

The PI System as the Core Data Infrastructure in Dalkia's Energy Management Solution

Presented by **Philippe Maine**



Who is Dalkia ?

Creating Energy Progress



[Key figures]

- **12 430** employees
- **3,5 Billion €** revenue per year
- **87 000 sites** with managed energy systems
- **39 TWh**
- **2,5 millions** tons of CO₂ saved

Our **SMART CITY** Scope of Action

1

Regional energy production



315 heating and
cooling networks



2000 hospitals
(175 000 beds)



2,1 millions
housing units

2

On-site energy production



3

Local Energy
Management Strategies



320 biomass facilities

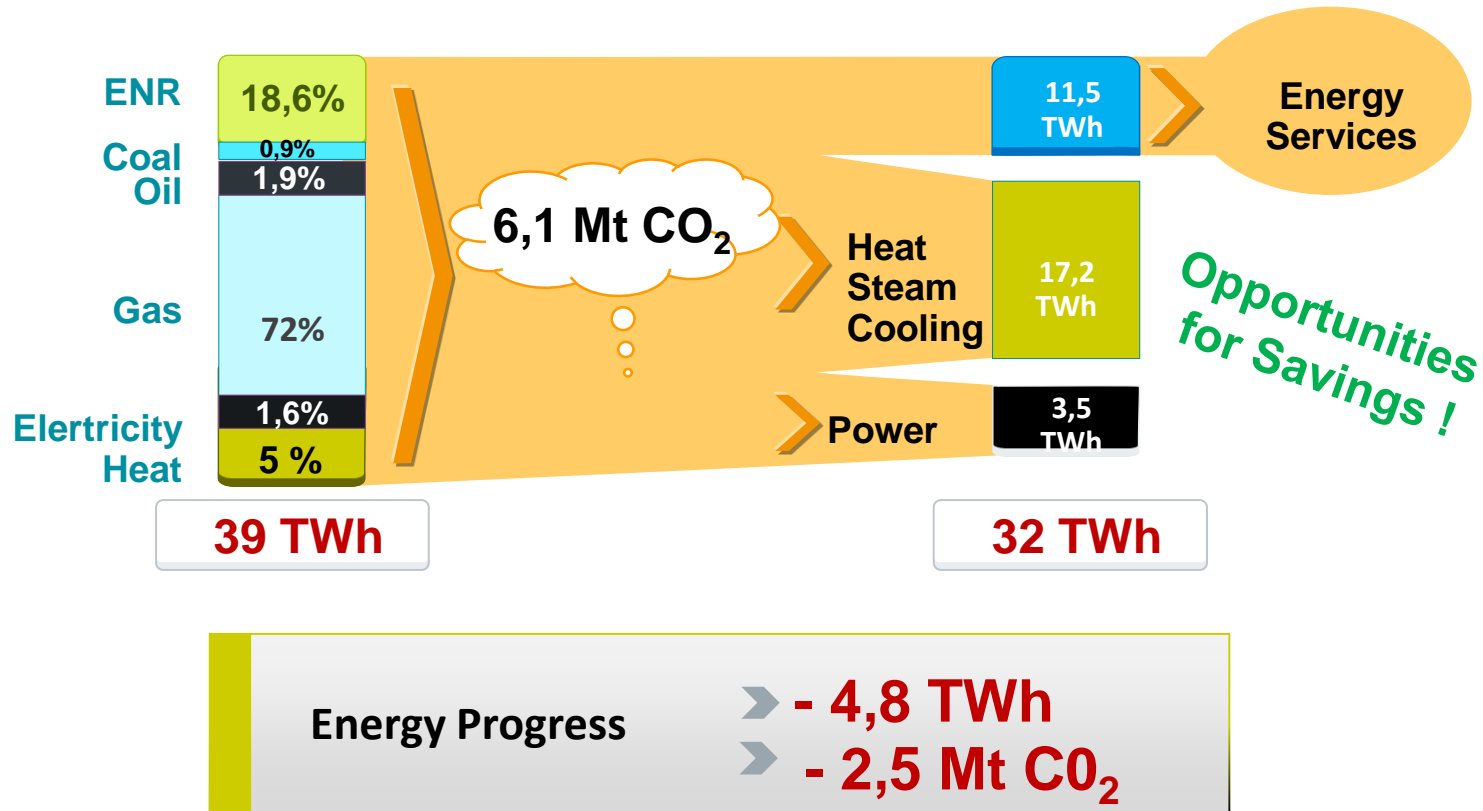


2 300 industrial sites



14 400 Facilities
for education,
culture, leisure

Overview of an Energy Balance



Energy efficiency for buildings and industrial sites

- **Reducing Energy Consumption by:**
 - Systematic analysis *of advanced* **energy performance indicators**
 - Fast and standardized roll out *of remote* **controlling technologies**
 - Management of consumption *by implementing* **reduction actions**
- **Promoting the Value of Energy Efficiency:**
 - Centralization of in-house expertise and reporting of our accomplishments
 - Creation of “showrooms” for our customers: Business Development
 - Operational governance (new management approach)

Building Energy Services (BES)

