

Electrical specification and smart grid

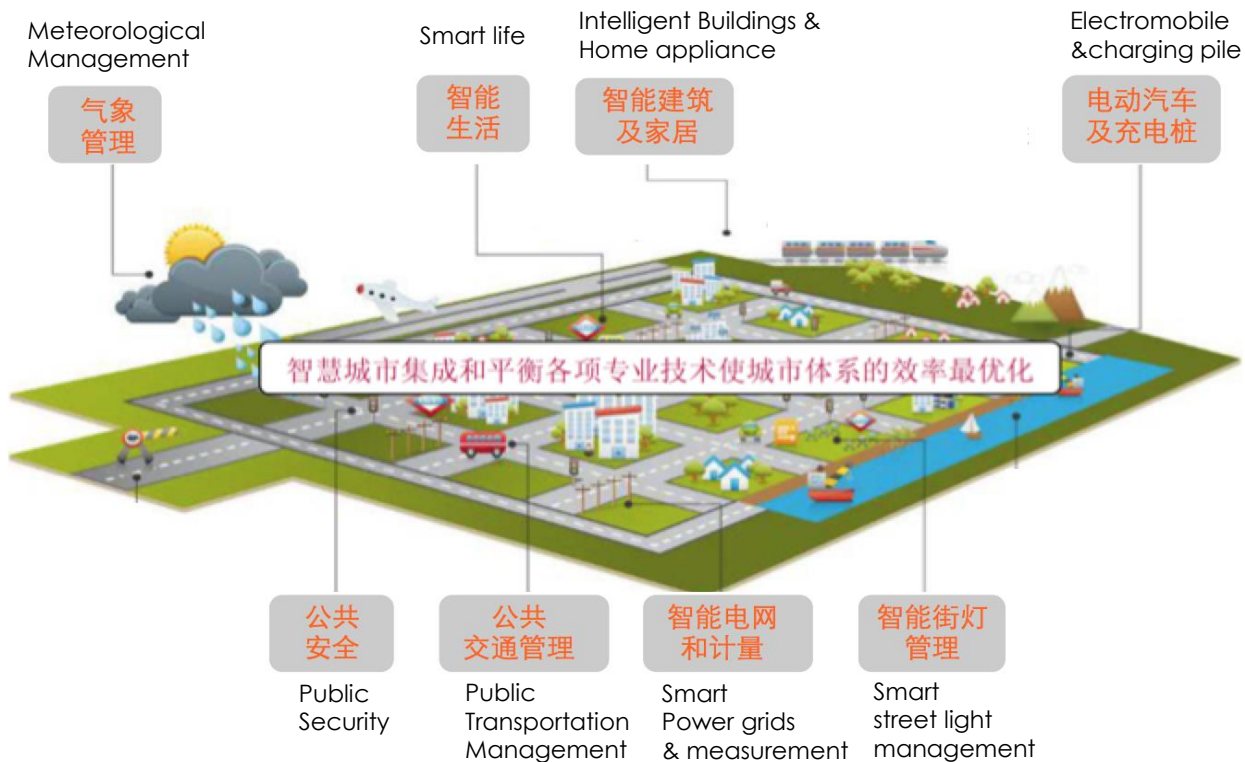
## 电气规范及能源互联



# 目录

## Content

- 配电设计 Power Grid Design
- 能源互联 Energy interconnection



唯一  
uniqueness

创新  
innovation

整合  
Integration

...

