Value Over Time with the PI System Infrastructure

Presented by Emanuele Andrico

Agenda

- About A2A
- Business Challenges and Data Management
- Business Needs
- Power Generation – IT Solutions and Results
- Waste Management – IT Solutions and Results
- Sharing knowledge into the group
- Conclusion

Company Profile

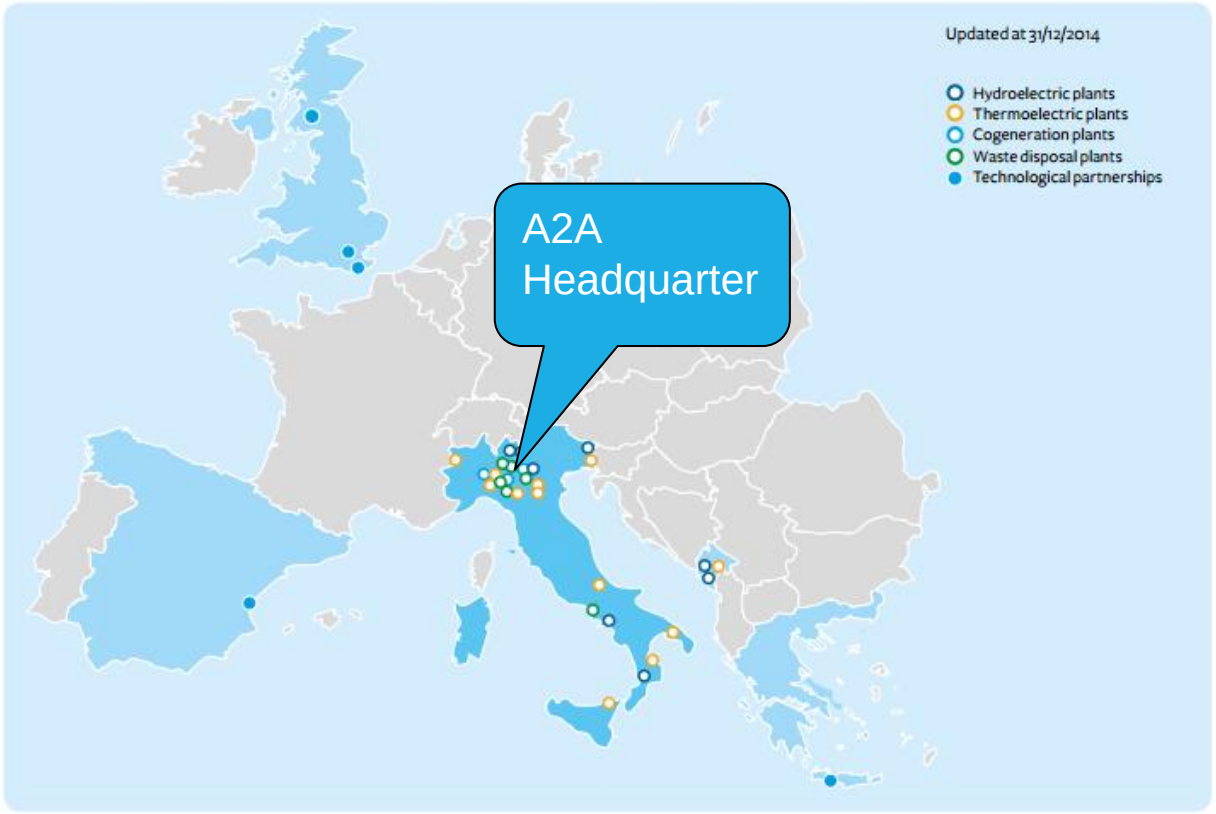
A2A is the largest Italian multi-utility company, a leader in the energy, environment, heat and networks sectors.

