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|---|------------------|
| Università degli Studi di Trieste<br>DIPARTIMENTO DI INGEGNERIA<br>E ARCHITETTURA |                  |
| N° 1262   | DATA<br>30/04/24 |
| Tit./Cl. 2024-VII 116.4   |                  |
| Rep. N°   |                  |

Allegato 1

Al  
Direttore Dipartimento di Ingegneria  
e Architettura  
Università degli Studi di Trieste  
Via Valerio, 6/1  
34127 Trieste

Il sottoscritto Ronelly José De Souza .....  
 Nato a Campina Grande/PB - Brasile ..... prov. Paraíba ..... il 18/03/1984 .....  
 Codice fiscale .....  
 Residente a ..... prov. ..... CAP .....  
 Via ..... P. ....

Recapito cui indirizzare eventuali comunicazioni (da compilare solo se diverso dalla residenza):  
 .....  
 .....

Recapiti telefonici \* .....  
 Recapito e-mail: ~~56~~ .....

**CHIEDE**

di essere ammesso alla procedura comparativa per il conferimento di n. 2 incarichi di lavoro autonomo occasionale per il Dipartimento di Ingegneria e Architettura dell'Università degli Studi di Trieste, di cui all'avviso prot. n. 1129 dd. 17/04/2024

per l'attività di:

"Sviluppo di strumenti di calcolo per l'analisi energetica di impianti criogenici"

nell'ambito del progetto "D13 – PNRR 24 TACCA\_01 Cryodesign CUP D43C22003090001"

A tal fine, consapevole della responsabilità penale cui può andare incontro in caso di dichiarazione mendace (art. 76 DPR 445/00),

**DICHIARA**

a) di essere cittadino italiano  SI  NO

**SOLO per i cittadini UE ed extra UE:**

- di avere cittadinanza Brasiliana .....

- di avere adeguata conoscenza della lingua italiana  SI  NO

- di godere dei diritti civili e politici nello stato di appartenenza  SI  NO

b) di godere dei diritti civili e politici (solo per i cittadini italiani):

SI

NO Motivo .....

c) di essere iscritto nelle liste elettorali (solo per i cittadini italiani):

- SI Comune: .....
- NO Motivo .....

d) di NON avere precedenti penali o procedimenti penali pendenti

(se SI, indicare quali: .....  
.....)

e) di essere in possesso del seguente titolo di studio: Master in Ingegneria Meccanica  
conseguito nell'anno 2019 presso Universidade Federal de Paraíba (Brasile)  
con il punteggio di 7,74/10,0

f) di essere in possesso (*indicare gli ulteriori eventuali requisiti di accesso previsti dal bando*)

Il candidato è stato titolare di una borsa di studio per il master in Brasile (2 anni), di un contratto come docente in una università pubblica federale in Brasile (2 anni) e di una borsa di studio ministeriale (MIUR, Italia) per il dottorato di ricerca UNIST a tema libero (3 anni). Durante questa esperienza, il candidato ha lavorato con SW Matlab, EES e HXCO Xpress per lo sviluppo di modelli di calcolo per la progettazione di impianti di cogenerazione e trigenerazione. Il lavoro sviluppato è stato oggetto di pubblicazioni su riviste internazionali e partecipazione a convegni internazionali. Informazioni più dettagliate sono riportate analiticamente nel CV.

g) di **NON** avere grado di parentela o di affinità, fino al quarto grado compreso, con un professore appartenente al Dipartimento di Ingegneria e Architettura dell'Università degli Studi di Trieste ovvero con il Rettore, il Direttore Generale o un componente del Consiglio di Amministrazione dell'Università degli Studi di Trieste, ex art.18, c.1, lett.b) e c), L.240/2010.

