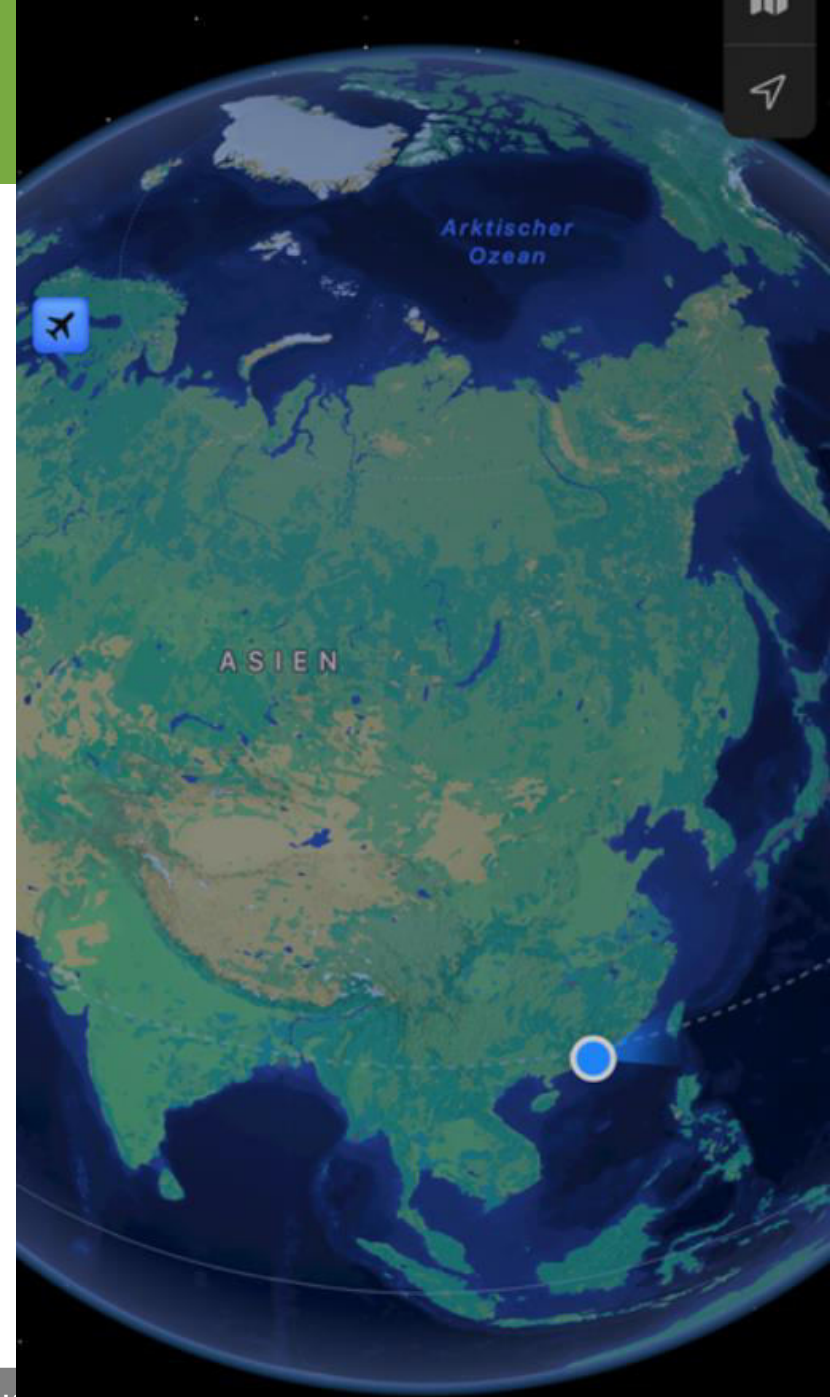


Austrian Technology Days 2024

CONSTRUCTION Chongqing, Foshan, Hong Kong

Dipl.Ing. Susanne Formanek
(16.-22.03.2024)



Vielen Dank für die gute Organisation!

- FFG
- BMK



Susanne Formanek
苏珊娜·福马内卡

- WKO – ADVANTAGE Austria
- ZECXPORT Partners in Austria
- Austria Embassy Beijing
-

Wer hat teilgenommen

- AIT Stefan Seer
- IBO/RENOWAVE/GRÜNSTATTTGRAU Susanne Formanek
- FULL COMFORT
- PARASTRUCT
- PLAN RADAR
- RUBNER HOLZBAU
- SHADOWMAP Technologies
- SYNTHETICS Dimensions
- Vienna Consulting Engineers
- SE-RAIL
- RIEGL (Scanner, Mapping)



Austrian Technology Days 2024

CONSTRUCTION

Foshan/ Guangdong Province

Dipl.Ing. Susanne Formanek
(20.03.2024)

Vielen Dank für die gute Organisation!

