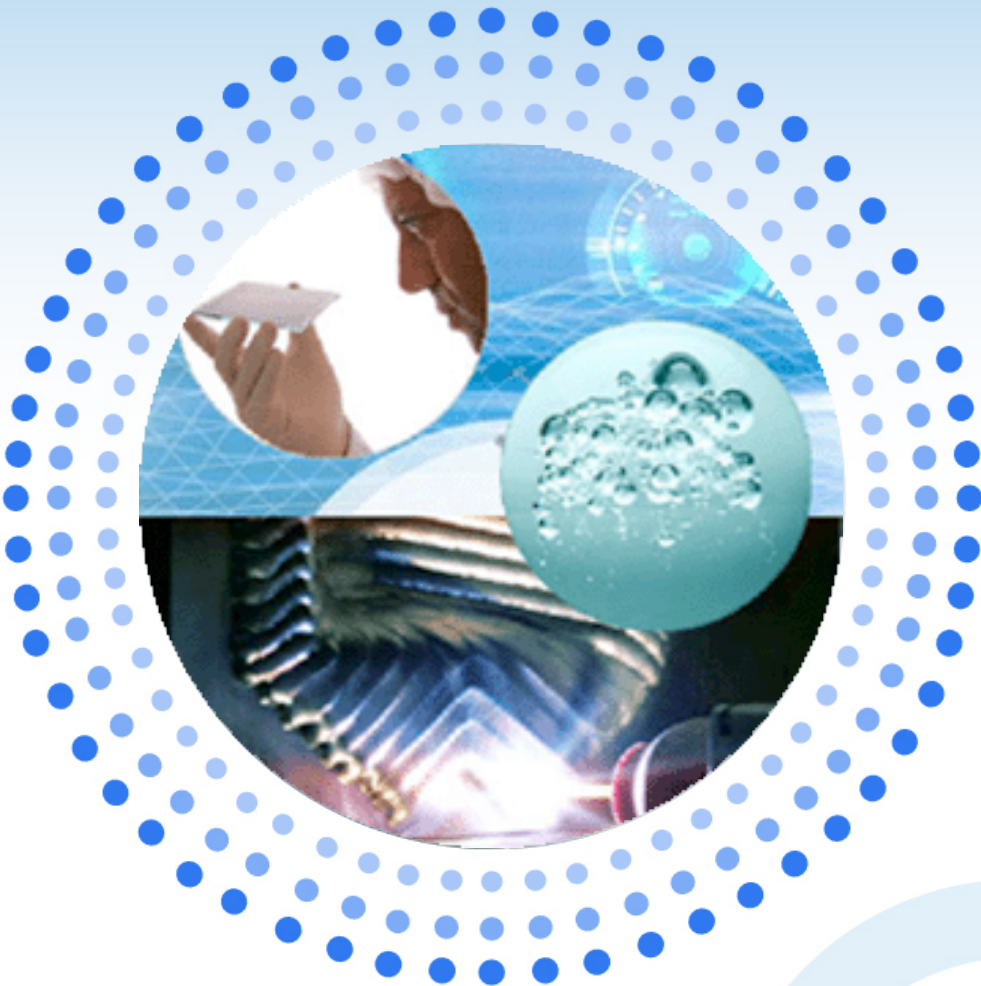


How can IPMVP be « adopted » in a European country where M&V methods are not so widespread ?

Illustration through the
presentation of 2 case-
studies





The Club S2E, an « engine » for EES development in France

- ⊙ Founded november 2005 by 5 French main players in the field of Energy Efficiency Services(Professional Associations)
- ⊙ Patronage of ADEME
- ⊙ Goal : contribute to the market development by customers information, public policies watch, expression of a common French position on EES within international audiences
- ⊙ 3 successive studies :
 - Building a common view on what EES are (with a special stress on energy efficiency improvement verification)
 - M&V methods benchmarking study, on an international scale (subject of a presentation at eceee 2007)
 - Common reflexion on IPMVP adoption both by French service players and by customers => edition of a guide (available on Club S2E website) AND case-studies to illustrate



