Benoit BECKERS

Urban Systems Engineering
Université de Technologie de Compiègne (UTC)

Born in 1969, Liège, Belgium, he has obtained an Engineering Degree in Physics from University of Liège (ULG) in 1992.

In 1993, he joined the Superior Architecture School of the Polytechnic University of Catalonia (UPC) in Barcelona, where he started personal researches on the following subjects: concert hall acoustics; daylight and solar radiation in the architectural and urban projects; geometrical methods in numerical simulation; waves perception in their physical and cultural environment. In 2005, he presented a doctoral thesis on the subject: "Sensitive Geometry". In 2008, he moved to France as associate professor (enseignant chercheur contractuel).

Benoit Beckers is the originator and one of the main designers of the Heliodon software devoted to the daylight and solar radiation simulation in architecture. This activity is presented on the web site: http://www.heliodon.net/

Today, his teaching activities include lectures in Compiègne, Barcelona and in the "École de Technologie Supérieure" (ÉTS), in Montreal.
- "Lighting ambiances and environment" and "Urban thermal energy", UTC.
- "Space and ambiance in the architecture", UPC.
- "Urban ecosystems", in collaboration, ÉTS.

Since 2009, he has been supervising PhD students (currently four). They deal with solar radiation simulation in the architectural project, energetic efficiency applied to important housing stocks with a long term (2050) perspective, finite element simulation and optimization of urban solar potential. In 2010, he organized an international workshop about "Solar Energy at Urban Scale", presented on the web site: www.utc.fr/seus. In 2011, he presented his "habilitation to supervise researches" (the HDR French diploma) and in 2012 he edited the book "Solar Energy at Urban Scale", ISTE- John Wiley, with 18 contributors. In 2013, he started new developments in the finite element simulation of heat transfers between the buildings, the ground and the atmosphere, from the district scale to the entire city, including the large contemporaneous megalopolis. In 2014 he published "Reconciliation of Geometry and Perception in Radiation Physics", Wiley-ISTE.

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Three most relevant publications:

The universal projection for computing data carried on the hemisphere, B. Beckers, L. Masset & P. Beckers, Computer-Aided Design, Volume 43, Issue 2, Pages 219-226, February 2011.

A general rule for disk and hemisphere partition into equal-area cells, B. Beckers & P. Beckers, Computational Geometry - Theory and Applications, Volume 45, Issue 7, Pages 275–283, August 2012.

Sky vault partition for computing daylight availability and shortwave energy budget on an urban scale, Benoit Beckers, Pierre Beckers, Lighting Research and Technology, Online-first published on September 6, 2013.

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