



POWER
Low Carbon Economies



INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS



European Union
European Regional Development Fund

ANNEX 2
Best practice Identified and transferred
Best Practice n. 6

Section	Indication of content
1 Title of the best practice	When measuring actual consumption of equipment (using electrical analysers, flow meters etc.), a significant sample period should be allowed in order to form an accurate impression of the building's normal performance.
2 Precise theme/issue tackled by the practice	The practice discusses the duration of the sampling period and the sampling frequency when measuring actual consumption of equipment. Evaluation methods differ: the acquisition of electric loads requires a higher sampling frequency and a shorter time duration; thermal flow meter data requires lower frequency sampling over longer time periods.
3 Objectives of the best practice	The objective is to suggest a suitable sampling time and frequency for the two types of consumption data for energy auditors requiring more detailed information on energy flows.
4 Location	<ul style="list-style-type: none"> - Italy - Province of Modena - All project partner regions
5 Detailed description of the best practice	<p>The installation of flow meters on the main system lines departing from a boiler house is useful to separate the thermal flows (for example a gym from the classrooms in a school, hot water from heating) and to measure the generation efficiency of the generation system before and after a boiler substitution.</p> <p>The flow meter sampling duration for obtaining separate flows is typically a full thermal season, and the sampling frequency may be once per month.</p> <p>If the thermal efficiency of the generator is investigated, data can be sampled once a week and the duration can be 6 or 8 weeks of different climatic condition, to verify the amount of variations. In special cases the generation efficiency can be plotted along the whole thermal season period.</p>

	<p>A much more interesting case is the “Energy Signature” method, described in the new standard EN 15603, Annex B1. If flow meter data are used, the method provides an assessment of the building’s global demand per unit temperature difference (expressed in W/K). If on the contrary fuel data are used, and therefore system performance is included, a check of the required nominal boiler size can be obtained, or the impact of a substitution of the generator. The recommended sampling time is one week and the total duration may be much less than a full thermal season, provided that periods with far different external temperatures are sampled.</p> <p>In the case of acquiring electric consumption data (using additional electric meters or data from the smart meters installed now by utility companies) the sampling interval may be 15 minutes, for public buildings, and the duration of the acquisition time should be at least some months, corresponding to a change of season, in order to separate the summer Air Conditioning load from the basic load due to artificial lighting and equipment.</p>
<p>6 Evaluation</p>	<p>While the purpose of the analysis of thermal flows was clearly indicated before, the analysis of the electric data requires further clarification.</p> <p>This analysis allows the detection of several features of the normal building performance, plotting the electric load vs. time, for example:</p> <ol style="list-style-type: none"> 1. The constant baseline of electric load can easily be detected, looking at the load during night time or in week-ends. 2. The switching off of the air handling units (AHU) may be checked during holiday time and week-ends. 3. The unnecessary consumption of equipment at night can be assessed. 4. The correct control of artificial light may be checked, during and outside working hours, with and without daylight. 5. Unexpected electric loads can be easily detected.
<p>7 Lessons learnt from the best practice</p>	<p>This type of analysis allows the assessor to obtain interesting features concerning the building performance, but a significant time duration is necessary to gain a satisfactory result. This may go from a few weeks for an energy signature, to several months or a full year for more detailed analysis.</p>

8 Contact information	<ul style="list-style-type: none"> - Marco Chiozzi (mchiozzi@aess-modena.it) - Website: www.environmentcentre.com/GENERATION/BestPractice
9 Other possible interesting information	Examples of electric data analysis are reported in Best Practice number 5.
10. Best practice transferred	The energy agency AESS is transferring the best practice to the Municipalities where it cooperates, and to a wider audience via the project dissemination and capacity building events. The best practice is also published on the GENERATION website.