Fellow	**Host Institution No.1:** University of Stuttgart **Host Institution No.2:** CATEC	**Country:** Germany **Country:** Spain
DC15	**Supervisor (academic):** Prof. Stefan Weihe **Supervisor (industrial):** Dr. Fernando Lasagni	**WP No:** 4

Title: Additive Manufacturing technologies for heat exchangers applications in sCO_2 power systems

Research Objectives: (1) To evaluate design methodologies and geometry optimization through simulations for enhancing HX applications in sCO_2 power systems. (2) To investigate different alloys for its processability through additive manufacturing technologies. (3) To analyse the optimum AM process parameters for desired application. (4) To characterize the material: thermo-mechanical and chemical properties as well as microstructure. (5) To investigate post processing steps, including thermal treatments, surface finishing, weldability, etc. (6) To evaluate the best AM technology for producing the targeted components and geometries through representative samples. (7) Investigate on non destructive evaluation techniques for highly complex geometries validation. (8) To investigate the functional capacity of HX demonstrators with special focus on sCO_2 power systems. (9) To derive recommendation for designers and manufacturers.

Mobility rules (eligibility of applicants): more information here

- Researchers funded by Doctoral Networks should comply with the mobility rules: in general, they must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting organisation for more than 12 months in the 36 months immediately before their recruitment date[1].
- In addition, they:
  - must not have a doctoral degree at the date of their recruitment.
  - can be of any nationality.

Applicant - specifications: in addition to the general specifications (eligibility criteria) listed above, the applicant must feature the following requirements:

- **Earned degree:**
  - MSc in Materials or Mechanical Engineering (or related area). Preference will be given to candidates with good knowledge on materials
- **Background (preferential):**
  - Materials science
  - Additive manufacturing
  - Metallic alloys
  - Material characterization/Materials testing

[1] This rule applies to the first contract only (University of Stuttgart)

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- FEM/CFD simulations
- **Additional background that will be valued in the selection process:**
  - Laboratory experience
- **English language:**
  - A certified C1 level of English is required

Scheme:

- M1-M12: the applicant is hired by CATEC.
- M13-M36: the applicant is hired by Univ. Stuttgart, without undergoing another selection process.
- M19-M24: the applicant is seconded to Rosswag.

Locations (place of work):

- M1-M12: the applicant will be employed by CATEC:
  Parque Tecnológico y Aeronáutico de Andalucía
  C/ Wilbur y Orville Wright 19 - 41309 La Rinconada (Sevilla), Spain
  Google Maps: https://goo.gl/maps/wPR1TqniJN7Y7qyi6
- M13-M36: the applicant will be employed by University of Stuttgart:
  Materials Testing Institute University of Stuttgart
  Pfaffenwaldring 32 - 70569 Stuttgart, Germany
  Google Maps: https://goo.gl/maps/7yHUujPiVrktrkZ89
- M19-M24: the applicant will be seconded to Rosswag GmbH:
  Rosswag Engineering GmbH
  August Roßwag Str. 1, 76327 Pfinztal, Germany
  Google Maps: https://goo.gl/maps/6CtiGgsNNp3kYtAe8

Planned secondments: DC15 is expected to carry out the following secondment:

- Rosswag GmbH: assess options to apply AM to high-pressure/temperature equipment in power plants.

How to apply: submit application package (see below) to Prof. Stefan Weihe (bewerbung@mpa.uni-stuttgart.de) before May 31st 2023, 17:00 h CET.

The Application Package is comprised of:

- CV Europass (https://europa.eu/europass/en/create-europass-cv)
- Letter of motivation
- *Analysis of the challenges faced by the energy sector to accomplish Carbon Neutrality by 2050, and the associated needs for technology development* (max 3 pages)
- Short video (less than 2min): *why I should be selected for the position*. The candidates should address some of the following questions:
  - D1: Why did you decide to apply for a position in ISOP?
  - D2: What do you expect/want to gain from an MSCA programme?
  - D3: How do you think you can add value to an MSCA programme?

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- D4: Summarise your strengths and weaknesses.
- D5: Describe a time when you had to deliver a challenging project. What was your role and what was the outcome?
- D6: Where do you see yourself in 10 years?
- D7: Why should you be selected for the position?

- Letters of recommendation (not mandatory)
- The application package must not exceed 15 Mb

Contract:

- Start date (estimate): September 2023
- Type: full-time exclusive
- Annual gross salary:
  - University of Stuttgart: € 38,400.00
  - CATEC: € 33,650.00
- An additional (family) allowance is available for candidates who have family obligations (applied from and until this condition applies)

Equal Opportunity Employers:

University of Stuttgart and CATEC are Equal Opportunity Employers. We believe that no one should be discriminated against because of their differences, such as age, disability, ethnicity, gender, gender identity and expression, religion or sexual orientation. All employment decisions shall be made without regard to age, race, creed, colour, religion, sex, national origin, ancestry, disability status, sexual orientation, gender identity or expression, genetic information, marital status, citizenship status or any other basis as protected by European laws.

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