

SÉMINAIRE ÉNERGIE – ENVIRONNEMENT  
Conférences 2023 - 2024

**Theory versus reality: Why do buildings need more thermal energy than designed, and why is it the other way round when it comes to calculating power?**

**Igor Bosshard**  
*OST Ostschweizer Fachhochschule*

**Jeudi 18 avril à 17h15**

**Uni Carl Vogt – Salle 1 (rez-de-chaussée)  
66 bd Carl-Vogt, 1205 Genève**

**Conférence en présentiel suivie d'un apéritif**

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## **L'orateur**

Igor Bosshard graduated in mechanical engineering from the University of Applied Sciences in Rapperswil (HSR) and went on to study energy engineering at the Lucerne University of Applied Sciences and Arts (HSLU). He currently works for the municipal utilities in Wallisellen as program manager for thermal grids. Previously, he spent over 11 years at the Institute for Solar Technology (SPF) at the OST working on energy-efficient buildings, sustainable energy supply systems and managing various applied projects.

## **La conférence**

A few years ago, the performance gap was a major topic in the construction industry, with studies showing that buildings require more heat than planned. This even led to headlines in the media that targeted the Minergie label, for example, claiming that the label did not deliver what it promised. Based on these undifferentiated statements and the unanswered questions on the topic, the university of applied sciences OST carried out three studies over several years in collaboration with various partners to examine the topic in greater depth. In the seminar Igor Bosshard will show the most important results of the three studies.

In the first study (ImmoGap), detailed energy consumption data with a high temporal resolution of over 50 apartment buildings was examined in addition to a literature analysis. It was found that the average additional consumption compared to the planning is around 40% and that this additional consumption is highly seasonal. The theory was put forward that this dependency is due to user behavior and not because of technical issues.

For this reason, the second study (VenTSol) focused on investigating user behavior. The façades of five apartment buildings were recorded with thermographic and photographic images in high temporal resolution in order to find out whether the use of blinds and the opening of windows is dependent on the weather. Based on this, a model for realistic user behavior was created, which can determine the probability of whether the windows are open or the blinds are closed only as a function of the outside air temperature.

In the third study (OptiPower), the focus was no longer on energy as in the previous studies, but on heating power. In the investigation of about 500 buildings, it was found that the oversizing of the heating system in residential buildings is around 40% on average and between 100 and 300% in office buildings. The study shows how this oversizing occurs in practice and how it can be dealt with.