



Annex 36 Newsletter

Improving the Learning & Teaching Environment

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He is a teacher-researcher at the LASH (Habitat Science Laboratory), one laboratory of the ENTPE, and one of the units of the Construction Civil Engineering Department, Research Unit affiliated with the CNRS (D1652). In this group, he participates in research and development projects within French and International programs.

His research experiences are in the fields of energy performance and indoor climate in buildings, environmental quality in sustainable building, prospective methods and decision making in urban and civil engineering.



Gérard Guarracino

Gérard Guarracino is the director of the LASH (Habitat Science Laboratory), one laboratory of the ENTPE, and one of the units of the Construction Civil Engineering Department, Research Unit affiliated with the CNRS (D1652).

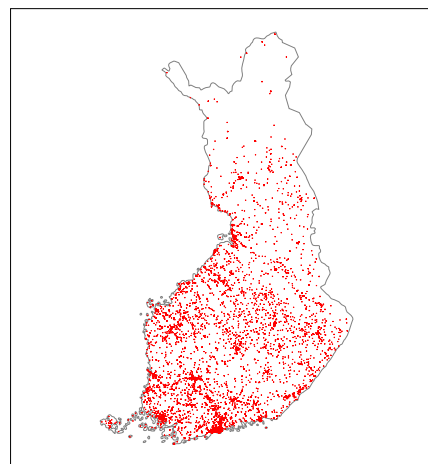
He holds a Ph.D. in civil engineering from the INSA - Lyon Scientific and Technical University and he works on acoustics and energy building.

Laboratory is involved in European programs (JOULE, SAVE, ALTENER, ENERGY) and in IEA Task 21 and Annex 21 "Daylight in buildings", in IEA Annex 35 "Hybrid Ventilation in New and Retrofitted Office Buildings", and in IEA Annex 36 "Retrofitting of Educational Buildings".

Country Profile

FINLAND

In Finland there are about 5000 school buildings located all over the 1300 kms long country. In the figure 1. central points of each school are plotted on the map based on the co-ordinates (longitude/latitude) in the national building register. Major part of schools are owned and run by municipalities, where school buildings account for a significant share of the total energy and water consumption of public buildings. Thus school buildings play an important role in the overall development of energy efficiency in municipal buildings.



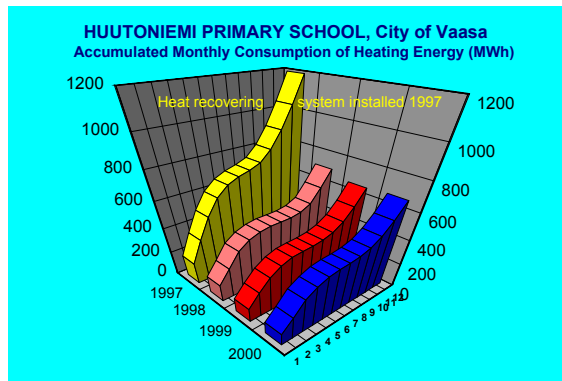
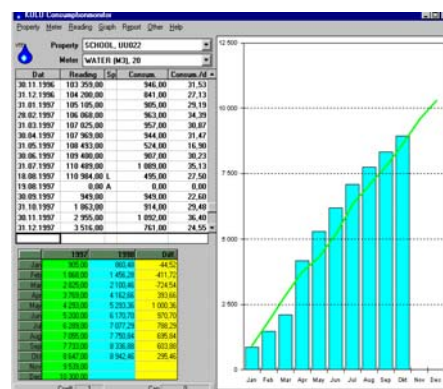
Besides sound planning and implementation of technical retrofitting measures also the operation and maintenance phase has very important influence on the energy use and efficiency. This fact is often undervalued and forgotten like the role of the users of building too. Because of their function schools have a very special role in the promotion of energy efficiency. When aiming at energy savings and sustainable development in general teachers and pupils and their values and knowledge are in key position especially in longer term. That's why one part of Annex activities in Finland will focus on the simple tools and practices, which could be used not only by the technical people responsible for retrofitting, operation and maintenance of school buildings but also

in the daily educational activities of schools. In order to support teachers in this work an **End Users' Energy Guidebook for Schools** has been developed in an European collaborative project co-ordinated by Motiva, Finnish Information Centre for Energy Efficiency and Renewable Energy Sources. The guidebook in pdf-format can be downloaded in Motiva's web site (<http://www.motiva.fi/english/index.html>) but it's available via the web site of the Annex too (<http://www.annex36.bizland.com>).

Important prerequisite for any successful energy saving action is the reliable knowledge about realised energy usage. This information is needed in the planning of saving measures as well as when verifying the prospective impacts and savings achieved. Consumption data forms basis also for information dissemination and feedback activities for users, designers, decision makers etc. In order to support the production of this kind of essential information VTT Building and infrastructure is developing tools for energy monitoring, targeting and management. Tools will be used during annex in hundreds of municipalities and educational buildings in Finland.

Support for all the languages of the countries, which are participating in the Annex36 will be added to the standard version of software and it will be utilised in case study monitoring in other annex countries as well.

Some results of this development are described in the following web site (www.vtt.fi/kulu). Based on user friendly software energy consumption data can be collected in schools and the development of energy and



water usage can be controlled and analysed even by pupils. The **Learn-Manage-Act-principle** described in the Guidebook mentioned before can be followed and the school building itself can be utilised as part of environmental etc. education. Later on benchmarking and reporting services will be organised in internet and information on the real effects of implemented retrofitting measures can be produced. Utilising of internet and www in

consumption monitoring and information dissemination will be investigated and tested in practice - hopefully in collaboration with international annex partners as well.

For example in the biggest municipalities of Finland like in the City of Helsinki and City of Espoo monthly energy consumption data of several hundreds of schools will be collected and used in Finnish sub-project. Similar data from all campus areas of Helsinki University and Helsinki University of Technology will be available too.



Comparisons and analyses among Finnish educational buildings can be carried out on the basis of continuously updated meter readings. Big consumers and prodigals (saving potential) can be easily found out. Real impacts of energy saving technologies utilised in retrofittings can be visualised in a new way and information on successful saving measures and best practices can be disseminated effectively.

At the moment major part of meter readings are collected and updated manually or semi-automatic using a portable barcode scanner.

Also Latest ICT will be tested in the collaboration with Finnish high-tech companies like Lonix (www.lonix.com) and Comsel (www.comsel.com) in order to develop new type automated meter reading (AMR) solutions. More information: Jorma Pietiläinen, Senior Research Scientist, VTT Building and Transport (jorma.pietilainen@vtt.fi).

