

JOB OFFER

Position in the project:	Graduate student
Scientific discipline:	Energy Engineering /Mechanical Engineering and/or similar
Job type (employment contract/stipend):	stipend
Number of job offers:	1
Remuneration/stipend amount/month (*X0 000 PLN of full remuneration cost, i.e. expected net salary at X 000 PLN*):	2 000 PLN
Position starts on:	01.12.2018 r.
Maximum period of contract/stipend agreement:	01.12.2018 r. – 01.12.2019 r.
Institution:	Division of Boilers and Steam Generators / Institute of Power Engineering and Turbomachinery / Faculty of Energy and Environmental Engineering / Silesian University of Technology
Project leader:	dr hab. inż. Sylwester Kalisz
Project title:	<i>Process optimisation and valorisation of combustion by-products in transition to circular economy (UPS-Plus)</i> <i>Project is carried out within the TEAM-TECH Core Facility programme of the Foundation for Polish Science</i>
Project description:	The main object of the project is the realisation of circular economy ideas by optimising the combustion process in order to obtain combustion by-products likely to valorisation and usable in industry. Optimization of low-quality solid fuels combustion (e.g. biomass or refuse-derived fuel) will be based mostly on upgrading fuel properties with additives, especially connected with slagging, fouling and high-temperature corrosion and on a reduction of harmful compounds (e.g. NO _x , Hg, HCl, HF, NH ₃). The purpose of the optimisation is to produce specific by-products subsequently subjected to thermal and chemical functionalization resulting in obtaining useful materials, e.g. geomats, insulations or sorption medium. Project objectives will be carried through the usage of innovative, multifunctional Core Combustion Facility (CCF) – semi-technical boiler stand allowing to develop research service concerning modification of combustion process in order to receive most useful by-products.
Key responsibilities include:	<ol style="list-style-type: none"> 1. Master thesis research: “Investigations of renewable fuels combustion in grate boiler” Research within Work Package Optimisation of combustion process. <p>Master thesis research will include following scope:</p> <ol style="list-style-type: none"> 1. Development of a design project and documentation of the measurement system for grate boiler (including diagrams for visualization of the measurement system). 2. Preparation of the experiment plan and the scope of necessary laboratory analyses for renewable fuels combustion tests in grate furnace. 3. Determination of operation parameters of the research grate boiler during the combustion of raw and additive doped renewable fuels: <ol style="list-style-type: none"> a) determination of the temperature distribution in the boiler furnace chamber using a micro HVT probe, b) measurements of velocity and composition of flue gas in selected cross-sections of the furnace chamber,

	<ul style="list-style-type: none"> c) studies on the rate of ash deposition on heating surfaces of a grate boiler, with the use of deposition probe, d) sampling of fly ash and slag from the combustion chamber of the grate boiler, e) laboratory analysis of fuels and combustion by-products, f) analysis of measurement results and measurement uncertainties.
Profile of candidates/requirements:	<ol style="list-style-type: none"> 1. Bachelor Degree in Mechanical Engineering/Energy Engineering or/and similar. 2. A Master student status in a field of Mechanical Engineering/Energy Engineering or/and similar. 3. Oral and written language skills in English (min. B2 level). 4. Predispositions for experimental work and laboratory research, willingness to learn fuel analysis methods (inter alia: technical, elemental fuel analysis, ash composition analysis, TG analysis, sieve analysis, flue gas analysis). 5. Basic knowledge of boiler technology, especially in the field of combustion process optimisation, corrosion control. 6. Advanced skills at, at least, one CAD and 3D CAD program.
Required documents:	<ol style="list-style-type: none"> 1. Covering letter including the reason of willing to realise the Master thesis within the UPS-Plus Project (max. 1 page). 2. CV including relevant professional experience, students organization activities and knowledge (max. 2 pages). 3. Copy of the Bachelor degree certificate(s) with grades list. Translations into English or Polish if the original documents are not issued in one of these languages. 4. Confirmation of good oral and written communication skills in English (min. B2 level).
We offer:	The possibility of realising Master research in a dynamic research environment in close cooperation with industries and advanced research centres in the world.
Please submit the following documents to:	ccf@polsl.pl (e-mail subject: CCF – Master Degree student application 2)
Application deadline:	20.11.2018 r.
For more details about the position please visit (website/webpage address):	www.ccf.polsl.pl
Euraxess job/stipend offer (in case of PhD and postdoc positions):	https://euraxess.ec.europa.eu/jobs/352488

Please include in your offer:

“I hereby give consent for my personal data included in my application to be processed for the purposes of the recruitment process within the project conducted by Silesian University of Technology which is the administrator of my personal data.

I am aware of the fact that providing personal data is voluntary and necessary in the recruitment process. I have the right to withdraw or limit the scope of consent to data processing.

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place, date and signature”