

## PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Advanced Technology
Supervisors	Principal supervisor: Dr. Timur Saifutdinov (XJTLU) Co-supervisor: Dr. Fei Xue (XJTLU) Co-supervisor: Dr. Lin Jiang (UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Novel flexibility mechanism for local energy markets and techno-economic framework for coordinated procurement of distributed flexibility in electricity distribution systems
Contact	Please email <a href="mailto:Timur.Saifutdinov@xjtlu.edu.cn">Timur.Saifutdinov@xjtlu.edu.cn</a> (XJTLU principal supervisor's email address) with a subject line of the PhD project title.  The principal supervisor's profile is linked here: <a href="https://scholar.xjtlu.edu.cn/en/persons/TimurSaifutdinov">https://scholar.xjtlu.edu.cn/en/persons/TimurSaifutdinov</a>

### **Requirements:**

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in Electrical Engineering (preferably, in the area of Power Systems).

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:**

Advances in low-carbon technologies trigger the evolution of electricity grids from passive networks to active systems, characterized by flexible networks, controllable loads and dispatchable generators. To facilitate a secure and economic operation of electricity grids (overloaded due to electrification of heat, transport and industries) energy policy suggests exploiting Distributed Flexibility (DF) instead of costly network modernizations. By shifting peak electricity demand in time, DF allows increasing the utilization factor of networks to defer or even avoid network reinforcement. A feasibility study shows that optimally coordinated dispatch of DF can lead to 35% savings of energy costs for customers; however, the study draws a perfect picture when all flexible assets are orchestrated in an optimal and coordinated manner, which can hardly be achieved in practice. To address the gap, a PhD candidate will be required to achieve the following objectives:

1. Provide a comprehensive review of methods proposed in the literature that focus on coordinated procurement of DF;
2. Develop an economic mechanism for the system operators to access the flexibility of local energy trading while providing fair compensation to the market participants;
3. Develop a techno-economic framework for coordinated procurement of DF in electricity distribution systems;
4. Quantify the value of the developed flexibility mechanism and the framework for coordinated procurement of DF against globally optimal solutions and state-of-the-art approaches.

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 [Timur.Saifutdinov@xjtlu.edu.cn](mailto:Timur.Saifutdinov@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