

# New facility promotes low-carbon ideas<sup>🌱</sup>

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**A new CityU facility, the first of its kind in Hong Kong, promises to deliver a fun and inspiring learning experience about low-carbon energy.**

The Low Carbon Energy Education Centre, which was completed in February 2017, is a collaboration with CLP Power Hong Kong Limited (CLP).

The interactive exhibits that the Centre hosts demonstrate how low-carbon energy sources such as renewable energy, nuclear power and natural gas can help combat climate change.

“We hope to introduce to the public the principles, applications, advantages, constraints and potential of the future development of power generation by various low-carbon energy sources,” said Professor Kai Ji-jung, Chair Professor of Nuclear Engineering in the Department of Mechanical and Biomedical Engineering (MBE).

The public generally doesn't have a thorough understanding of energy, and while many people approve of renewable energy in principle, they will not accept any increases in their electricity bills caused by the expensive renewable energy.

Also, some people have a negative impression of nuclear power without appreciating its benefits.

“Therefore, we wish to provide unbiased information to enable the public to know more about the importance of low-carbon energy, the pros and cons of different fuel types and the feasibility and cost of developing clean energy,” Professor Kai added.

The Centre will also play a role in showcasing related research at CityU, Professor Kai said, in areas such as nuclear reactor safety, nuclear accidents, fuel-coolant interactions, smart grid, smart thermostat, and smart battery conditions for monitoring and diagnostics systems.

The Centre will also have a strong impact on learning. Students who study on the nuclear and risk engineering programme or Gateway Education courses related to technology, energy and nuclear can make use of the facility.

“Students on the nuclear and risk engineering programme study nuclear energy from a macro perspective so that they can understand the need for developing nuclear energy, its role in the mix of energies for power generation, and the most advanced nuclear technology. The objective is to equip them with the knowledge and applications of nuclear and risk engineering and prepare them for career development in related fields,” Professor Kai said.

“As nuclear power is one of the low-carbon energy themes presented in the Centre, students in this programme will take lessons at the Centre to learn from various angles about nuclear power and other energy sources for power generation,” he said.

The Centre has five themed zones: Climate Change and Fuel Choice, Renewable Energy, Natural Gas, Nuclear Power, and Powering the Future. Interactive elements and innovative technology such as 3D projection mapping and a 235-degree immersive display system have featured at the exhibits.

“The 235-degree immersive display system provides a virtual reality tour of Phase I of the Ling Ao Nuclear Power Plant,” said Dr Luk Bing-lam, a member of the Centre’s team and Senior Engineer in MBE.

“This is the first time that CGN [China General Nuclear Power Corporation] has provided Hong Kong with a virtual reality system for exploring Phase I of the Ling Ao Nuclear Power Plant. Also, this is the first time that CGN has collaborated with CityU’s Centre for Applied Computing and Interactive Media at the School of Creative Media and MBE,” Dr Luk added.

Another highlight of the Centre is a 3D model of the Hualong 1 Nuclear Reactor donated by Guangdong Nuclear Power Joint Venture Company Limited. It is the mainland’s first indigenous design of a third-generation nuclear power plant, with independently owned intellectual property rights. The model has not been displayed outside the mainland before.

CityU members participating in this interdisciplinary collaborative project include Professor Kai; Dr Zhao Jiyun, Associate Professor of MBE; Dr Luk; Dr Lam Miu-ling, Assistant Professor of the School of Creative Media; and Professor Chieng Ching-chang, former Visiting Professor of MBE.

More than 3,000 visitors, including government officials, professionals from various sectors such as members of the Hong Kong Institution of Engineers, and students from post-secondary institutes and secondary and primary schools, have visited the Centre since it opened its doors in April 2017. ◆



# 低碳能源教育中心

城大與中華電力有限公司(中電)合作,於今年2月開設了全港首個低碳能源教育中心,為公眾提供有趣又富啟發性的學習體驗。

教育中心以互動展品向公眾介紹如何運用低碳能源,包括可再生能源、核能及天然氣,來應對氣候變化。

機械及生物醫學工程學系核子工程講座教授開執中教授說:「我們希望向公眾介紹各種低碳能源的發電原理、應用、優點、限制,以及未來的發展潛力。」

一般人對能源的認識不夠全面,例如很多人原則上都支持使用可再生能源,但當討論到電費會因而增加時就卻步了;又如不少人對核電只存有不良印象,卻不了解當中的好處。

開教授說:「因此,我們希望以中立、不偏頗的資訊,使大家認識低碳能源的重要性、不同燃料的利弊,並了解發展潔淨能源的可行性及代價。」

他說,教育中心還會展出城大相關研究,範疇包括核反應堆安全、核事故、燃料與冷卻劑的相互作用、智能電網、智能恆溫器、智能電池狀態的監察及診斷系統等。

教育中心對城大的教學亦有幫助。修讀核子及風險工程以及與科技、能源和核子有關的精進教育課程的學生也可使用此中心。

開教授說:「核子及風險工程課程教導學生宏觀地看待核能,了解核能發展的必要性和其用於電能組合的作用,以及現今最先進的核電技術,目的是使他們能夠掌握核工程與風險工程學科的知識和應用,有助將來在相關行業發展。」

「教育中心涵蓋不同的低碳能源,核能是其中一個主題。因此,修讀此課程的學生會到中心上課,從多角度認識核能和其他發電能源。」



中心共分五個展區:氣候變化與能源選擇、可再生能源、天然氣、核能、未來電能發展。展品加入互動元素,並使用了最新技術,如立體投影和235度立體沉浸式顯示系統等。

教育中心團隊成員、城大高級工程師陸炳林博士說:「用235度立體沉浸式顯示系統進行虛擬實境導賞,可使參觀者恍如置身於嶺澳一期核電廠內。」

他說:「這是中國廣核集團(中廣核)首次向香港提供嶺澳一期核電廠的虛擬實境系統,也是中廣核與城大創意媒體學院互動媒體電算應用中心和機械及生物醫學工程學系的首次合作。」

另一個值得介紹的展品,是廣東核電合營有限公司送給大學展出的華龍一號立體模型。華龍一號是運用中國自主知識產權製造的反應爐,採用第三代核電廠壓水堆技術。這也是該公司首次在大陸以外地區展出此模型。

參與此跨學科協作計劃的城大成員包括:開教授、機械及生物醫學工程學系副教授趙吉運博士、陸博士、創意媒體學院助理教授林妙玲博士、機械及生物醫學工程學系前客座教授錢景常教授。

教育中心自4月對外開放以來,已吸引逾3,000人參觀,當中包括政府官員、不同行業的專業人士如工程師學會會員、大專及中小學生等,反應熱烈。●

