ED MONITOR

Bauhaus.SOLAR AWARD 2012 Distinction:

[applied] Foreign Affairs "Guabuliga: Well by the Thorn Tree" has been awarded a distinction in the annual **Bauhaus.SOLAR AWARD** in Erfurt, Germany, for its "on site analysis and its development and response to a complex problem".

Congratulations to Baerbel Mueller and her students Christian Car, Joseph Hofmarcher, Ioana Petkova, Jürgen Strohmayer, Stefanie Theuretzbacher and Theresa Theuretzbacher! The [Applied] Foreign Affairs, a lab established in WS 2011/12 at the IoA investigating spatial and cultural phenomena in rural and urban Sub-Saharan Africa, started off investigating the status and potential of Guabuliga, a remote village located in the tree savannah of Northern Ghana.

[A]FA GHANA has been taught by **Baerbel Mueller in collaboration with the architects Bernhard Sommer and Joe Osae-Addo, the artists Nikolaus Gansterer and Bernard Akoi-Jackson**, and is implemented in partnership with the NGO Braveaurora and Chief Salifu Mahama Tampurie.

ED LECTURES

The Energy Design lecture series presents young professionals in our field.

Previous guests: Christophe Barlieb, TU Berlin, Norbert Palz, CITA, Copenhagen, Stylianos Dritsas, KPF, London, Christian Friedrich, Hyperbody, TU Delft.

SS 12 we will present **Alex Graef**, director of Alex Graef Associated Architects Ltd, and course director of the BA(hons) Architecture course at London Southbank University. His work aims to create and exploit a symbiotic relationship between architectural practice, teaching and independent research. As a result, his work displays a collaborative ethos, strives for innovation or application of current technologies in design and production processes, and the pursuit of context and meaning in a world of constant technological innovation and specialisation.

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A L E X G R A E F

GENERATIVE SCRIPTING AND FORM FINDING IN SPACE GRID SYSTEMS

ABOUT ED

At Energy Design, the goal in teachings and research is pursued of maximizing the energy performance of buildings by the optimisation of form and construction.

Substantial main points of research are investigations regarding the relationship between building form and energy efficiency.

Research and teachings further investigate into Rapid Manufacturing, Interactive Architecture, Form and Energy Consumption and Parametric Design Strategies. The aim is not only to create buildings, which use less energy, than they need, but also to create buildings and cities, where the climate is not only treated as a technical problem, yet becomes part of the architectural design intention.

ED COURSES

Energy Design *SE 4 ects*
Energy Design *PUE 2 ects*
Architecture & Energy *(Building Physics) VO 2 ects*

courses of the new Master programme:

Energy Design SE 3 ects
Energy Design Integration SE 3 ects
Energy Design Strategies SE 3 ects

ED NEWS

presentation:
bauhaus.SOLAR: **Evolutionäre Algorithmen im Entwerfen energieeffizienter Gebäude.** B. Sommer, Ulrich Pont

presentation:
bauhaus.SOLAR: **Ecologic Strategies for the Devolopement of Guabuliga.** B. Sommer, Bärbel Müller

presentation:
First International Conference on Architecture and Urban Design, Tirana: **A critical case study of decision criteria in architectural competitions.** U. Pont, M. Schuss, K. Kiesel, K. Orehounig, A. Mahdavi, B. Sommer

book chapter:
Kas Oosterhuis (ed.), Hyperbody, First Decade of Interactive Architecture:
Continuously Variable Systems - A Topological Architecture. B. Sommer

public lecture:
234.060 Praxisreport: Innovatives Bauen, TU Wien: **File-to-Factory - Realisierte Projekte.** B. Sommer

public lecture:
Modul Emerging Fields, TU Wien: **Adaptive Architecture - Generating Topologies.** B. Sommer

PROF. BRIAN CODY

Professor Brian Cody is head and founder of the Institute for Buildings and Energy at the University of Technology in Graz. Since 2005, he is Guest Professor at the University of Apllied Arts in Vienna, where he founded and defined the field of Energy Design as a subject of the study plan and as research topic.

