CHINA CONSTRUCTION 4.0

中国建造4.0国际创新平台

China Construction 4.0 International Innovation Platform

BRIEF INTRODUCTION

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1.0 Platform Overview

1.1 Platform Brief Introduction

The China Construction 4.0 International Innovation Platform （CC4.0）and Consortium was established by Professor Guoqiang Zhang of Hunan University, China. It is managed by Hunan China Construction 4.0 Building Industry Academy. In CC4.0 system, construction refers to the life cycle process of urban and rural infrastructure and buildings. “China Construction 4.0” refers to the four developments phases of construction in China, namely ① Traditional folk houses; ② Modern construction stage represented by high rise structure and modern equipment as air conditioning and elevator; ③ Green, intelligent and industrialization of construction, and high-quality; and ④ New era of digital construction . What is special about the concept of CC4.0 is that we believe that the development of China's construction industry needs to improve the innovation capability, to reconstruct and improve the quality assurance system as the main work basis, and then to enter the digital era effectively.

1.2 Core Concepts

High-quality Construction, Sustainable Cities: Through international cooperation and innovation &entrepreneurship, constitute scientific, systematic and refined theoretical and practice model, promote the quality

of construction and urbanization in China and developing countries, realize sustainable development

1.3 Platform Definition

China Based International Knowledge and Innovation Platform for High-quality Construction and Sustainable Urbanization

1.4 Platform History

In 1998, Prof. Guoqiang Zhang developed the first Internet website in the field of HVAC&R in China(www.chinahvacr.com).

- In 1999, Changsha Netsun Information Technology Co. Ltd was founded (www.netsun.com.cn.Renamed as Changsha Ruili Netsun Culture Communication Co., Ltd. in 2015).
- In 2001, Hosted the first large scale international conference in the field of building energy and environment in China: The 4th International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings(IAQVEC2001).
- In 2003, Journal of Building Energy & Environment (www.chinabee.org), which is sponsored by Architectural Society of China, was published by Netsun company. Prof. Zhang was appointed as the editor-in-chief.
- In 2005, Center for Sustainable Built Environment, Hunan University was established(www.chinasbe.com. Renamed as Institute for

Sustainable Urbanization and Construction Innovation, Hunan University in 2017).

- In 2005, Awarded Asia-Link project from EU: A multi-disciplinary approach to curriculum development in sustainable built environment （www.cc4education.com）.
- In 2006, Secured 6 projects from the Ministry of Science and Technology, including green building design, renewable energy applications, ventilation technology, etc.
- In 2006, Awarded the first prize of science and technology progress of the Ministry of Education and the first prize of science and technology progress of Construction of China.
- In 2007, the Key Lab of Building Safety and Energy Efficiency was approved by the Ministry of Education, China.
- In 2008-2012, undertake 10 national demonstration projects in the field green building and energy-saving and emission reduction with the total financial funding about 2 billion RMB and 10 provincial technical standards were compiled.
- In 2009, Hunan University Regal Energy Technology Co., Ltd was founded (www.hnregal.com).
- In 2012, Undertook major scientific and technological projects in Hunan Province, took apart in the IEA ECES Annex 31 project and

conducted international cooperation research on district energy and energy storage technologies.

- In 2013, The National Center for International Research Collaboration in Building Safety and Environment (yjzx.chinahvacr.com) was approved by the Ministry of Science and Technology.
- In 2013, The Evaluation and Promotion Platform for Energy Conservation and Emission Reduction was approved by the Ministry of Finance and the National Development and Reform Commission.
- In 2014, Hunan University team took part in IEA EBC Annex62:"Ventilatice Cooling" as national representative of China.
- In 2014, China(Changsha) International Energy Saving and Emission Reduction Industry Expo (www.eser-expo.com) was initiated.
- In 2015, China（Changsha）Green Building Expo was initiated , which was renamed as Prefabricated Building and Construction Technology Expo since 2016(www.higbe.org) and officially sponsored by Hunan and Changsha government.
- In 2015, Hunan University Regal Energy Technology Co., Ltd was elected as vice chairman of the Hunan Association of Construction Science and Technology and Building Energy Efficiency.
- In 2016, China Construction 4.0 International Innovation Forum(www.cc4forum.com) was initiated.

- In 2017, Prof. Zhang attended "Sweden-China Green Development Forum" and proposed the concept and system of China Construction 4.0 internationally.
- In 2017, China Construction 4.0 International Innovation Forum was officially defined as international platform of the Building Expo. Hunan China Construction 4.0 Building Industry Academy, Innovation Platform and consortium were established (www.construct4.cn).
- In 2018, Prof. Zhang participated in Air Infiltration and Ventilation Centers (AIVC,Chinese Website： www.vent.org.cn) as a national representative of China.
- In 2018, Hunan University team participate in the China International Solar Decathlon(www.solaroffspring.com).
- In 2018, The International Conference on 2050 AsiaCity: Quality Construction and Sustainable Cities was initiated (www.cc4conference.com).
- In 2019, Hunan University Regal Energy Technology Co., Ltd. was elected as the rotating president unit of Changsha Building Energy Conservation Association.
- In 2019, Hunan University Regal Energy Technology Co., Ltd was elected as deputy director of the Hunan Provincial Green Building Council.

