

Workshop Building EQ – Milan (IT) – 18 December 2008 – Politecnico di Milano
Transcription of the discussion with the auditorium
Hour 17:00 -17:45

Chairman: Mario MOTTA, Livio MAZZARELLA

Résumé:

The discussion occurred at the end of the workshop have been structured in mainly two sections:

- clarification of Building EQ approach, tools and software, calculation models;
- highlighting of constraints and potentialities of Ongoing Commissioning and Building EQ approach

The first section can be generally resumed on better explanation of minimal data set and consequent “low” monitoring of equipments (cost reduction is stressed, permanence of the commissioning is envisaged) and discussion of details of the models and results that can be obtained through EPBD application (differences among EU countries, thermal inertia effect, Simple Hourly Method).

The second section furnished the following outcomes:

- Constraints
 - o Need of formation (technicians, operators) and dissemination (building owners, real estates, building managers) for let understand the advantages and the business opportunities of CC;
 - o Strong need to contractual forms for implementing CC (overtake lack of experience) and to update actual contract forms in order to prize the energy savings (now: more consumption, more money);
 - o Building EQ approach appears poor in higher technology buildings (e.g. hospitals);
 - o Constructor is not interested in CC because the benefits go to the owner/client, market appears ignorant of the added value;
- Potentialities
 - o Building EQ approach, in term of simplicity, payback and cost of application appears interesting and already applicable, but mainly on buildings with limited complexity (e.g. offices, retail, schools) where a full BEMS is not in place;
 - o Energy certification and commissioning stimulate different actions: especially Regione Lombardia wish to create an excellence centre for develop all the approach up to commissioning and Politecnico di Milano administration will insert commissioning requirement in next heat management contract renovation;
 - o Savings of 10-20% and payback less than 3 years appear reasonable to the auditorium.

Full transcription:

MOTTA, Introduction:

The objective of this discussion is to collect and exchange your opinions, receive input from your part in order to understand if tools similar to what Michele Liziero showed when applied to a specific case study or the tools developed in the entire project that have been showed by prof. Mazzarella, can be useful for people that have to manage important real estate or anyway non residential buildings. Beside this if limits of the tools are evident or modifications could be made.

Q: Agenzia Parma Energia, Romano SELVA:

- Considering data acquisition devices, don't you think that measures delivered flow or just the main circuits is too simplified?
- How do you choose the typical office/room where measure internal temperature and relative humidity?
- Why don't you measurement devices less invasive like ultrasonic flowmeter?

A: MAZZARELLA:

- please don't believe on producer data sheets, the continuous commissioning is continuous and measurement devices like ultrasonic flow meter are just temporary
- we develop a minimal dataset, this is the motivation for measuring only the most important circuits
- we want to estimate the performances of the system with the minimum of sensors that are necessary, trying to reduce the cost of the necessary instruments. The focus is to act on existing building equipments, whereas full monitoring of new buildings/plants cost less if foreseen during design. Focus is on obtaining more data indirectly from less measurements. E.g. the DHW consumption is correlated to occupancy, so that if I measure the DHW consumption with a low cost flow meter I can obtain indirectly the occupancy. With indirect measurement combined with direct measurements we can do enough elaborations for identify faults, this is the target.

Q: SIRAM, Sergio LA MURA:

- detail question. In the DIN norms the calculation is performer considering the plant operation on 24h? The values that appears on the certificates are far away from the reality. The hours of operations is very important depending on the building typology

A: MAZZARELLA:

- the Italian legislation impose us to consider 24h for make easier comparing different buildings, whereas the German norms consider 33 different profiles for consider different buildings
- I introduce a different concept: talking about norms, the continuative operation of building is well known, whereas when interruption of the system occurs norms are not clear. Generally only the night attenuation with night set-point is considered whereas the turning off of the system is not well treated
- Our objective is to analyse the trends and the deviations, in order to highlight faults, We try to maintain the system coherent in order to obtain results coherent, the energy certificates have to be considered as just a reference, an indication.

Q: Elyo Italia, Massimo CIVATI:

- In the model that you are developing have you taken into account the thermal inertia? If yes, in which mode the data analysis is performed?