Hosts:

- China Science and Technology Exchange Center,
- Departement of Sciences and Technology of Guangdong Province
- Division of European Affairs, intern. Cooperation
- Foshon Municipal Science and Technology Bureau
- Foshan Xianhu Laboratory
- BMK
- Austrian Embassy Beijing
- Austrian Research Promotion Agency

Vielen Dank für die gute Organisation!

Chinese Guests

- Ministry of Sciences and Technology of the People's Republic of China, Departement of International Cooperation, Consultant at Division of European Affairs **Li Gang**.
- China Science and Technology Exchange Center,
 - Deputy Director General **Zhuang Jia**
 - Director of the Division of European Affairs **Song Song**
 - Director of the Division of Resources and Platform **Chen Xiong**
 - Program Officer of the Division of European Affairs **Cheng Wenhua**

Vielen Dank für die gute Organisation!

Chinese Guests

- Departement of Sciences and Technology of Guangdong Province
 - CPC Committee Member & Deputy Director General **Lian Qinru**
 - Director of the Division of Sci-tec Exchange and Cooperation, **Yang Huifang**
 - Deputy Director of the Division of Sci-tec Exchange and Cooperation, **Yu Kai**

Background

- Die Provinz hat über 130 Universitäten mit insgesamt 1,8 Millionen Studenten, darunter renommierte Einrichtungen wie die Guangdong University of Foreign Studies und die Guangzhou Medical University.
- In den letzten 5 Jahren wurden an der Guangdong University of Finance & Economics 96 nationale und 353 Provinzforschungsprojekte durchgeführt. Über 1.300 Artikel wurden in Fachzeitschriften veröffentlicht.
- Die Guangdong Technion - Israel Institute of Technology (GTIIT) wurde gegründet, um Forschung, Innovation und Unternehmertum in der Provinz zu fördern. Auf ihrer Forschungsplattform können Experten und Projekte zu den UN-Nachhaltigkeitszielen gefunden werden.
- Das **Guangdong Department of Science and Technology** ist für die Forschungsförderung in der Provinz zuständig. Es vergibt Fördermittel, koordiniert Forschungsschwerpunkte und unterstützt den Aufbau von Forschungsinfrastruktur und Innovationsplattformen.
- Ein wichtiges Förderprogramm sind die "**Guangdong Provincial Engineering Technology Research Centres**". Ziel ist es, marktorientierte Forschung und Entwicklung in Schlüsselbereichen zu unterstützen. Jährlich werden Hunderte neuer Zentren bewilligt



- Top Universitäten

Latest ESI ranking for 18 universities in Guangdong				
Name	The number of disciplines		Rank	
	Top 1‰	Top 1%	National	World
Sun Yat-sen University	5	20	7	132
South China University of Technology	4	10	18	277
Shenzhen University		9	48	683
Southern Medical University		9	53	727
Jinan University		12	54	728
Guangzhou Medical University		6	80	1018
South China Normal University		9	88	1092
South China Agricultural University	1	9	90	1098
Southern University of Science and Technology		5	94	1151
Guangdong University of Technology		5	100	1226
Shantou University		3	123	1662
Guangzhou University		6	139	1824
Guangdong Medical University		2	168	2223
Guangzhou University of Chinese Medicine		2	175	2265
Guangdong Pharmaceutical University		4	215	2926
The Chinese University of Hong Kong, Shenzhen		2	234	3277
Dongguan University of Technology		2	254	3581
Guangdong Ocean University		1	299	4218

FOSHAN

- Foshan ist eine Stadt in der zentralen Provinz Guangdong, China.
- Mitte des Südens von Guangdong im Herzen des Perlfussdeltas und ist im Osten mit Guangzhou verbunden und grenzt im Süden an Zhongshan und **Macao**.
- 8 Millionen Einwohner
- Das Klima ist mild, feuchtes subtropisches Monsunklima gekennzeichnet.
KEIN HOLZBAU
- industrielle Basis, die sich auf Elektronik und Informationstechnologie, keramische Werkstoffe und Metallverarbeitung konzentriert.
- Foshan ist auch berühmt als Heimatstadt der Kampfkünste und für die Förderung der Lingnan- und Guangfu-Kultur durch einzigartige Bräuche und Traditionen wie den Drachen- und Löwentanz.
- Foshan ist Teil der **Metropole Guangdong-Hongkong-Macao Greater Bay Area** und ist eine Schlüsselstadt in der Region, die für ihre wirtschaftliche Entwicklung und ihre industriellen Fähigkeiten bekannt ist.

