 mS/cm	94.70 mS/cm	28.31 °C	56.86 °C	60.66 °C	27941.98 lh	6993.01 l
4242	0.50 mS/cm	0.68 mS/cm	1.62 mS/cm	28.21 °C	32.55 °C	65.71 °C	26997.10 lh	1506.48 l
4242	1.62 mS/cm	50.44 mS/cm	74.03 mS/cm	65.71 °C	82.87 °C	85.74 °C	27642.84 lh	468.18 l
4242	0.00 mS/cm	35.72 mS/cm	111.35 mS/cm	0.00 °C	58.30 °C	93.53 °C	755028.09 lh	124375.06 l

Equipment and Step Details

# EOS dashboard for Dairy

Enterprise performance

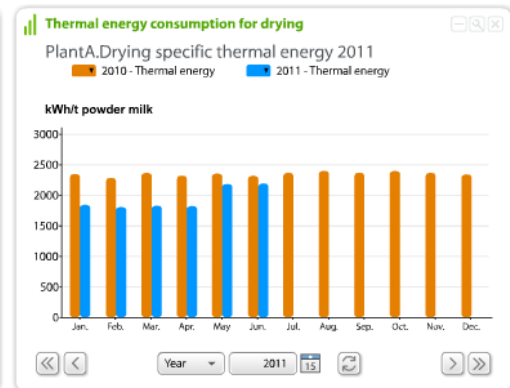
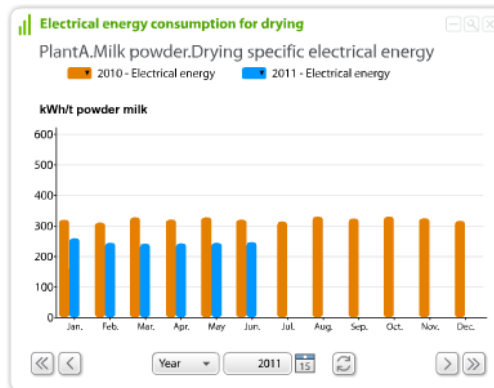
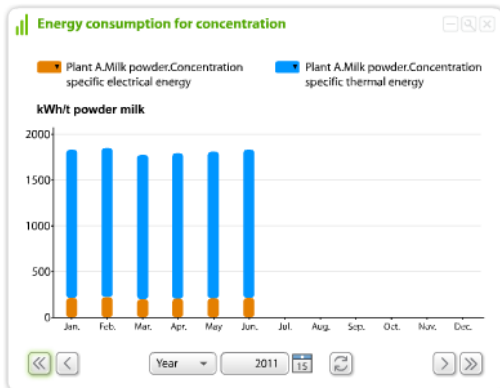
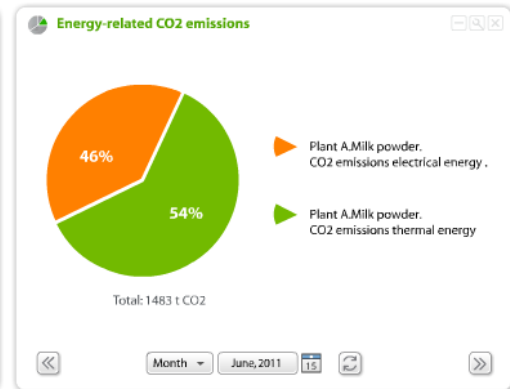
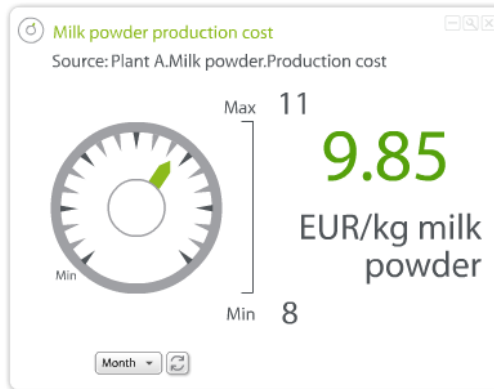
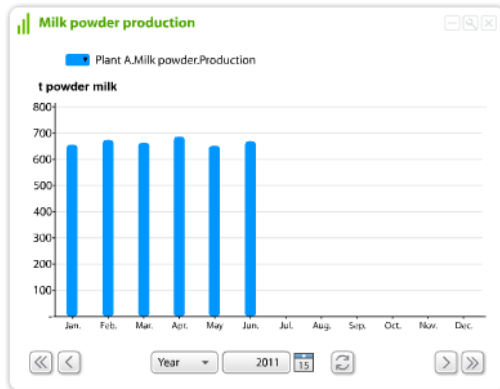
Plant performance

Cleaning-In-Place

Milk powder process

Yogurt process

Add Gadget



## Optimize your energy procurement policy

- Get exclusive recommendations from our specialists
- Identify the best suppliers and the best tariff
- Manage the risk and detect opportunities
- Manage the smart grid impact

**Market Outlook**

Due to the considerable upside price risks that exist, current prices should be viewed as a favorable opportunity.