**Allega alla presente un curriculum vitae et studiorum sottoscritto in originale, unitamente a una fotocopia fronte/retro di documento di identità in corso di validità.**

I candidati in possesso di **titolo di studio estero** dovranno, altresì, dichiarare nella domanda di partecipazione alla selezione, e nell'allegato curriculum vitae, gli estremi del provvedimento di equipollenza o equivalenza con il titolo richiesto per l'accesso alla presente selezione; in mancanza di tale provvedimento, dovranno allegare al curriculum vitae copia del certificato del titolo di studio estero conseguito con l'indicazione degli esami di profitto sostenuti. Se la lingua del certificato è diversa dall'inglese, il candidato dovrà allegare la relativa traduzione in lingua italiana o inglese. La traduzione potrà essere effettuata dal candidato stesso, che si assume totalmente la responsabilità della veridicità della traduzione e della conformità all'originale.

Il sottoscritto dichiara di essere a conoscenza che l'Amministrazione non assume responsabilità per la dispersione di comunicazioni dipendente da inesatta indicazione del recapito da parte del concorrente oppure da mancata o tardiva comunicazione del cambiamento dell'indirizzo indicato nella domanda, né per eventuali disguidi postali o telegrafici o comunque imputabili a fatto di terzi, a caso fortuito o forza maggiore.

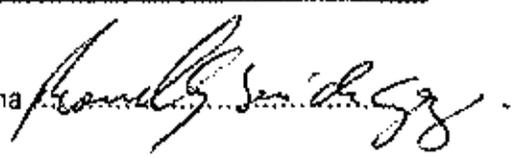
Il sottoscritto si impegna a notificare tempestivamente le eventuali variazioni del recapito sopra indicato che dovessero intervenire successivamente alla data di presentazione della presente domanda.

Il sottoscritto si impegna altresì a comunicare tempestivamente all'Amministrazione eventuali successive modificazioni della situazione sopra dichiarata.

Il sottoscritto autorizza l'Università degli Studi di Trieste ad utilizzare i dati contenuti nella presente domanda ai fini della gestione della procedura selettiva, ai sensi delle disposizioni del D.Lgs. 196/2003.

**Il sottoscritto dichiara inoltre di aver preso visione dell'avviso di selezione di cui trattasi, e di essere a conoscenza che, come da premesse ivi contenute, l'espletamento della suddetta selezione è subordinato all'esito negativo della ricerca di professionalità interna, avviata dall'Università degli Studi di Trieste per la medesima attività.**

Luogo e data, Trieste, 29/04/2024 .....

Firma 

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Ronelly José de Souza

**CURRICULUM VITAE**

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**1 PERSONAL INFORMATION**

Address: ..... 010 319  
..... 3  
Italy

Research Gate Profile: .....

Google Scholar: .....

E-mail: .....

Date of Birth: 18/03/1984

Nationality: .....

Phone: .....

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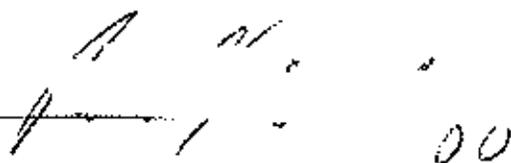
*[Handwritten signatures and marks]*