A2A is currently:

- the Italian leader in environmental services and district heating
- the second-largest domestic producer of energy, with a product mix geared to renewable sources, from which it obtains 53% of the energy generated
- the second-largest operator in electricity distribution networks
- one of the largest in gas and water cycle networks

A2A and his values

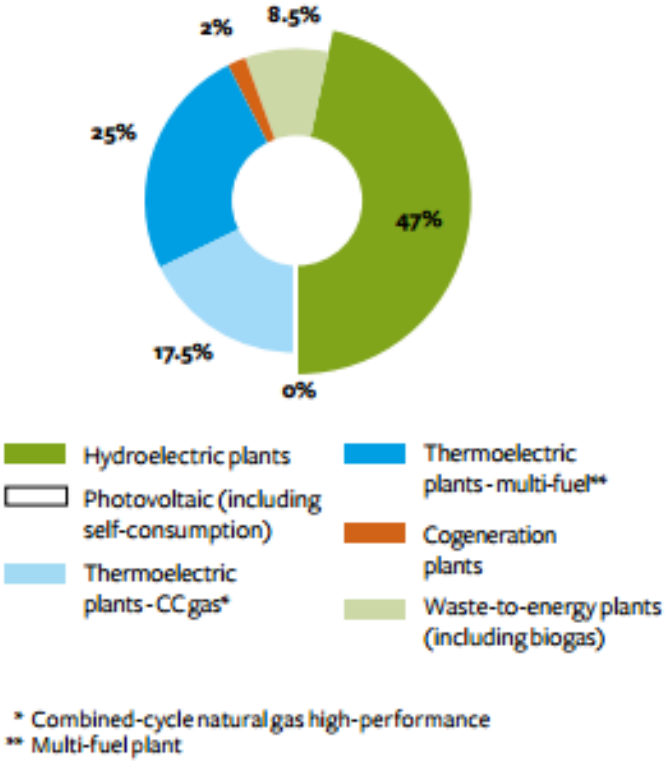
A2A – Market Served

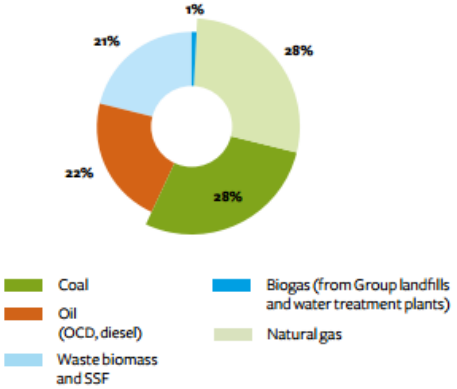


9.8 GW
of installed production capacity

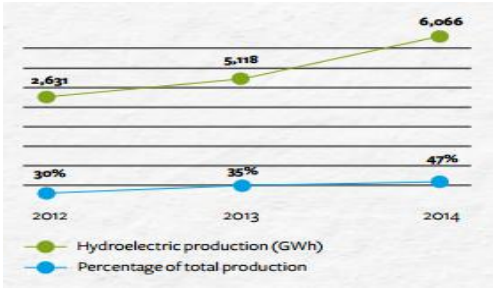
6,066 GWh
hydroelectric energy production of A2A in 2014

A2A Energy Production by type of Plant and Fuel





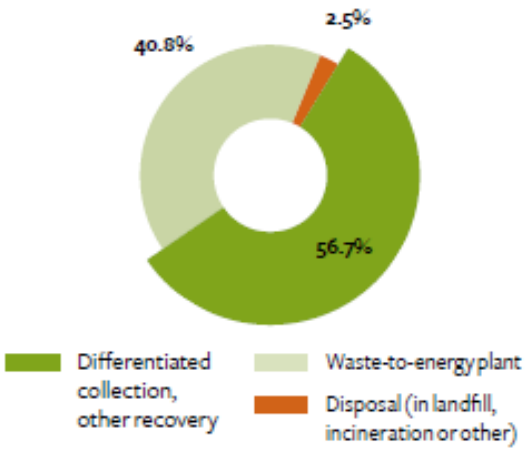
Performance of hydroelectric production



A2A Waste Management

Waste Production → Collection, street sweeping and transport → Treatment → Reintroduction of recycled material on the market