---

**Position Overview FY**

<b>% Hedged:</b>	<b>62%</b>
<b>Average Price::</b>	<b>\$8.357</b>
<b>Mark to Market:</b>	<b>\$4,748,049</b>
<b>Mark to Budget:</b>	<b>\$86,000</b>

---

**Recent Outlooks**

**North American Natural Gas**

- Week of 18.7.2011
- Natural Gas
- North American Natural Gas
- Energy Independence and Security Act of 2007

---

**European Natural Gas**

- EU Natural Gas
- European Natural Gas

---

**Crude Oil**

- Week of 18.7.2011
- Crude Oil
- Crude Oil and Diesel
- Energy Independence and Security Act of 2007

---

**North American Diesel**

- Week of 18.7.2011
- Diesel

Home » Risk Management

### Risk Management

**Outlook** US Natural Gas Detailed Outlook

**Valuation Chart**

Quarter	Forecast	Current Market
Q1	7.735	
Q2	8.034	
Q3	8.925	
Q4	9.834	

---

**Storage**

**Weekly Storage Report: 3023**

# Track the performance of your Energy and Sustainability program...

- Communicate mission, goals & program achievements
- Aggregate emissions (scope 1,2 and 3), water, waste, etc. for the enterprise
- Access emission factor data and methodologies for verification
- Share key documents and information resources
- Report and manage status of projects with archives



Resource Advisor

Enterprise



**Recommended Documents**

- Sustainable Site Assessment 03/27/2011
- Renewable Generation Portfolio 07/28/2011
- CarbonMap 01/27/2011
- CA Sustainability Committee Notice 08/14/2011
- Sustainability Roadmap 05/27/2011

**Related News**

- 08/28/2011 - US Treasury Issues RBC
- 02/07/2011 - Wal-Mart releases new Environmental Footprinting plan on supply chain
- 05/22/2011 - US House passes American Clean Energy & Security Act (aka Waxman-Markey)
- 11/22/2010 - CO RGGI Auction Results
- 07/16/2010 - Water and waste footprinting: tracking up!

**Highest Emitting Facilities**

Site	Absolute	Below
Driver, DE	7,700	92%
Brana, NY	7,800	91%
Louisville, KY	4,500	98%
Albany, MN	1,600	2%
Avon, NY	1,200	2%

**Sustainability**

Greenhouse Gas (GHG) Emissions

Absolute



Index



**CORPORATE GOALS MISSION**

ABC Company's sustainability mission is to promote conservation and operational efficiency throughout the organization to support strategic goals to reduce our energy, carbon, water and waste impacts. Engaging our employees to contribute to our collective efforts is critical to the success of the goal.


- Energy:** Reduce total energy usage by 15% from 2010 to 2012 2010 to 2012
- Carbon:** Reduce carbon emissions by 12% from 2010 to 2012 (aggregate) and by 5% per case produced over the same period (normalized)
- Water:** Reduce wastewater generation by 2.3 MH gallons per year through water conservation efforts; target zero discharge incidents across portfolio
- Waste:** Reduce waste generation by 2% (equivalent to 2.4 MH tons) by focusing on supply chain light weighting and recycling of raw material packaging
- Renewable Energy:** Increase green energy portfolio by 5% per year with limit of 50% increase achieved via credit purchases; utilize diverse sources of clean generation

**Top Sustainability Projects**

Project Title	Category	Target Completion	Savings	Status
Re-calibrate VAV boxes	HVAC	10/01/2011	\$22,123	<span style="color: green;">●</span>
Inspect and repair chilled water return valve motor	Other HVAC Eq.	10/01/2011	\$550	<span style="color: red;">●</span>
Replace T-82 Lighting w/ T-8	Lighting	05/01/2011	\$10,000	<span style="color: gray;">○</span>
Natural Gas Request for Proposal	RFP	01/01/2012	Awaiting Quote	<span style="color: gray;">○</span>
Motion Sensors for Lighting	Occupancy Sens.	01/01/2012	\$500	<span style="color: green;">●</span>
Install economizer chiller / retain backup	HVAC	02/01/2012	\$8,050	<span style="color: gray;">○</span>