- *Remote monitoring* service
- *Analyze* building/operational data
- *Take Action* to improve energy performance
- *Provide support* with technicians
- *Communicate* value of energy savings with reports



Our Business Challenges

- Vast (and growing) amounts of real time data from various sources...
- How to transform available **data** into ***actionable* information**?
- How to apply and cultivate our **internal expertise** to realize the benefits
- How to be flexible and **adapt to future changes**
(when confronted to constant technological changes/diversity “in the field”)

Solution

OSIsoft PI System was selected as *Real-Time Data Infrastructure*

- We can centralize all real time data from our many sites into a single environment
- We can implement our own data analysis algorithms
- We can structure the data in context according to our customer sites and needs
- We can build reports to show results



Architecture Overview



RTU on site



Production
(SCADA)

Communication (ADSL, GPRS, 3G...)



Remote
hypervision



2014 :
120 k measures
100 k alarms
100 k controls
= 6 M events/day

CRT

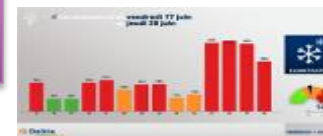


The PI System



2013 : 1k tags
2014 : 200k tags
2016 : 400 k tags

MOS
(reporting)



Report generator



MOS (web)



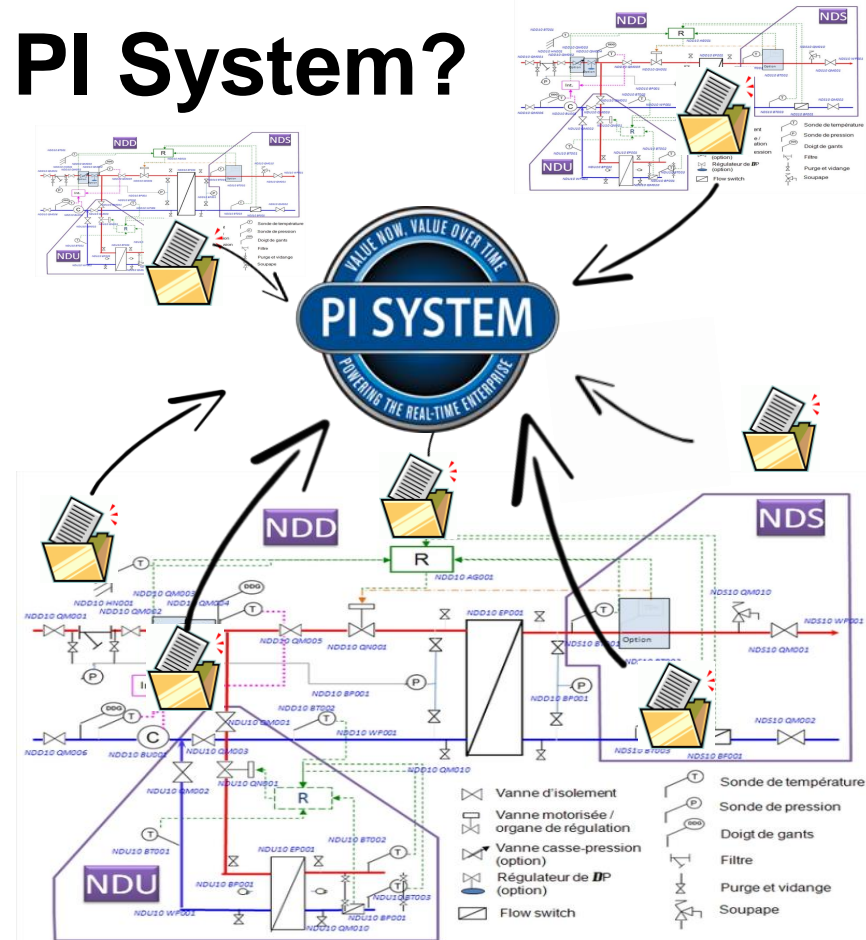
DEL
(Slide show)