**八大智能  
基础设施**

Eight Intelligent  
Infrastructure

**IE1888  
能源互联网**

IE1888 Energy  
Internet

**信息综合  
管控平台**

Information  
integrated  
Control platform

**可持续的  
收益模式**

Sustainable  
revenue model

**LEED nd  
国际认证**

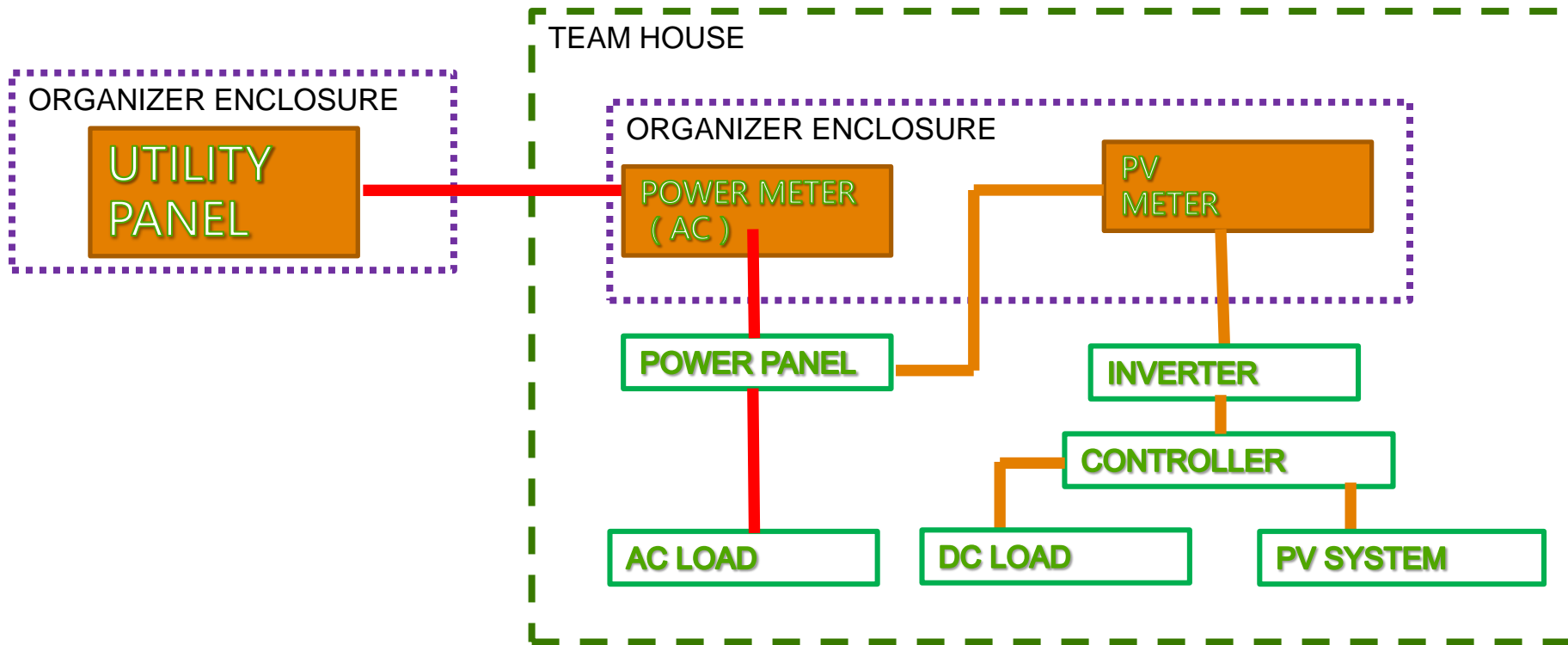
LEED nd  
international  
certification

Connect Location 接入位置	Organizer will supply the panels and it is located in the middle of two team sites.
Connection 连接	Adopted the fixed connection method.
Ground Connected 接地	$R \leq 4\Omega$ , and all metal equipments have to connect ground. Power cables which is from the Organizer Utility Panel have to be ground laid.

Power supply 电源	The organizers will supply with max. 30KW, 220/380 V, 50 Hz, 3-phase, 5-wire service.
Power Cable 电力电缆	5 cores and 16 mm <sup>2</sup> (diameter)

