

## PhD studentship (Full-time)

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| Institution          | Xi'an Jiaotong-Liverpool University, China  |
| School               | School of Intelligent Manufacturing Ecosystem   |
| Supervisors          | Principal supervisor: Dr Long Huang (XJTLU)<br>Co-supervisor: Dr Yi Chen (XJTLU)<br>Co-supervisor: Dr Guangliang Cheng (UoL)  |
| Application Deadline | Open until the position is filled   |
| Funding Availability | Funded PhD project (world-wide students)  |
| Project Title        | Approximation-Assisted Transient Vapor Compression Cycle Modeling under Fast Fluid Dynamics Simulated Built Environment   |
| Contact              | Please email <a href="mailto:long.huang@xjtlu.edu.cn">long.huang@xjtlu.edu.cn</a> (XJTLU principal supervisor's email address) with a subject line of the PhD project title.<br><br>The principal supervisor's profile is linked here:<br><a href="https://www.xjtlu.edu.cn/en/departments/academic-departments/entrepreneur-college-taicang/staff/long-huang">https://www.xjtlu.edu.cn/en/departments/academic-departments/entrepreneur-college-taicang/staff/long-huang</a> |

### **Requirements:**

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in Mechanical Engineering, Energy and Power Engineering, Applied Mathematics, Computer Science and other relevant fields. Evidence of good spoken and written English is essential. The candidate should have an IELTS score of **6.5 or above**, if the first language is not English. This position is open to all qualified candidates irrespective of nationality.

### **Degree:**

The student will be awarded a PhD degree from the University of Liverpool (UK) upon successful completion of the program.

### **Funding:**

The PhD studentship is available for three years subject to satisfactory progress by the student. The award covers tuition fees for three years (currently equivalent to RMB 99,000 per annum). It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. The scholarship holder is expected to carry out the major part of his or her research at XJTLU in Suzhou, China. However, he or she is eligible for a research study visit to the University of Liverpool up to six months, if this is required by the project.

## **Project Description:**

Transient simulation of heating, ventilation and air-conditioning systems is of dire needs. Such model serves as the digital-twin representation of the actual building thermal envelope conditions for the purposes for control optimizations as well as thermal comfort improvements. This research aims to establish a Modelica-based vapor compression cycle model that allows modular components to be configured as systems and cycles. Further, Fast Fluid Dynamics simulation scheme will be developed in providing flow field for the transient system model. The key to applying the developed methodology in industry applications is speed up the calculation to be faster than real time. The approximation-assisted approach is to be implemented in reducing the iterative nature of fluid-to-fluid physics-based simulations. Finally, the systematics transient simulation library developed would be used for arbitrary cycle optimization in enhancing the cycling performance.

For more information about doctoral scholarship and PhD programme at Xi'an Jiaotong-Liverpool University (XJTLU), please visit

<https://www.xjtlu.edu.cn/en/admissions/global/entry-requirements/>

<https://www.xjtlu.edu.cn/en/admissions/global/fees-and-scholarship>

## **How to Apply:**

Interested applicants are advised to email [long.huang@xjtlu.edu.cn](mailto:long.huang@xjtlu.edu.cn) (XJTLU principal supervisor's email address) the following documents for initial review and assessment (please put the project title in the subject line).

- CV
- Two formal reference letters
- Personal statement outlining your interest in the position
- Certificates of English language qualifications (IELTS or equivalent)
- Full academic transcripts in both Chinese and English (for international students, only the English version is required)
- Verified certificates of education qualifications in both Chinese and English (for international students, only the English version is required)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available