Whom we met

- Roadshow
 - China-Austria cooperation Experience and Achievements
 - Urban Development & Mobility Transformation
 - Dongguan University of Technology
 - Guangdong University of Technology
 - Architectural Design and Research Institute of Guangdong Province
 - Guangzhou Metri Design & Research Institute Co.Ltd
 - South China University of Technology
 - Shenzhen Institute of Building Resear
 - CRRC Qingdao Sifang Co.Ltd
 - Guangzhou Institute of Energy Conversion, Chinese Adademy of Sciences
 - Zhonggyun Technology Co,. LZD
- Guangdong Boyi Architectural Design Institute Co.,Lrd.
- Lingnan harmonious garden

Guangdong Boyi Architectural Design Institute Co.,Ltd.

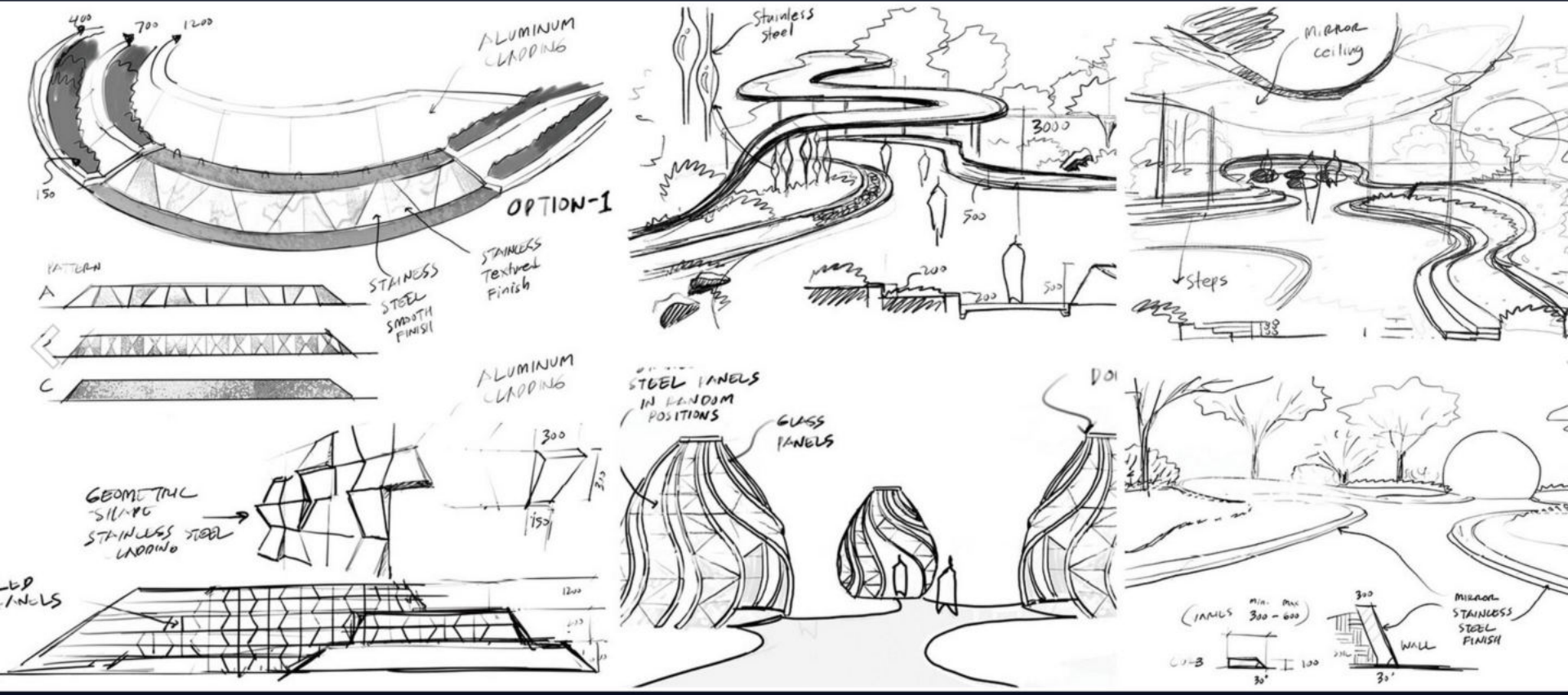


Guangdong Shiqiao Architectural Design
Institute Co., Ltd.



Country Garden Sci-Tech Town – CREDAWARD 地建师

Foshan Country Garden International Commerce Centre (Metr...