He as been Associate Director, Design Leader and Business Developement Leader at Arup´s, where he still acts as scientific consultant.

He collaborated on numerous 1st-prize awarded projects for architectural design competitions and runs several research projects at TU Graz.

He is founder and principal of the consultancy Energy Design Cody.

ASS. BERNHARD SOMMER

Bernhard Sommer teaches and researches in the field of Energy Design. Before, he has been an Assistent Professor at the Institute of Building Construction and Design (Prof. Richter) at the University of Technology in Vienna and a researcher and project manager at Hyperbody (Prof. Oosterhuis), University of Technology in Delft, the Netherlands.

He was awarded the Arch+-Prize 2000, MAK-Schindlerstipendium in 2002 and the prize for Experimental Tendencies in Architecture 2006. He is founder and principal of exikon arc & dev zt, an architecture office in Vienna.

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E n e r g i e D e s i g n

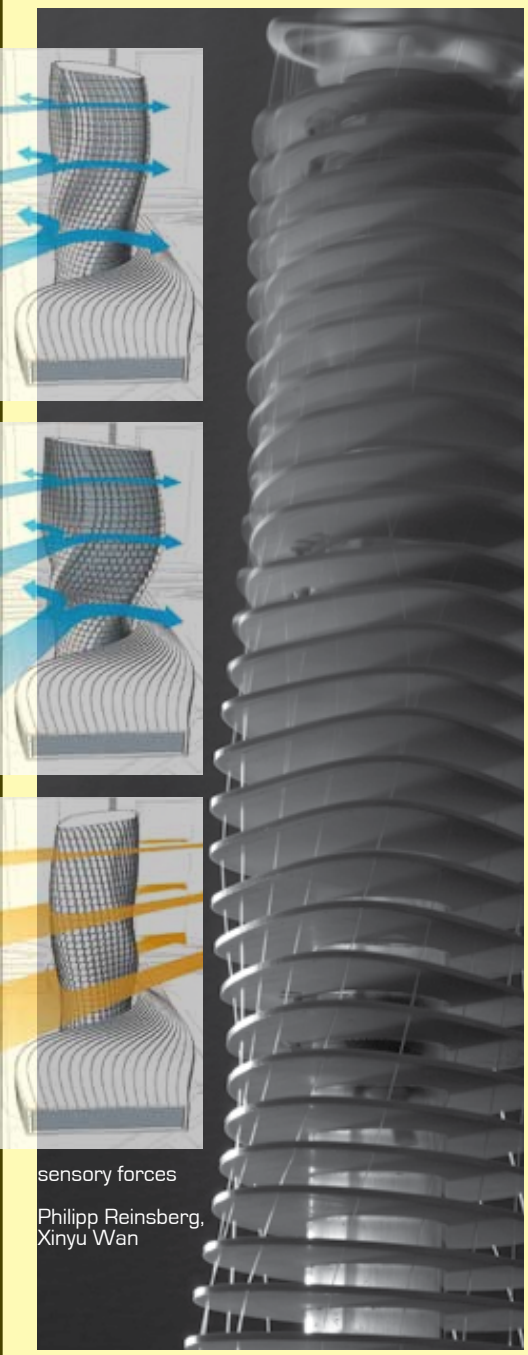
INSTITUTE OF ARCHITECTURE

di:'ʌngewʌndtə

Universität für angewandte Kunst Wien
University of Applied Arts Vienna

ENERGY DESGN STRATEGIES

In the summer term 2012, we looked into sensors and kinetic strategies. We used Arduino technology, Grasshopper and Ecotect. The course was co-tutored by Galo Moncayo.