Final destination of municipal waste collected in the provincial



Percentage of differentiated collection in the Municipalities where Group companies operate*

	2012	2013	2014
Bergamo city	53.5%	60.3%	64.3%
Brescia city	38.9%	38.2%	38.3%
Como city	-	-	49.3%
Milan city	36.7%	43.4%	50.4%
Varese city	56.0%	58.9%	60.9%
Province of Bergamo	NA	58.6%	62.9%
Provinces of Brescia and Mantua	NA	53.7%	63.5%
Province of Milan	NA	54.6%	57.1%
Province of Varese	NA	68.7%	70.0%

53%
of thermal energy produced from waste

Why is data management important for A2A?

ENERGY

ENVIRONMENT

HEAT & SERVICES

NETWORKS

DECISION

ICT & OT Infrastructure

(META) DATA

Fast means $$

A2A Business Needs

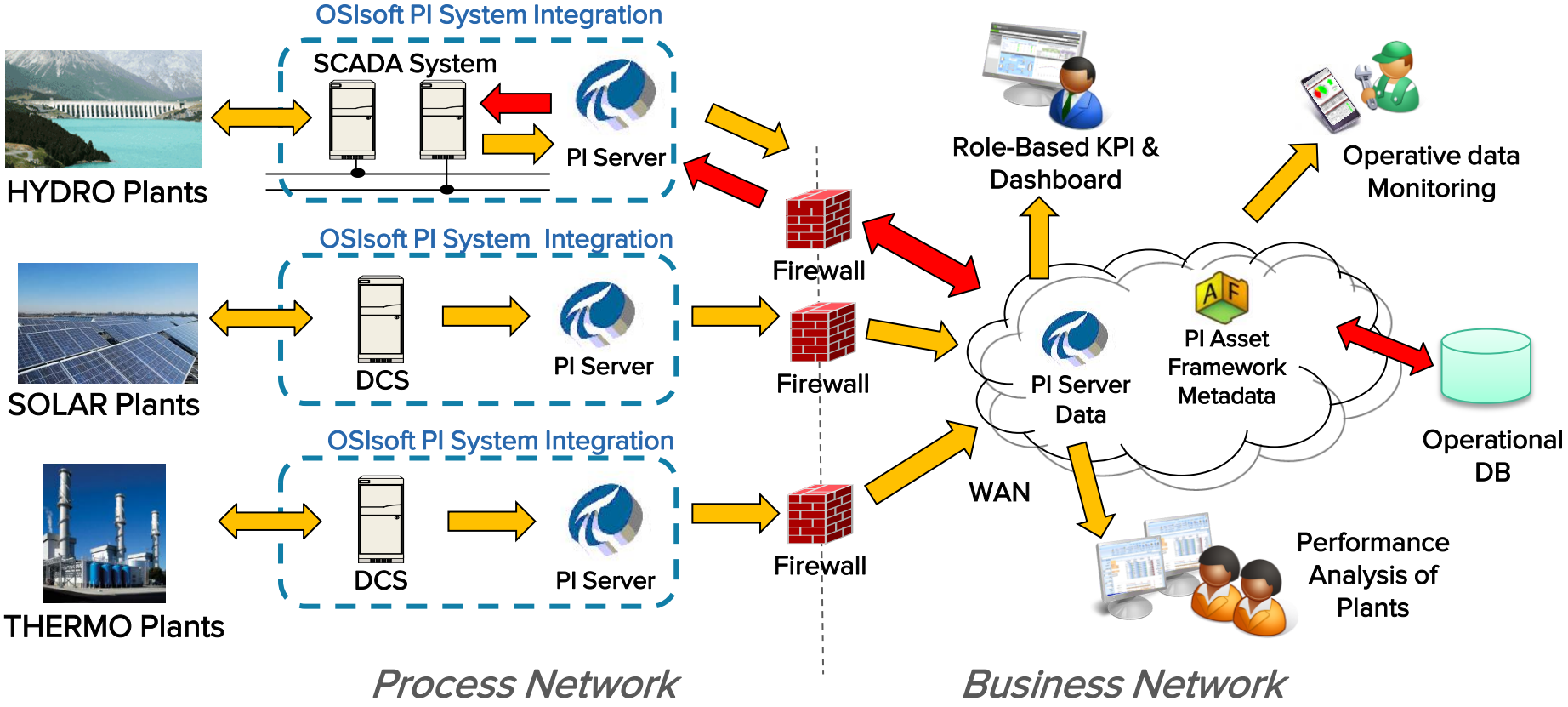
Power Generation

- Reliability and availability
- Increase life equipment
- Avoid plant failure -> Early failure detection
- Flexibility and ramping

