2007台达杯国际太阳能建筑设计竞赛获奖作品集

Awarded Works from International Solar Building Design Competition 2007

太阳能和我的家

Solar Energy for My Home

中国可再生能源学会太阳能建筑专业委员会 编

Edited by Special Committee of Solar Buildings,CRES

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Chief Editor : Zhong Jishou, Zhang Lei

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Solar Energy for My Home

引言

住宅是人类生活的空间载体，太阳是人类生存的能量源泉。2007台达杯国际太阳能建筑设计竞赛将两者结合起来，以“太阳能和我的家”为题，在世界范围内进行太阳能住宅建筑设计方案的征集与评比。通过设计竞赛，让现在和未来的建筑师和工程师更多地从居住环境及其支撑的能源环境角度，思索我们的住宅形式和人们的生活方式；通过建筑设计方法和太阳能技术，解决健康的居住环境和相关的能源问题，开拓新的设计理念和技术产品。

本次竞赛由国际太阳能学会、中国可再生能源学会、中国建筑学会和2007世界太阳能大会组委会主办，成为2007北京世界太阳能大会的主要活动之一。竞赛题目与大会主题“太阳能与人类居住”一致，借此引导人们思考与探索太阳能作为一种永续能源在人类生活中所能发挥的作用，并希望获得与住宅相关的各利益主体对今天和明天的居住环境及其能源支撑技术的关注。

1. 设计竞赛的命题与作品征集

2007年国际太阳能建筑设计竞赛面向北京地区90m²多层城市住宅和低层农村住宅开展命题设计竞赛，本书“2007台达杯国际太阳能建筑设计竞赛办法”中的附件给出了本次设计竞赛的场地环境和建筑需求。

竞赛活动获得了世界太阳能和建筑行业的广泛关注，共有900人进行了竞赛注册，涵盖来自四大洲的47个国家，包括中国、美国、俄罗斯、德国、澳大利亚、意大利、印度、西班牙、日本、乌干达、南非和阿根廷等。组委会收到提交作品201项（其中，低层农村住宅作品117项，多层城市住宅作品84项），作品涉及中国、美国、

Introduction

All people, regardless of culture or geography and definition, seek shelter and dwelling in a place called home. Like the yearning for home, solar energy is a universal resource, able to be utilized around the world, indifferent to place or politics. The International Solar Building Design Competition theme “Solar Energy for My Home” seeks ideas to establish a link between these two universal entities. Call for works and evaluation for the solar building design works are world widely collected. Via the competition, current and future architects and engineers will think deeply about dwelling form and people´s living mode from living environment and supporting energy point of view. By building design method and solar techniques, problems in healthy living environment and relevant energy will be solved. Meanwhile, new design idea and technical product should be exploited.

The competition sponsors are International Solar Energy Society, Architectural Society of China, Chinese Renewable Energy Society and Organizing Committee of Solar World Congress 2007. As the centerpiece of the Solar World Congress 2007 in Beijing, competition theme is coincident with the theme of Solar World Congress — “Solar Energy and Human Settlement”. The competition leads people to deeply think and exploit the function of solar energy in human´s life, and hopes to get attention in current and future living environment and supporting energy with each part involved in dwellings.

Competition Design Topics and Submission Collection

The design competition has two topics, consisting multi-storey downtown dwelling and low-rise village dwelling with 90 m² construction area in Beijing. Appendix of “Competition Brief for the International Solar Building Design Competition 2007” in

加拿大、意大利、英国、荷兰、伊朗、俄罗斯、埃及等四大洲16个国家。

2007年5月21~23日，由来自澳大利亚、奥地利、日本、中国台湾和中国大陆的太阳能和建筑专家组成的评审组，从竞赛组委会提交的110项入围作品中评选出综合奖获奖作品51项，包括：一等奖2项，二等奖4项，三等奖6项，优秀奖39项。组委会根据初评、中评和终评的专家评审意见，从全部提交作品中评选出技术专项奖作品8项。获奖作品的统计见表1。

全部获奖作品数据统计（包括综合奖和技术专项奖） 表1

项 / 类型 / 单位	低层农村住宅	多层城市住宅
	37	22
大专院校	33	13
设计院及公司	4	9

2．设计作品中的太阳能建筑设计方法

与2005年“中国太阳能建筑设计竞赛”[1]以及目前国际建筑设计技术的发展现状比较，本次设计竞赛在太阳能建筑设计方法上出现了明显的变化。

2.1 太阳能与建筑的结合逐步向技术集成方向发展。如924号多层住宅设计作品，在太阳能与建筑技术集成方面具有可操作性。在立面上，采用了模数化可移动遮阳部件、窗间墙型空气集热器、阳台型太阳能集热器、水平遮阳构件以及通风窗等，既较全面地运用了主被动太阳能技术，又让这些太阳能部件构成了现代住宅的立面元素。在许多作品中，阳台设计得到了特别的关注，将太阳能综合利用与阳台功能及其建筑部件结合起来，形成了独特的建筑景观。700号多层住宅作品以集交通、生态调节和交往休闲为一体的“绿核”楼梯间为创意出发点，将太阳能发电、聚风型风力发电技术与建筑技术集成起来，构成风光互补的城市住宅能源系统，创作出层层退台的建筑造型。

