



"Innovation" – DAY 2

Grid Balancing & Storage

MAY 25 2022, 09:00-10:30 CEST

Leading experts discuss the issues facing China and Europe

- smart grids • storage • behind-the-meter
- gas-to-power • system integration

Octavian Stamate – Counsellor, EU Delegation to China

Guido Dalessi – CEO, Elestor

Walter Boltz – Senior Adviser on European Energy

Anders Hove – Project Director, GiZ



EU-CHINA ENERGY
Cooperation Platform



THE EUROPEAN UNION
CHAMBER OF COMMERCE IN CHINA

Co-operating in China

MAY 25 2022, 10:45-12:15 CEST

Leading experts discuss the issues facing China and Europe

- case studies • wind turbines • transmission
- smart energy systems • efficiency

Dongye Zhang – Head of Offshore Wind, Shell China

Luc Liu – GM China, Schneider Electric

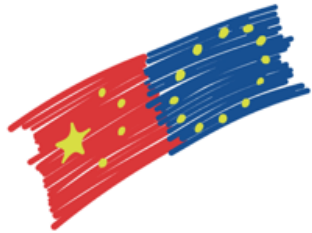
Alfred Che – VP, Danfoss China

energypostevents
THE BEST THINKERS ON ENERGY...LIVE



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the European Union

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EU-CHINA ENERGY *Cooperation Platform*



**European Union
Chamber of Commerce in China**
中 国 欧 盟 商 会

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the European Union**

EMBRACE THE DIFFERENCES FOR BETTER COLLABORATION



Dongye Zhang
China Country Manager, Shell Offshore Wind

25 MAY 2022

BRIEFLY ABOUT SHELL IN WIND



50 YEARS+

Experience in Large
Offshore Engineering



20 YEARS

Experience In Wind
Development



20+ COUNTRIES

Power Trading



~9 GW

Capacity Installed & in
Development (Shell Share)