世纪达建设集团出席成员
Attending members of Centurystar

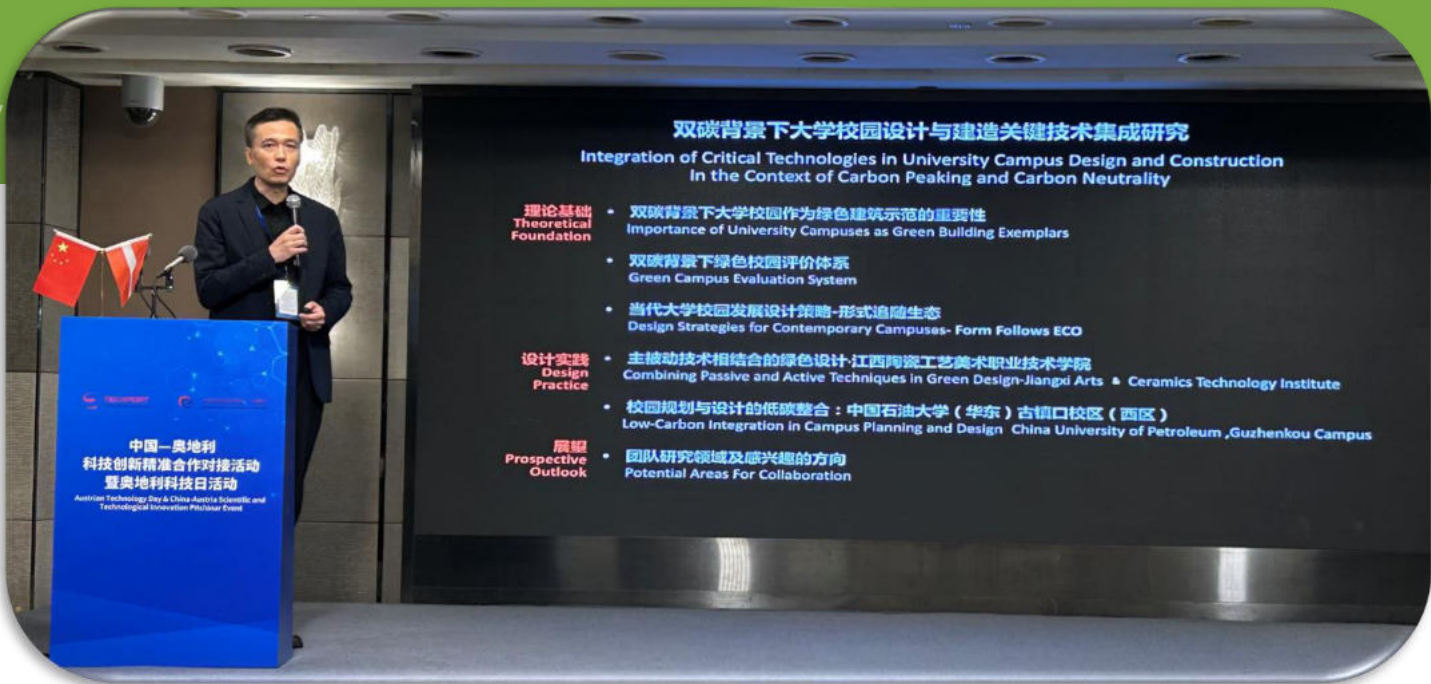
- 区荣大 Ou Rongda/董事长 Chairman
- 王华 Wang Hua/常务副总经理 Executive Vice President
- 罗卫军 Luo Weijun/副总经理 Deputy General Manager
- 邹巨新 Zou Juxin/技术创新主任 Director of Technical Innovation
- 何冠良 He Guanliang/技术专员 Technology Commissioner
- 谢正国 Xie Zhengguo/业务主管 Business Executive
- 韦家浩 Wei Jiahao/助理总经理 Assistant General Manager