2.2 地域文化、气候特征、场地环境在建筑设计和规划设计中得到了高度重视，建筑造型、建筑材料的选择更加本土化、生态化和集约化，构造节能设计与建筑节能技术相得益彰。

2.3 在土地资源匮乏与生活水平提升的矛盾中，参赛者给予多层城市住宅室内外环境品质更多的关注。如732号多层住宅作品采用组合叠拼的单元方式为每户提供了户外平台，在解决小户型住宅外部环境品质方面具有借鉴意义。在许多作品中，参

this book shows the site environment and design conditions.

The competition gained world-wide attention in solar energy and architectural industry. Total 900 registrations have been received, and among them are from overseas of four continents, covering 47 countries, including China, USA, Russia, Germany, Australia,Italy, India, Spain, Japan, Uganda, South Africa and Argentina, etc. Totally 201 submission works were received, among them 117 are low-rise village dwellings and 84 are multi-storey downtown dwellings. The relevant 16 countries are from four continents include China, USA, Canada, Italy, UK, The Netherlands, Iran, Russia and Egypt, etc.

From 21st to 23rd May, 2007, seven Jury members from Australia, Austria, Japan, Taiwan Province of China and Mainland of China, who are all expertise in international solar building field consisted the final evaluation team and participated the final evaluation conference. General prizes from 110 works are selected out including two First Prizes, four Second Prizes, six Third Prizes, and 39 Honorable Mention Prizes. Based on the suggestions from preliminary, medium-term and final evaluation, eight submissions from all the 201 submissions won Prizes for Technical Excellence. The statistics from awarded submissions are shown in Table 1.

Table 1 Statistics for all the awarded submission works (including general prizes and prizes for technical excellence)

Item / Type / Institute	Low-rise Dwelling	Multi-storey Dwelling
	37	22
Colleges and Universities	33	13
Design Institutes and Companies	4	9

Solar Building Design Methods in Delivered Submissions

Compared with China Solar Building Design Competition 2005[1] and current situation of international building design techniques, the international competition has obvious diversification in solar building design methods.

2.1 The combination of solar energy and buildings is developing towards technical integration. For example, the multi-storey dwelling submission No.924 is practicable in the integration of both aspects. In elevation, it adopts moveable sun shading components in modulus, solar air heater for the installation on brace wall in between windows and balcony, horizontal sun shading component and ventilating window, etc. The active and passive solar energy are widely used in this submission and the relevant solar components consist of the elevation elements in modern dwellings. Balcony design is particularly paid attention, which combines the solar energy with balcony function to be part of building components, and unique building sight is formed. Multi-storey dwelling No.700 submission starts from integration of solar PV

赛者利用复合通风策略的底层空间，结合竖向交通的天井空间、由太阳能部件遮阳的种植屋顶等，为大都市里的人们创造着别样的休闲交往空间，同时又肩负着通风、采光、遮阳的作用。

2.4 低层农村住宅设计反映了中国当地农村生活、生产的现状和未来的发展趋势。很多作品能够从农村能源现状、中国北方地区农民生活方式、农村生产特点去构思新农村未来的家，同时充分考虑了农民对住宅运行成本的支付能力，并使室内环境易于控制。

2.5 太阳能被动利用技术更加具有可操作性，中国五千年积淀的传统建筑理念和建造方法获得了继承与提升。建筑物本身作为系统的组成部件，不但反映了当地的气候特点，而且在适应自然环境的同时充分利用了自然环境的潜能，在解决建筑物的固有问题方面发挥了主要作用。

如，中国北方“四合院”的传统建筑形式在太阳能建筑理念下得到了升华，可启闭的阳光中庭取代了传统的院落空间，平面布局的适应性得到了极大的改善，通风、采光、保温、隔热的可控性更强。没有改变的是北墙开窗受到了严格的限制。

适应北方地区的掩土建筑获得了新生。如243、134号农村住宅作品，通过对场地特征和生活方式的考察，使得作品的可实施性更强。

作为传统设计方法的“中庭”含义得到了扩展，复合了组织交通、强化通风、自然采光、营造景观、邻里交往等更多功能。772号多层住宅作品和959号低层住宅作品都对中庭的设计给出较满意的答案。