Information Broadcast

How is it done with the PI System?

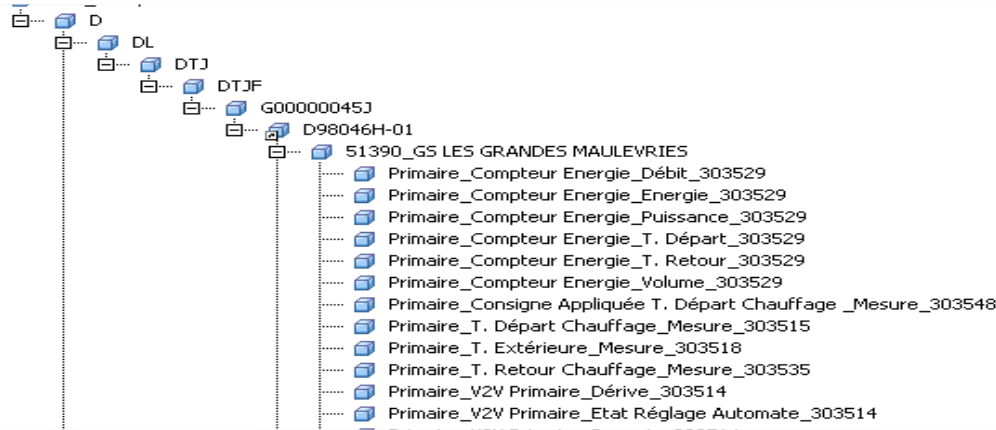
- PI Interfaces for data acquisition:
 - **PI Interface for Universal File and Stream Loading** in our production system
 - **PI to PI Interface** to synchronize data between our integration and production systems
- Data Archiving:
 - **PI Data Archive** with 200 000 tags
 - PI Tag naming convention adheres to RDS-PP standards



How is it done with the PI System ?

- **PI Asset Framework (PI AF) Structure:**

- To provide contextual information
 - Elements are linked to specific templates
 - We dissociate trees for loading sources and trees for visualization.
- These are created dynamically depending on the customer organization.
The same trees are used for our Dalkia website.



- **Calculations and Analysis:**

PI Asset Based Analytics is used to aggregate data on *hourly, daily, monthly, yearly basis*

- Sum of Consumptions
- Average of Temperatures
- ...

In progress :

- Calculations of referenced consumption by using historical data behavior
(PI Advanced Calculating Engine)
- Set a Validation Estimation and Editing module
(PI ACE / PI Asset Based Analytics)

How is it done with the PI System?