1GW+

Projects in Operations

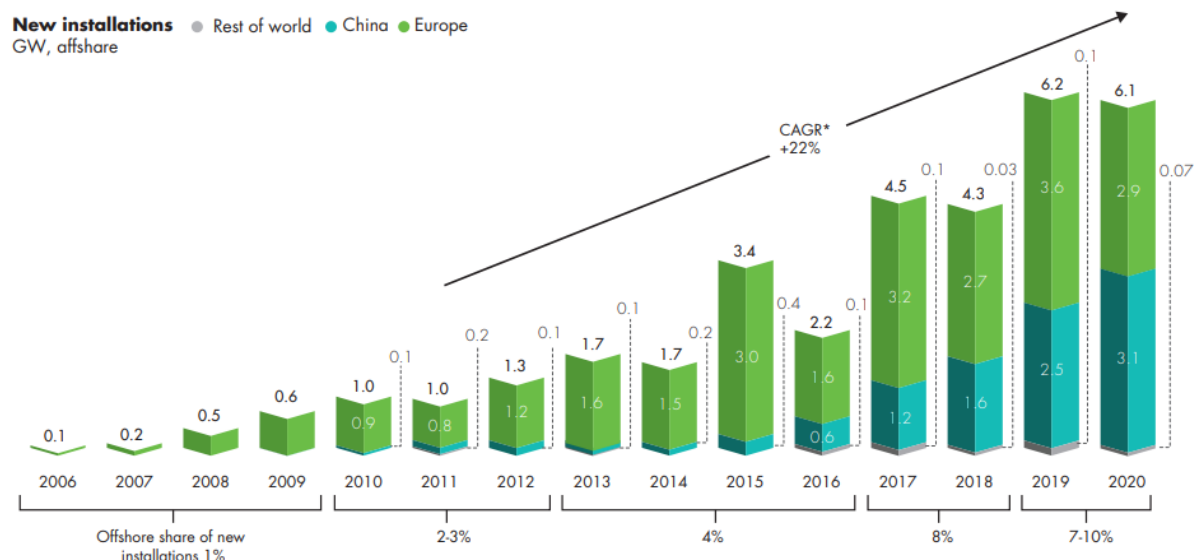


GLOBAL COVERAGE

In Asia, Europe and Americas

OFFSHORE WIND HAS BEEN A HEATED MARKET IN EUROPE SINCE MID-2000S, AND MOST RECENTLY IN CHINA

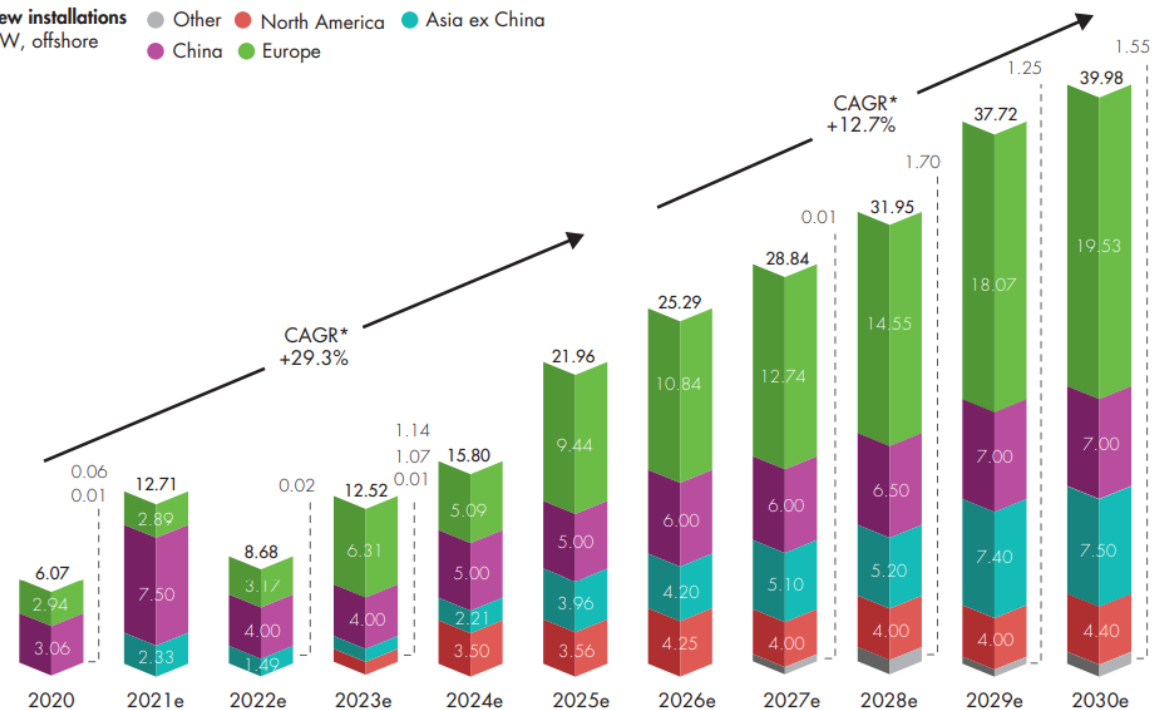
New installations ● Rest of world ● China ● Europe
GW, offshore



* Compound Annual Growth Rate
Source: GWEC Market Intelligence, July 2021

Global offshore wind growth to 2030

New installations ● Other ● North America ● Asia ex China ● China ● Europe
GW, offshore



*CAGR = Compound Annual Growth Rate
Source: GWEC Market Intelligence, July 2021

UNDERSTAND THE DIFFERENCES & EMBRACE THEM

Natural/Technical Conditions

- Much lower wind speed in China compared to North Sea
- More extreme winds – typhoons in China
- Easier seabed conditions in China, flatter and shallower
- Each province is almost the same size as an European country