“火炕”是北方农村传统住宅的一个典型符号，尤其受到老年人的推崇。956号、134号农村住宅作品对传统火炕进行了改良；532号作品在充分理解北方农村生活、生产需求的基础上，采取了太阳能集热器与“水炕”结合的局部采暖系统具有创意。许多作品还利用空气集热器，地窖或水井等集热蓄热技术，通过强化地板蓄热采暖或通风降温的设计手法代替了传统的烟气加热方法（如，地炕、火炕、火墙）。

3. 发展中的太阳能建筑理念

理念的提升往往带来建筑技术与产品开发的革新。2007年台达杯国际太阳能建筑设计竞赛为我们展现出更新的建筑观点和设计理念。

3.1 可变空间或适应性住宅的含义得到了拓展。如770号农村住宅作品中的可变空间，包括了街道的变化、院落的组合、生产与生活空间的迁移、太阳的引入与遮挡等多个方面。而388号低层住宅作品的适应性理念，不仅反映了季节变换和时间推移（起居室、卧室、餐厅、阳光室、阳台等空间和部件的功能、大小都是可变的，以满足家庭人口的变化和游客入住需要），而且反映了太阳能的主动和被动利用（阳光室和阳

system, wind capture type wind power production technique, and building technique, forming self- supplement between wind and electricity for city dwelling power system and back off layer upon layer building shape.

2.2 Regional culture, climate characteristic, and site environment gain high recognition in building design and planning design. The building shape and selection of material are localized, ecological and concentrated. The structure energy saving design for building energy efficient techniques brings out the best in each other.

2.3 In the contradiction of short of land and improving of living standard, participants pay more attention to indoor and outdoor environmental quality in multi-storey dwellings. For example, submission No.732 offers outdoor flat roof for each dwelling by combined terrace house unit, which can be used for reference in improving exterior environmental quality of small size dwellings. Many submissions adopt ground level space with complex ventilation strategy, dooryard combined with vertical routeway, moveable sun shading components and roof planting, etc. All the designs create distinctive relaxation space for urban people, and meanwhile bear arrangement of function for ventilation, lighting and sun shading.

2.4 Low-rise village dwelling design reflects state of the art of Chinese local village life mode, production character and future trend. Many submissions consider new village dwellings from point of view in energy usage status, farmer living mode in northern China, and production character. Meanwhile, rural dwellers' affordability ability is also considered by these submissions.

2.5 Passive solar building techniques are more practicable. Traditional architectural idea from 5000 years' deposit and construction method in China are inherited and updated. Being the component of system, passive techniques not only reflect local climate character, but also the potential to fall together with natural environment. It plays an important role in solving existing problems in building.

For example, traditional building form of "Si He Yuan" in northern China is sublimed by solar building techniques. The controllable daylight atrium replaces traditional courtyard space. The adaptability of layout is largely improved. Ventilation, lighting, insulation and heat preservation are more controllable. Window size in northern wall is rigidly restricted as remains of tradition.

Building partly surrounding by earth, which is adaptive to northern China, gains revitalization in the competition, such as submission No. 243 and No.134. Via on-site investigation to character and living mode, the projects become more feasible.

Being the traditional design method, the meaning of "atrium" is extended, which combines multi-function in flow organization, mechanical ventilation, natural lighting, landscaping, and communication with neighbors, etc. Multi-storey submission No. 772 and low-rise submission No.959 both have good atrium designs.

"Fire-Kang" is a symbol in traditional dwelling of northern village, especially for elders. No.956 and No.134 reform the traditional Fire-Kang. Based on the fully understand of northern village life and production requirement, No.532 adopts the combination of solar collector and "Water-Kang" to be the local heating system,

台空间，住宅建筑体量，相变材料外墙和地面、外围护结构、集热器部件等也具有可变性，以达到充分利用太阳能和节约建筑能耗的目的）。可活动折叠的外围护墙体、可移动收放的遮阳保温部件在许多作品中得到了应用，有的还附加了相变蓄能的构思。

3.2 "热缓冲层"与"热质量中心"的概念在设计作品中得到了实践。比如，353号低层住宅作品从传统四合院的活动中心"院落"转化成阳光室型的起居空间，引入传统壁炉的构思，形成了住宅的"热质量中心"。而通风屋面和阁楼空间、北侧带状储藏空间、南侧的特朗布墙和阳光室构成了主要生活空间的"热缓冲层"。这样的概念还有很多，如574号多层住宅作品，在平面设计上将厨房、卫生间以及生活辅助阳台设置在北侧，对端单元平面进行了特别的处理，并对建筑的"六个面"（包括地面）行了太阳能利用设计。而917号多层住宅作品，以折形的楼梯间、折形的阳台与适应性平面构成了该住宅作品的基本创意，太阳能利用的理念还包括可推拉透光相变材料的南墙、隔热通风做法的西山墙等。