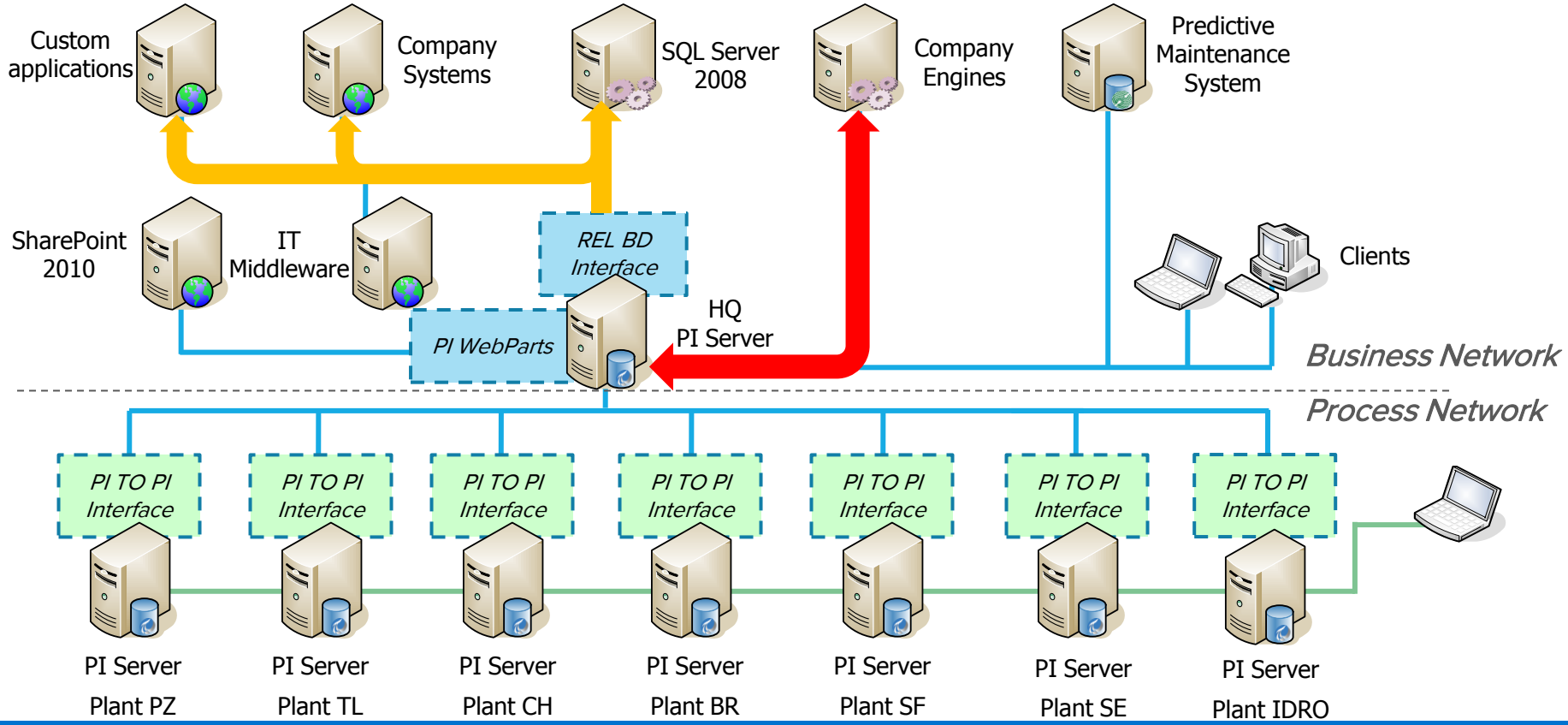
Waste Management

- Regulatory requirements
- Operations performance (multi-site / small units)
- Collect all the data to a Central Headquarter server
- Review of IT standard security to integrate with different solutions and different companies

PI System Infrastructure in Power Generation



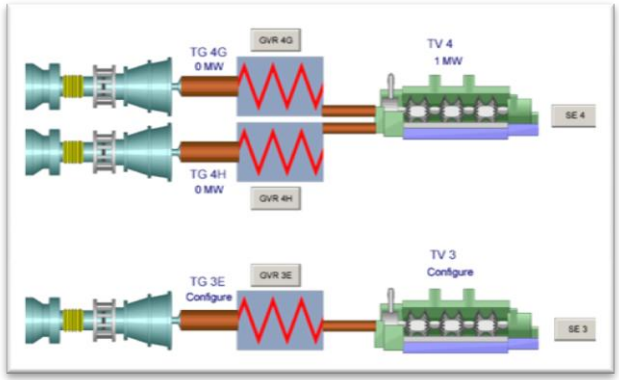
PI System Architecture Details



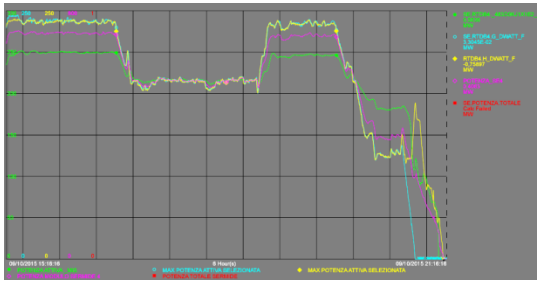
Power Generation – Results

- A single infrastructure collecting data from each a2a power plant that can be connected to operational system in HQ
- Every connection from the plant to headquarter is OSIsoft technology → it delivers real-time data
- For hydro business, with OSIsoft we not only collect data from the plants but also calculate new real-time metadata (with the auxiliary of IT systems), and resend them to OT systems to optimize the monitoring and control processes.
- OSIsoft technology guarantees a secure channel between the IT and the OT networks