## 2 EDUCATION

- 11/2020 – to present    Ph.D. Candidate in Industrial and Information Engineering  
**University of Trieste (Italy)** (<https://www.units.it/>)  
**University of Zaragoza (Spain)** (<https://escueladoctorado.unizar.es/>)  
 Collaboration agreement for the development of the Ph.D. In co-tutela.  
 Development of modelling and optimization tools for the design and operation of complex polygeneration systems, with a particular focus on their integration into energy communities. The work has been developed by using the FICO Xpress Optimization software, through its programming language Mosel.  
 Title: *"Optimal Synthesis, Operation, and Thermo-economic Analysis of Distributed Polygeneration Systems for Energy Communities"*  
 Supervisor: Prof. Mauro Reini (University of Trieste)  
 Supervisor: Prof. Luis M. Serra (University of Zaragoza)  
 Expected defence date: 10/06/2024
- 05/2016 – 01/2019    Master's Degree in Mechanical Engineering  
**Federal University of Paraíba (Brazil)** ([www.ufpb.br](http://www.ufpb.br))  
 The attached transcript of records (both the original document in Portuguese and an official translation to Italian) provides a complete list of the passed exams. The original diploma and the respective translation to Italian are also attached.  
 Study of a small cogeneration system comprising an organic Rankine cycle and an absorption chiller with the aim to partially cover the electricity and cooling demands of a university lab in Brazil. The system was designed to take advantage of the exhaust gases of an internal combustion engine and was modelled by using the SW EES (Engineering Equation Solver).  
 Thesis title: *"Exergoeconomic analysis of a CCP system comprising an Organic Rankine Cycle and an Absorption Refrigeration System"*  
 The work was published in the Energy Conversion and Management journal.
- 09/2012 – 08/2013    International University Exchange  
**University Rovira i Virgili (Spain)** ([www.urv.cat](http://www.urv.cat))  
 The candidate completed various disciplines, including three months working as an intern in the Group of Research in Applied Thermal Engineering (CREVER) laboratory, in the same university. He worked in the theoretical and experimental analysis of a cogeneration system with the aid of the software EES (Engineering Equation Solver).
- 09/2009 – 04/2016    Bachelor's Degree in Mechanical Engineering  
**Federal University of Paraíba (Brazil)**  
 The attached transcript of records (both the original document in Portuguese and an official translation to Italian) provides a complete list of the passed exams. The original diploma and the respective translation to Italian are also attached.  
 Mechanical Engineering course with focus on three fundamental areas: thermal energy systems, materials and manufacturing processes, and automation of systems.

**3 EXPERIENCE**

- 02/2019 – 10/2020  
 Voluntary Researcher  
**Federal University of Paraíba (Brazil)**
- Continuation of the research project developed within the Master's degree.
  - Publication of paper in a scientific international journal and participation in an online conference.
- 04/2018 – 03/2020  
 University Lecturer  
**Federal Rural University of Pernambuco (Brazil) (<http://uacsa.ufpe.br>)**
- Responsible for the following disciplines: Heat Transfer; Thermal Machines; Boilers and Furnaces; Technical Drawing; and General Mechanics.
  - Supervisor of an undergraduate thesis under the project: "Energy analysis of the working fluid influence on the performance of an organic Rankine cycle". Numerical model developed in EES (Engineering Equation Solver).
- 08/2014 – 07/2015  
 Research fellow (scientific initiation practices)  
**Federal University of Paraíba (Brazil)**  
 Continuation of the project "*Fluid-mechanical optimization of the Solution Blow Spinning technique, to obtain polymeric nanofibers*".
- 06/2013 – 08/2013  
 Internship  
**CREVER - Group of Applied Thermal Engineering Research**  
 University Rovira i Virgili – Tarragona (Spain) [www.crever.urv.cat/en\\_index.html](http://www.crever.urv.cat/en_index.html)
- He gained experience in a theoretical experimental study of a scroll expander as part of an organic Rankine cycle (working fluid: R134a).
  - The main duties included: preliminary tests: sealing tests, refrigerant loading, calibration of measuring instruments, etc.; expander tests in various working conditions; analysis of the expander performance; comparison and validation of the results obtained with the EES (Engineering Equation Solver) model.
- 08/2011 – 07/2012  
 Research fellow (scientific initiation practices)  
**Federal University of Paraíba (Brazil)**  
 He acquired research skills and techniques working on the project "*Fluid-mechanical optimization of the Solution Blow Spinning technique, to obtain polymeric nanofibers*", within the Department of Materials Engineering.
- 02/2010 – 07/2011  
 Academic Tutor  
**Federal University of Paraíba (Brazil)**  
 He helped students in multiple tasks within two disciplines:
- Mechanical Drawing (02/2011 – 07/2011)
  - Differential and Integral Calculus I (02/2010 – 12/2010)