3.3 热压通风系统的可操作性更强。如573号农村住宅作品设计了一套基于通风烟囱的空调系统。特朗布墙将空气加热并储存在混凝土蓄热层中，夜间通过混凝土平板换热系统为室内供热。夏季空气经过地窖降温和蒸发冷却，在光伏发电为动力的风机驱动下进入自然通风系统，为室内通风降温。而1026号多层住宅作品的热压通风系统是由窗间夹壁墙与通风屋面构成的，构思新颖。

3.4 被动设计优先的太阳能建筑理念成为共识。这也是本次竞赛与2005年设计竞赛[1]的显著不同点。在上一届设计竞赛中，新的太阳能主动利用技术被广泛地应用，但太阳能被动利用设计和建筑构造节能设计不到位，从而影响了太阳能建筑的效益。在本次设计竞赛作品中，太阳能被动利用技术得到了发展。如379号农村住宅作品按照冬季热需求水平，将建筑空间由北至南划分为设施空间、服务空间和生活空间，并在生活空间和服务空间之间设置了辅助加热夹壁墙。由阳光室、屋面空气夹层、空气预加热通道、太阳能烟囱组成的被动系统能有效地解决冬季加热和夏季通风的问题。而982号多层住宅作品采用了小进深户型，采用户式太阳能采暖/制冷循环系统，并考虑了夏季集热器的遮阳，具有创新性。

3.5 风光互补的住宅能源系统有可能进入普通住宅。建筑间距、建筑通风通道不仅为住宅院落提供自然通风环境，还为风力发电提供了一种可能的思路。当然，这种理念还有许多问题需要面对，如噪声的问题、维护的问题等。

4. 感谢

本次竞赛由国家住宅与居住环境工程技术研究中心和中国可再生能源学会太阳能

which has originality. Many submissions use thermal storage technique with air collector, cellar and well. Via enhancing floor thermal storage for heating or ventilation for cooling, traditional heating method by smoke from the fireplaces (such as ground-kang, fire-kang and fire wall) is replaced.

Developing Solar Building Concepts

Upgrade of concepts usually brings innovation of building techniques and product exploitation. International Solar Building Design Competition 2007 shows new architectural point of view and design concept.

3.1 The meaning of flexible space or adaptive dwelling is developed. The flexible space in low-rise submission No.770 includes variety of street, combination of courtyard, shift of production and living space, introduction and shading of sunshine, etc. The adaptive concept in low-rise submission No.388 reflects not only season change and time shift (function of living room, bedroom, dining room, sunny room, and balcony, etc could be changed according to the change of family numbers and visitors), but also the active and passive use of solar energy (sunny room, balcony, shape coefficient of building, phase change material composing exterior wall and ground, envelope, and heat collector have the mobility to fit fully making use of solar energy and energy saving propose). Besides, foldable envelop walls, moveable sun shading and insulation components are widely used in many submissions, and phase change for heat storage is also considered in some submissions.

3.2 The idea of "Thermal buffer area" and "Thermal mass core" are realized in some design submissions. For example, low-rise submission No.353 transforms traditional courtyard of "Si He Yuan" into sun room, together with traditional grate, therefore, a "Thermal mass core" is formed. Ventilation roof and attic space, north zonal storage space, south TROMBE wall and sun room consist of "Thermal buffer area" for living space. There are many such kinds of ideas, such as multi-storey submission No.574 sets kitchen, toilet and auxiliary balcony in the north with special arrangement to end unit, and solar usage design to building six faces (including ground face). The basic idea of Multi-storey submission No.917 is using zigzag stair well, zigzag balcony and adaptive layout. The solar usage in this work includes moveable south wall in phase change material, and west gable wall with heat insulation and ventilation function.

3.3 Thermal pressure ventilation is more operable. For example, low-rise submission No.573 designs an air conditioning system based on ventilation chimney. In winter, TROMBE wall heats up the air and stores the heat into concrete layer. In the night, the heat is transferred into indoor via concrete plate heat exchanger. In summer, air is cooled through cellar and goes into ventilation system driven by PV powered fan. The thermal pressure ventilation system in multi-storey submission No. 1026 is composed by cavity wall in between windows and ventilation roof, which is a novel idea.