A: MAZZARELLA:

- the model exploit the CEN norms, so that consider the orientation, the solar gains, etc. Considering the dynamic effects, we are not going to simulate the answer of the building, we are going to estimate the energy need. Considering the daily integral the dynamic effect is less important than as it is the equipment design and dimensioning, so that we can take in account the effect in the medium time period with the gains utilization factor eta (that consider overheating or undercooling of the mass). Is that sufficient for the diagnosis analysis? We are investigating.
- We are also applying a dynamic model contained in the EN ISO 13790:2008, e.g. the one capacitance model proposed in the simple hourly method. The focus remains to analyse the trend of the energy needs.
- Is finally possible to calibrate ad hoc the mass parameters with higher detailed calculation tools, and modify the necessary parameters for take into account the capacitance effect with higher detail

Q: Claudio GIURIN, EdilFaenza:

- Practical questions. Is possible to think about a sort of formation for firms the need a know-how in order to transmit to the market this kind of approach, both with norms and with economy, considering the investment that are to do?
- Does the Commissioning had some kind of contract form? This could be helpful both for firms, operators and costumers

A: MAZZARELLA:

- Preamble: our project is a research project partially financed from EC with a limited budget. Beside that there are the call for proposal "Industria 2015" that aim to involve all the stakeholders beside the industry and few regional call for proposal
- The Regione Lombardia wish to create an excellence centre for develop all the approach, so that the formation too. I.e. we would like to create the tools, norms and know-how, with a common sharing with the stakeholders. There is a political interest in this sense.
- Contract forms are under discussion from a lot of time, how to do that? How to insert into the details into a specification? In the AICARR this is discussed from a lot of time, to create a standard, but being only voluntary work it's not easy. Someone have to write a draft in order to allow discussion on that. In the regional objectives there is also the norms and contract forms development.
- The Regione Lombardia has distributed a free software for energy calculation purpose, obtaining good results in term of image and functionality. Probably with the end of Building EQ work on other practical aspects and tools creation will be prosecuted.

A: MOTTA:

- different area of the world (e.g. USA, Japan) already see the Commissioning as a business and they are furnished of all contractual instruments useful for the application. In Europe there are first examples that need to be adapted to the particularities of the European market. In terms of legal impact, definition of performances, etc. There are for sure business opportunities that are not exploited in Italy.

Q: Walter GRATTIERI, CESI ricerca:

- CC in USA versus the one in Europe, do the not technical barriers have been examined?

A: MAZZARELLA:

- Benefits for who buy the building are not understood. In Italy the laws remains unapplied or there is the lack of the applicative decrees. The energy certification not imply any action, just give an information. So that the owner can decide to act, to make a cost-benefit analysis and stimulate the market
- The constructor that realize and sell the building is not the one that obtain the benefits, the certificate can make the owner conscious on other characteristics that he don't know. E.g. in the acoustic sector depreciation of 30-40% of building happens. A lot of building under the new and old regulations don't respect the required performance, constructors want to avoid legal problems.
- The constructor has not interest on CC, whereas the purchaser has not clear idea of the matter. Is therefore necessary to inform him about the benefits in order that this is a requirement to the constructor. The culture has to be improved. The market appear not ready, so that formation and diffusion must be done, in concepts like durability, maintenance, energy performance, etc.

Q: MOTTA to the public:

- the not technical barriers have been listed and discussed, in which position is SIRAM, that make heat management, facing tools as those that have been proposed. Are they interesting? Are they already used? What about the limits and the applicability?

A: SIRAM, Sergio La Mura:

- The methodologies are interesting, they can be useful for us. Some of the steps showed are interesting, whereas sometimes others methodologies that don't need of measurement device
- Apply them on simple buildings, is not the case. If building are quite complicate (e.g. hospital) they appear poor. In case of medium technological buildings, that are not sophisticated, thy are very interesting.
- The proposed expected savings (10-15%) appear reasonable, perhaps in some over estimated. 30% don't appear believable.
- The limit is a contractual form that repay who is going to make savings, now there is not! The heat manager gain more money if they consume more energy, so that is necessary to work on the contractual side, finding form that repay the effort in this sense

A: EdilFaenza, Claudio Giurin:

- this a topic that is very useful for our sector. Now on the existent building often only the boiler is under control, whereas on recent building with BMS everything is under control
- On building where there isn't a good control it's possible to obtain the higher results. The fact to keep under control the equipment permit to obtain the savings showed. We, as heat or building manager, must be very interested

Q: MOTTA to the public:

- are there characteristics that the tools must have?

A: different auditors:

- principal constraint is the cost of implementation, the payback time are reasonable but the unitary cost must be acceptable and low

- the owner/end user must receive a service, lighting or thermal comfort only when user is there and when he need it, so that good control! I like your simplified approach that focus on time scheduling and turning off when is not necessary