

Smart thermostat, cool energy- saving

城大師生共同 研發智能溫度調節器



Team strives to transform Hong Kong to 'smart city' through technology research and development

城大團隊透過創新科技的研發，竭力助香港轉型為「智慧城市」

Guest interviewer: alumnus Ho Lai-chuen
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A hefty electricity bill from air conditioning has become a common headache for most local families in the summer. To help others, as well as to put their own stamp on the future through innopreneurial ingenuity, CityU postdoctoral fellow Dr John Chan Yau-chung, and doctoral students Jacky Lai Chun-tak and Ryan Yeung Shun-cheung decided to focus their research and development on practical solutions to this prominent issue.

Renovate technology

Under the guidance of their instructors, Professor Henry Chung Shu-hung and Dr Norman Tse Chung-fai, the team went on to develop a novel smart thermostat that not only saves energy but also reduces costs. "Not many people had thought of developing such energy-saving technology even though air-conditioners are an integral part of modern living," Dr Tse noted. "However, it is also the

case that **innovation does not always need to involve a totally new invention. It could also be a significant enhancement of existing technology - and what was currently available** in the air-conditioning area did need improvement."

The idea of developing a smart thermostat, earned the team secured funding from the Technology Start-up Support Scheme for Universities (TSSSU). Using energy-saving lighting as a reference, the team developed a more energy-efficient air-conditioning system. Soon, the concept started to materialise

and the first product, an energy saver, was launched on the market. The smart thermostat will be launched in the next phase.

The team said that the most challenging part of the whole process was not technology-related, but sales. **While it is often thought that research and development only centres on the creation and design of products, innovators actually encounter a host of difficulties connected to sales strategies and design.** To overcome such challenges, the team would turn to commercial experts instead to augment company operations.



The temperature of the motor for the fan coil was significantly reduced after using the smart thermostat.

使用智能溫度調節器後，風機馬達的溫度顯著下降。

Conducive environment for inspiration

Looking ahead, Professor Chung sees that universities play a crucial role in R&D as they help students to fully explore their potential and interests instead of just instilling knowledge. The curriculum should be readily transferrable in real-life.

In this regard, Jacky said that CityU already provides a good example. He sees the University as a warm and close family equipped with the environment necessary for leading research, despite its relatively small size. There are always faculty members willing to answer students' questions and ensure resource availability. Ryan agreed, saying that **CityU professors were like beacons, showing students the direction and providing valuable links to the commercial sector.**

Support for R&D from the government was also a key factor. Team members commented that in recent years, the government has adopted the view that the economy and people's daily lives are increasingly founded on the digital economy and hence been willing to invest more in R&D, particularly in science and technology. On the electronic engineering front, the Electrical and Mechanical Services Department is also always willing to explore collaboration with SMEs. **While innovation has taken off to a much greater degree in the mainland, Hong Kong's on-going realignment will help the city keep pace with global developments overall**, according to the team.

香港很多家庭都會安裝至少一部冷氣機，而每年夏季我們也要繳付高昂的冷氣費。城大博士後研究員陳佑宗博士與其他兩位博士生黎俊德和楊純彰注意到這個問題，於是在導師鍾樹鴻教授和謝松輝博士的協助下，合力研發出智能溫度調節器，既節省能源，亦可減低冷氣機電費的支出。



The Smart Thermostat prototype.
智能溫度調節器的原型。



創新：日常但不平常

謝松輝博士表示：「雖然冷氣機是香港市民在日常生活經常會接觸到的，但甚少人著手研發冷氣節能的科技，現有的冷氣節能科技實在談不上完善。」他指出人們常提到創新科技一詞，但**創新不一定是無中生有的全新發明，亦可以是改進已有的科技**。佑宗和他的團隊便是參考現有的電燈節能系統，受到啟發，然後將冷氣節能系統加以改善。

佑宗表示研發智能溫度調節器的意念出自謝松輝博士，他與俊德和純彰負責撰寫建議書，並申請「大學科技初創企業資助計劃（TSSSU）」，而兩位老師就從旁協助，提供意見。在成功獲得研究基金後，團隊便開始將意念實體化。產品的第一階段節能器（energy saver）已在市面出售和應用，而團隊亦將會推出智能溫度調節器（smart thermostat）。在整個過程中，最具挑戰的是營銷問題；社會上很多研發人員認為，只要創造出優秀的產品便可以；但要將產品推出市場，會涉及到營銷及設計等問題。團隊計劃在未來聘請商業專才，以進一步擴展公司的規模。

科研發展的未來

談到如何在香港推動科研，鍾樹鴻教授認為大學教育擔當了十分重要的角色。學校需要發展學生的潛能和興趣，而不只是灌輸知識。課程應該與現實掛鉤，讓學生把知識應用在日常生活中。」在這方面，俊德感覺城大是很好的例子，他說城大就像一個溫暖的家，雖然校園不大，但設備十分充足，只要學生願意，就能找到有助於學習和應用的資源。純彰亦認為**教授就像燈塔或指南針一樣，為學生指明研究的方向，並讓學生得以認識投資者。**

要推動科研亦需要政府的資助。團隊認為香港的市場模式雖然較為注重商業

發展，可幸的是，近年政府了解到商業和日常生活亦建基於電子科技，故投放了更多資源在科研發展。資源增加，機電署亦樂於與中小企合作。雖然現在內地的科技發展比香港快，但只要香港重整方向，假以時日，定能追上內地和歐美。 ◀



About guest interviewer Ho Lai-chuen

Mr Ho is an EMBA graduate. As a former member of TVB's senior management, he produced many famous variety shows. In 2015, he set up his own concert production and entertainment company. He is one of the City AlumNet Advisory Committee members.

特邀記者何麗全校友簡介：

何校友為城大行政人員工商管理碩士畢業生、香港資深的電視媒體管理層，曾擔任無線電視的節目總監，並製作多個著名的綜藝節目。2015年，他成立了製作公司，專門籌劃演唱會等製作。他是城大校友網雜誌的諮委成員。