



**POLITECNICO**  
MILANO 1863

<b>Fellow</b>	<b>Host Institution No.1:</b> Politecnico di Milano - POLIMI <b>Host Institution No.2:</b> RPOW Consulting	<b>Country:</b> Italy <b>Country:</b> Italy
DC5	<b>Supervisor:</b> Prof.Giampaolo Manzolini <b>Co-supervisor:</b> Angel Martinez Quesada	<b>WP No:1</b>
<b>Title:</b> Utilisation of CO <sub>2</sub> mixtures to enhance the performance of supercritical Carbon Dioxide systems		
<b>Research Objectives:</b> (1) To explore the potential of utilising CO <sub>2</sub> mixtures to enhance the performance of indirect sCO <sub>2</sub> power cycles. (2) To identify and characterise dopants according to the temperature level of interest: nuclear, WHR, CSP. (3) To identify optimal cycle layouts for each mixture-application combination. (4) To identify and assess environmental and mechanical integrity - related issues potentially triggered by the working mixtures.		
<b>Mobility rules (eligibility of applicants):</b> more information <a href="#">here</a>		
<ul style="list-style-type: none"> <li>• 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<sup>1</sup>.</li> <li>• In addition, they: <ul style="list-style-type: none"> <li>○ must not have a doctoral degree at the date of their recruitment.</li> <li>○ can be of any nationality.</li> </ul> </li> </ul>		
<b>Applicant - specifications:</b> in addition to the general specifications (eligibility criteria) listed above, the applicant must feature the following requirements:		
<ul style="list-style-type: none"> <li>• <b>Earned degree:</b> <ul style="list-style-type: none"> <li>○ MSc in Energy, Chemical, Industrial, Mechanical or Aerospace Engineering (or related area). In the latter two cases, preference will be given to candidates with a specialization in energy/power/propulsion or related areas</li> <li>○ MSc with a final score no lower than 95/110 (or 86/100) or minimum average score in exams indicated below:</li> </ul> </li> </ul>		

<sup>1</sup> This rule applies to the first contract only (Politecnico di Milano)





COUNTRY	MINIMUM GPA
BANGLADESH	3,3/4
CHINA	70/100
COLOMBIA	3,5/5
European Countries (ECTS grading system)	C+
EGYPT	65/100
ETHIOPIA	3/4
GHANA	65/100
INDIA	70/100
INDONESIA	2,8/4
IRAN	14,5/20
NIGERIA	3/5
PAKISTAN	3,3/4,0
SERBIA	7,5/10
TURKEY	3/4
VIETNAM	7/10

(for the Countries not included in this list, the evaluation will be carried out directly by the Selection Committee).

- **Background (mandatory):**
  - Thermodynamics
  - Power plant engineering (design and analysis)
  - Matlab/Python programming
- **Additional background that will be valued in the selection process:**
  - Optimisation techniques in engineering
  - Equation of state knowledge and calibration
  - Material science
- **English language:**
  - A certification of the level of English is required. A list of the certifications accepted by the Politecnico di Milano and the corresponding levels is given below:

TEST	MINIMUM LEVEL REQUIRED
CAMBRIDGE	≥ FCE grade B
CAMBRIDGE IELTS (International English Language Testing System) (Academic)	≥ 6
ETS - TOEFL (Test of English as a Foreign Language)	paper based (total score): ≥ 547
ETS - TOEFL (Test of English as a Foreign Language)	computer based (total score): ≥ 210
ETS - TOEFL (Test of English as a Foreign Language)	internet based (total score): ≥ 78
ETS - TOEIC (Test of English for International Communication - Listening and Reading Test)	≥ 720
TRINITY COLLEGE LONDON	≥ ISE II

**Scheme:**





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- M1-M24: the applicant is employed by Politecnico di Milano
- M19-M24: the applicant is seconded to CIEMAT
- M25-M36: the applicant is employed by RPOW Consulting, without undergoing another selection process

**Locations (place of work):**

- M1-M24: the applicant will be employed by Politecnico di Milano and located at the Department of Energy:  
Building BL25, Via Lambruschini 4, 20156 Milano (Italy)  
Google Maps: <https://goo.gl/maps/VNXoxeHir3cSs99z7>
- M19-M24: the applicant, while being employed by Politecnico di Milano, will be seconded to and located at CIEMAT:  
Ctra. de Senés, km. 4,5, 04200 Tabernas, Almería, Spain  
Google Maps: <https://goo.gl/maps/9pEUHkz8LyMT1Agj8>
- M25-M36: the applicant will be employed by RPOW Consulting and located at:  
Av. De Innovacion 3, 308, 41020 Sevilla, Spain  
Google Maps: <https://goo.gl/maps/8xbtijGfkCSA5ysf9>

**Planned secondments:** DC5 is expected to carry out the following secondment:

- CIEMAT: characterise the boundary conditions that are relevant for CSP and WHR applications

**How to apply:** submit application package (see below) to Prof. Giacomo Persico via the form at the following link <https://forms.office.com/e/EAuaDrzS8H> before May 31<sup>st</sup>, 17:00 h CET.

The Application Package is comprised of:

- CV
- Letter of motivation
- A short essay (maximum length is 3 pages, including references) on the topic of the *Analysis of the challenges faced by the energy sector to accomplish Carbon Neutrality by 2050, and the associated needs for technology development*
- Short video clip (less than 2 minutes) where the candidates shall explain why they should be selected for the position. The candidates shall 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?
  - 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?

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- The application package must not exceed 15 Mb

**Contract:**

- Start date (estimate): October 2023
- Type: full-time exclusive
- Annual gross salary (yearly):
  - Politecnico di Milano: € 38,052.72 € (research fellowship)
  - RPOW Consulting: € 33,710.00
- An additional (family) allowance is available for candidates who have family obligations (applied from and until this condition applies)

**Equal Opportunity Employers:**

Politecnico di Milano and RPOW Consulting 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, color, 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 and Italian laws. For details, view the Gender Equality Plan of Politecnico di Milano.