  
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#### 4 LANGUAGE AND COMPUTER SKILLS

|  |  |         |          |         |
|--|--|---------|----------|---------|
| <b>Brazilian Portuguese</b>                  | Native Language  |         |          |         |
| <b>Language skills according to the CEFR</b> | Listening  | Reading | Speaking | Writing |
| <b>English</b>                               | B2   | C1      | B2       | C1      |
| <b>Italian</b>                               | B2   | B2      | B1       | A2      |
| <b>Spanish</b>                               | B2   | B2      | B1       | B1      |
| <b>Microsoft Office</b>                      | Word, Excel, and PowerPoint (Good Knowledge)   |         |          |         |
| <b>Programming</b>                           | Mosel (intermediate/advanced level)<br>Python (Basic Level)  |         |          |         |
| <b>Modelling</b>                             | Engineering Equation Solver – EES ( <a href="https://www.fchartsoftware.com/ees/">https://www.fchartsoftware.com/ees/</a> )<br>FICO Xpress Optimization ( <a href="https://www.fico.com/en">https://www.fico.com/en</a> )<br>openLCA ( <a href="https://www.openica.org/">https://www.openica.org/</a> ) |         |          |         |
| <b>CAD</b>                                   | AutoCAD  |         |          |         |

#### 5 SCHOLARSHIPS

|                     |  |
|---------------------|--|
| Nov 2022 – Oct 2023 | Erasmus+ grant provided by University of Trieste for the mobility period at the University of Zaragoza, Spain.         |
| Nov 2020 – Feb 2024 | PhD scholarship from the Italian Ministry of University and Research.  |
| Nov 2016 – Aug 2018 | * Master's scholarship. <i>Grant number 154144/2016-9.</i>   |
| Aug 2014 – Jul 2015 | * Scientific Initiation project 800300/2011-4 - <i>Grant number 146969/2014-6.</i>                                     |
| Sep 2012 – Aug 2013 | * Scholarship awarded for a one-year university exchange mobility program in Spain. <i>Grant number 210598/2012-3.</i> |
| Aug 2011 – Jul 2012 | * Scientific Initiation project 800300/2011-4 - <i>Grant number 120774/2011-9.</i>                                     |

\* Grants awarded by the National Council for Scientific and Technological Development (CNPq), a foundation linked to the Ministry of Science and Technology - Brazil.

#### 6 HELD SEMINARS

##### "Exergoeconomic Analysis - SPECO method"

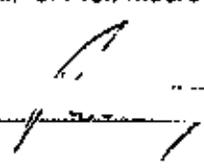
Seminar held within the course "Impiego Industriale dell'Energia" of Prof. Rodolfo Taccani, at the University of Trieste, May 2022.

##### "Towards a Carbon-Neutral Future: The Role of Polygeneration Systems and Energy Communities"

Seminar held within the "IX Jornada de Doctorandos del Programa de Doctorado en Ingeniería Mecánica" at the University of Zaragoza, Spain. April 2023.

##### "Towards a Low-Carbon Future: The Role of Polygeneration Systems and Energy Communities"

Seminar held within the course "Tecnologie dell'Energie Rinnovabili," of Prof. Mauro Reini, at the University of Trieste, April 2024.