建筑专业委员会承办，得到了台达环境与教育基金会、沿海绿色家园有限公司、北京四季沐歌太阳能技术有限公司、甘肃天鸿金运置业有限公司、北京九阳实业公司等单位的经费资助，在此表示深深的谢意，也盼望2009年国际太阳能建筑设计竞赛活动更精彩。

5. 结语

有理由相信，太阳能建筑设计竞赛能够在引导住宅相关利益主体关注居住品质和能源供给，引导未来的建筑师/工程师认识身上担负的重任，引导能源企业开发新技术新产品，引导房地产开发商在建设太阳能建筑等方面发挥应有的作用，让我们共同拥有“阳光生活”。

参考文献

[1]仲继寿，张磊，何少平.中国太阳能建筑设计竞赛获奖作品集.北京：中国建筑工业出版社，2005.

3.4 There is a common sense that passive design should be the priority in solar building design process. This is the obvious differentia compared with that of design competition in 2005[1]. In the competition 2005, active solar energy techniques were widely used, but passive solar energy design and energy efficiency design were seldom used and solar energy efficiency was quite low. In the competition 2007, passive solar techniques are widely developed. For instance, based on the heat requirement in winter, low-rise submission No.379 partitions the building space from north to south into equipment space, service space and living space. Cavity wall for assistant heating propose is installed between living space and service space. The passive system composed by solar room, roof air duct, air preheat channel, and solar chimney, can effectively realize heating in winter and ventilation in summer. Multi-storey submission No.982 adopts dwelling size with short depth, household solar heating/cooling recycling system and solar collector to be the sun shading components, which are creative.

3.5 The residential energy system in alternative use with wind and solar energy may enter the common families. Sunlit distant of building and building ventilation channel offer not only natural ventilation environment, but also opportunity for wind power electricity generation. It is true that these ideas still have many problems to face, such as noise, maintenance, etc.

Acknowledgement

The Competition Administrators are China National Engineering Research Center for Human Settlements (CNERC) and Special Committee of Solar Buildings, Chinese Renewable Energy Society; the main co-sponsor is Delta Environmental & Educational Foundation and rest co-sponsors are Coastal Greenland Group, Beijing Siji Micoe Solar Energy Technology Co., LTD., GanSu TianHong JinYun Property Development LTD., and Beijing Jiuyang Industry Co., LTD. Greatly appreciate to these co-sponsors, and hope a more brilliant International Solar Building Design Competition in 2009.

Conclusion

We believe that solar building design competition could lead correlative parts involved in residential buildings to pay attention to residential quality and energy supply; lead future architects and engineers to realize the important task; lead energy enterprise to exploit new techniques and new products; and lead real estate developers to construct more and more solar buildings. Hope everyone owns “Solar life”.

Reference

[1] Zhong Jishou, Zhang Lei, He Shaoping. Awarded Works from China Solar Building Design Competition.Beijing: China Architecture & Building Press, 2005.

过程回顾
General Background

图1 设计竞赛启动仪式

本次竞赛的主办单位是：国际太阳能学会、中国建筑学会、中国可再生能源学会、2007世界太阳能大会组委会；承办单位是国家住宅与居住环境工程技术研究中心和中国可再生能源学会太阳能建筑专业委员会；冠名单位为台达环境与教育基金会；协办单位有沿海绿色家园有限公司、北京四季沐歌太阳能技术有限公司、甘肃天鸿金运置业有限公司、北京九阳实业公司。本项竞赛在“科学、创新”的原则下，公开、公正、公平地顺利进行，为打造国际知名的专业学术设计竞赛品牌，提高中国太阳能建筑设计、建设和推广水平作出了贡献。

（1）2006年9月22日“2007世界太阳能大会台达杯国际太阳能建筑设计竞赛”新闻发布会在人民大会堂顺利召开，主办单位领导人中国可再生能源学会理事长石定环先生同竞赛冠名单位台达环境与教育基金会董事长郑崇华先生以及全国人大环资委调研室主任徐晓东先生等共同启动了本次竞赛(如图1所示)。

（2）2006年9月23日～2007年1月31日，开展了竞赛组织与宣传。太阳能建筑涉及专业多，设计难度大。为保证竞赛的顺利进行，组委会专门针对国内主要参赛高校开展了免费授课；利用《建筑学报》、《建筑师》等7家面向业内人士的各类太阳能和建筑专业杂志进行设计答疑与热点问题探讨；本次竞赛在组织方面更加注重对社会各界的宣传工作，先后邀请《中国经济时报》、《中国建设报》、《参考消息》等21家平面媒体向社会大众进行科普宣传，对太阳能等清洁能源在建筑中的应用进行全方