- *Reporting and visualization*
 - SSRS Reports : PI OLEDB Enterprise to extract data from the PI System
 - PI DataLink is used for specific reports by our key users
 - Alarms and notifications : Evaluation of PI Notifications in progress

Samples of Internal Reports

Daily dashboard
Multi criteria analysis
Mail broadcast to technician

MOS119 - Bulletin d'alerte Sous-stations Réseaux de chaleur - CHAUFFAGE

Installations	Taux de remontées données	T° Ext.	T° arrivée Prim.	T° retour Prim.	Position vanne % V2V	Consigne T° Dép. Sec.	T° dép. Sec.	T° retour Sec.	Chaleur livrée
	%	°C	°C	°C	%	°C	°C	°C	kWh

C. Faible enlèvement de température (impact sur T retour)

CCI BATIMENT A (Primaire)	100,0%	15,3	58,1	45,4	3,9	47,5	37,7	30,7	538
FARMEA (SKID FARMEA)	100,0%	16,9	101,5	86,5	14,8	91,7	92,1	83,9	119 800
CCI BATIMENT 1999 (Primaire)	100,0%	15,4	56,9	38,8	8,2	59,4	42,2	35,3	3 730

Delta T primaire
°C
12,7
15,0
18,1

D. Température de consigne non tenue ou dépassée

CLINIQUE DE L'ANJOU (Primaire)	100,0%	16,4	95,9	69,3	26,7	85,0	85,0	65,1	52 200
FARMEA (SKID FARMEA)	100,0%	16,9	101,5	86,5	14,8	91,7	92,1	83,9	119 800
UCO (BAZIN) (Primaire)	100,0%	13,9	90,5	51,9	9,4	62,1	63,9	43,6	33 100

T° Cons. - T° Dép. Sec.	Indicateur écart / T. consigne sec.	T° Cons - T° Arrivée Prim.
°C	kWh.°C	°C
0,1	2 696,6	-10,9
-0,5	-48 739,8	-9,8
-1,8	-2 676,5	-28,3

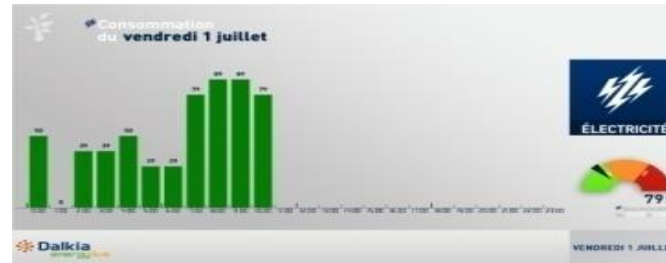
E. Rapport Puissance Max Appelée / Puissance Souscrite

PISCINE JEAN BOUIN (Primaire)
RESIDENCE BON REPOS (Primaire)
FARMEA (SKID FARMEA)
CCI BATIMENT A (Primaire)

Puissance maximale appelée mesurée	Date Puissance maximale appelée mesurée	Puissance Souscrite	P. Max Appelée / P. Souscrite
kW		kW	kW
1 166,0	10/04/2014 06:30		1 166,0
759,1	07/04/2014 07:30		759,1
1,1	05/04/2014 19:00		1,1
50,8	07/04/2014 04:30		50,8

ESA (Primaire)	100,0%	14,4	88,5	56,9	21,0	59,5	59,9	56,6	11 940	33,2
----------------	--------	------	------	------	------	------	------	------	--------	------