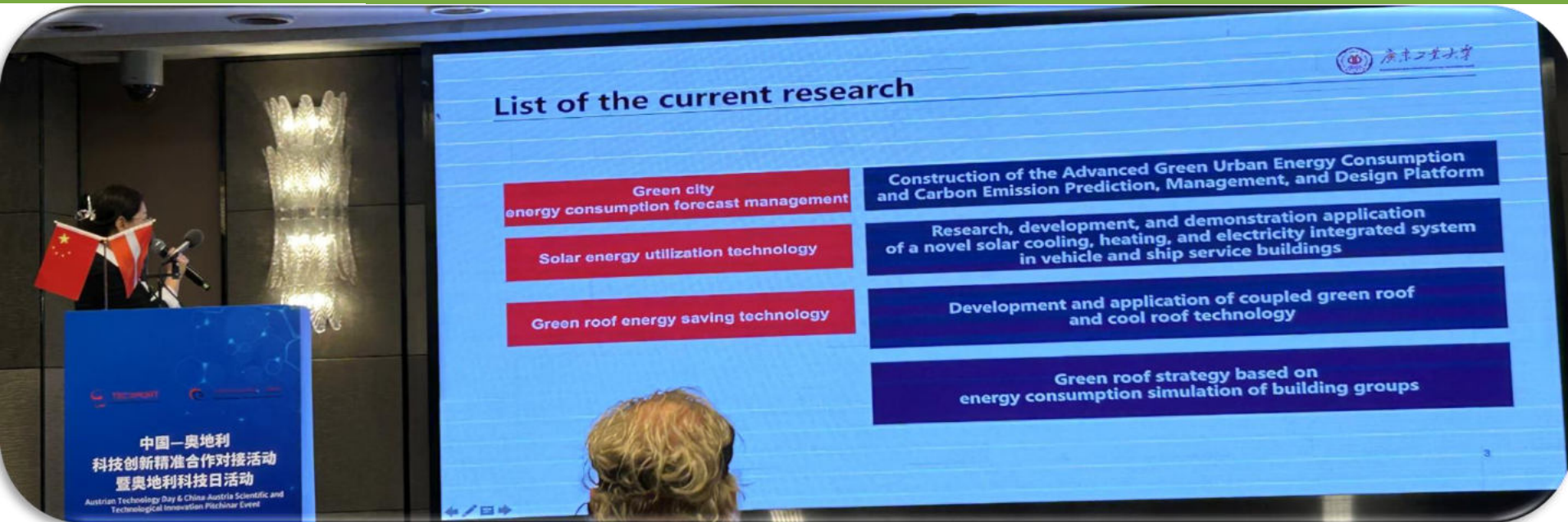


Eindrücke

Foshan Country Garden International Commerce Centre (Metr...







List of the current research

- Green city energy consumption forecast management
- Solar energy utilization technology
- Green roof energy saving technology

Construction of the Advanced Green Urban Energy Consumption and Carbon Emission Prediction, Management, and Design Platform

Research, development, and demonstration application of a novel solar cooling, heating, and electricity integrated system in vehicle and ship service buildings

Development and application of coupled green roof and cool roof technology

Green roof strategy based on energy consumption simulation of building groups

中国—奥地利
科技创新精准合作对接活动
暨奥地利科技日活动
Austrian Technology Day & China Austria Scientific and Technological Innovation Pitching Event



Team profile

Key team member

- Zhanyuan Wang, Professor
Professor at Guangdong University of Technology
Member of the Chinese Academy of Sciences
- Xudong Zhao, Academician
Fellow of the European Academy of Science (EAS) / University of Hull in the United Kingdom
- Senlin Zheng, Associate Professor
Guangdong University of Technology
- 11 graduate students

Team research direction

- Building energy efficiency
- Green building
- Technologies for integrated utilization of building environment and energy, and energy system design
- Sustainable energy products
- Technology development, research, and demonstration applications

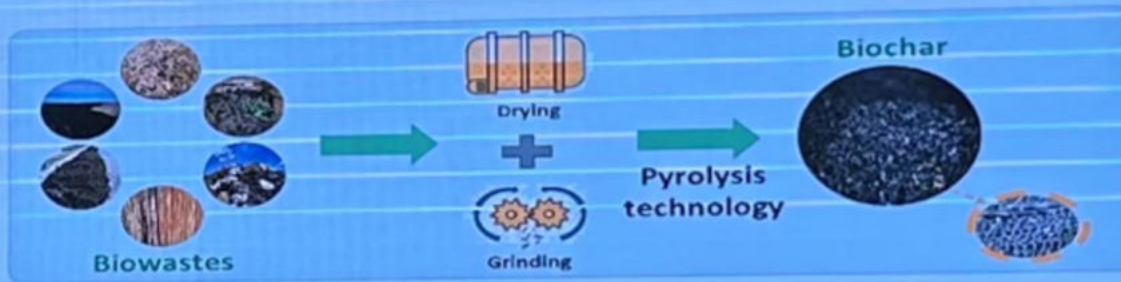
FRP reinforced concrete pavement layer of bridge deck slab Standard development

Construction site

On-site crack detection

中国—奥地利
科技创新精准合作对接活动
暨奥地利科技日活动
Austrian Technology Day & China Austria Scientific and Technological Innovation Pitching Event

Low carbon concrete Carbon-negative concrete for carbon neutrality



- ✓ Biochar: CO_2 sequestration $-3.3 \text{ t CO}_2 \text{ t}^{-1}$; One of the most effective tools recognized by the IPCC;
- ✓ **Internal curing** ability improves cement hydration, microstructure and macroscopic mechanical properties;
- ✓ Carbonized ITZ compensate for the strength loss, and reduce the **weight** of cement products ;
- ✓ Carbon-negative cement products, which can **sequester 59kg** of CO_2 per ton of product.

