



**UNIVERSITÉ
DE GENÈVE**

**INSTITUT DES SCIENCES
DE L'ENVIRONNEMENT**

Uni Carl Vogt, 66, bd Carl Vogt | CH-1211 Genève 4
Tél : 022 379 01 07 | Web : www.unige.ch/energie

CYCLE DE FORMATION ÉNERGIE – ENVIRONNEMENT

SÉMINAIRE 2015-2016

**« Energy refurbishment of residential buildings of the 50s – Research
and Results »**

Davide CALI

RWTH Aachen University

Jeudi 10 décembre 2015 à 17h.15

Salle B001 au rez-de-chaussée – Uni Carl Vogt

66, bd Carl Vogt, 1205 Genève

<http://www.unige.ch/energie/fr/contact/plan>

PROGRAMME DES PROCHAINES CONFÉRENCES :

Février 2016

The conference speaker

Davide Cali studied at the “Università degli Studi di Catania,” Catania, Italy, where he received the Bachelor and the Master in mechanical engineering (focus: energy systems).

He wrote his bachelor thesis at the ENEL Energy Research Center (about the “Archimede” solar thermal power plant) and his master thesis at Fraunhofer ISE (focused on efficient cooling systems for residential buildings).

Since 2009, he has been working as a Research Assistant at the Institute for Energy Efficient Buildings and Indoor Climate, part of the E.ON Energy Research Center. His work is focused on building refurbishment, occupants’ behavior and energy supply systems for buildings.

Abstract

Low insulation standards and obsolete heating systems of a large amount of buildings in Europe account for disproportional energy consumption. Within this project, the holistic renovation and the results from the monitoring activity of buildings from a field test, located in Southern Germany, are presented. The buildings, built at the end of the fifties, have been retrofitted with seven different refurbishment layouts. The layouts differ for insulation and engineering system. An installed monitoring system collects comfort and air quality conditions in rooms as well as data about energy flows at delivery, distribution, storage and generation level, at high time resolution.

The monitoring system allows a comparison between the real and the expected energy consumption of the buildings. The energy performance gap was identified and quantified for each refurbishment solution (with values up to 287 %). The occupants’ behaviour has been identified as one of the causes for the energy performance gap. Further causes are mistakes in the installation and malfunctioning of the engineering system. The importance of a monitoring system for buildings with a complex engineering system was confirmed.