**Emission Profile**

Past 12 Months

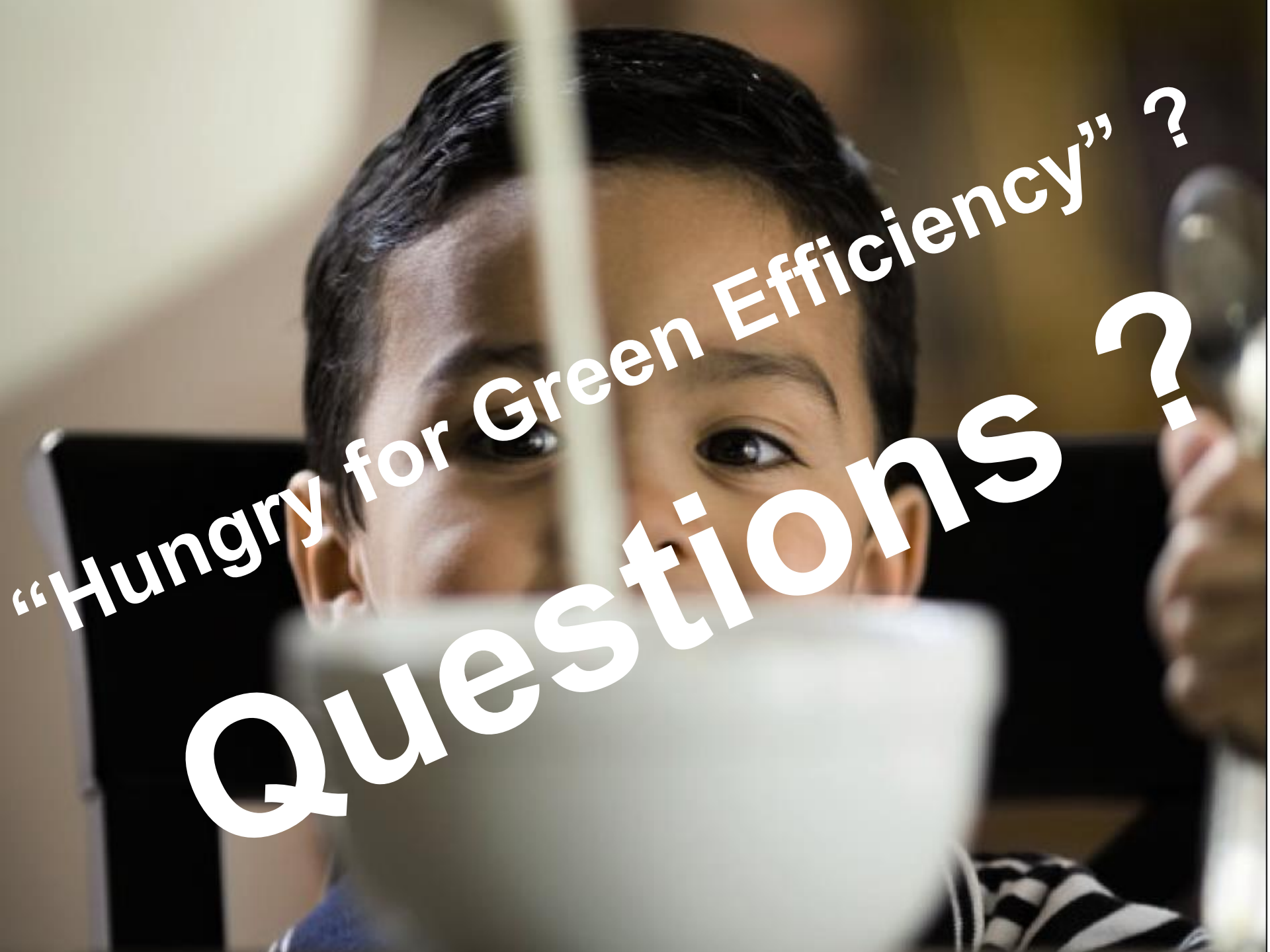


Scope 1 Scope 2 Scope 3

Units: mton CO<sub>2</sub>e

**Rate Collection**

Scope	Category	Frequency	Rate
Scope 1	Natural Gas	monthly	95%
	Fuel	monthly	100%
	Fuel Oil	monthly	76%
	Diesel	monthly	76%
	Coal	monthly	76%
	Aviation	monthly	100%
Scope 2	Process	monthly	98%
	Electric Power	monthly	85%
	Steam	monthly	85%
Scope 3	Rental Car	monthly	85%
	3rd Party AP Travel	monthly	85%
Indices	Facility Area	constant	85%
	Sales	quarterly	100%
	Production	annually	98%



“Hungry for Green Efficiency” ?

Questions ?



**Conclusion**



- 
- **EcoStruxure** is a scalable global solution
  - **Partnership** is part of our DNA

- **Our greatest reward:**  
**The satisfaction of our F&Bev customers**

***“Better Food for More People  
Using Less Energy”***



**Tack så mycket !**

**Schneider**  
 Electric