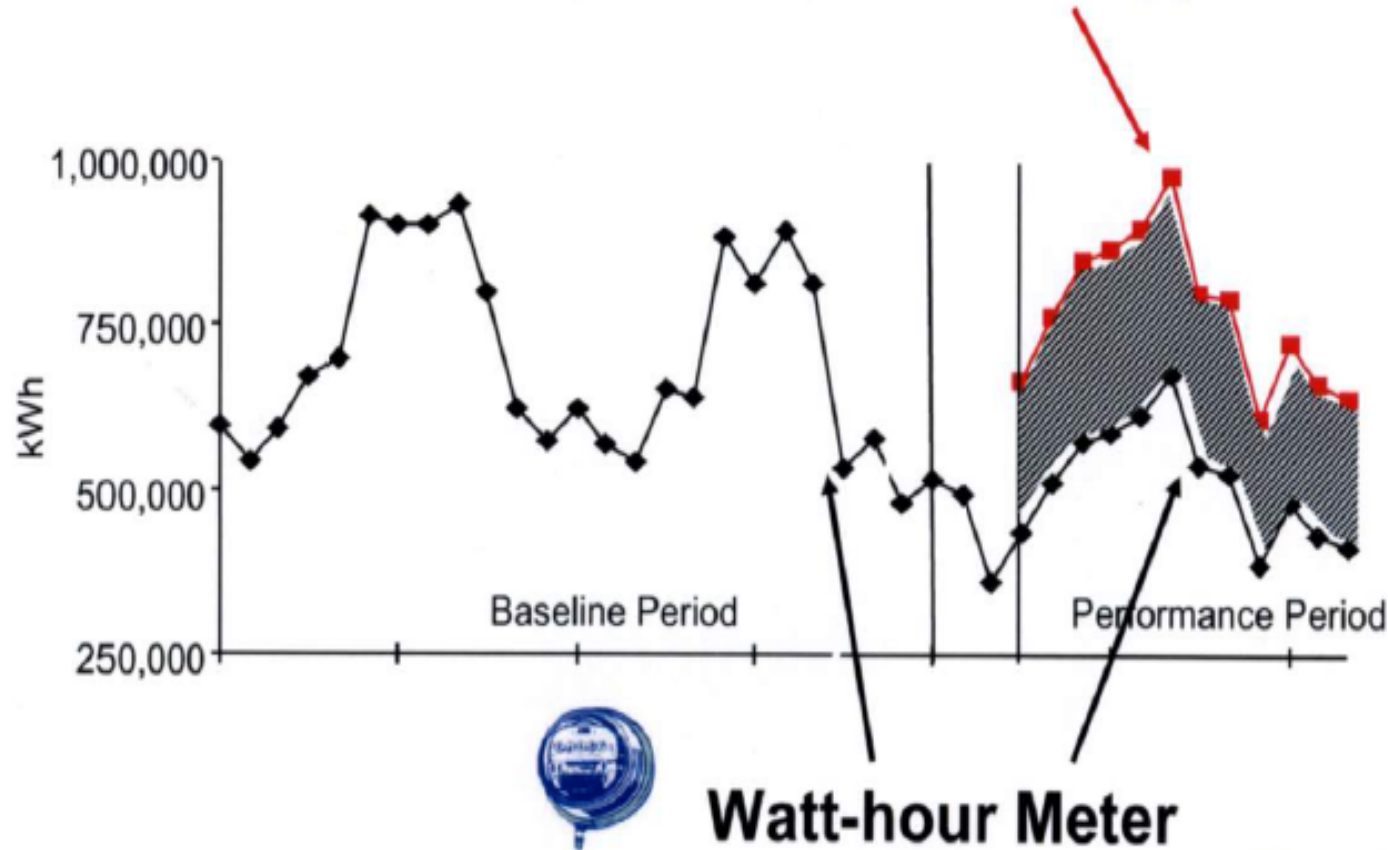
Quick overview of IPMVP : a free interpretation by the authors...

- ⦿ “Measurement & Verification (M&V) is the process of using measurements to reliably determine actual saving created within an individual facility by an energy management program.”
- ⦿ Supported by a NGO called Efficiency Valuation Organization
- ⦿ Main subjects dealt with by IPMVP :
 - ⦿ definition of a **framework** and **terms** used in determining ‘savings’ after implementation of a project.
 - ⦿ Specification of the topics to be addressed in an **M&V Plan** for a specific project.
 - ⦿ **flexibility** in M&V Plans creation, although adherence to key-principles is required : **accuracy, completeness, conservativeness, consistency, relevance and transparency.**



Watt-hour Meters (Wh) & What Would Have Happened (WWHH) Meters

What Would Have Happened Meter



Savings = Base-year energy use – Post-retrofit energy use +/- Adjustments



EDF participation in EES and M&V

● Club S2E :

- as a representative of UFE, EDF actively contributes to the Club's various studies and fully supports the adoption of IPMVP as a reference.
- EDF has contributed to the Guide on M&V and has produced 2 case-studies from its own experience

● Standardization works :

- under the mandate of AFNOR, EDF has committed in CEN/CENELEC Task-Force 189 Energy Management, notably in Project Team Energy Efficiency Services.
- Supportive of the idea that M&V should be mandatory to call a service EES.

