

## Solar Decathlon China 2018

### **Introduction:**

- **Overview**

Initiated and hosted by U.S. Department of Energy, the Solar Decathlon (SD) is an international competition on solar building science and technology that challenges collegiate teams worldwide. Since the launch of the Solar Decathlon in 2002, six subsequent competitions have been hosted in the US and Europe, involving over 100 collegiate teams to showcase the latest innovative achievements in the solar industry. During each competition the site is visited by hundreds of thousands of people, and the Secretary of Energy awards the winning teams by themselves. Teams receive wide support from business corporations, research communities and social media, provide the sponsors an international platform that is market-oriented and contains an extremely wide audience, while receiving their own chance of influence and improvement. SD China is hosted by National Energy Administration of China (NEA) and U.S. Department of Energy (DOE), co-hosted by the Ministry of Finance (MOF) and Ministry of Housing and Urban-Rural Development (MOHURD), supported by All-China Students Federation Secretariat (ACSFS), organized by Peking University (PKU). After the first SD China was successfully held in Datong, Shanxi in 2013, SD China 2018 started in March of 2016, and will end in summer of 2018. Nearly thirty teams from all around the world are going to show their houses in Dezhou, Shandong province where the place is called the "City of Sun". Final designs should be evaluated in ten separate contests comprehensively, including market appeal, comfort zone, energy balance, etc.

- **Team TJU&TUD**

Tongji University cooperates with the Technical University of Darmstadt from Germany, who won the two champions in SD 2007 and 2009, in order to take advantage of the technology and creativity of the world's leading research and design teams, to explore the development potential of solar building integration in China, and find the way to promote the industrialization and energy-saving industry, thus to improve the living environment for people and bring benefits to our society. The conception of our team will be integrated solutions for the general public including complete functions, compact layout, comfort and

environmental friendly.

- **Status quo of the project**

According to the SDC schedule the project has selected one concept from the 40 ideas of both teams and developed the concept with other disciplines together during the winter semester 2016-17. Right in January 2017 all the teams presented their works in Dezhou during the 2<sup>nd</sup> technical training. So from now until summer 2018 it will be an open running. The project will go on with detailed design in the summer semester. There is the architectural and civil engineering concept, energy and plumbing concept, all of them need to be deepened and improved. Especially the modern communication part and interior design are still missing.

- **What to do in this studio?**

Different from all the past SD competition on all the continents SDC 2018 will build a permanently used residential housing. Once we built up the house in workshop and have is tested, it will be dismantled and transported to the competition site, where it will be constructed for the competition and latterly using. The house could be used for monitoring as a research object. In the detailed design stage to be worked out are following theme blocks:

- Studying and analyzing the current concept design. Critical report
- Design of joints, Intelligent construction components
- Interior environment simulation
- Life style design
- Smart lighting
- Furniture design & Flexibility
- Working process managing & Recording

**\*Beside of the CPs all the participants of this design project will be listed in official SDC documents as team members and can take part in the final competition if they will.**

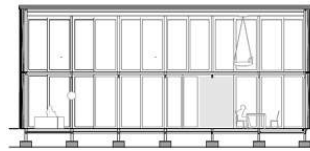


Site plan

**SD CHINA 2017  
同济大学 & 达姆施塔特工业大学  
联合赛队建筑方案**

能耗面积 130 平方米，建筑面积 219 平方米，总高 6.3 米，室内空间体积 420 立方米。

贯穿两层的技术核心：设备集中于一层处，其余空间为开放式起居和餐厅，二层则是分立的小卧室、稍大的主卧室和可开合的工作区域。



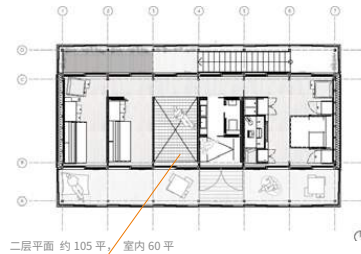
剖面



一层平面 约 114 平，室内 69 平

意向 - 南立面

意向 - 南立面



二层平面 约 105 平，室内 60 平

意向 - 中部通高



**灵活空间：**除了厨卫、设备固定，其他空间均可个性化自由使用。增减卧室、中庭等需求都可在未来实现。

**模块化建造：**十二个尺度相同的箱体工厂定制加工，现场干作业组装。

**舒适节能：**南北两侧的过渡缓冲空间，降低室内能耗，提供舒适的交流共享空间。

Architectural plan

**Number of participants: 12**

**Design Studio period:**

March 04, 2017 to June 12, 2017,  
Thursdays from 13:30-17:00

**First Meeting:**

March 04, 2017 Friday at 13:30, Room E201