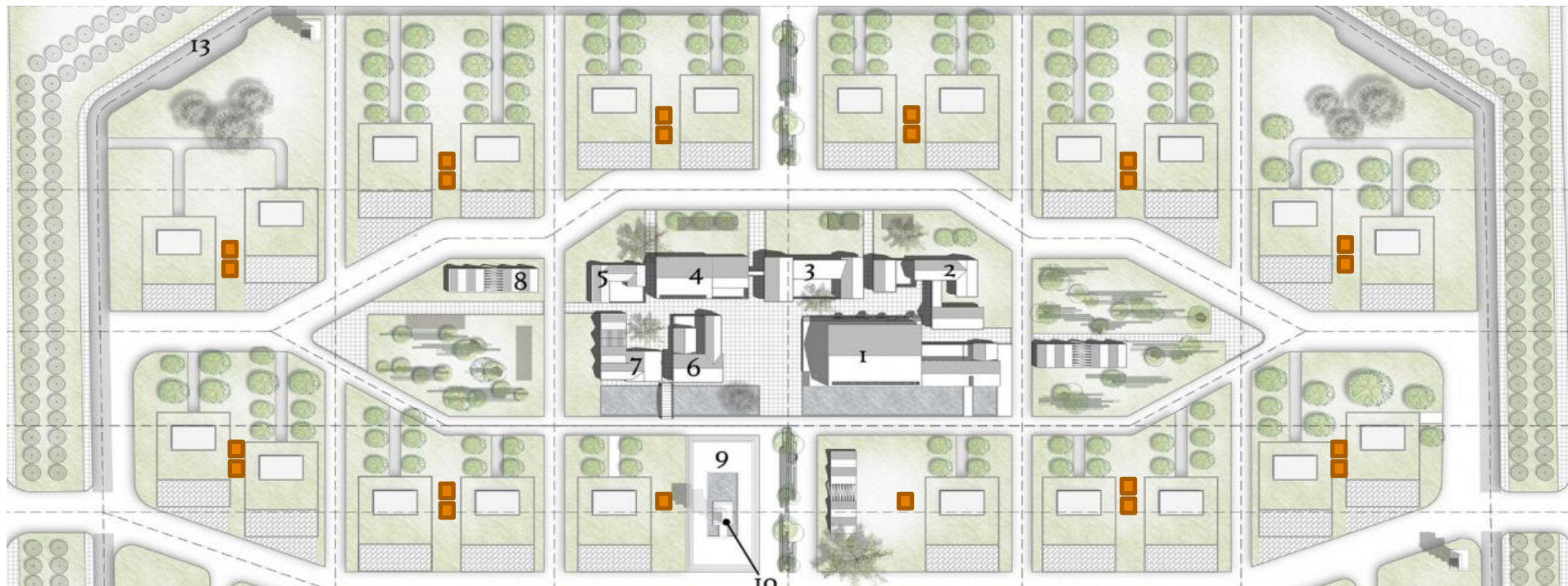
Notes: 5 cores- three phases wire, one neutral wire, one ground wire.

Efficiency 转换效率	$\geq 90\%$
Frequency 输出频率	$50 \pm 0.5\text{Hz}$
Output Voltage 输出电压	3P4W , $230/400\text{V} \pm 3\%$
THD 谐波分量	$\leq 3\%$