Reporting to our Customers



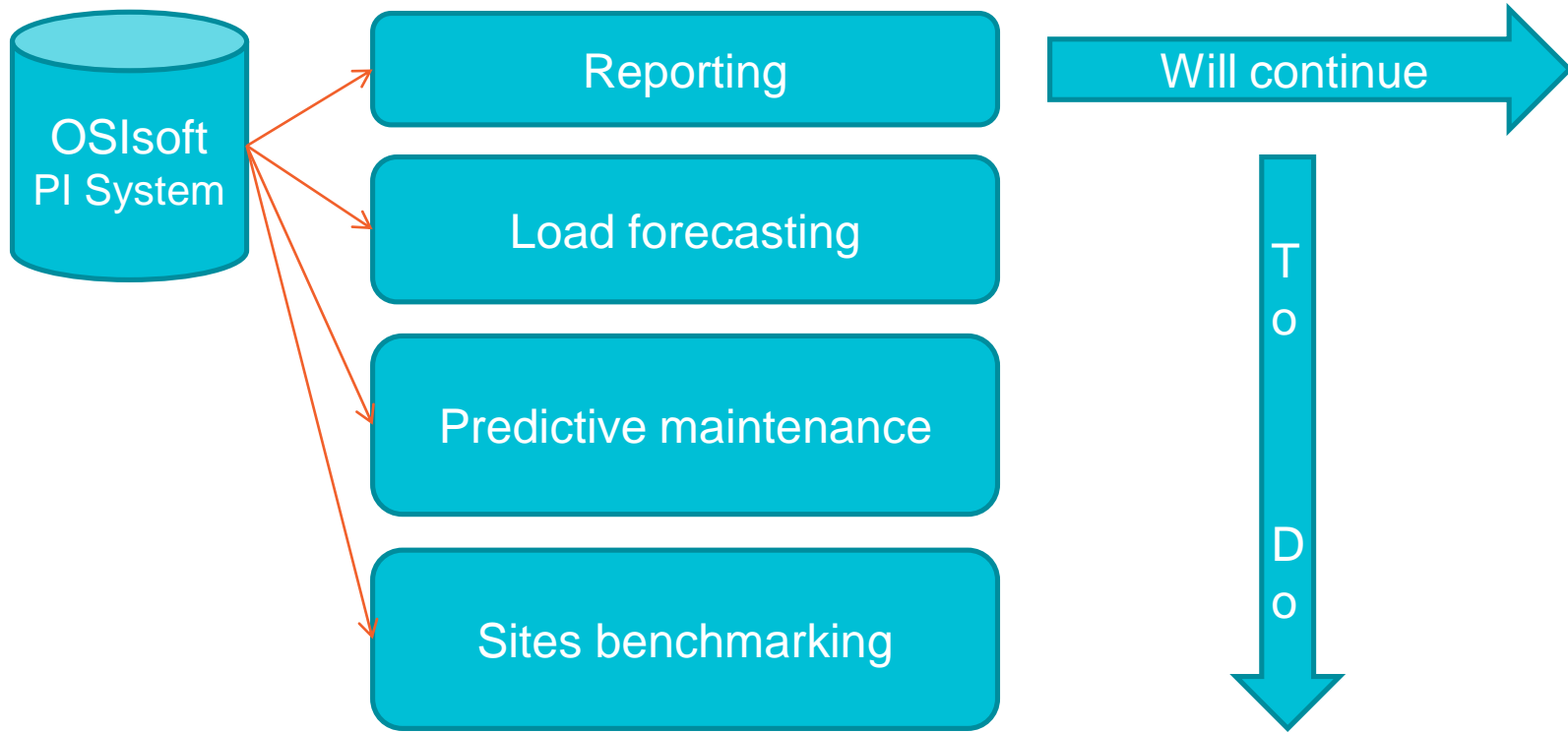
Reporting to our Customers



Project feedback

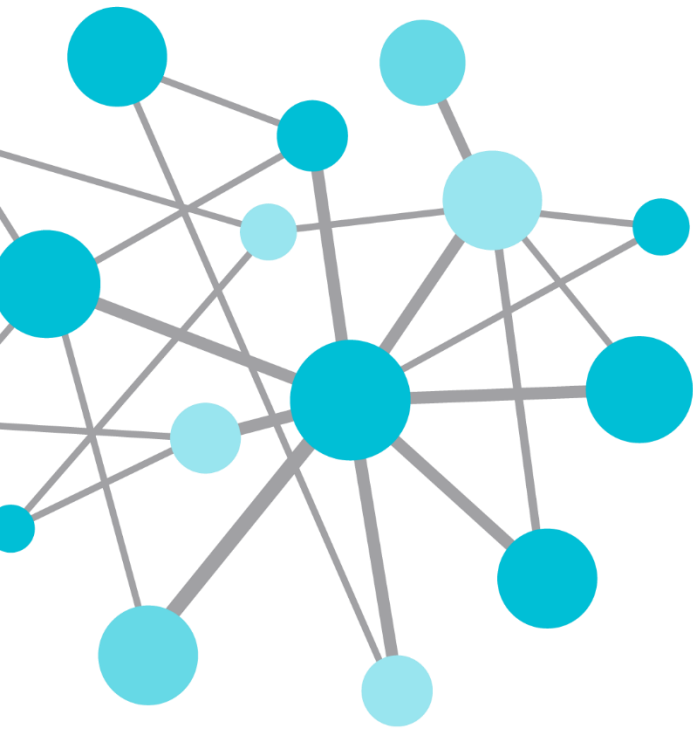
- **Site structuring**
 - RDS-PP was chosen to standardize generation of reports.
 - The diversity of our sites require flexibility in our models and the PI AF Server provides that capability.
- **Complex data analysis and models**
 - Can effectively apply our team's knowledge and expertise
 - Energy consumption profiles can be understood and streamlined
- **Diversity of internal uses and customer base**
 - The flexibility of the PI System answers our multiple analysis needs