- In 2019, started to operate and manage "Changsha Guqiao Vocational Training School" (School License No.: Renshemin 1801034000092, www.guqiaoxueyuan.com).
- In 2019, Co-founded China Low-carbon Network Hunan Operation Management Center.
- In 2019, Hunan University team won the first price of Hunan Educational Achievement for sustainable built environment education.

2.0 Main Institutions

2.1 Hunan China Construction 4.0 Building Industry Academy

Joint-stock Industrialization R&D and Management Agency.

Main business: transformation of fundamental research achievements; industrial technical support; CC4.0 innovation platform/consortium management and membership services; technical operations and management of forum and meetings; start-up business incubation such as green planning and design

CHINA CONSTRUCTION 4.0 湖南四点零建筑产业技术研究院

Website: www.jianzao4.cn

2.2 Institute for Sustainable Urbanization and Construction Innovation, Hunan University

Interdisciplinary research institution of Hunan University.

Main business: technical research and talent cultivation in green building, fabricated building, smart technology application in construction; student innovation and entrepreneurship practice

湖南大学城市与建筑创新研究院
Institute for Sustainable Urbanization and Construction Innovation, Hunan University

Website: www.chinasbe.com

2.3 National Center for International Research Collaboration in Building Safety and Environment

International joint research institution approved by the Ministry of Science and Technology

Main research fields: building safety, building energy conservation, built environment, building materials, IT technology application in construction.

建筑安全与环境国际联合研究中心
National Center for International Research Collaboration in Building Safety and Environment

Website: yjzx.chinahvacr.com

2.4 Hunan University Regal Energy Technology Co., Ltd.

Joint-stock technical service and research achievement transformation demonstration agency

Main business: green building consulting, sustainable energy engineering, energy consumption monitoring and control, building energy efficiency renovation, waterproof materials and engineering, etc.

Website: www.hnregal.com

2.5 Changsha Ruili Netsun Culture Communication Co. Ltd

Joint-stock communication service demonstration agency

Main business: Expo, forum and conference organization, website and new media operations, professional publications

Website: www.netsun.com.cn

2.6 Changsha Guqiao Vacational Trainning School

Joint-stock vocational training school

Main business: innovative training and vocational skills training in the field of construction and green development.

Website: www.guqiaoxueyuan.com

3.0 Annual Events Introduction

3.1 Expo: China (Changsha) Prefabricated Building and Construction Technology Expo (PBCTE)

Prefabricated buildings and green buildings are the pillar industries supported by the Hunan Provincial Government. China (Changsha) Prefabricated Building and Construction Technology Expo (simply PBCTE) is the international exchange and cooperation platform for the industrial cluster. Since 2016, PBCTE has been successfully held for three times with a total exhibition area of 150,000 square meters, attracted nearly 200,000 visitors from 51 countries and regions and 30 provinces, municipalities and autonomous regions in China. The contract amount reached 60 billion RMB and has won series of honors such as “China Brand Exhibition Gold Award”, “China Cities Excellent Exhibition Project Award” and “Most Brand Value Industry Exhibition”.

2019 PBCTE will reach area of 60,000 m2, attracting more than 700 exhibitors. Exhibitors and visitors come from 20 different nations and districts. There will be more than 25 governmental delegation group from different provinces and cities, the total visitors could be reach 80,000.


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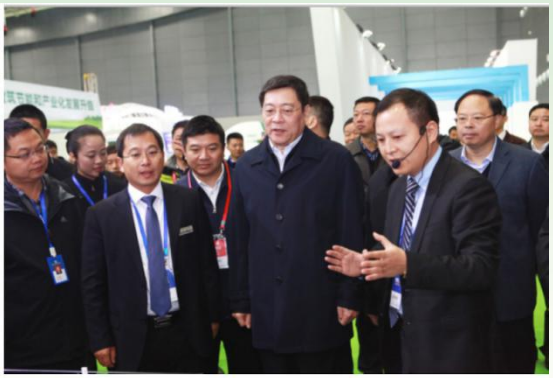
Build Green Future

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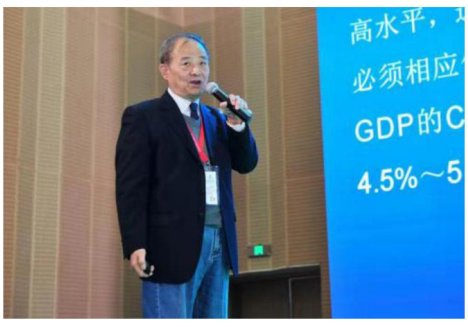
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新时期建筑方针
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3.2 Forum: China Construction 4.0 (CC4.0) International Innovation Forum

CC4.0 Forum was established in 2016. The mission of the Forum is to discuss the concept of CC4.0, exchange international advanced experience, gather advanced institutions and talents at home and abroad, and promote China's construction to high-quality and green development.