The sponsors of International Solar Building Design Competition 2007 are International Solar Energy Society, Architectural Society of China, Chinese Renewable Energy Society and Organizing Committee of Solar World Congress 2007. The Competition Administrators are China National Engineering Research Center for Human Settlements (CNERCHS) and Special Committee of Solar Buildings, Chinese Renewable Energy Society; the main Co-Sponsor is Delta Environmental & Educational Foundation and rest Co-Sponsors are Coastal Greenland Group, Beijing Siji Micoe Solar Energy Technology Co., LTD., GanSu TianHong JinYun Property Development LTD., and Beijing Jiuyang Industry Co., LTD.The organizing committee ensured the competition with openness, justness and fairness based on the principle of "Science & Innovation". The goal which is to create a world wide famous brand with professional academy design competition, and enhance Chinese solar building design, construction and development level is achieved.

Process Retrospect

(1) The International Solar Building Design Competition 2007 was successfully launched in People's Great Hall at 22nd September 2006, Beijing. As a parallel event, the announcement of Solar World Congress 2007 to be held in September 2007, Beijing, China, was released. The Congress will be firstly held in China, and it

图2 作品征集阶段媒体见面会

位、多渠道的报道；通过新浪网、ABBS建筑论坛、国际太阳能学会ISES网站等27家国内外网站进行在线新闻报道、实时发布竞赛信息(如图2所示)。

(3) 在2006年10月1日～2007年1月31日的竞赛注册时间内，共计有900人注册。其中265个国外注册人员，涵盖46个来自四大洲的国家，包括美国、意大利、俄罗斯、印度、西班牙、德国、日本、澳大利亚、乌干达、南非和阿根廷等，竞赛的举办得到了国内外太阳能和建筑行业的广泛关注。

(4) 到竞赛作品截止提交时间2007年3月12日为止，共收到提交作品201项，其中国外作品44项，占总数的22%。作品涉及中国、美国、加拿大、意大利、英国、荷兰、伊朗、俄罗斯、埃及等四大洲16个国家。

具体统计数据见表1。

参赛作品统计表　　表1

类型 / 单位	低层参赛作品	多层参赛作品
	117	84
大专院校	92 (79%) (其中国外7项，占8%)	54 (64%) (其中国外3项，占6%)
设计院及公司	25 (21%) (其中国外17项，占68%)	30 (36%) (其中国外17项，占57%)

can be called the "Olympic Games" in solar energy field. Being the centerpiece of the congress, the International Solar Building Design Competition was also initiated. During the meeting, Mr. Shi Dinghuan, the President of Chinese Renewable Energy Society (Competition Sponsor), with Mr. Zheng Chonghua, Board Chairman of Delta Environmental & Educational Foundation (Competition Co-sponsor), and Mr. Xu Xiaodong, director of Policy Research Center of Environment & Resource Committee, the National People's Congress, pressed the startup button together, which represents the startup of the competition(Fig.1).

(2) Competition propaganda

From 23rd Semptember till 31st January 2007, in order to widely spread the concept of solar buildings, enhance the public comprehension to all kinds of solar energy products and solar buildings, and build up the new concept of using cleaning energy voluntarily, the Competition Committee organized training concerning solar building design; published the competition news at domestic and overseas website (sina.com.cn, abbs.com.cn, ises.org, etc) in real time; made use of all kinds of magazines (Architectural Journal, The Architect, etc) concerning solar energy and buildings to discuss the relevant hot issues and answer the questions about design; carried out science propaganda to public via media (China Economic Times, China Construction News, etc); reported and propagandized the use of solar energy and other cleaning energy in buildings via diverse orientation and channel(Fig.2).

The competition is taking the chance to introduce the advanced design concepts & methods from abroad, to find the gap of design concepts, products between domestic and overseas, to improve technical capacity with domestic architects, equipment engineers who involved in soar building design. By strengthening the first step, i.e. building design, the technical foundation for long term building energy conservation in China will be solidly established.

(3) Competition Registration

The registration process was starting from 1st October 2006 till 31st January 2007. Total 900 registrations have been received, and among them 265 registrations are from overseas of four continents, covering 46 countries, including USA, Italy, Russia, India, Spain, Germany, Japan, Australia, Uganda, South Africa and Argentina, etc.

(4) Competition Submission

The submission works were submitted from 31st January till 12th March 2007, totally 201 submission works were received, among them 44 are from overseas (22% of the total). The relevant 16 countries from four continents include China, USA, Canada, Italy, UK, the Netherlands, Iran, Russia and Egypt, etc.