Li, L., et al., 2022. *Chemical Engineering Journal* 431 (2022) 133946 (ESI highly cited paper)



IBO

Austrian Institute for Healthy and Ecological Building



1 背景介绍 / Introduction

- 建筑领域的节能降碳需要从转变建造方式和深化运行节能两方面入手
Building decarbonization: reduce Embodied & Operation energy consumption
- 转变建造方式 / Reduce embodied energy
 - 传统建筑
 - 建造过程工期长
 - 资源浪费
 - 耗能高
 - 国务院办公厅关于大力发展装配式建筑的指导意见
工作要点
 - 装配式建筑
 - 标准化部件预制
 - 模块化施工安装
 - 绿色建材一体化

至2025年装配式建筑占新建建筑比例达到30%以上的阶段性目标

大力发展装配式建筑，推广绿色化、工业化、集约化、产业化建造方式
- 应用场景 / Applications :
 - 文化旅游 / Culture-oriented travel
 - 乡村农牧 / Rural field
 - 旧城改造 / Reconstruction



国际合作 International Cooperation

未来合作方向

- 城区、街区与建筑 绿色低碳更新技术研究
Green and Low Carbon Renewal Technologies for Urban Areas, Blocks, and Buildings
- 智慧低碳管理系统 low-carbon management system
- 用户需求侧响应技术研究
Research on User Demand Side Response Technology

低碳 Low-Carbon
韧性 Resilience
宜居 Livable
智慧 Smart

深圳市近零碳试点分布 (第1-3批) Near-zero carbon pilot distribution in Shenzhen (1st~3rd batch)



IBO

Austrian Institute for Healthy and Ecological Building

未来大厦 About Future



软件层 Software Level

室内层 Indoor Level
基于个人感知的健康环境
A healthy environment based on personal perception

建筑层 Architecture Level
模块化可变空间
Modular and variable space

社区层 Community Level
幼儿中心、健康中心、数据中心、交流中心
Child Care Centres, Health Centres, Data Centres, Communication Centres

城市层 City Level
PRT接驳、城市展厅、社区活动、雨水花园
PRT Shuttle, City Showroom, Community Events, Rain Garden

页码: 6/13



屋顶花园 Roof Garden

12F 食堂 12F Food Hall

7-10F 办公室 7-10F Offices

6F 空中花园 6F Sky Garden

5F 报告厅 5F Conference Hall

-2F 车库 -2F Parking Lot

12F 活动室 12F Common Room

11F 专家公寓 11F Expert Apartments

3F 幼儿园 3F Kindergarten

1F Open-Space Reception 1F Open-Space Reception

1F 开放式大堂 1F Open-Space Reception

1F 图书馆、健身房 1F Library and Fitness



IBO

Austrian Institute for Healthy and Ecological Building



团队研究领域及感兴趣的方向

Team research Areas and Preferred Directions

华南理工大学建筑学科为中国最早建立的建筑学科之一，拥有有一级学科博士点和一级学科博士后流动站，创立了亚热带建筑与城市科学全国重点实验室，拥有国际先进、国内领先的建筑科学研究平台。研究团队由王扬教授主持，擅长校园规划和建筑设计理论与实践研究，主持了国内包括985、211、双一流等高校在内的校园规划与建筑设计近50项。主持或参与了国家级科研项目6项，发表论文70余篇。

The Architecture Department at South China University of Technology boasts a leading research platform in architectural science nationwide. Professor Wang Yang leads a prominent research team within this platform. With the support of top-tier academic resources, the team has overseen nearly 50 projects in university campus planning and architectural design, including 6 national-level research projects, and has published over 70 papers.