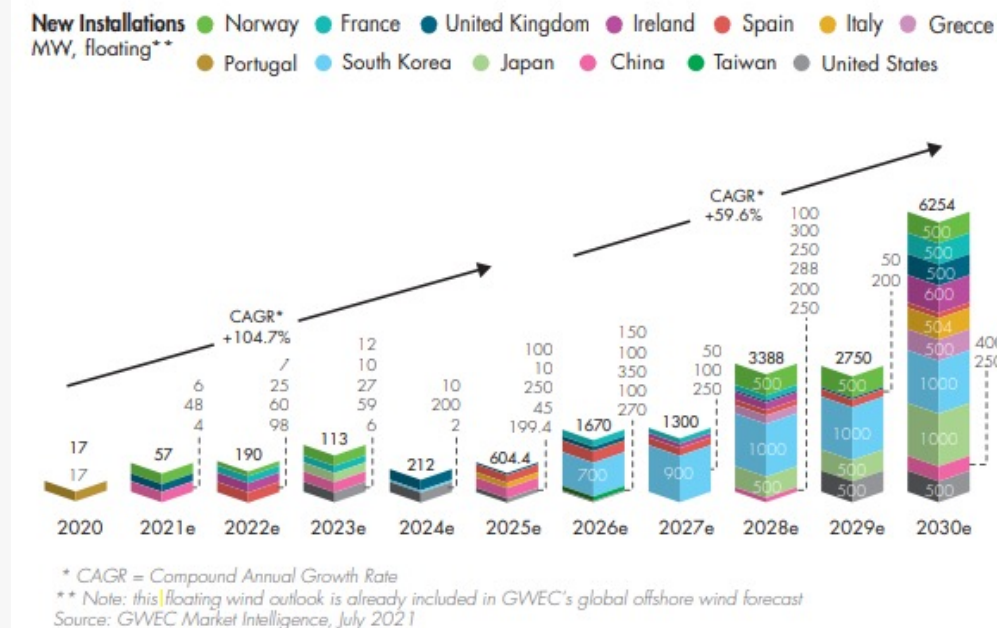
Economical/Business Conditions

- Overall approach:

“Let’s just get started, learning by doing” versus

“let’s be well planned and make it to perfection”

- Feed-in-Tariff (subsidy) until end of 2021 – 0.85 RMB/KWh, compared to LCOE of 0.6-0.7 RMB/KWh – Europe has moved away from such scheme
- value focused versus cost focused

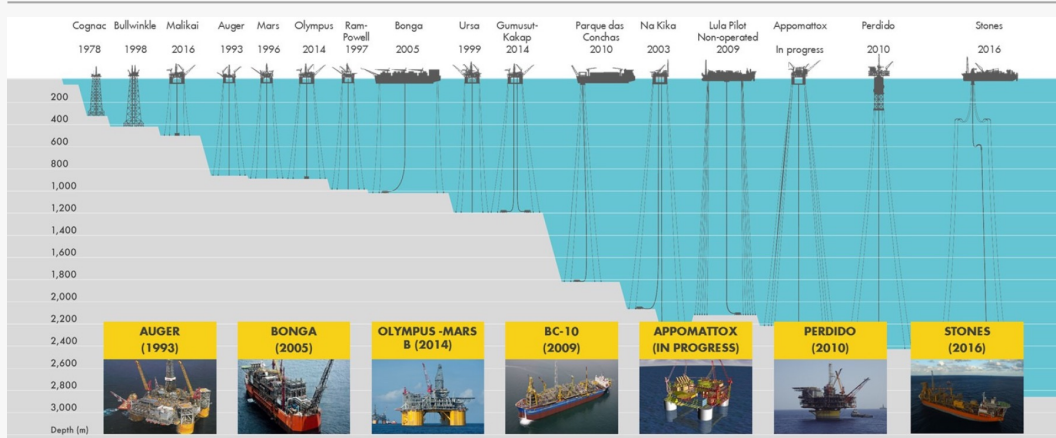


Shift the focus to frontier technology as the handrail: Floating Offshore Wind

- Combine European innovation (value) & China speed (scale & cost optimization)

