



(Freiburg)



(The Hague)

European PhD Fellowship on Experimental Design, System Identification and Flight Trajectory Analysis of Rigid Wing Airborne Wind Energy Systems

University of Freiburg (Germany) & Ampyx Power B.V. (Netherlands)

[AWESCO](#) is an interdisciplinary Marie Curie doctoral training network combining eight academic and four industrial network partners with five associated partners, all selected on the basis of excellence and complementarity. The idea of Airborne Wind Energy (AWE) is to replace the most efficient part of a conventional wind turbine, the tip of the rotor blade, by a fast flying high efficiency kite.

The PhD fellow will spend 3 months at University of Freiburg (Germany) under the supervision of Prof. Dr. Moritz Diehl, head of Control and Optimization Laboratory and 1.5 months at Ampyx Power B.V. in The Hague (Netherlands). Ampyx Power is a company which has developed a tethered high-strength autonomously controlled glider capable of generating electricity at cost levels competitive with respect to fossil fuels.

PROJECT DESCRIPTION

Aim of the Early Stage Researcher (ESR) position is to conduct research on modelling, simulation and optimization of a rigid wing AWE systems with numerical optimal control techniques that include experimental design, system identification and optimal trajectory generation.

The AWE systems under investigation will be close to those in operation and in development at the AWESCO partner [Ampyx Power B.V.](#) It is desired to build on existing modelling and optimal control results and also on existing software infrastructure in the open source environment [CasADi](#) such as [Open OCL](#). The aim of the 4.5 months ESR position is to collect and solidify existing research results and describe the state of the art in experimental design, system identification and

optimal trajectory generation as well as identify suitable control architectures for rigid wing AWE systems in one self-contained and cohesive research monograph.

In summary:

- **Duration of the fellowship:** 4.5 months
- **Start date:** 1-1-2018
- **Secondment:** 1.5 month at Ampyx Power B.V.
- **Deliverable:** Research monograph on “Experimental Design, System Identification and Flight Trajectory Analysis of a Rigid Wing Airborne Wind Energy System”.

CANDIDATE PROFILE

An ideal candidate has a master degree in control (or equivalent) engineering, with a strong background in:

- physical modelling and control of flying systems;
- optimization;
- optimal control theory;
- system identification theory;
- control algorithms design.

A solid familiarity with airborne wind energy systems is also expected. Knowledge in programming languages such Matlab as well as casADi are strongly recommended. Finally, proficiency in English is mandatory.

The position adheres to the European policy of balanced ethnicity, age and gender. Both men and women are encouraged to apply.

APPLICATION

To apply, send an email to diehl@imtek.uni-freiburg.de. Subject of your email should be: “AWESCO Fellowship Application”. Please include:

- a. an academic CV and a PDF of your diplomas and transcript of course work and grades;
- b. statement of research interests and career goals;
- c. eventual publications pertinent to the topics above mentioned;
- d. proof of proficiency in English (e.g. language test results from TOEFL, IELTS, etc.).

Please send your application before Tuesday 12th December, 2017.

MARIE CURIE ELIGIBILITY CRITERIA IN SHORT

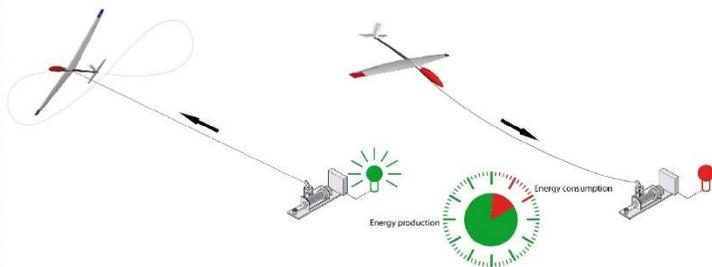
To be eligible, you need to be an "Early Stage Researcher" i.e. simultaneously fulfill the following criteria at the time of recruitment:

- a. **Nationality:** The researcher may be of any nationality.
- b. **Mobility:** the researcher must not have resided or carried out his/her main activity (work, studies, etc...) in the Germany for more than 12 months in the 3 years immediately prior to his/her recruitment under the project.
- c. **Qualifications and research experience:** you must be in the first 4 years of your research career after the master degree was awarded.

Please visit the <http://www.awesco.eu/> for more information about the project, its partners and eligibility criteria.



(Protopyte designed by Ampyx Power B.V.)



(Example of Operating Principle)