In 2017, the CC4.0 Forum was officially positioned as the International Platform of PBCTE, the Hunan Provincial Department of Housing and Urban-Rural Development, the Hunan Provincial Department of Science and Technology, the Changsha Municipal People's Government, the Hunan Xiangjiang New District Management Committee, China Construction Corporation, and Hunan University sponsored the forum. The China Architecture Society provided academic support. 18 institutions from 10 countries and regions signed cooperation agreements to form the “China Construction 4.0 International Innovation Consortium” (CC4.0 Consortium).

In the 2018 forum, academicians and entrepreneurs from more than 10 internationally renowned universities, research institutes and enterprises jointly announced the “Changsha Declaration on High Quality Construction”. The number of international organizations that signed the agreement to enter the CC4.0 Consortium has reached more than 50.

3.3 Conference: International Conference on AsiaCity 2050, High Quality Construction and Sustainable cities

International Conference on AsiaCity 2050: High-quality Construction and Sustainable Cities was established in 2018, it is a concurrent annual academic conference during PBCTE and the CC4.0 Forum.

2018 AsiaCity2050 Organization Institutions

Sponsors: Architectural Society of China, Hunan University, International Society of Indoor Air Quality, Ventilation and Energy Conservation in Buildings

Co-sponsors: Architecture Institute of Japan, Korean Architectural Society, The Hong Kong Polytechnic University, The university of Hong Kong, The Chinese University of Hong Kong, Cloud River Urban Research Institute, University of Ontario Institute of Technology, China Construction Fifth Engineering Bureau, Broad technology group.

Organizers：

Institute of Sustainable Urbanization and Building Innovation, Hunan University

National Center for International Research Collaboration in Building Safety and Environment(Hunan University)

Laboratory of Building Safety and Energy Efficiency, Ministry of Education

Journal of Building Energy and Environment

Journal of Construction and Architecture

AsiaCity2050 Main Topics

2050 is a key node in the global zero-carbon and sustainable development transformation. Asia has the world's largest population and construction area, yet with highest growing speed, and thus a key area for global transformation and development. AsiaCity2050 aims to bring

together experts from academia and industry, government officials from around the world to discuss the way to promote construction quality and innovative capacity mainly in China and Asian countries. The main contents of the discussion include: the latest progress in education, fundamental theory and key technologies in modern urban and rural construction area especially in green building and fabricated building development, as well as future urban and rural construction technology development trends that combines fabricated buildings, zero-carbon buildings and smart building technologies.

4.0 Invited Speakers（Tentative）and participants

4.1 Speakers from Academia

	**Prof. Kamiel S. Gabriel** Academician of the Canadian Academy of Engineering, Professor and deputy president of Ontario Institute of Technology, Director of National Center for International Research Collaboration in Building Safety and Environment. Prof. Gabrial is a famous expert in new energy, as well as innovation theory and policy.
	**Prof. Muzhi Zhou** Professor of Tokyo Keizai University, Director of Cloud River Urban Research Institute. Professor Zhou established and organized “Beijing-Tokyo Forum”, “Japanese-Chinese Academic Exchange Forum”, “Global International Forum”, forged a first class international communication platform, provided successful cases for public policy. Prof. Zhou is a famous expert of innovative urbanization.

	**Prof. Tsou Jin Yue** Prof. Tsou is a Professor of the School of Architecture, the Director of the Center for Housing Innovations, the Chinese University of Hong Kong. He is a member of the scientific committee of the Ministry of Housing and Urban-Rural Development, China. Prof. Tsou is a famous expert in green building
	**Prof. Henk Visscher** Professor of Delft University of Technology, Chair of Housing Quality and Process Innovation. Founder of the Building and Technology Innovation Center of the Netherlands. Prof. Visscher is a famous expert in housing quality assurance and innovation.
	**Prof. Per Heiselberg** Professor of Aalborg University, National Representative of IEA EBC Denmark, Director of the Hybrid Ventilation Center, Director of the Zero Energy Building Center, head of the three international energy agencies IEA ECES Annex. Prof. Heiselberg is a famous expert in ventilation and zero energy building.
	**Prof. Paul W Chan** Professor of Delft University of Technology, Chair of Design and Construction Management. He published the book Constructing Futures (2010) with a wide-ranging impact. Prof. Chan is famous expert in project management and innovation.