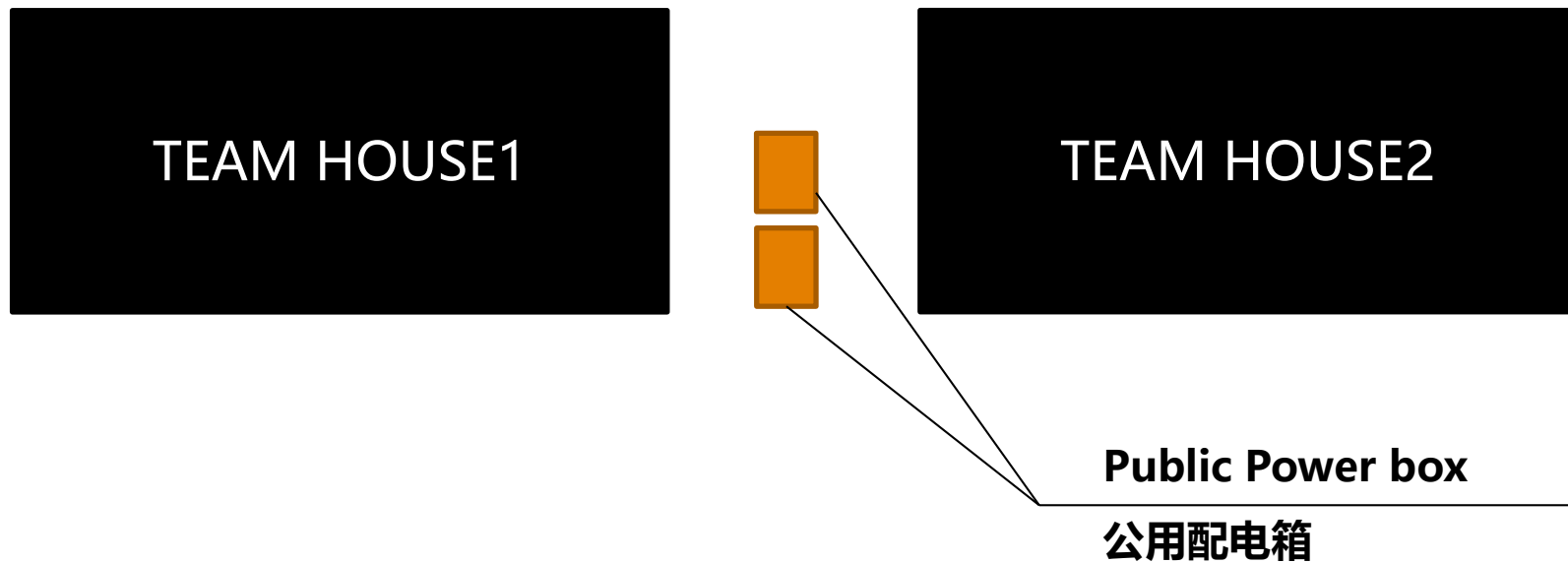


**Notes: Teams take charge of the cable and team panel board.**





Public Power box 公用配电箱





Fixed Connection Method

采用交流、慢充 220V充电，充电功率不超过7KW

电动汽车每天跑40公里

电池容量 $\leq 7.5\text{KWh}$

组委会需增加计量表计

电池需要在开赛前放空电能

编号 No.	赛队 Team	电源 Power Supply			光伏电站 PV Power Station			
		电压 Voltage	频率 Freq.	功率 Power	逆变电源 Inverter Voltage	逆变器功率 Inv. Power	逆变器数量 Inv. Count	PV 功率 PV Power
1	A队	3P/N,220/380 V	50Hz	20kW	3P/N,230/400V,5 0Hz	3.0kW	3	10.8kW

说明：所有赛队必须在2016年9月30日前回复所有参数。

EXP: All Teams have to confirm the technical parameters and send the Interconnecting Application Form to organizer before 30<sup>th</sup> of September, 2016.

分类 (Classify)	数据类型 (Type of Data)	数据体量 (Quantity of Data)	通讯接口 (Interface)	数据互联互通 (Data Connectivity)
赛队房屋 内部	<ul style="list-style-type: none"> <li>光伏太阳能</li> <li>暖通空调</li> <li>智能家居控制系统</li> <li>电动汽车及充电桩</li> <li>供水系统</li> </ul>	<ul style="list-style-type: none"> <li>每个房屋数字量和模拟量</li> </ul>	Modbus, KNX, 以太网、 串口	<ul style="list-style-type: none"> <li>往届大部分赛队已将房屋内所有数据整合到一个内部系统，具备整体上传数据的基础。</li> <li>在给赛队的接口文件中，需要明确给出接口规范，统一使用IE1888能源互联网协议通讯</li> </ul>
Internal of the house	<ul style="list-style-type: none"> <li>Photovoltaic Solar</li> <li>HVAC</li> <li>Intelligent home control system(IHCS)</li> <li>Electric cars and charging piles</li> </ul>	<ul style="list-style-type: none"> <li>Every house has about 800-1000 digital quantity and analog quantity.</li> <li>There are about 24,000-30,000 data points in these 22 houses.</li> </ul>	Modbus KNX, Ethernet, Serial port	<ul style="list-style-type: none"> <li>Most of the teams in the past integrated all data into a built-in system, and this will be the basis for holistic uploading.</li> <li>In the interface document that provided to each teams, it will need to provide the interface specification and use the IE1888 Energy Internet protocol communication.</li> </ul>

主要界面(Main Interface )	民众 (visitors)	管理者 (administrator)
SD园区导视主界面 (SD region guiding Main Interface)	●	●
22栋赛队房屋3D虚拟参观 (3D Virtual Visiting of the teams' House )	●	●
8大功能模块一级展示界面 (Eight Functional Modules of First Level Displaying Interface)	●	●
8大功能模块数据分析及控制界面 (Data Analysis and Control Interface)		●
8大功能模块自由系统调度界面 (Free system scheduling interface)		●
平台报警界面(Alerting Interface)	●	●
综合控制台界面(Integrated Control Interface)		●
后台管理功能界面(Back-stage Management Interface)		●



1.支持电脑、iPad、手机、3D导览机、大屏幕多平台多平台发布

Multiple platforms supported, such as PC, iPad, mobile, 3D Audio Guide etc.