三维仿真

数字化

韧性城市

木结构

建筑材料

气候适应性

3D Simulation

Digitalization

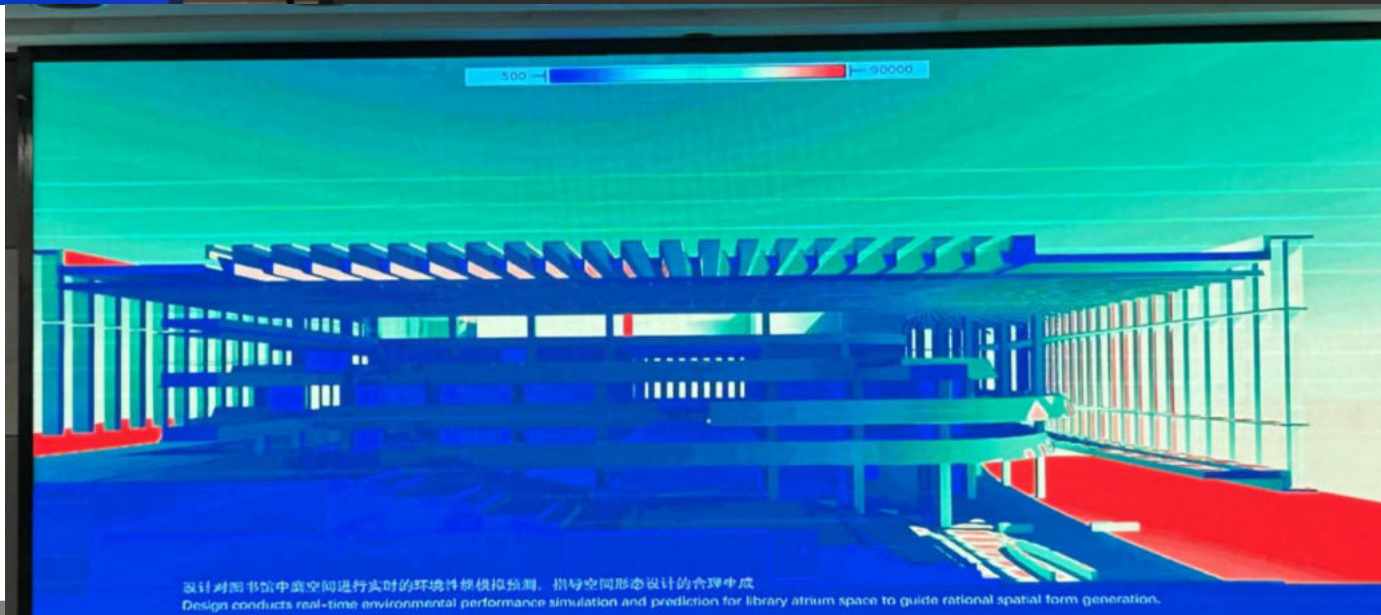
Resilient Cities

Wooden Structures

Building Materials

Climate Adaptation

△团队在以上领域存在中外合作的巨大潜力：Potential Areas For Collaboration





IBO

Austrian Institute for Healthy and Ecological Building



2主被动技术相结合的绿色设计 Green Design Combining Active and Passive Technologies

基于低影响开发理念的海绵校园整体性设计 Comprehensive Design of Sponge Campus based on Low Impact Development Principles

建筑与景观布局的模拟分析：雨水迭代与径流模拟
Rainwater Iteration and Runoff Simulation

(a) 雨水迭代次数 L=05 (b) 雨水迭代次数 L=10
(c) 雨水迭代次数 L=15 (d) 雨水迭代次数 L=20

使用物理求解器 Kangaroo for Grasshopper 记录雨水粒子的物理轨迹。由此，雨水的淹没、冲刷、积累、流动路径都可以被追踪和分析。
Using the Kangaroo physics solver for Grasshopper, record the physical trajectory of rainwater particles.
This allows tracking and analysis of flooding, erosion, accumulation, and flow paths.



主被动技术相结合的绿色设计 | 江西陶瓷工艺美术职业技术学院
Green Design Combining Active and Passive Technologies | Jiangxi Arts & Ceramics Technology Institute



IBO


Austrian Institute for Healthy and Ecological Building



中国—奥地利
科技创新精准合作对接活动
暨奥地利科技日活动
Austrian Technology Day & China-Austria Scientific and Technological Innovation Pitches Event

2 项目方案 / Proposal

- 基于太阳能联产和潜热储运的装配式建筑一体化可再生能源系统
Modularized Building Integrated Renewable Energy Systems Using On-site Solar Cogeneration and Latent Heat Transportation/Storage
- 材料方面 / Materials :
研发温度可调流态化无机盐相变浆体提高建筑围护结构的热质量、优化高效热质设计
Phase change material slurries
- 部件方面 / Components :
开发建筑一体化太阳能光伏/热模块和室内空调辐冷/热模块作为装配式建筑预制构件
solar photovoltaic thermal collectors
Indoor radiant heating/cooling modules
- 系统方面 / System :
耦合并优化可再生能源联供的智慧综合能源系统 / Intelligent BMS



□ PCM slurries




中国—奥地利
科技创新精准合作对接活动
暨奥地利科技日活动
Austrian Technology Day & China-Austria Scientific and Technological Innovation Pitches Event

股票代码: 871481

中运科技
ZYTECHNOLOGY

基于交通领域的智慧新能源解决方案

Smart New Energy Solutions Based on the Transportation Sector

中运科技股份有限公司
Zhongyun Technology Co., Ltd.

