

Conclusions to seminar IV: thermal performance of buildings

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Objektyp: **Article**

Zeitschrift: **IABSE congress report = Rapport du congrès AIPC = IVBH
Kongressbericht**

Band (Jahr): **12 (1984)**

PDF erstellt am: **13.07.2024**

Persistenter Link: <https://doi.org/10.5169/seals-12176>

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Conclusions to Seminar IV Thermal Performance of Buildings

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Only little interest was shown by IABSE-Engineers to this seminar on building physics. There were few papers submitted, even less authors present in Vancouver and only a small group attended this seminar. This shows again that building physics has not been recognized with the necessary degree of importance in the education of engineers and in building practice. The working commission VII "Building Physics" however is convinced of the growing importance and urges all members of IABSE to contribute and participate more in this field in the future.

The seminar itself was a Swiss-Australian affair. Two Australian and three Swiss papers were presented. Prof. Hirst, University of Adelaide, dealt with thermal design loads for flat roofs. He showed a method to determine characteristic values of thermal loads for roof slabs heated by solar radiation. This can be useful for poorly insulated concrete roofs in warm climates, but has little importance for the normal roof construction in cold climates with a good thermal insulation above the concrete slab. Prof. Cowan, University of Sidney, showed that sunshading and thermal storage coupled with careful attention to daylighting and ventilation can result in a substantial saving of energy in buildings in warm regions, a well known principle which seems necessary to be repeated. Dr. Keller, Winterthur (Switzerland), proved that private research can lead to new technologies. He reported on the development of a new window system in "High Insulation Technology" (HIT) without thermal bridges and a U-value down to $0.6 \text{ W/m}^2 \text{ K}$, combined with high solar and luminous transmittance. This will open new horizons for comfort and building energy management. Mr. Sagelsdorff from the Swiss Institute for Materials Testing and Research (EMPA) proposed a



nomogram for the easy determination of the maximum indoor-temperature for Swiss summer conditions. A check for overheating is especially important for buildings designed for high solar gains in winter. Mr. Sagelsdorff also presented the paper of Dr. Gass (EMPA) on the evaluation of a micro-computer-based heating control system for residential buildings. A pilot project using such a system was investigated in the city of Zurich. Extensive long time measurements showed that heating energy savings up to 25 % are possible. Such savings resulted from: delivering heat only to the extent of the occupants' demands, adjusting for their behaviour thereby avoiding overheating, and giving data for individual heating bills. There is no question that micro-computer control will be more and more common in the future. Further research in this field is in progress.