FLOATING AT SHELL: INHERITED FROM O&G EXPERIENCES, MULTIPLE PLATFORMS, DEVELOPMENT STAGES & REGIONS

Over 50 Years in Offshore Platforms

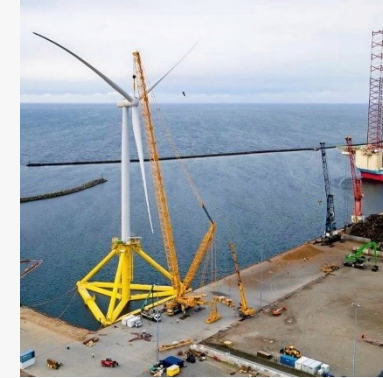


2015



Technical Collaboration With PPI – enter Floating Wind

2019



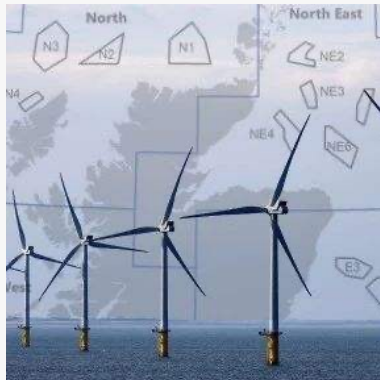
TetraSpar Demo project in Norway, 3.6MW Single Turbine, 200m water depth

2019



Commercial project in Korea with CoensHexicon, 800MW for Phase I, water depth 120-160m

2022



5GW Tender win in ScotWind

2021



Partner with Simply Blue and Enter Emerald JV for Floating Wind in Ireland, 400MW for Phase I

2019



Acquisition of Eolfi, 28.5MW Pre-Commercial Project in Development in France, water depth 60m



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ENGINEERING
TOMORROW

Danfoss

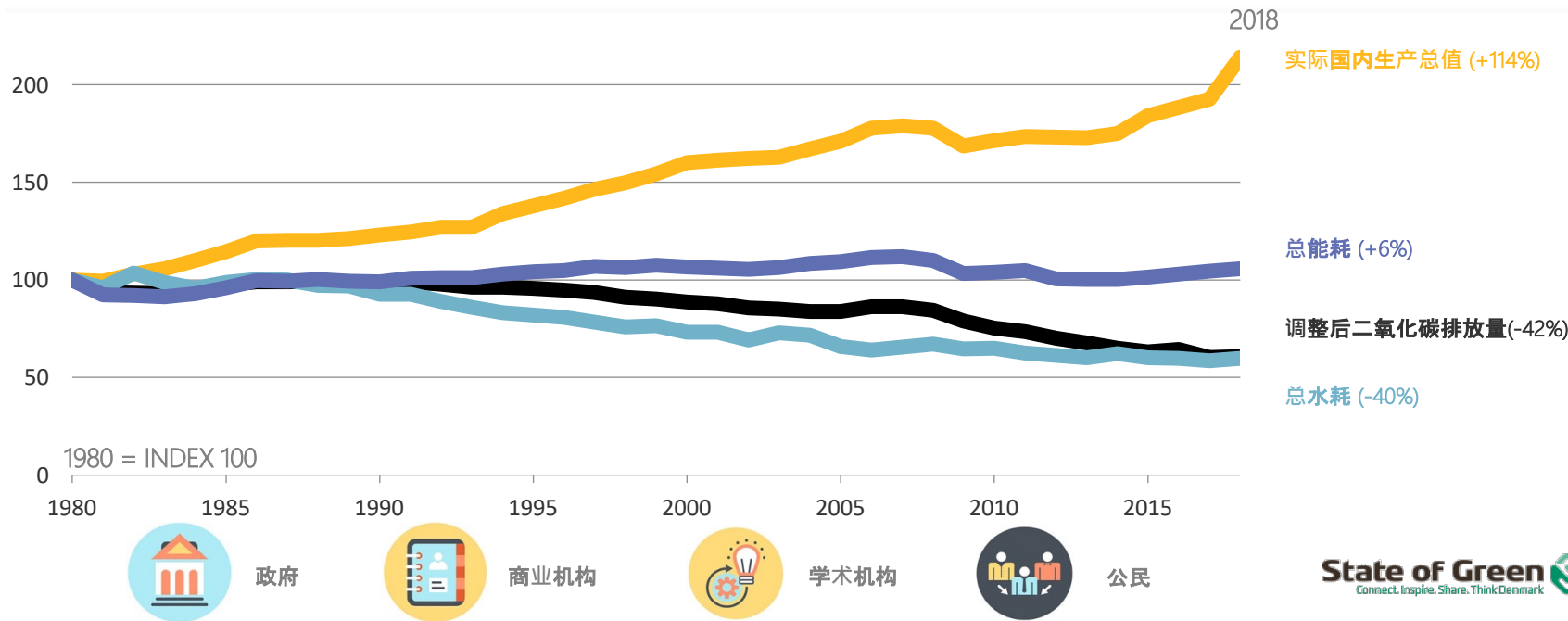
Energy Efficiency Solutions from EU Capable of Helping China Meet its Double Carbon Goals 欧盟能效解决方案助力中国实现“双碳”目标

