

## CURRICULUM VITAE ABREVIADO (CVA)

### Part A. PERSONAL INFORMATION

First name	Antonio		
Family name	Gallardo Izquierdo		
Gender (*)	Male	Birth date	
ID number			
e-mail	gallardo@uji.es	URL Web	
Open Researcher and Contributor ID (ORCID)	0000-0001-7160-4774		

(\*) Mandatory

#### A.1. Current position

Position	Full Professor of University		
Initial date	01/12/2017		
Institution	Jaume I University		
Department/Center	Mechanical Engineering and Construction		
Country	Spain	Teleph. number	964728187
Key words	Municipal solid waste, characterization, management, treatment		

#### A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
2003-2017	Professor, Jaume I University, Spain
2002-2003	Professor, Jaume I University, Spain
2001-2002	Associate Profesor
1994-2000	Assistant Doctor

#### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Dr.	Politecnico University of Valencia, Spain	2000
Industrial Engineering	Politecnico University of Valencia, Spain	1994

(Include all the necessary rows)

### Part B. CV SUMMARY (max. 5000 characters, including spaces)

Antonio Gallardo Izquierdo is Dr. Industrial Eng. from the Politecnico University of Valencia. Since 2017 he is Full Professor in the Prohct Enginnering area of the Mechanical Engineering and Construction Department of the Jaume I University (UJI). He teaches in engineering projects and environmental technologies in degrees of the industrial engineering field. He is the director of the University Master in Energetic Efficiency and Sustainability of the UJI.

He is the Co-director of the research team INGRES (ingres.uji.es) composed of 13 persons. He has participated in projects that have been funded by competitive calls (32). He is co-author of articles published in national journals (26) and international journals (44, 35 on JCR publications), papers in national congresses (26) and international congresses (144). He has participated as an editor (4), author (4) in books and chapters (9). He has lectured in universities and round tables (45). He has trained one junior researcher FPI-UJI and 15 researchers from contracts with enterprises. He has evaluated 5 projects for ANEP. He has reviewed 55 papers from 18 journals (12 JCR) and he has been member of 18 scientific committees of international congresses. He participated in the organization of the First Iberoamerican Symposium of Waste Engineering (Castellón, 2008) and in the next editions



(10). He has participated in 4 International projects in Brazil, México and Argentina. He has completed 12 research stays (shorter than 2 months)

He coordinates the Iberoamerican network in Environmental Sanitation (Red Iberoamericana en Saneamiento Ambiental, REDISA). It has received 3 network grants (1 from AECI and two from CYTED) with a total of 310.000 euros. It is composed of 40 research teams, 16 universities, 170 researchers and 11 countries.

His line of research is within the field of the municipal solid waste (MSW) engineering, its management and utilization knowing its characteristics, the design of the separate collection and its treatment. In this last item, the research is focused in the analysis and utilization of the reject fraction of the treatment plants.

Regarding the transfer of knowledge, he has participated in 42 projects funded by 24 public and private enterprises. He has developed technical assistances (minor contracts of about 3000 euros) in the waste field. It must be highlighted his collaboration with public institutions such as Municipality of Castelló, RECIPLASA, VAERSA, FCC Medio Ambiente, PreZero, and Bionord in questions related to the selective collection of the MSW and its treatment with a special focus on the waste characterization and the study of taking advantage of the reject fraction.

He is member of the Doctoral Programme in Industrial Technologies and Materials of the UJI. He has directed 10 doctoral thesis and has 4 more in development.

Concerning the project requested, it must be underlined the doctoral thesis "Design of a methodology to control the quality of the reject fraction produced in the municipal solid waste mechanical-biological treatment plants" (2019) by Natalia Edo-Alcón. This thesis establishes a methodology to characterize the reject fraction produced in a treatment plant (it can be applied to any type of treatment plant) and to obtain and analyze the SRF produced from the reject. The use of the macro elemental analyzer was essential. He is currently directing the thesis "Design of an industrial process for the biodrying of rejects from a mechanical and biological treatment plant" in which elemental analysis is also essential.

## **Part C. RELEVANT MERITS** (*sorted by typology*)

### **C.1. Publications** (*see instructions*)

Of the 20 international papers published in the last 10 years, I select the 10 that are closely related to the requested Project:

1.-Natalia Edo Alcón; Antonio Gallardo Izquierdo; Francisco José Colomer Mendoza; A. Lobo. Efficiency of biological and mechanical-biological treatment plants for MSW: The case of Spain. HELIYON. 10, pp. 1 - 11. (Reino Unido). 2024. <<http://dx.doi.org/10.1016/j.heliyon.2024.e26353>>. ISSN 2405-8440

2.-E. Rondón-Toro; A. Lobo; A Gallardo Izquierdo. Circularity indicator for municipal solid waste treatment plants. JOURNAL OF CLEANER PRODUCTION. 2022, pp. 1 - 9. (United Kingdom). 2022. <<http://dx.doi.org/10.1016/j.jclepro.2022.134807>>. ISSN 0959-6526

