

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	María Belén		
Family name	García de Burgos		
Gender (*)	Female	Birth date	07/09/1975
Social Security, Passport, ID number	██████████		
e-mail	bgarciad@ing.uc3m.es	URL Web	https://researchportal.uc3m.es/display/inv15548
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-5181-3349		

(*) Mandatory

A.1. Current position

Position	Catedrática de Universidad		
Initial date	9 th -February-2023		
Institution	Universidad Carlos III de Madrid (UC3M)		
Department/Center	Departamento de Ingeniería Eléctrica		
Country	Spain	Teleph. Number	██████████
Key words	Electrical insulation, transformer life management, mineral oil, natural ester, synthetic ester, predictive maintenance.		

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Lic. Physics	Universidad Complutense de Madrid	1998
PhD Eléctrical Engineering	Universidad Carlos III de Madrid	2002

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

Belén García received her B.S. degree in Physics from Universidad Complutense de Madrid in 1998 and the PhD degree in Electrical Engineering from Universidad Carlos III de Madrid (UC3M) in 2002. Since 1998 she held several teaching positions in the Electrical Engineering Department of UC3M, and since 2023 she holds a Full Professor position. Her University activity has been recognized with **three research periods** (2000-2005, 2006-2011 and 2012-2017) and **four teaching periods**. She is currently responsible for the courses Magnetic Circuit and Transformers and Electrical Power Engineering Fundamentals. Her teaching activity was graded as **Excellent+** in the program **DOCENTIA**.

Her main research interest is related with Power Transformer Life Management and Insulating Materials. She has been **leader of six competitive projects** funded in calls of the **Plan Nacional** de I+D (DPI2015-71219-C2-1-R, DPI2015-71219-C2-1-R, DPI2012-35819, DPI2009-07093, DPI2008-01279) and participant in other in four National Competitive projects as researcher. She has been participant or leader in **18 projects funded by companies**. She has also been **leader** of the UC3M team in the **European project** "BIOTRAFO: Raising knowledge and developing technology for the design and deployment of high-performance power transformers immersed in biodegradable fluids" funded in the call MARIE SKŁODOWSKA-CURIE RESEARCH AND INNOVATION STAFF EXCHANGE (H2020-MSCA-RISE-2018) and carried out during the period 2019-2023 (GA-823969).



She is co-author of **42 publications** in indexed journals, with 31 of these publications belonging to Q1 and Q2 quartiles. In most of these publications, she is the first or second author. **Since 2013** she has published **23 JCR journal papers**. She is also coauthor of **44 conference papers**. Her works have been cited 1463 times and her h index is 18 (Scopus). Her average number of cites per year in the last five years was 149 (source Scopus). She contributed to the **book** Power Transformer Condition Monitoring and Diagnosis: Concepts and Challenges, IET 2018. She is also coauthor of two **patents**.

She has been **co-supervisor of eight PhD thesis**, three of the supervised students were enrolled in doctorate programs of UC3M and the fourth was a PhD student at Glasgow Caledonian University (U.K). Two of the supervised theses were distinguished with the Doctorate Extraordinary Award (UC3M 2011/2012 and 2022/2023).

She has done **five research stays** in foreign Universities, three of them since 2013: Chalmers University (6 months, 2004), Strathclyde University (6 months, 2012) and Glasgow Caledonian University (12 months 2014, 2016, 2 weeks and 2018, 2 weeks). The stay in Strathclyde University was funded by the Spanish Government within the call "Estancias de profesores e investigadores senior en centros extranjeros". The 2016 stay in Glasgow Caledonian University was funded with an Erasmus + grant. She also did a two months' **stay in the industry** at the company Sea Marconi (Italy) in 2019.

She **promoted an Erasmus agreement** between UC3M and Glasgow Caledonian University (U.K) and coordinated it from 2016 to 2018. She **gave two invited talks** in Glasgow Caledonian University in 2014 and 2015, **organized four specialized seminars** in UC3M and supervised six researchers from foreign Universities during their stays in UC3M. She acted as examiner in four PhD defences of Queensland University (Australia) and in one of University Western Australia. She participated as International Expert in the panels of the topic Energy of the call Collaborative and Knowledge-building Project 2022 and 2023 of the Research Council of Norway.

She is **vocal of the Spanish normalising comitees CTN 207/SC 10** "Fluidos para aplicaciones electrotécnicas" and **CTN 207/SC 14** "Transformadores de potencia" of AENOR and is member of the **international working groups** IEC TC10-14 JWG 46, IEC WG 45 and IEC MT 30.

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

C.1. Publications (*see instructions*)

1. Journal paper: Montero, A., García, B., Burgos J. C. Electric field distribution in natural-ester retrofilled transformers under AC stress, *International Journal of Electrical Power & Energy Systems*, Volume 155, Part A, 2024, **Q1**

2. Journal paper: A. Montero, B. García, C. López, Life Expectancy of Transformer Paper Insulation Retrofilled with Natural Ester in the Laboratory. *Polymers*, 15, 4345, 2023, **Q1**

3. Journal paper: A. Montero, B. García and J. C. Cabanelas, "A New Method for the Quantification of the Remaining Mineral Oil in Natural-Ester Retrofilled Transformers," in *IEEE Electrical Insulation Magazine*, vol. 39, no. 5, pp. 17-25, September/October 2023. **Q2**.