	**Prof. Wei Pan** Associate Professor of the University of Hong Kong, Executive Director of HKU Centre for Innovation in Construction and Infrastructure Development (CICID), Chair of the Low Carbon Construction (LCC) Taskforce. Dr. Pan is a famous expert of sustainable construction engineering and management, including zero carbon building and modular integrated construction (MiC).
	**Prof. Mohamed Al-Hussein** Professor of Construction Engineering and Management, University of Alberta, Canada, Chairman of NSERC Research in Building Industrialization Industry **Prof. Hussein is a famous** expert in fabricated building, smart building (BIM) and zero carbon assembled building.
	**Prof. Ryozo Ooka** Professor of the University of Tokyo, Leader of IEA ECES Annex project. Editor-in-Chief of the Journal of the Architectural Society of Japan, Director of the Sustainable Architecture Committee of the Japan Architecture Society, and Director of the Urban and Climate Change Committee of the Japan Architecture Society. Prof. Ooka is a famous expert in district energy and energy storage.

	**Prof. Mohamed El Mankibi** Professor of the University of Lyon, director of the ENTPE-LTDS research, deputy secretary general of International Society of IAQVEC. Prof. Mankibi is a famous expert in phase change energy storage and indoor environment.
	**Prof. Yicheng Zhou** Professor of Waseda University, senior research fellow and chief expert of smart city of Fuji Information and Communication Technology Industry Co., Ltd., Editor-in-Chief of Smart City International Standard. Prof. Zhou is a famous expert in smart city.

4.2 Speakers from Industry

	**Dr. Jeff W. N. Leung** Founder of JET Design Architects, Canada, He is the recipient of the International Bidding for the Small Art Gallery Project in the West Kowloon Cultural District of Hong Kong , and the Concept City Design Project in the Central District of the Shenshan Special Cooperation Zone. Dr. Leung is a famous expert in ecological architecture and urban planning.

	**Mr. Anders Thomsen** President of Flexhouse，Founder of Sino-Danmark Construction Cooperation Platform. Mr. Thomsen is a coordinator of Danish Eco-villiage Initiative in China and also an expert in Eco-villiage.
	**Dr. Valerie Gacogne** Complexio CEO, An expert applying complex system dynamics principles and models to urban planning. Dr. Gacogne is an expert in urban planning.
	**Mr. Alan Pauel Bjerr** Vice Chairman of the Danish National Ecovillage Network, an expert in the design and construction of ecological towns. Mr. Bjerr is an expert in Eco-village.

4.3 Other overseas speakers

It is expected that more than 20 speakers from internationally renowned universities and companies will participate in the conference, such as:：

- National University of Singapore

- The Hong Kong Polytechnic University
- Canada Wood Association: Industrial association
- Lauzon-DV, Canada: Wood structure company
- Bengt Dahlgren, Swedish: Ecological planning and design company who is organizing the planning and design work of the 42km^2 ecological demonstration zone in China
- Velux,Demark: Windows and skylight manufacturing company
- Barebo, Danmark: Ecovillage company who is organizing the construction and promotion of ecological villages in China
- Emporium, the Netherlands, Building energy conservation company
- Byldis, the Netherlands: Precast concrete construction company

4.4 Participants

There will be over 400 participants from mainland China, from governmental departments, universities, industry park, products manufacturers, design institutes, contractors, among them there will be important speakers to introduce the demands of international cooperation in construction industry upgrading, industry park construction and ecol-village construction. Some of the organizations include:

- Science and Technology and Industrialization Development Center, Ministry of Housing and Urban-Rural Development, China.

- Hunan Provincial Housing and Urban-Rural Development Department
- Hunan Provincial Science and Technology Department
- Changsha Municipal People's Government
- Changsha Housing and Urban-Rural Construction Bureau (Annual output value of construction industry in Changsha is 500 billion RMB, Seeking for cooperation in construction industry upgrading)
- Construction Industry Development Committee of Linzhou City, Henan Province (Annual output value of construction industry of Linzhou City is 300 billion RMB. Seeking for cooperation in construction industry upgrading)
- Hunan Xiangjiang New Area Management Committee (area 1200 square kilometers, output value 2000 billion RMB. Seeking introducing technology and enterprises)
- Changsha High-tech Industrial Development Zone (140 square kilometers, output value 360 billion RMB. Seeking introducing technology and enterprises)
- Southern Changsha Zone (294 square kilometers, under planning. Seeking for international participation in the construction and introducing technology and enterprises)
- Green Development Demonstration Zone in Chibi city, Hubei (42 square kilometers, seeking for international participation in the zone)

- Hunan Changde Dahu Established Pastoral Complex (area 4-10 square kilometers, seeking for international cooperation in industry park)
- Changsha Yuelushan National University Science and Technology City Construction Investment Co., Ltd.(Seeking for high technology transfer in the University City)

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