Alfred Che, Vice President, Danfoss China 车巍 丹佛斯中国副总裁



Danish Energy Fairytale:

“丹麦能源童话”：率先实现“碳达峰”，稳步迈向“碳中和”





Copenhagen: Building the World's First Carbon Neutral Capital by 2025

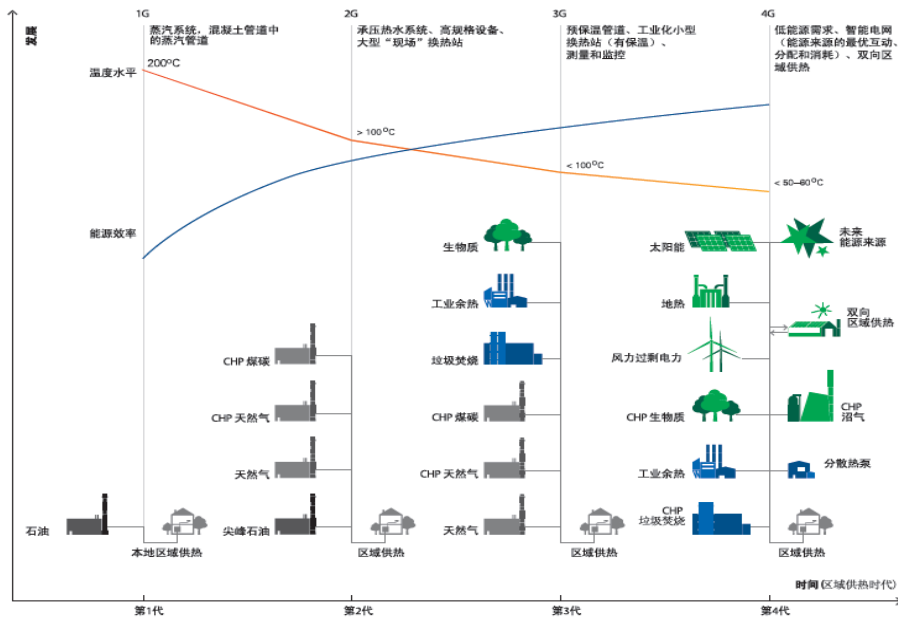
哥本哈根：2025年成为世界首个碳中和首都城市



ProjectZero in Sønderborg and IEA Global Energy Efficiency Conference 森讷堡零碳项目：丹麦能源童话最佳实践

District Energy: a Cornerstone of "Danish Energy Fairytale"