● EVO sponsor from this year on...



What is a M&V Plan ?

- ⦿ A piece of the contract – a confidence-raising tool, a facilitating method in the long-term relationship to the customer
- ⦿ 13 points to fulfill :

1. Project intent
2. Selected IPMVP Option and Measurement Boundary
3. Baseline : period, energy, conditions
4. Reporting period
5. Basis for adjustment
6. Analysis procedure
7. Energy prices

8. Meter specification
9. Monitoring responsibilities
10. Expected accuracy
11. Budget
12. Report format
13. Quality assurance





Case-study 1 : baseload reduction



600 kW during week-ends

Target : 400 kW

No adjustment needed :
small influence of weather,
no forecasted perimeter
evolution

Time of use : fixed, not the
responsability of the
contractor

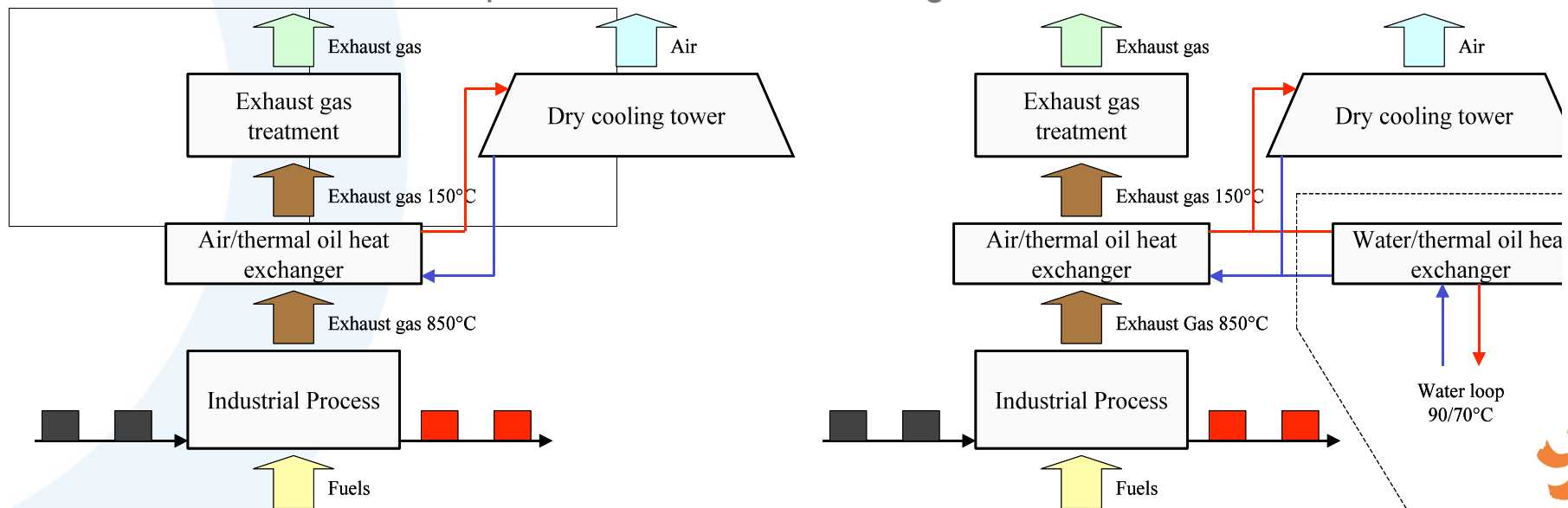
Budget for M&V : 9 k€ for
3-year follow-up

Estimated 215 k€ savings
=> ratio cost/saving 4%



Case study 2 : heat recovery on a process line

- Metals industry with hot exhaust gas from the process
- Replacement of an air/thermal oil heat exchanger with cooling towers by an oil/water exchanger – valorization of hot water for space heating (9 GWh/yr gas) and DHW (237 MWh/yr)
- Elaboration of a model relating weather to gas consumption (various setpoints, offices vs workshops) on the basis of former data from the supervision
- M&V cost 52 k€, compared to 3.5 million € savings => ratio 1.5%





Learnings, pending questions... and prospects

- ◎ Use of IPMVP reveals difficult points to tackle :
 - To create adequate models, with simple mathematical tools although reflecting correctly energy consumption with adjustment,
 - To evaluate the error committed in the process of energy saving estimation
 - To make sure of the permanency of the site contours when a global option is used
- ◎ These obstacles can be surmounted (with a little R&D activity !).
- ◎ Prospects regarding EDF are positive :
 - Trainings in IPMVP methods (target : certification)
 - Further investigation in Option D
 - Enhanced use of our aM&T software tools as M&V vehicles