（5）专业评审

① 2007年3月12日～31日，作品打印、建立内部编号和档案，并进行形式审查。

② 2007年4月1日～30日，由3名国内专家组成的评审组进行初评，采用背对背的评分方式，为每一项参赛作品打分，并根据排分的名次，从201项提交作品中评选出110项作品进入中评。

③ 2007年5月9日～10日，由5名国内专家组成的评审组进行中评。如图3所

图3 中评评审会 Medium-term evaluation

图4 终评评审会 Final evaluation conference

The statistical data are shown in table1.

Table 1 the Statistical Data of Competition Submission Works

	Low-rise Dwellings	Multi-storey Dwellings
	117	84
Colleges and Universities	92 (79%) (7 from overseas, 8%)	54 (64%) (3 from overseas, 6%)
Design Institutes and Companies	25 (21%) (17 from overseas, 68%)	30 (36%) (17 from overseas, 57%)

(5) Professional Evaluation Process

① From 12th till 31st March 2007, printed of submission works, created internal registration number and record, preliminary preview.

② Preliminary evaluation:

From 1st April to 30th April 2007, the preliminary evaluation was preceded, three Chinese experts attended this process to review the 201 submission works. Each submission work was marked by each expert separately, the sum of the marks by three experts determine the number of submission works which can enter the next round for medium-term evaluation.Finally, 110 submission works were selected to enter the next round for medium-term evaluation.

③ Medium-term evaluation

From 9th May to 10th May 2007, the medium-term evaluation was preceded, five Chinese experts attended this process to review the 110 submission works(Fig.3). Each submission work was marked by each expert separately. However, experts have some different comments to some submission works, and the divergence was quite big for these works. In order to show the respect the competition participants and make competition fair, the organizing committee decided to deliver the 110 submission works to final evaluation Jury team for final evaluation.

④ Final evaluation conference

From 21st to 22nd May, 2007, the final evaluation conference was held in China Architecture Design & Research Group, the seven Jury members from Mainland of China, Taiwan Province of China, Japan, Austria, and Australia are all expertise in international solar building field. Leading by the chief commissioner, Mr. Zhou Ganshi, academician of Chinese Academy of Engineering and Sciences, the Jury

图5 中国建筑设计研究院修龙院长参观作品

图6 中国建筑学会副秘书长唐仪清与国家住宅工程中心刘燕辉主任参观作品

图7 中国可再生能源学会石定环理事长与两院院士周干峙讨论竞赛推广工作

示。中评专家组首先对110项初评作品进行确认，对入围作品进行了独立评审。评审结果表明各专家对部分作品看法存在分歧，从尊重参赛作者和公平竞赛的角度出发，竞赛组委会决定将110个作品全部提交给终评专家组进行评审。

④ 2007年5月21～22日，"2007台达杯国际太阳能建筑设计竞赛"终评会在中国建筑设计研究院顺利举行，来自中国大陆、中国台湾、日本、奥地利、澳大利亚的七位国际太阳能和建筑专家，在本次竞赛评委会主任、两院院士周干峙的带领下，开展了认真、周密的评审工作如图4～图7所示。组委会为便于专家对作品进行横向比较，将全部入围作品统一制作成展板。在专家组长、国家工程设计大师崔恺的主持下，经过四轮讨论投票方式的评审，专家组从竞赛组委会提交的110项入围作品中评选出综合奖获奖作品，包括：一等奖2项，二等奖4项，三等奖6项，优秀奖39项。

全部获奖作品数据统计表　　表2

类型 / 单位	低层参赛作品	多层参赛作品
	35	16
大专院校	31 (88%) (其中国外1项，占3%)	11 (69%) (全部为国内作品)
设计院及公司	4 (12%) (其中国外2项，占50%)	5 (31%) (其中国外1项，占20%)

2007年6月～8月竞赛组委会将整理出版优秀作品集，并挑选部分获奖作品制作模型。

在9月举行的"2007世界太阳能大会"上举办免费向社会开放的优秀作品展，同时隆重举办本次竞赛的颁奖仪式。并通过参加世界太阳能大会的代表投票，评选出"我最喜爱的家"大众奖。

members had a very serious and careful evaluation process(Fig.4~Fig.8). All the 110 works were printed in the exhibition boards. Presided by National design master, Mr. Cui Kai, four vote rounds was preceded. General prizes from 110 works were selected out including two First Prizes, four Second Prizes, six Third Prizes, and 39 Honorable Mention Prizes.

From June to August 207, the publication for excellent works will be carried out,

Table2 Total data statistics(Including first, second, third prizes and honorable mention prize)are shown in Table 2.
Total Data Statistics

	Low-rise Dwelling	Multi-storey Dwelling
	35	16
Colleges and Universities	31 (88%) (1 from overseas, 3%)	11 (69%) (all from China)
Design Institutes and Companies	4 (12%) (2 from overseas,50%)	5 (31%) (1 from overseas, 20%)

and model making for some works.