  
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## 7 SCIENTIFIC PRODUCTION

### 7.1 Published Papers

Emanuele Nadalon, Ronelly De Souza, Melchiorre Casisi, and Mauro Reini. *Part-Load Energy Performance Assessment of a Pumped Thermal Energy Storage System for an Energy Community*. *Energies* 2023, 16(15), 5720; <https://doi.org/10.3390/en16155720>

De Souza, R.; Nadalon, E.; Casisi, M.; Reini, M. *Optimal Sharing Electricity and Thermal Energy Integration for an Energy Community in the Perspective of 100% RES Scenario*. *Sustainability* 2022, 14(16), 10125. <https://doi.org/10.3390/su141610125>

De Souza, R.; Casisi, M.; Micheli, D.; Reini, M. *A Review of Small-Medium Combined Heat and Power (CHP) Technologies and Their Role within the 100% Renewable Energy Systems Scenario*. *Energies* 2021, 14, 5338. <https://doi.org/10.3390/en14175338>

R. J. Souza, C. A. C. Dos Santos, A. A. V. Ochoa, A. S. Marques, J. L. M. Neto, P. S. A. Michima. *Proposal and 3E (energy, exergy, and exergoeconomic) assessment of a cogeneration system using an organic Rankine cycle and an absorption refrigeration system in the Northeast Brazil: Thermodynamic investigation of a Facility case study*. *Energy Conversion and Management*, 2020. <https://doi.org/10.1016/j.enconman.2020.113092>

Adriano S. Marques, Monica Carvalho, Álvaro A. V. Ochoa, Ronelly J. Souza, Carlos A. C. dos Santos. *Exergoeconomic Assessment of a Compact Electricity-Cooling Cogeneration Unit*. *Energies*, 2020. <https://doi.org/10.3390/en13295417>

### 7.2 Submitted Works (under review)

Ronelly De Souza, Mauro Reini, Luis M. Serra, Miguel A. Lozano, Emanuele Nadalon, Melchiorre Casisi. *A Multi-Objective Optimization Approach for Integrating Polygeneration Systems and Renewable Energy Sources into Energy Communities*. *Applied Thermal Engineering*. (Under review)

Ronelly De Souza, Luis M. Serra, Mauro Reini, Miguel A. Lozano, Emanuele Nadalon, Melchiorre Casisi. *Marginal Cost Analysis Applied to Complex Polygeneration Systems: Case Study of an Italian Energy Community*. 37<sup>th</sup> International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems – ECOS 2024. (Under review)

Ronelly José De Souza. *Optimal Integration and Thermo-economic Analysis of Polygeneration Systems Applied to District Heating and Cooling Networks*. 12<sup>th</sup> International DHC+ Student Awards (competition 2024). (Under review)

*Ronelly José De Souza*

## 8 CONFERENCES

Ronelly J. De Souza, Emanuele Nadaon, Melchiorre Casisi, Mauro Reini, Luis M. Serra, Miguel A. Lozano. *Towards a Low Carbon Future: Evaluating Scenarios for an Energy Community through a Multi-Objective Optimisation Approach*. ECOS 2023, 25-30 June 2023, Las Palmas de Gran Canaria, Spain. <https://doi.org/10.52202/069564-0235>

De Souza, R.J.; Neto, J.L.M.; Dos Santos, C.A.C.; Reini, M. *Life Cycle Assessment Applied to an ORC System Operating Under Two Modes: Evaluation of Two L.C.I.A Methods*. Proceedings of the ECOS 2022, 3-7 July 2022, Copenhagen, Denmark.

Leidy C. F. Anjos, Ronelly J. Souza. *Assessment of the working fluid influence on the performance of an Organic Rankine Cycle through energy analyses*. CERES 2020, 1st National Congress on Renewable Energy, Exergy and Sustainability, Natal – Brazil. (Online event) <http://www.dem.ufm.br/CERES-2020/>

Souza, R. J.; Medeiros Neto, J. L.; Santos, C. A. C. *Exergy analysis of a coupled unit to produce electrical energy and cold water*. COBEM 2017, 24th ABCM International Congress of Mechanical Engineering, Curitiba – Paraná – Brazil. (Presentation type: Oral in English) <https://doi.org/10.26678/abcm.cobem2017.cob17-1179>