3.-Ángel Miguel Pitarch Roig; Lucía Reig Cerdá; Antonio Gallardo Izquierdo; L. Soriano; M.V. Borrachero; Sergio Rochina Salvador. Reutilisation of hazardous spent fluorescent lamps glass waste as supplementary cementitious material. CONSTRUCTION AND BUILDING MATERIALS. 292, pp. 1 - 13. (Reino Unido). 2021. <<http://dx.doi.org/10.1016/j.conbuildmat.2021.123424>>. ISSN 0950-0618

4.-Antonio Gallardo Izquierdo, Francisco José Colomer Mendoza, Mar Carlos Alberola, Cristóbal Badenas Catalán, Natalia Edo Alcón, Joan Esteban Altabella. Efficiency of a pilot scheme for the separate collection of the biowaste from municipal solid waste in Spain. SCIENTIFIC REPORTS. Nº. 2. Vol. 11. pp. 1-13. 2021. <<http://dx.doi.org/10.1038/s41598-021-90957-2>>. ISSN 2045-2322

5.-Joan Esteban Altabella, Francisco José Colomer Mendoza, Antonio Gallardo Izquierdo, Natalia Edo Alcón. Behavior of Rejects from a Biological-Mechanical Treatment Plant on the Landfill to Laboratory Scale. SUSTAINABILITY. Nº. 2. vol. 12. 2020. <<http://dx.doi.org/10.3390/su12020499>>. ISSN

2071-1050

6.-Antonio Gallardo Izquierdo, Mar Carlos Alberola, Francisco José Colomer Mendoza, Natalia Edo Alcón. Analysis of the waste selective collection at drop-off systems: Case study including the income level and the seasonal variation. WASTE MANAGEMENT & RESEARCH. Nº. 1. vol. 36. pp. 30-38. 2018. 12. <<http://dx.doi.org/10.1177/0734242X17733539>>. ISSN 0734-242X

7.-Francisco José Colomer Mendoza, F. Robles Martínez, A. Piña Guzmán, Pablo Vicente Monserrat, Antonio Gallardo Izquierdo. Influence of different airflows and the presence of bulking agent on biodrying of gardening wastes in reactors. REVISTA INTERNACIONAL DE CONTAMINACION AMBIENTAL. Vol. 32. pp. 161-171. 2016. <<http://dx.doi.org/10.20937/RICA.2016.32.05.12>>. ISSN 0188-4999

8.-Natalia Edo Alcón, Antonio Gallardo Izquierdo, Francisco José Colomer Mendoza. Characterization of SRF from MBT plants: Influence of the input waste and of the processing technologies. FUEL PROCESSING TECHNOLOGY. Vol. 153. pp. 19-27. 2016. <<http://dx.doi.org/10.1016/j.fuproc.2016.07.028>>. ISSN 0378-3820

9.-Antonio Gallardo Izquierdo, Francisco José Colomer Mendoza, E. Cirstea, N. Edo Alcón, Joan Esteban Altabella. Testing the Degree of Biostabilization in the Refuse from Composting Plants. AMERICAN JOURNAL OF ENVIRONMENTAL PROTECTION. Nº. 5. Vol 3 . pp. 238-243. 2014. <<http://dx.doi.org/10.11648/j.ajep.20140305.15>>. ISSN 2328-5680

10.-Antonio Gallardo Izquierdo, Mar Carlos Alberola, María Dolores Bovea Edo, Francisco José Colomer Mendoza, F. Albarrán. Analysis of refuse-derived fuel from the municipal solid waste reject fraction and its compliance with quality standards. JOURNAL OF CLEANER PRODUCTION. Vol. 83 . pp. 118-125. 2014. Nº citas: 41 <<http://dx.doi.org/10.1016/j.jclepro.2014.07.085>>. ISSN 0959-6526

**C.2. Congress**, indicating the modality of their participation (invited conference, oral presentation, poster)

Of the 70 papers published in international conferences in the last 10 years, I select the 5 that are closely related to the requested project:

1.-Víctor Gamal Muzaber; Antonio Gallardo Izquierdo; Francisco José Colomer Mendoza (2023). Analysis of the variables that determine the efficiency of biodrying. 10th Iberoamerican Symposium on Waste Engineering. Spain. pp. 628 - 636. ISBN 9788409531233. Oral Presentation.

2.-Víctor Gamal Muzaber; Antonio Gallardo Izquierdo; Francisco José Colomer Mendoza; Maria del Mar Carlos Alberola (2022). Design of an SRF facility using rejects from a mechanical and biological treatment plant. 26th International Congress on Project Management and Engineering. Spain. pp. 1425 - 1437. ISBN 9788409445219. Oral Presentation.

3.-Muzaber, Víctor Gamal; Gallardo Izquierdo, Antonio; Colomer Mendoza, Francisco; Carlos Alberola, Mar; Albarrán Vargas-Zúñiga, Fernando (2021). Solid recovered fuel produced from biowaste from a mechanical biological treatment plant for municipal solid waste. 9th Iberoamerican Symposium on Waste Engineering. Panamá. Ed: Universidad Tecnológica de Panamá. pp: 709-715. ISBN: 9789962698807. Oral Presentation.