Power Generation screenshots



Edipower Sermide CCGT Power Plant Italy

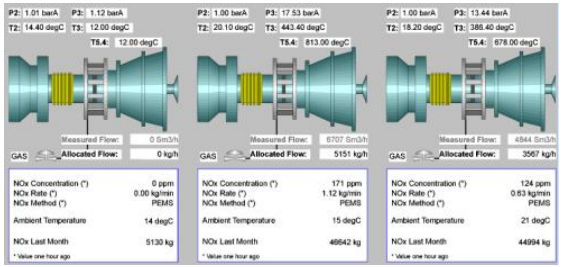


Power generation vs Load plan

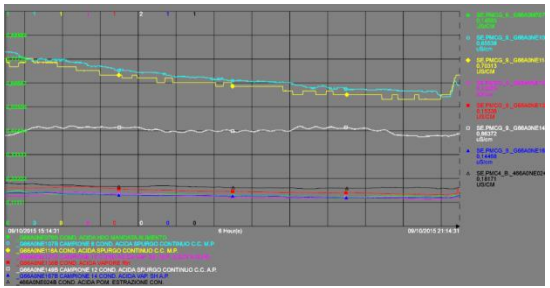
Trading Analysis

Edipower Sermide CCGT Power Plant Italy

Design Capacity 1140 MWe



Technical Monitoring



Chemical Analysis

Technical Analysys

A2A Waste Management Process

Undifferentiated WASTE

CRANE SHREDDER AREA

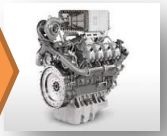
BIODRYING AREA

REFINEMENT AREA

RECYCLING

LANDFILL

BIOGAS



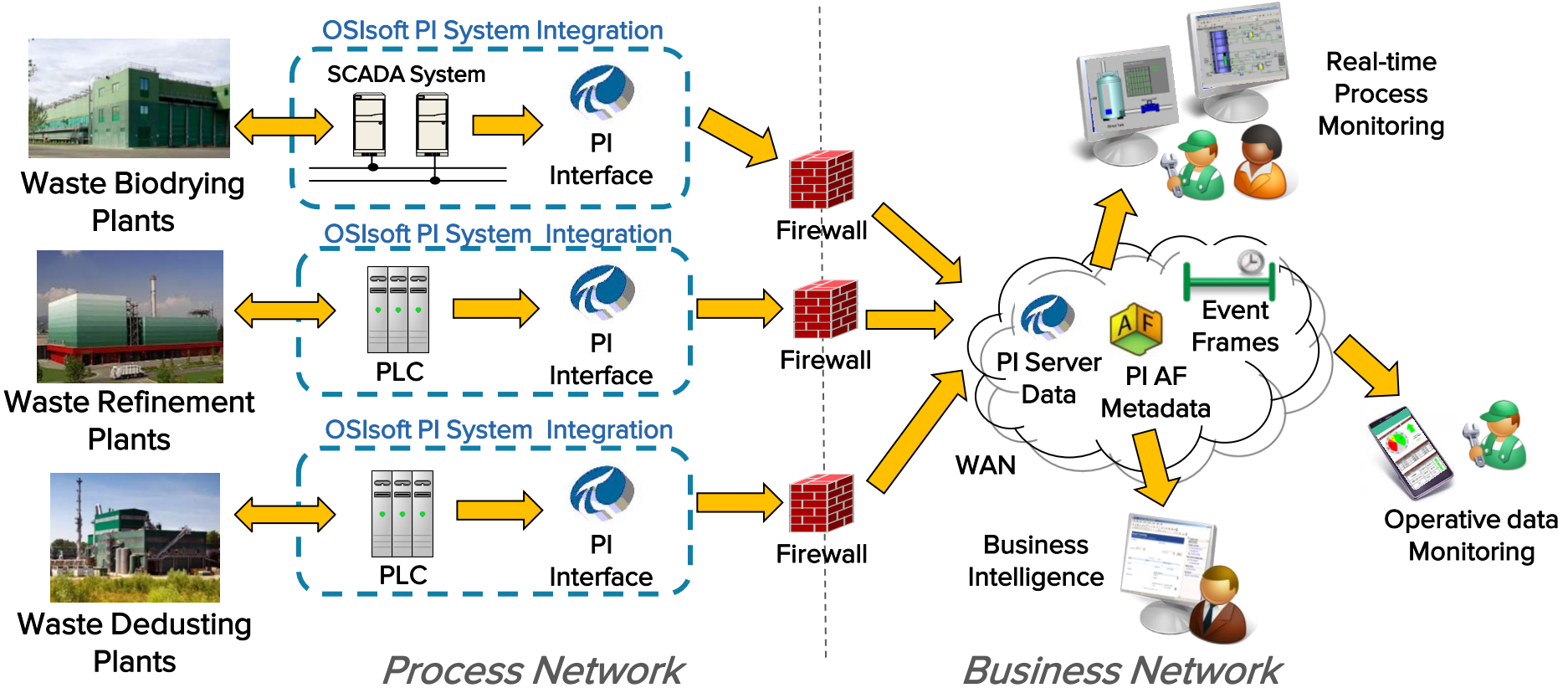
CSS RDF

AIR

BIOFILTER AREA

DEDUSTING AREA