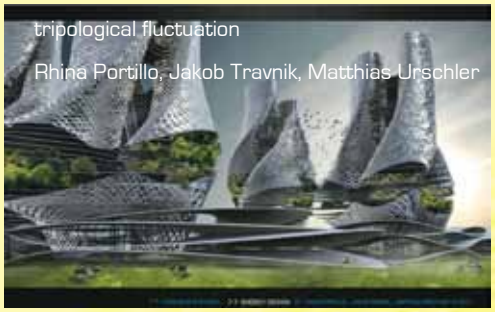


sensory forces

Philipp Reinsberg,
Xinyu Wan

ENERGY DESGN SEMINAR

In the summer term 2012, we took the idea of low entropy housing to urban scale.



tripological fluctuation

Rhina Portillo, Jakob Travnik, Matthias Urschler

urban wind towers

Philipp Reinsberg,
Andrea Sachse,
Christoph Pehnelt

ENERGY DESGN SEMINAR

In the winter term 2012-13, the high rise was investigated in four different cliate zones.

ISTANBUL

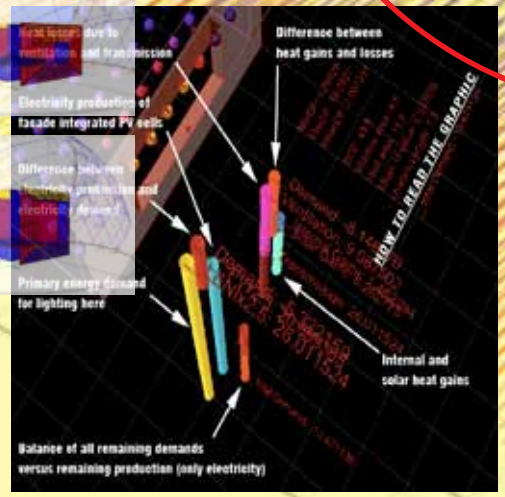
Deniz Önengüt
Klaus Sitzmann
Hugo Eynius Toro
Daniel Schinagl

SEOUL

Benjamin Ennemoser
Philippe Grotenrath
Vlad Cuc

EVOLUTIONARY ENERGY DESGN

Our latest research in the field will be published this year: On the basis of a simple room, an optimization algorithm was set up that considers most energy performance characteristics. Parameters were the room height, the insulation thickness, the position of the window and the size of the window. The goal was to find out an optimum configuration for a zero energy building. The fitness criterion was a figure composed from all energy demands, i.e. heat demand caused by transmission and ventilation and lighting demand; from these demands the energy gains, i.e. internal gains and solar gains were subtracted. Further it was assumed that the façade is producing electricity by photovoltaic (so a bigger room height and a smaller window size would increase solar electricity production). The fitness criterion was optimized towards zero. Electricity gains could only diminish electricity demand. So over-production was ruled out. One of the goals of the project was to see how the thickness of thermal insulation worsens daylight supply and from what point on this becomes relevant. The energy performance was calculated by a mix of simulation (for daylight and solar gains) and standardized building physics calculation methods.



YEAR´S THEME 2012/2013

This year we focus on high-rise buildings.

high-perfprmance high-rise

High rise buildings are the key technology in the urban development of many regions in the world. They are a fixed part in modern urban architecture. With the areal accumulation of this architectonic type arise a new factor in the typology of cities. If you look at it objectively the intention is to get with a high density of development on the valuable city ground a useful area as high as possible and keeping urbane facilities as compact as possible. This intentions are leading to negative side effects in the design process.
Complex technical systems and energy systems for large buildings benefit from different utilizations and delayed energy requirements. Total energy considerations of such intelligent building complex lead to an energy-optimized living and working space.
The type ‚high rise building' is generally inherent energy inefficient. Because of the special form technical requirements are leading to a bad relation between GFA and effective surface and therefore to a high energy consumption concerning construction, operation and recycling. Transport areas and the necessary surface for technical installations are evident for the space plan and especially in the lower floors the use of natural light is difficult. Meteorological circumstances are forcing exceptional solutions in facade design and hence are influencing the appearance of the building.

Restaurant Sternzeichen completed.
Parametric strategies applied to merge acoustics, lighting and fire safety into a unique design. 284 different components, economically produced file-to-factory.

exikon arc&dev zt
Bernhard Sommer, Goga Nawara, Galo Moncayo, Bernhard Schwaighofer, Alexander Karaivanov
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structural support:
werkraum zt gmbh