In September 2007, all the awarded works will be exhibited in Solar World Congress 2007, the award ceremony will be held meantime. Ten entries will be selected directly by the delegates and conference participants, for the award for, "My Favorite Home." Winners will be awarded a certificate of merit.

2007 台达杯国际太阳能建筑设计竞赛终评专家组成员介绍

Introduction of Jury Members from Final Evaluation Team of International Solar Building Design Competition 2007

主任委员：

Chief Commissioner:

周干峙：中国科学院院士、中国工程院院士，中国房地产及住宅研究会会长，中华人民共和国建设部原副部长。

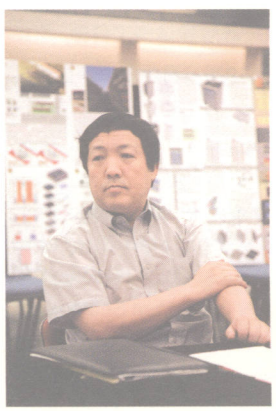
Mr. Zhou Ganshi, Academician of Chinese Academy of Engineering and Sciences;President of China Real Estate and Housing Research Association; Former Vice-minister of Ministry of Construction, PRC.

Deo Prasad: 国际太阳能学会亚太区主席，澳大利亚新南威尔士大学建筑环境系教授。

Mr. Deo Prasad, Asia-pacific President of International Solar Energy Society (ISES); Professor of Faculty of the Built Environment, University of New South Wales, Sydney,Australia.

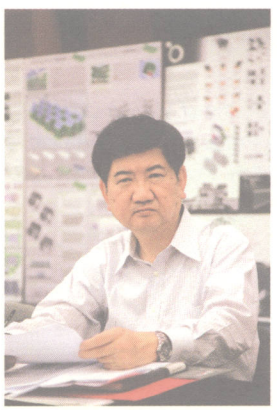
委员：

Jury Members:



崔恺：国家工程设计大师，国际建筑师协会副理事，中国建筑学会副理事长，中国建筑设计研究院副院长，总建筑师。2003年荣获法国政府颁发的“文学艺术骑士勋章”。

Mr. Cui Kai, National Design Master; Deputy Board Member of IUA (International Union of Architects); Vice President of Architectural Society of China; Vice President and Chief Architect of China Architecture Design & Research Group; French Culture & Art Cavalier Medal (2003).



Mitsuhiro Udagawa：日本早稻田大学博士，国际太阳能学会日本区主席，日本工学院大学建筑系教授。

Mr. Mitsuhiro Udagawa, Doctor of Engineering of Waseda University; President of ISES-Japan; Professor of Department of Architecture Kogakuin University.

林宪德：日本东京大学博士，台湾成功大学建筑系教授，台湾绿色建筑委员会主席。

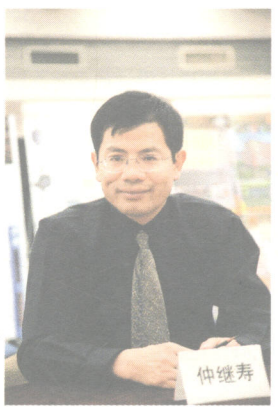
Mr. Hsien-Te Lin, Doctor of Engineering, Tokyo University, Japan; National Cheng-Kung University, Tainan, Taiwan Province of China; Chairman of Green Building Committee of Taiwan Province of China.

栗德祥：清华大学建筑学院教授，博士生导师，国家一级注册建筑师。2002 年荣获法国政府颁发的“文学艺术骑士勋章”。

Mr. Li De Xiang, Professor of School of Architecture, Tsinghua University,Doctoral Supervisor, Class 1 Registered Architect; French Culture & Art Cavalier Medal(2002).

Karin Stieldorf：奥地利维也纳理工大学博士，维也纳理工大学建筑设计系副教授，国际太阳能学会奥地利区副主席。

Ms.Karin.Stieldorf, Doctor of Vienna University of Technology; Vice Professor of Department of Architecture and Design; Vice-president of ISES-Austria.



仲继寿：中国矿业大学博士，教授级高级工程师、国家一级注册建筑师、国家一级注册结构工程师，国家住宅工程中心常务副主任、中国可再生能源学会太阳能建筑专业委员会主任委员。

Mr.Zhong Ji Shou, Graduated from China University of Mining & Technology with Doctor′s Degree in Engineering; Authorized with Class 1 Registered Architect and Class 1 Registered Structural Engineer; Executive Director in China National Engineering Research Center for Human Settlements (CNERCHS);Chief commissioner of Special Committee of Solar Buildings, Chinese Renewable Energy Society; Vice Chief Engineer and Professor.

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