

SUMMARY OF THE QUESTION TIME OF SESSION 3

- Mario Costantino (Italy), President of the Session thanks Mike Holmes, reporter for the high quality of his report, as well as for the content as for the presentation. He also asks the audience to put questions to both the reporter and the authors to make the session efficient, fruitful and stimulating.
- Morton Blatt (USA) : based on his experience on simulation of retail stores and super markets, he tells that the results of the simulation and the energy consumption depends deeply on the efficiency of the air conditioning system. His opinion is that with a high efficiency air conditioning system, it is possible to control lower relative humidity and stay at the same time close to the optimum of energy consumption of the whole system. He finally says that in the US 50 to 60 % of the energy consumption of a super market is used for refrigeration.
- Mathieu Orphelin (France) tells that in France, 40 % of the energy consumption in the super market is used for refrigeration and 25 % is used for air conditioning.
- Mike Holmes asks the authors what is their opinion about the accuracy of the monitoring of the system by way of building energy management systems (BEMS).
- Jean Pascal Bourdouxhe (Belgium) tells that his own experience on commissioning of installations with the help of simulation is that it is difficult to rely on BEMS data without calibrating the sensors and adding other sensor to have sufficient information.
- Mike Holmes wonders if the installation were first checked and commissioned by the consulting engineer.
- Jean-Pascal Bourdouxhe supposes so but tells that the sensors can be damaged during the operating phase and that the plant operator has to recalibrate them regularly to be sure that the installation is working properly.
- Mario Costantino says, on the basis of the previous discussion, that the need of "bridges" between the field engineer and research engineers is very strong as Richard Hayter, past President of Ashrae told before. It is in fact very difficult for a design engineers to use the papers written by research engineers and to apply their results in their every day activity. Vice-versa it is almost impossible for a research engineer to get sufficient information from a design engineer to perform a simulation because of lack of time and scientific culture to do so. So the question is : is it possible to fill this gap between research and design engineers?

- Dolf Van Paasen (The Netherlands) : the design engineers should learn to put the right questions to the researchers.
Both parties have also to communicate because in most of the cases this communication happens when the simulation is completed. At this time, it is too late to establish that the results of the simulation and not the answer to the right question.
- Mike Holmes agrees with that point of view : the design engineer has to be sure the research engineer understands his questions on the right way.
So, communication is very important.
- An engineer of ISSO, the Netherlands, tells that his organisation as well as the french organisation Costic can fill the gap between design and research engineers.
- Andréi Livtchak (Finland) : a good solution to fill the gap for consulting engineer practices is to have research engineer in their organisation. That is the reason why many consulting engineer practices develop their own simulation programs.
- An engineer from Egypt finds that the best way is to create contacts between manufacturers and researchers to be sure that the equipment put on the market can be properly simulated.
- Yvan Khoo (UK) finds that the data monitored by the BEMS is often not sufficient to perform a good modelling of equipment.
Only the big building with sophisticated BEMS can be modelled while super market with no BEMS cannot be modelled.
- Geoff Levermore (UK) : The biggest problem is that the engineers in charge of the commissioning have no time enough to do their job.
- An engineer from Hong Kong tells that, in his country, there are many buildings with sophisticated BEMS but the commissioning is not done because of lack of time.
Another problem is that the plant operators are reluctant to use BEMS because they believe that BEMS will take them a part of their job.
His experience is also that data coming from the BEMS are often not accurate enough even if the BEMS have been commissioned.
- An engineer from the U.S.A. finds that researchers are always looking for the truth while design engineers are looking for the answer. So, the dialog can be to find an answer in the truth of science or to explain the good answers and find the truth behind them.
- Donald Holte (President of Ashrae) : Ashrae gave, some years ago, an answer to the question by creating the Ashrae Research Journal to publish papers coming from research engineer that are not directly applicable. On the other hand the Ashrae Journal contains publications directly applicable by design engineers.
- Mario Constantino is convinced that Ashrae can give a good answer to fill the gap between design and research engineer. In Europe, Rehva is not still able to do it but can try to do so in collaborating with Ashrae.

- Sam Luxton (Australia) tells that his students always work in close collaboration with design engineer because it is an essential part of their education. He thinks that it is the same in most of the countries of Europe. He also thinks the engineers have to design installation that can work efficiently without BEMS in order not to be dependant on the quality of the BEMS.
- Somebody from the Eastern Country tells that the theoretical knowledge of the students is good but the collaboration with the industry is poor. Most of the engineers from the research centers moved to the industry these last years because they get better salaries. Unfortunately there are no researchers anymore in their new job so that the amount of researchers is now decreasing deeply because of the lack of financial support from the government.
- Peter Novak (Slovenia) tells that, in the past, the students were educated as design engineers but now it has changed to an education of scientists. The result is that all the papers presented in the congresses come from universities and not from design and maintenance engineers.
- An engineer from UK tells that in the Ashrae Meetings, the biggest part of the presentations come from design engineers. For the next Clima 2000 conferences, some sessions should be dedicated to design engineers in order to allow them to present paper about practical application and restore on that way the bridge with researchers.
- Dragen Kovacevic (Yugoslavia) : Design Engineer are often paid by investors who have no mind to pay more to have sophisticated technical equipments. So, it is impossible for design engineers to make some research.
- Curtis Pedersen (U.S.A.) : As a member of Ashrae, he can tell that Ashrae has not all the answers to the problem of filling the gap between designers and researchers but there is a very good collaboration between the two parties that gives very good results. He also asks to Mike Holmes who is a researcher working in a consultant practice, how he can fill the gap.
- Mike Holmes (U.K.) : It is difficult to do but one way to do it is to have good contacts with universities to be able to take their research into account when performing programs for the designers. A second way is to have internal publications in the practice that can inform the designers about the recent developments in research.
- Mario Constantino closes the session by thanking Mike Holmes for his report, Nicola Stoitchkov, vice president of the session, Jean-Pierre Minne, secretary and all the audience and invites everybody to the poster session.