- **The project has demonstrated that consolidation, analysis and reporting of high frequency data reveals new opportunities of value from our diverse energy processes.**

It is just the beginning



Philippe Maine

- pmaine@dalkia.com
- Energy Performance Manager
- DALKIA France

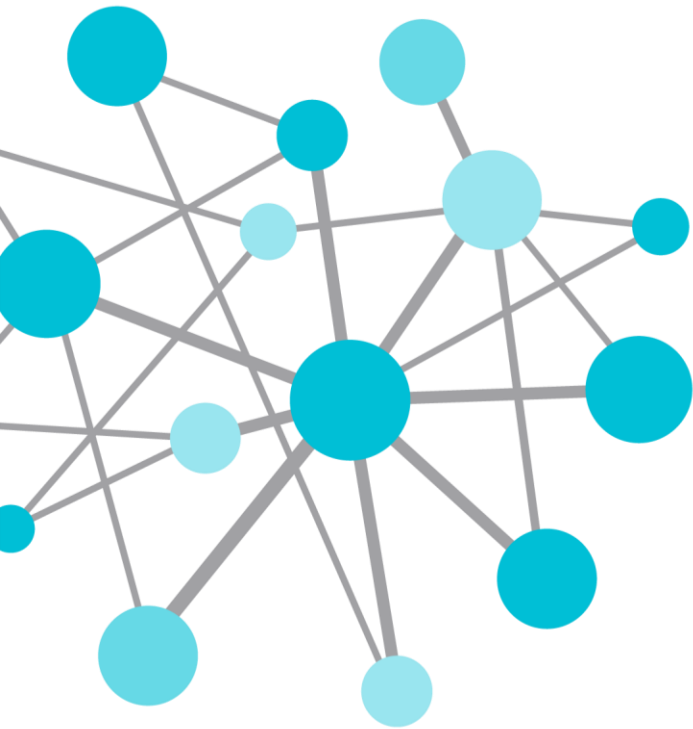


Questions

Please wait for
the **microphone**
before asking
your questions



State your
**name &
company**



THANK
YOU

Brought to you by  **OSI**soft.

Please don't forget to...

Complete the online survey for
this session

eventmobi.com/emeauc14



Share with your friends

#UC2014