区域能源技术：多能互补+本地化+能效最大化



District Energy: a
UN SE4All
Accelerator
50% Energy Saving
59% Less CO2

区域能源可减少高
达50%的一次能源
消耗，减排59%



Think Denmark

知名建筑师的思考

区域能源

城市区域能源效率

本白皮书内容

区域能源核心
燃料灵活性与供应保障

规划和治理——先决条件
监管流程、职责与要求

燃料灵活性考虑到区域供热中的可持续性
智能化用能的关键

储热的必要性
节约资金和保障供应

区域能源的未来
实现强大的全球潜力



中国·区域能源专业委员会 (CDEA)

State of Green

绿色能源 · 参与未来 · 改变世界



节能率
高达 Saving
Energy
40%

DES Helped Benxi Regain the Blue Sky
区域能源解决方案使辽宁本溪蓝天重现





节能率
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节能率
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Facebook IDC Case in Odense, Denmark

数据中心综合能源管理解决方案帮助Facebook节能降耗



China's First IDC EE and Heat Recap Case in Tianjin

高效低碳数据中心热回收方案

中国首个
数据中心热回
收商业项目

实际应用 – 高村清数科技园数据中心余热利用供能

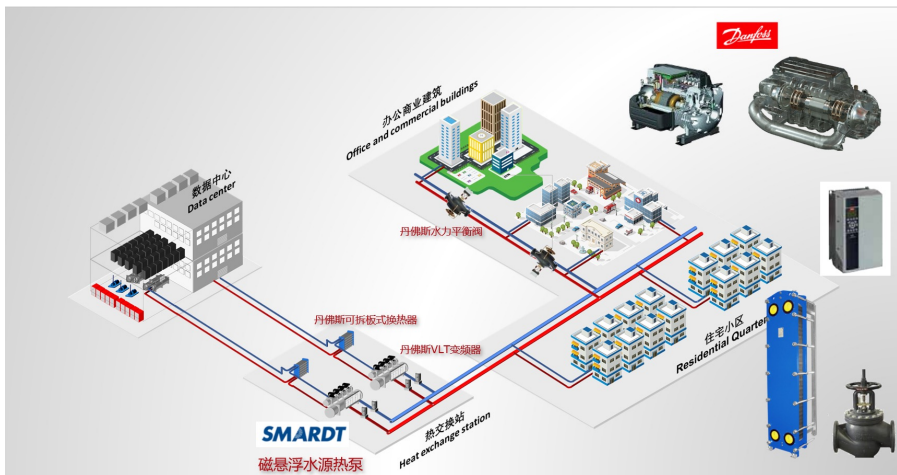
- 建筑功能：办公、酒店、商业
- 供能需求：采暖、制冷、生活热水
- 供能面积：103,450m²
- 冷负荷：10,426kW，热负荷：6,577kW
- 余热热源：周边2个数据中心的5,000个机架散热量

COP	热泵采暖	热泵热水	热泵制冷
螺杆水源热泵	4.60	3.25	4.94
变频磁悬浮水源热泵	5.71	4.33	5.58

- 热泵采暖：
 - 蒸发器进/出水温度：17/10°C
 - 冷凝器进/出水温度：38/50°C
- 热泵热水：
 - 蒸发器进/出水温度：17/10°C
 - 冷凝器进/出水温度：55/60°C
- 热泵制冷：
 - 蒸发器进/出水温度：13/6°C
 - 冷凝器进/出水温度：32/37°C

2.4年

投资回收期





总产能达自
身所需能耗
Produce
230%

“Prosumption”: World’s First Energy Positive WWTP in Aarhus, Denmark
水处理解决方案助力奥胡斯建成全球首个能源中和污水厂





Building Zero Carbon Industrial Park in Haiyan jointly With Shanghai Electric 携手上海电气风电集团，共建丹佛斯海盐零碳产业园

森纳堡—
2022年1

丹佛斯节能技术
让未来建筑的模样近在眼前

丹佛斯高效暖通与传动解决方案，以节能高效方式
确保建筑可持续发展。

案例 Jutland 堡中的零碳建筑

Sanderburg 丹佛斯酒店 Alsk 自 2019 年 5 月开业
以来，一直是丹佛斯最受关注和最令人兴奋的酒店之一。
该酒店以其独特的一体化设计风格和天然材料为特
色，由 Henning Larsen Architects 设计，并在 17 楼拥
有一个精致餐厅，可以一览 Sanderburg 市的全景。