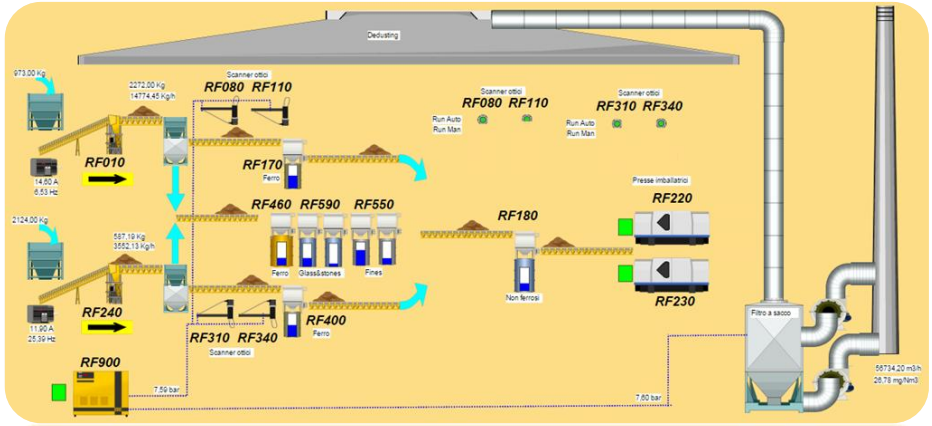
PI Infrastructure in Waste Management

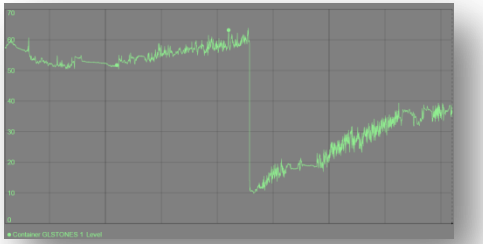


Waste Management – Results

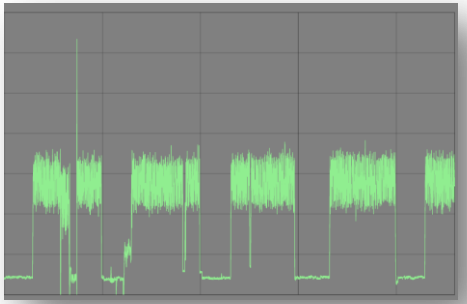
- A standard infrastructure collecting data from different OT systems (SCADA, PLC, machine)
- New paradigm: from «closed» monitoring system (only customizable from the vendor) to «open» monitoring system (fully accessible from the owner)
- With the OSIsoft technology in the future we'll be able to real-time remote monitor and control our plants
- The use of the OSIsoft Event Frames help us collect and detect particular events and failure