2024年3月20日
March 20th, 2024

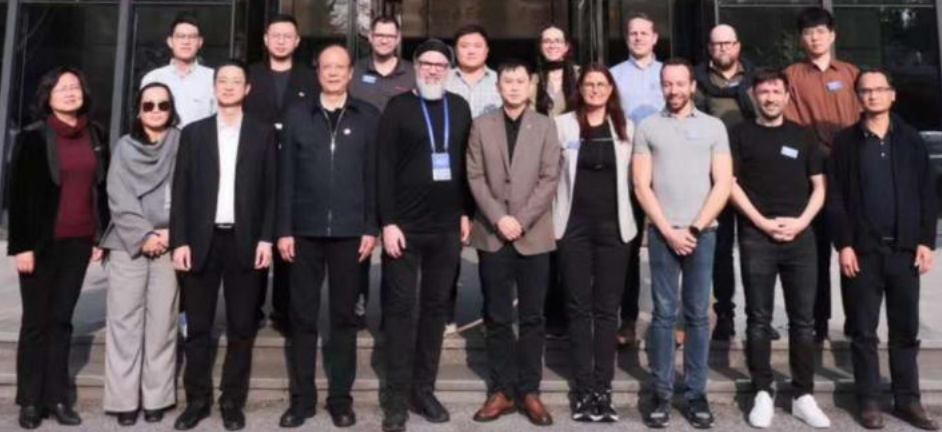




世纪达建设集团

代表团莅临参观热烈欢迎奥地
Distinguished guests from A

58





IBO

Austrian Institute for Healthy
and Ecological Building







Guandong Bright Dream Robotics Co.,Ltd

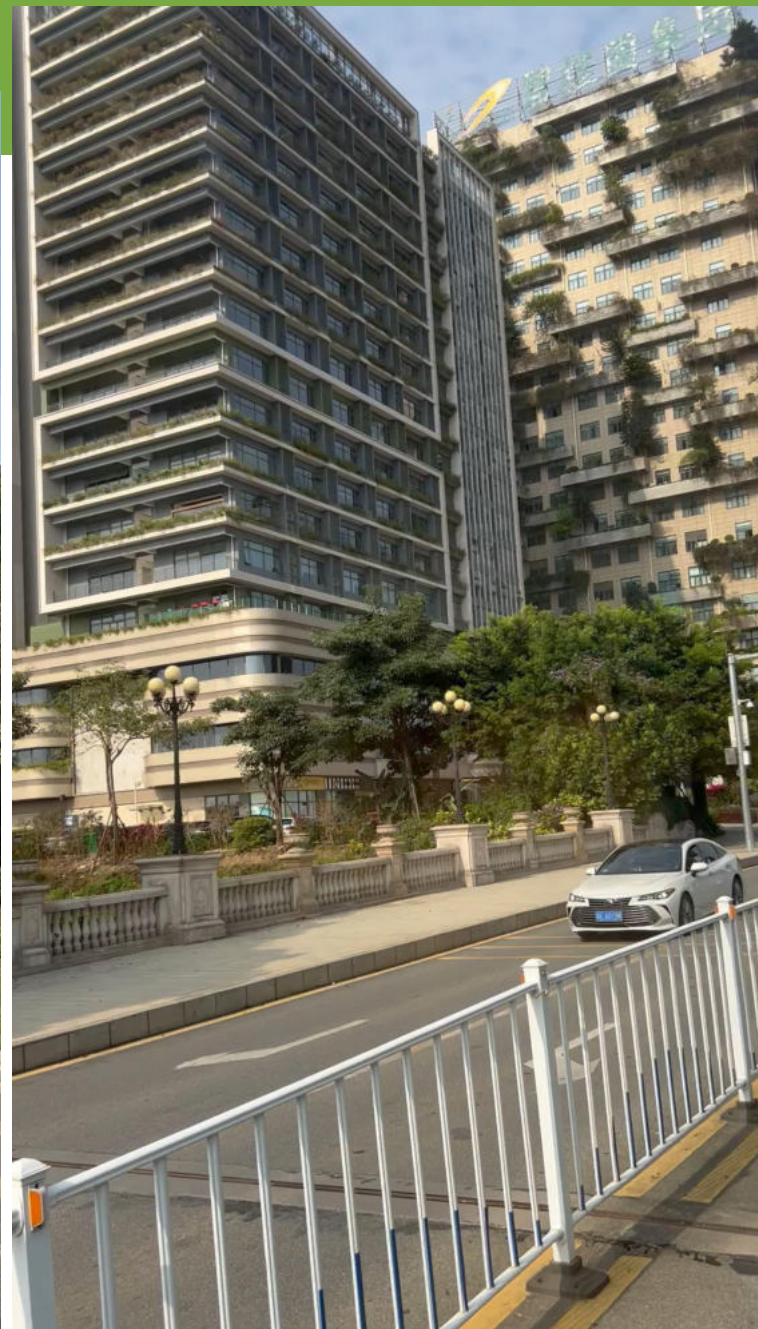
<https://www.bgy.com.cn/en/products/construction>





IBO

Austrian Institute for Healthy
and Ecological Building





碧桂园战略升级

THE NEW STRATEGY
FOR THE FUTURE
OF THE COMPANY
IS TO BE A LEADER
IN THE REAL ESTATE
INDUSTRY AND TO
BE A RESPONSIBLE
CITIZEN.











IBO

Austrian Institute for Healthy
and Ecological Building





Contact:

DI Susanne Formanek

IBO - Austrian Institute of Building and Ecology

Alserbachstraße 5/8

A-1090 Vienna

mail to: vorname.nachname@ibo.at

www.ibo.at

 **RENOWAVE.AT**



IBO is a member of

**a
cr** **austrian
cooperative
research**

