

Task 51

Summer School with a Twist

The recently held summer school, “City in Transformation: Energy and the Urban Environment“ brought students together with researchers and teachers in combination with the IEA SHC Task on Solar Energy in Urban Planning. Over the course of a week, students from different fields and German universities developed a master plan for solar optimized buildings in an area of Berlin’s Adlershof district and then publically presented project designs.

The EnEff:Stadt (Research for an Efficient City) Summer Academy was integrated into IEA SHC Task 51: Solar Energy in Urban Planning, and funded by the German Federal Ministry for Economic affairs and Energy (BMWi). The link with this summer school is a key component of SHC Task 51 – to strengthen solar energy in urban planning education at universities by testing and developing teaching material for programs in architecture, architectural engineering and urban planning. As Maria Wall, the Operating Agent of SHC Task 51 notes, “Such summer schools and courses provide valuable input to improve teaching methods and assessment tools for solar energy planning. And the students seemed to appreciate the summer school – which makes this a win-win situation.”

To ensure this education objective is met, Task experts, led by Tanja Siems and Katharina Simon of the University of Wuppertal, are focusing specifically on communicating new research results and developing teaching material for tertiary education and continuing professional development education. The September EnEff:Stadt Summer Academy is one example of strengthening solar energy planning. An outcome of this work will be a catalogue of analogue and digital teaching material that include lectures as well as methodologies for seminars and interdisciplinary workshops as well as an evaluation of digital teaching approaches and the use of various software tools that are good examples for the simulation of solar assessments on the urban scale.

▼ **Figure 1. Open discussion with Students and international Experts at the Adlershof Forum.**

Photo: T.Lorenz, BUW University, Urban Institute



◀ **Figure 2. Seminars for interdisciplinary student groups with academic staff.**

Photo: T.Siems, BUW University, Urban Institute.



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Approach of the Interdisciplinary Summer School

The “City in Transformation: Energy and the Urban Environment” summer school brought together students, researchers and teachers from various disciplinary backgrounds to the halls of Hochschule für Technik und Wirtschaft (HTW), the largest University of Applied Sciences in Berlin.

The various lectures, seminars and tutorial sessions accentuated the interdisciplinary nature of the event as participants explored the topic “Energy and the urban Environment” from all applicable angles. Participants from the field of architecture, urban and energy design, and spatial and regional planning reflected on this wide variety of disciplines, which in turn resulted in stimulating discussions between the student working groups.

Berlin Adlershof was selected to serve as the “educational field experiment” to generate a sustainable approach to a master plan strategy. Berlin Adlershof as a technology park was founded in 1991 after the dissolution of the Academy of Science of the German Democratic Republic, and today covers 4.2 square kilometers making it the largest science park in Germany. The WISTA Management Ltd, which supported the summer school with experts for tutorials and talks, was founded in 1994 as the plans for a new science and technology park took shape. Since then, WISTA has helped to develop the cluster partly like a business incubator, with network management, communication and marketing, acceleration of special fields of technology, and acquisition of projects, investments and companies. Today, there is still room for extending the science park using the industrial area along the former airfield in the west and the goods station in the north. The summer school used these areas to challenge and underline the WISTA Management Ltd development plans for business and housing projects to accommodate students and families.

Methods and Tools Used During the Summer School

To have from the outset a comprehensive overview of the to-be-developed area, the students started the workshop with a guided expert tour led by the WISTA Management department. The experts explained in detail the urban planning strategy and energy related systems of the Berlin Adlershof case study. After the three hour guided tour, the students explored the site on their own as a starting point in the analytical process.

During the week, the academic staff from the different institutions gave various inputs in the form of tutorials, seminars and lectures. The designer and planning experts from the Adlershof WISTA Management group gave direct tutorial input after the student group presentations. And, every day the students documented the design and planning process in plans, models and filmic interviews to generate a documentation of the interdisciplinary decisions that were being made along the creative process.



▲ **Figure 3. Guided expert tour” with Dr. Mekiffer and Mr. Lauterbach.**
Photo: T.Siems, BUW University, Urban Institute



▲ **Figure 4. Open Discussion with Students and Experts.**
Photo: T.Lorenz, BUW University, Urban Institute



▲ **Figure 5. Case Study Berlin Adlershof: Site plan.**
Drawing: K.Simon, BUW University, Urban Institute

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What made this summer school so unique is that students from the disciplines of architecture, urban design and planning teamed up with students of energy design and regional and spatial planning. These trans-disciplinary student working groups started with an analysis of the existing urban structure and the utilization of the area to evaluate the strengths and weaknesses of the entire district. In this way, the groups could identify the urban and energy potentials and formulate a strategy plan for the site and the selected areas A0 - A8 (see site plan in Figure 5).

Students then generated various strategies and scenarios in relation to the urban function, utilities and typologies. After the intense analyzing process to examine the volumes of the different strategies in more detail, a physical model was generated for these scenarios in relation to the urban fabric with its functions and typologies.

This physical model was used to test their structural design ideas, such as positioning different typologies of settlement as well as technical infrastructural elements and systems. In parallel with the design process, the students used the software tools District Energy Concept Adviser (DECA) to calculate the energy demand and to recognize the energy potentials and EnOB-Lernnetz to solar irradiation potential of the surfaces and demonstrate the shading problems of the buildings, which aided in the development of a sustainable energetic concept.

This summer school is one example of how students can gain in-depth, hands-on experience so that they can later apply their newly acquired knowledge in practice.

Adlershof is one of 32 case studies from 10 countries that will be included in the 2017 SHC Task 51 publication, *Best Practice Case Studies and Case Stories*.

This article was contributed by Prof. Dr.-Ing. Tanja Siems and Katharina Simon of the Institute for Urban Design & Studies, University of Wuppertal and experts in SHC Task 51: Solar Energy in Urban Planning in cooperation with Prof. Dr.-Ing. Susanne Rexroth HTW University of Applied Sciences Berlin and Dr. Gustav Hillmann, Margarethe Korolkow, IBUS Berlin. [Click here](#) to learn more about SHC Task 51.



▲ **Figure 6. Student's presentation of the urban and energy concept at the Adlershof Forum.**

Photo: T.Siems, BUW University, Urban Institute