Souza, R. J.; Santos, C. A. C. *Exergy analysis of a cogeneration system operating with an Organic Rankine Cycle connected to an absorption refrigeration system*. CIBEM 2017, 13th Ibero-American Congress of Mechanical Engineering, Lisbon – Portugal. (Presentation type: Oral in Portuguese) <http://www.worldcat.org/isbn/9789899568341>

Souza, R. J.; Santos, C. A. C. *Theoretical-experimental study of an Organic Rankine Cycle operating with a scroll expander for energy production*. CONEM 2016, IX National Congress of Mechanical Engineering, Fortaleza – Ceará – Brazil. (Presentation type: Poster) <http://abcm.org.br/anais/conem/2016/default.htm?query=ronelly>

## 9 UNDERGRADUATE THESIS SUPERVISOR

### Leidy Catarina Feilx dos Anjos

"Estudo da influência do fluido de trabalho no desempenho de um ciclo rankine orgânico através da análise energética" ("*Energy analysis of the working fluid influence on the performance of an organic Rankine cycle*"), presented on 12th December 2019, Federal Rural University of Pernambuco.

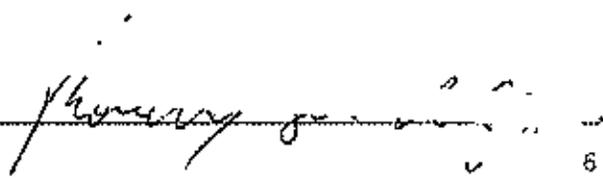
## 10 MASTER'S THESES CO-SUPERVISOR

### **Stefan Jelic**

"*Extending Exergy Accounting of a Photovoltaic System: Pordenone University Consortium Case Study*", academic year 2021/2022, Supervisor: Prof. Mauro Reini, Defence date: 14/12/2022, University of Trieste.

### **Samantha Gandini**

"*A Comparative Study on Green Hydrogen Production and Transportation in Oman and Italy*" Supervisor: Prof. Rodolfo Taccani, Ongoing work, University of Trieste.



## **11 MEMBER OF UNDERGRADUATE THESES COMMISSION**

### **Mauro Alves das Neves Filho**

"Coletor Solar do Tipo Parabólico de Baixo Custo" (*"Low-Cost Parabolic Type Solar Collector"*), presented on 13th December 2017, Federal University of Paraíba.

### **Fernando Maximo da Silva Neto**

"Construção e estudo teórico-prático de um trocador de calor de casco e tubo de bancada" (*"Construction and theoretical-practical study of a lab shell and tube heat exchanger"*), presented on 11th July 2019, Federal Rural University of Pernambuco.

### **Karla Cristina Silva Barros**

"Análise aerodinâmica de uma turbina eólica de eixo horizontal para microgeração de energia elétrica em ambientes rurais" (*"Aerodynamic analysis of a horizontal axis wind turbine for microgeneration of electricity in rural environments"*), presented on 3rd December 2019, Federal Rural University of Pernambuco.

### **Murilo Andrade Santos**

"Sistema de aquisição de dados de temperatura de trocador de calor de casco e tubos" (*"Temperature data acquisition system for a lab shell and tube heat exchanger"*), presented on 12th December 2019, Federal Rural University of Pernambuco.

## **12 VOLUNTEER EXPERIENCES**

Nov 2017 – Nov 2017

Budapest Budget Hostel – Hungary

### **Volunteer Receptionist Assistant**

The main goal was to practice and improve English language, interpersonal skills and learn about different cultures. Duties included helping in the main reception in different tasks.

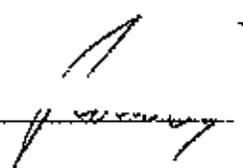
Sep 2015 – Apr 2016

Padre Ze Hospital [Philanthropic Institution] – Brazil

### **Volunteer Maintenance Technician**

Provided technical support in the Technical Centre, which is responsible for the hospital's maintenance.

In compliance with the GDPR and the Italian Legislative Decree n° 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document.

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