Waste Management Screenshots

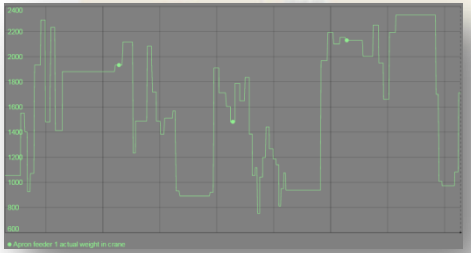




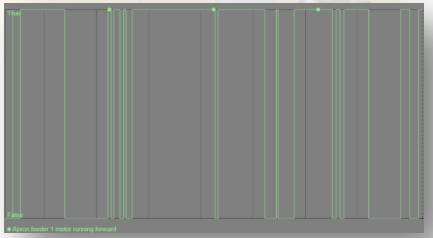
Glass & Stones Level



Chimney flow

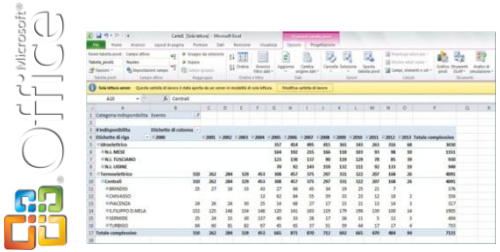


Weights og crane

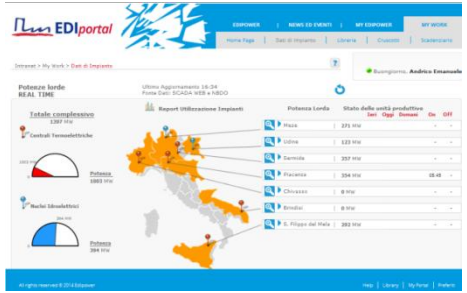


Motor running forward

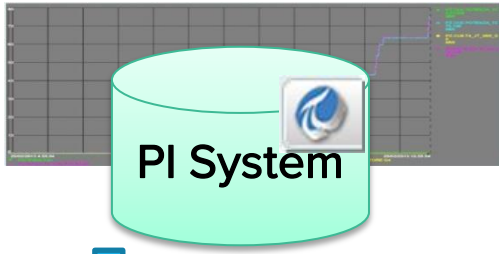
Sharing knowledge into the company to all users

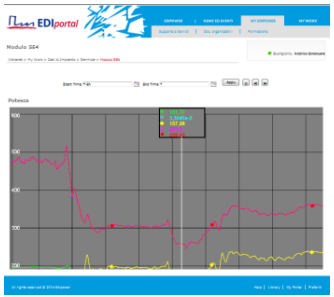


Self Service Reporting

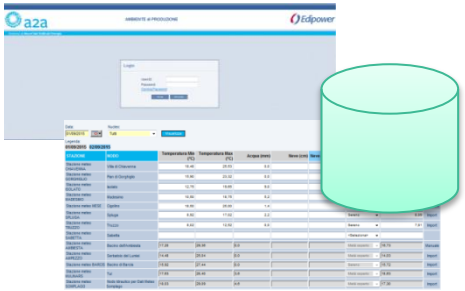


Corporate Reporting





Standard Console



Operative Data Process

Next Steps

- Use OSIsoft technology to analyze future data (Energy Trading Simulation, Future Trend Equipment Analysis, …)
- Increase Performance, Flexibility and Availability of our Power plants with the auxiliary of OSIsoft solutions
- AF and Event Frames capture and find relevant process and business events and the related data in a single database without querying multiple systems

Summary

BUSINESS CHALLENGES

A. Reliability, flexibility and availability of Power Plants

B. Remote monitor and control of our Plants

C. Define a standard IT infrastructure to real-time collect our data that can be used in different sectors (energy, environment, heat and networks)

SOLUTION

A. PI solutions as a Middleware that connect OT systems to IT systems

B. Operational intelligence as approach to data analysis that enables decisions based on the real-time data

C. Innovation as a competitive advantage

RESULTS AND BENEFITS

A. Reduction of maintenance costs of our plants

B. High data Quality and Availability

C. Reduction of time to connect new OT systems without IT costs

D. A revolution in a Company Culture

Contact Information

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Questions

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State your
name & company

Please don't forget to…

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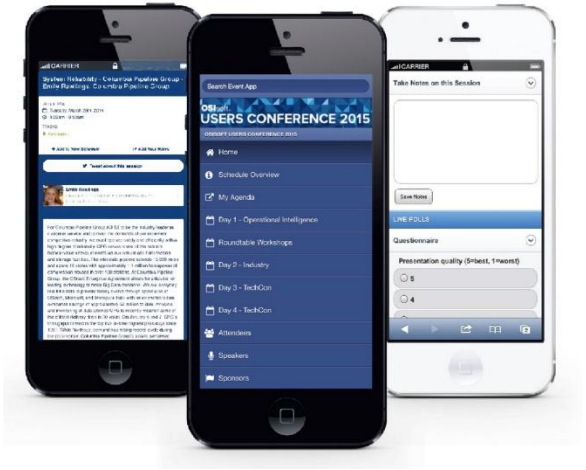

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감사합니다

谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Спасибо

Obrigado