然而，与 Alsk 酒店为客人提供舒适体验以及独特注
重可持续性的伟大工作相比，这只是小菜一碟。

如今，Alsk 达到了 70% 的 CO₂ 减排。这在当前建
筑业的酒店中非常罕见——从酒店业的节能解决方案，
建筑物的设计和能源消耗的 3000+ 太阳能电池，一
位俱全。制冷系统的多步能量用于加热生活热水，并
能重复进行存储和使用。

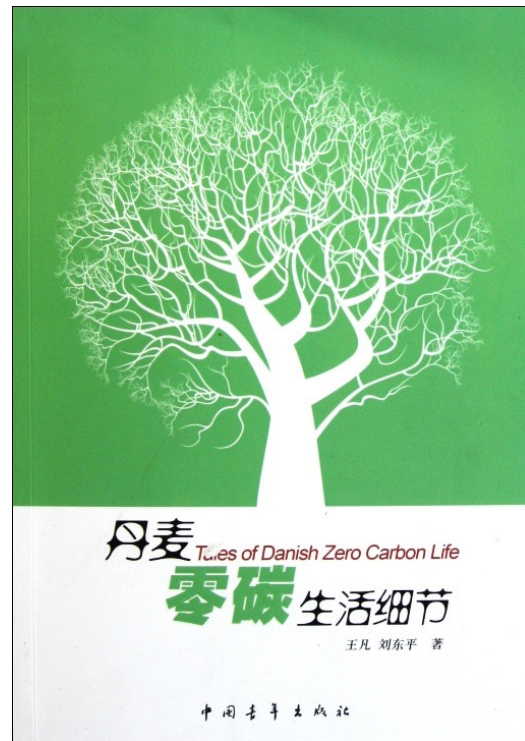
甚至水渠也具有可持续性

从设计一开始，可持续性就已经是 Alsk 的
核心和关键的设计要素。在可能地利用自
来水回收系统制成，混凝土采用天然材料
具有优秀的热容量。Alsk 酒店的建设符合
丹麦绿色建筑 2018 标准。该酒店就符合了
最高的能源需求。

酒店包括 190 间客房、三间餐厅和一个三
层非常特殊的解决方案才能在确保舒适度
的同时可持续性。据 Nordmantic 区域经
理 Nick 介绍，丹佛斯传动的高效解决方案
是更具可持续性的豪华酒店之一做出了重



Highly Recognized for Achievements in Promoting Sustainability in China 致力于推动零碳绿色发展，受到中国社会各界高度认可





谢 谢 ! Thank You!