2.通过上网即可登陆该平台

Register on the platform via internet.

3.赛后可为每个赛队提供属于各自房屋的子平台

Each team will be provided its own sub-platform after the competition.





Dashboard

3D导览

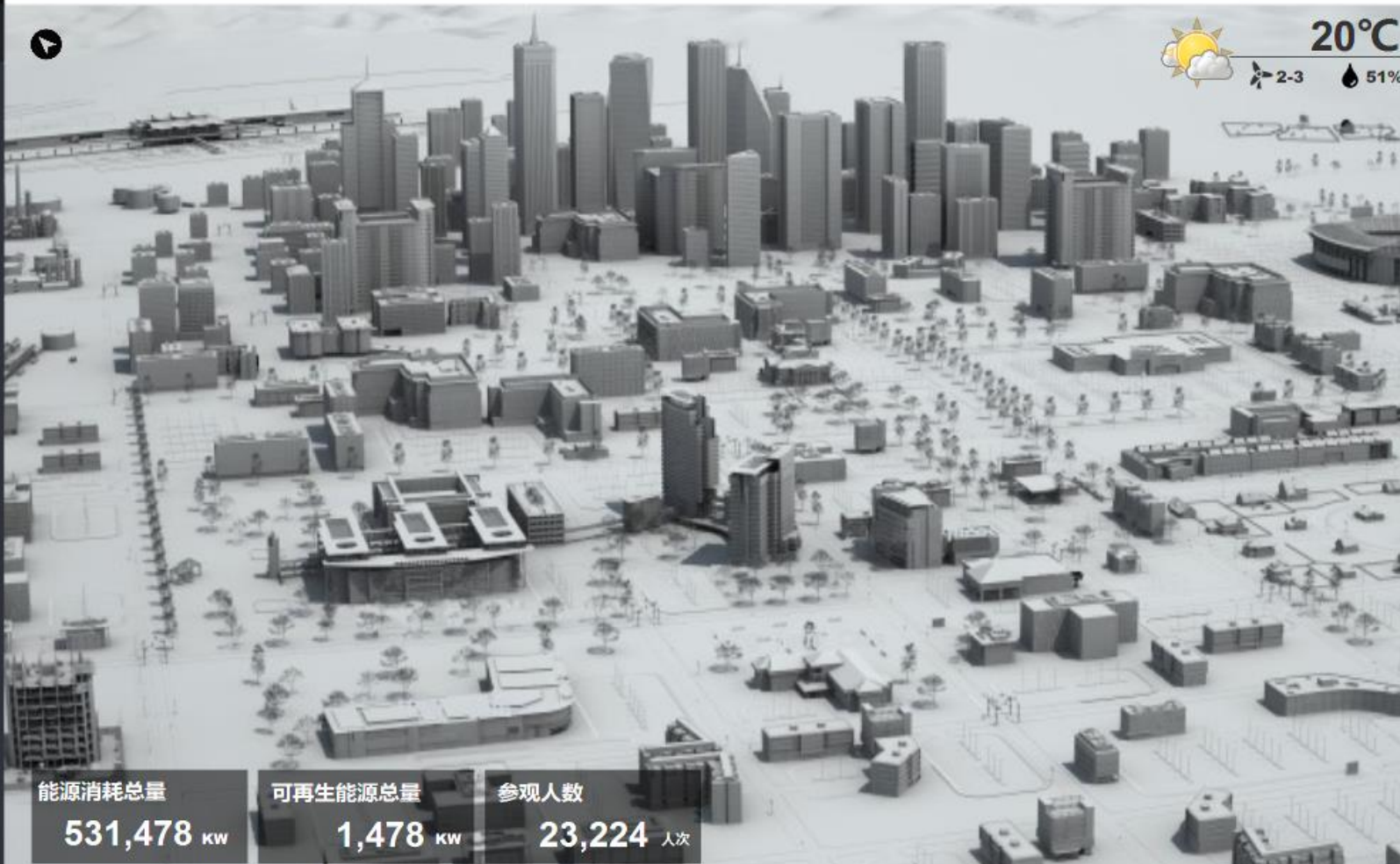
智能交通

智能电网