4.-Antonio Gallardo Izquierdo, María del Mar Carlos Alberola, Francisco José Colomer Mendoza, Natalia Edo Alcón, Andrea Jorge Ortiz (2020). Design of solid recovered fuels from municipal solid waste and biomass. 24th International Congress on Project Management and Engineering. Alcoy (Spain). ISBN 9788409211289. Oral Presentation.

5.-Ismael Sánchez López; Antonio Gallardo Izquierdo; Natalia Edo Alcón (2017). Study of the gasification process of the refuse derived fuels through simulation in a bubbling fluidised bed reactor. 16th International Waste Management and Landfill Symposium. Cerdeña, Italia. Oral Presentation.

**C.3. Research projects**, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

Of the 10 projects in which I have participated in the last 10 years, I highlight 4 that are closely related to the requested project:

1.-Project: APPLICATION OF BIO-DRYING IN THE PRODUCTION OF SOLID RECOVERED FUEL FROM MUNICIPAL SOLID WASTE COMPOSTING PLANTS. Principal Investigator (PI): Antonio Gallardo Izquierdo/ Francisco Colomer Mendoza. Nº investigators: 5. Funding entity: State Investigation Agency (Spain). Number: TED2021-131142B-I00. Start date: 01/11/2022 Duration: 24 months. Amount: 86.250 €.

2.-Project: APPLICATION OF BIODRYING IN THE MANUFACTURE OF SOLID RECOVERED FUEL FROM MUNICIPAL SOLID WASTE COMPOSTING PLANTS. Principal PI: Antonio Gallardo Izquierdo. Nº investigators: 3. Funding entity: Jaume I University. Number: UJI-B2022-25. Start date: 01/0/2023 Duration: 24 months. Amount: 17.699 €.

3.-Project: METHODOLOGY FOR SAMPLING AND CHARACTERIZATION OF RECOVERED MATERIALS AND REJECTS FROM MECHANICAL-BIOLOGICAL TREATMENT PLANTS. PI: Antonio Gallardo Izquierdo. Nº investigators: 4. Funding entity: Jaume I University. Number: UJI-B2017-69. Start date: 01/01/2018. Duration: 24 months. Amount: 15.733 €.

4.-Project: STUDY OF ENERGY RECOVERY FROM THE REJECTS OF THE COMPOSTING PROCESS OF THE ORGANIC FRACTION OF MUNICIPAL WASTE. PI: Antonio Gallardo Izquierdo. Nº investigators: 6. Funding entity: Jaume I University. Number: P1-1B2013-46. Start date: 01/01/2014. Duration: 24 months. Amount: 27.650 €.

**C.4. Contracts, technological or transfer merits**, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any.

Of the 20 contracts and agreements in which I have participated in the last 10 years, I highlight 5 that are closely related to the requested project:

1.-Project: STUDY FOR THE IMPLEMENTATION OF A SYSTEM FOR THE SELECTIVE COLLECTION OF SANITARY CELLULOSE FROM SOLID URBAN WASTE IN THE "GRAO" AREA OF THE CITY OF CASTELLÓN. Principal Investigator (PI): Antonio Gallardo Izquierdo. Nº investigators: 3. Funding entity: FCC Medio Ambiente, S.A. (Spanish company). Start date: 06/10/2023 Duration: 6 months. Amount: 10.440 €.

2.- Project: CSR PRODUCED FROM REJECTS FROM THE ONDA MECHANICAL-BIOLOGICAL TREATMENT PLANT: VARIATION IN QUALITY DUE TO SEPARATE COLLECTION OF BIOWASTE. PI: Antonio Gallardo Izquierdo. Nº investigators: 3. Funding entity: RECIPLASA. (Spanish company). Start date: 01/02/2019. Duration: 36 months. Amount: 15.000 €.

3.-Project: STUDY OF THE IMPLEMENTATION OF A SELECTIVE COLLECTION SYSTEM FOR THE ORGANIC FRACTION OF SOLID URBAN WASTE IN THE CITY OF CASTELLÓN. Phases I, II and III. PI: Antonio Gallardo Izquierdo. Nº investigators: 6. Funding entity: FCC Medio Ambiente, S.A. (Spanish company). Date: 2017,2018 y 2019. Amount: 11.300 €

4.-Project: STUDY FOR THE VALORIZATION OF THE REJECTS FROM THE RSU TREATMENT PLANT OF THE UTE ZONE 1 OF CASTELLÓN. PHASE II. PI: Antonio Gallardo Izquierdo, Nº investigators: 2. Funding entity: UTE ENUSA, FOBESA Y A2A AMBIENTE (Spanish company). Start date: 01/01/2019 Duration: 36 months. Amount: 9.360 €.

5.-Project: BEMASS SYSTEM: BIOMASS ADAPTATION SYSTEM IN DRYING AND PRE-DRYING LINES FOR THE AGRI-FOOD INDUSTRY. PI: Francisco José Colomer Mendoza. Nº investigators: 3. Funding entity: WATERPOWER RESEARCH S.L. (Spanish company). Start date: 14/03/2016. Duration: 6 months. Amount: 4.000 €.