A New Paradigm of Innovation @ Edge

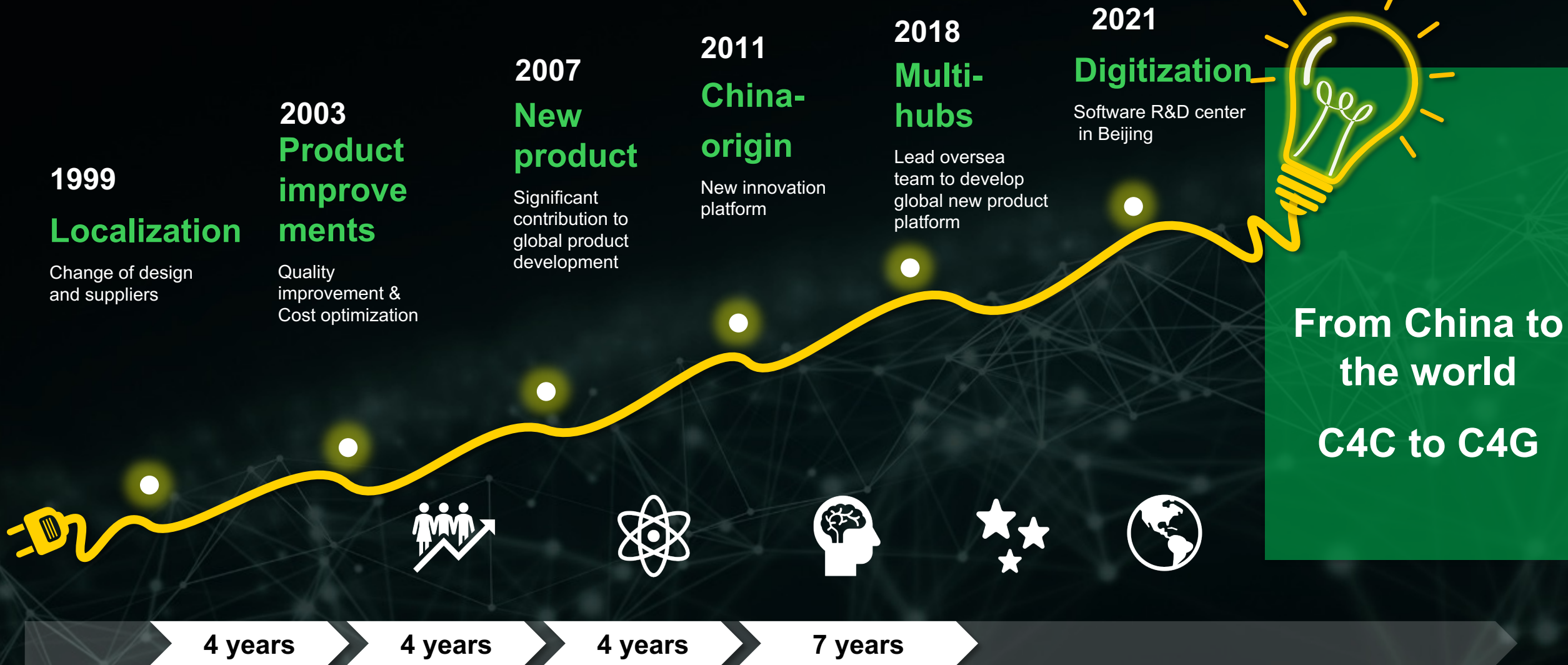
Luc LIU,
GM of Corporate Alliance & Digital Ecosystem,
China

China is SE's second largest market in the world, with business footprint across the country

- **~17,000** employees
- **1** headquarter in Beijing , **9** branch companies , **37** offices
- **1** customer service center
- **1,100+** distributors
- **23** factories
- **8** logistics centers
- **3** R&D centers
- **1,400+** R&D engineers
- **~300** technical service engineers located across China
- **1** online Energy University
- **1,600+** local suppliers



We have focused on local R&D for more than 20 years



Summary of 2021 Green Energy Management Innovation Program

Ideation

Mar. 05 - Apr.30



Scouting

May. 19 - Jun.20



Selection

Jun.20 - Jul.02



Acceleration

Jul.15 - Nov.30



Demo Day

Dec. 02

6 BU involved , **21** ideas submitted , **5** ideas selected

180 startups connected , **80** startups enrolled

40+ jury members/mentors , **12** startups selected to enter the acceleration camp

4.5 months PoC

4 monthly seminars (training and PoC review)

9 PoC delivered and presented on Demo Day



12 Startups in 2021 GEM Camp



Multi station data center Design optimization software

AI for design software of building

3D PaaS

xkool 小库

realibox



Data center power distribution operation and maintenance training & Simulation software

Digital twin solution provider

BIM+AR+ AIoT solution

DIGITWIN

以见科技
Onesight Technology



Micro grid Energy management, optimization and control for Star Charge charging station



AI for BMS to improve security of battery

VPP+DERM platform

Fire detection for energy storage system

Distributed energy storage solution provider



电享
Power share



TRM Energy



Predictive maintenance for MCCB in wind farm application



智擎信息



EV charging robot



Milk Charge