公共安全

智能照明

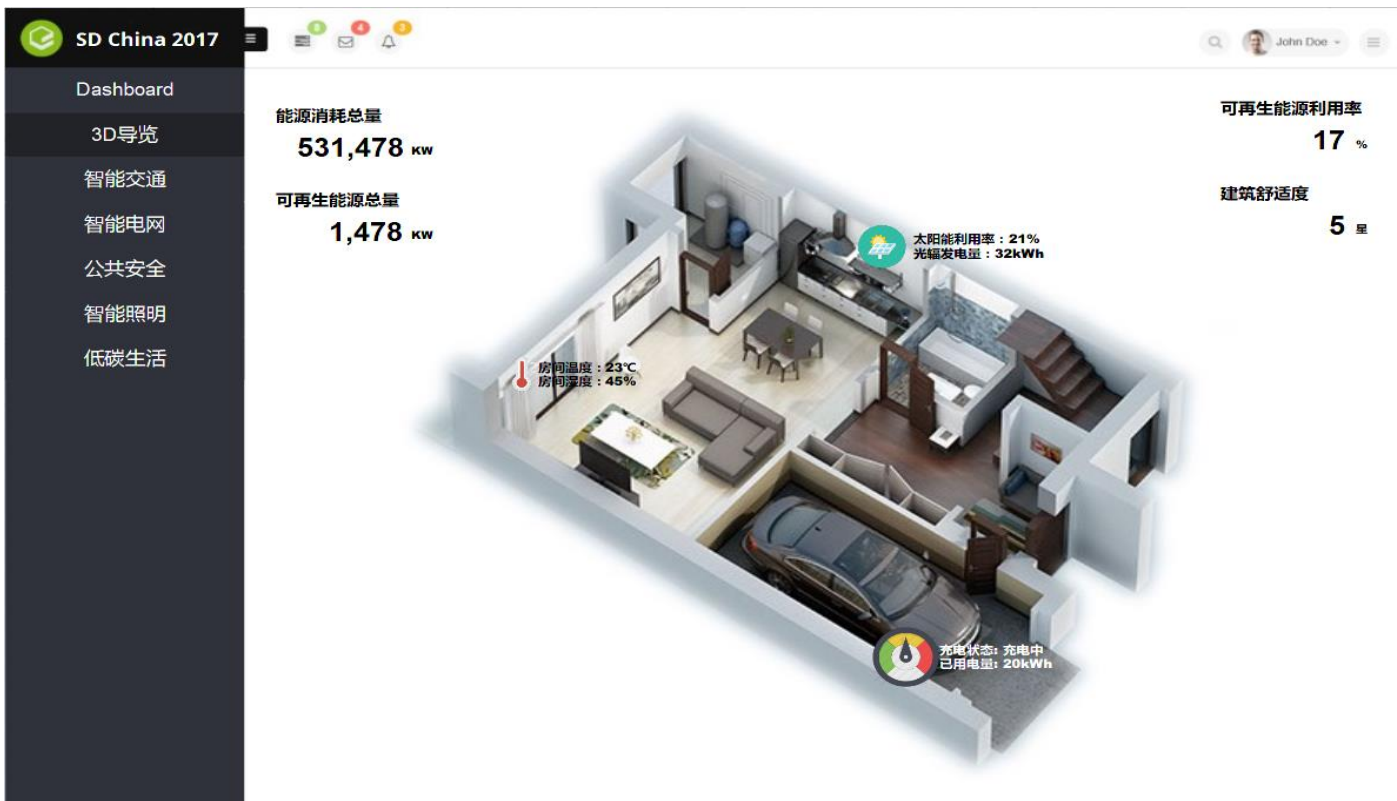
低碳生活



Weather: 20°C  
 Wind: 2-3  
 Humidity: 51%

说明：  
 1.3D主界面真实反映赛场情况；  
 2.显示园区级的概览数据及报警信息；

能源消耗总量	可再生能源总量	参观人数
531,478 KW	1,478 KW	23,224 人次



**谢谢！**

**Thank You!**