4. Journal paper: A. Montero, B. García, J. C. Burgos and C. González-García, "Dielectric Design of Ester-Filled Power Transformers: AC Stress Analysis," in *IEEE Transactions on Power Delivery*, vol. 37, no. 3, pp. 2403-2412, June 2022 **Q2**

5. Journal paper: R. Villarroel, B. García, D. García, "Moisture dynamics in natural-ester filled transformers", *International Journal of Electrical Power & Energy Systems*, Volume 124, 2021. **Q1**

6. Journal paper: V. A. Primo, B. García, J. C. Burgos and D. Pérez, "AC breakdown voltage of Fe₃O₄ based nanodielectric fluids. Part 1: Analysis of dry fluids," in *IEEE Transactions on Dielectrics and Electrical Insulation*, vol. 27, no. 2, pp. 352-359, April 2020, **Q2**

7. Journal paper: B. García, R. Villarroel and D. García, "A Multiphysical Model to Study Moisture Dynamics in Transformers," in *IEEE Transactions on Power Delivery*, vol. 34, no. 4, pp. 1365-1373, Aug. 2019. **Q1**

8. Journal paper: B. García, T. García, V. Primo, J. C. Burgos and D. Urquiza, "Studying the loss of life of natural-ester-filled transformer insulation: impact of moisture on the aging rate of paper," in *IEEE Electrical Insulation Magazine*, vol. 33, no. 1, pp. 15-23, January-February 2017. **Q2**

9. Journal paper: B. García; D. García and G Robles "Development of a Moisture-in-Solid-Insulation Sensor for Power Transformers", *Sensors*, 15/2, 3610- 3624, 1424-8220, 2015, **Q1**

10. Book chapter: B. García, A. Céspedes, D. García, Moisture analysis, Power Transformer Condition Monitoring and Diagnosis: Concepts and Challenges, ISBN: 9781785612541, IET 2018.

C.2. Conferences

1. E. Sorrentino, B. García, D. Urquiza and D. F. G. Gómez, "A statistical analysis of predictive maintenance tests on synthetic ester-filled railway transformers," Oral presentation in *2023 IEEE International Conference on Environment and Electrical Engineering*, Madrid, Spain, 2023

2. A. Montero, D. García, B. García and J. C. Burgos, "A comparative study on the dielectric properties of mineral oils and natural esters," Oral presentation in *2023 IEEE International Conference on Environment and Electrical Engineering*, Madrid, Spain, 2023.

3. A. Montero, B. García, J. D. Mina-Casaran and J. C. Burgos, "Experimental Study on the Insulation Permittivity of Transformers Retrofilled with Natural Esters," Oral presentation in *2022 IEEE 21st International Conference on Dielectric Liquids (ICDL)*, Sevilla, Spain, 2022.

4. D. Pérez-Rosa, B. García and J. C. Burgos, "Temperature Dependency of the Dielectric Response of Nanofluid-based Transformer Insulation Systems," *2022 IEEE 21st International Conference on Dielectric Liquids (ICDL)*, Sevilla, Spain, 2022.

5. B. García, A. Ortiz, C. Renedo, J. C. Burgos, D. G. Gómez and D. P. Rosa, "Application of biodegradable fluids as liquid insulation for distribution and power transformers," Oral presentation in *2020 IEEE International Conference on Environment and Electrical Engineering*, Madrid, Spain, 2020

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

1. PID2019-107126RB-C21, Gestión del ciclo de vida de transformadores aislados con fluidos biodegradables.. AGENCIA ESTATAL DE INVESTIGACION (AEI). (Universidad Carlos III de Madrid). 01/06/2020-29/02/2024. 145.200 €. **IP**

2. Raising knowledge and developing technology for the design and deployment of high-performance power transformers immersed in biodegradable fluids – BIOTRAFO (GA823969). EUROPEAN COMMISSION RESEARCH EXECUTIVE AGENCY. (Universidad Carlos III de Madrid). 01/01/2019-30/09/2023. 122.450 €. **IP**

3. DPI2015-71219-C2-2-R, Mejora de los sistemas de aislamiento de los transformadores mediante nanofluidos dieléctricos. MINISTERIO DE ASUNTOS ECONOMICOS Y

TRANSFORMACION DIGITAL. (Universidad Carlos III de Madrid). 01/01/2016-31/12/2019. 157.058 €. **IP**

4. DPI2012-35819, Dinámica de la humedad en transformadores aislados con aceites vegetales. MINISTERIO DE ASUNTOS ECONOMICOS Y TRANSFORMACION DIGITAL. (Universidad Carlos III de Madrid). 01/01/2013-31/12/2016. 117.000 €. **IP**

5. DPI2009-07093, Optimización de los procesos de secado de transformadores de potencia en campo. MINISTERIO DE CIENCIA E INNOVACION. (Universidad Carlos III de Madrid). 01/01/2010-31/12/2012. 118.580 €. **IP**

6. DPI2008-01279, Análisis de los procesos de secado de los transformadores de potencia en campo. MINISTERIO DE CIENCIA E INNOVACION. (Universidad Carlos III de Madrid). 01/01/2009-31/12/2009. 12.100 €. **IP**

C.4. Contracts, technological or transfer merits,

Contracts:

1. "Genie. Proof of Concept" awarded by E.ON DIGITAL TECHNOLOGY GMBH (Germany) 01/07/2023-31/6/2024. 48.400 €. **IP**

2. "Indisponibilidad de Transformadores aplicada a los proyectos Onshore Renovables" awarded by IBERDROLA RENOVABLES ENERGIA, S.A. 01/06/2022-31/10/2023. 7260 €. **IP**

3. Asistencia técnica para la generación de Modelos de Envejecimiento de Transformadores de Potencia (ECRIGEN) CENTRO DE ENSAYOS, INNOVACION Y SERVICIOS S.L CEIS. (Universidad Carlos III de Madrid). 09/03/2012- 09/06/2014. 27.000 €. **Participant**

4. Tecnologías para la gestión automatizada e inteligente de las redes de distribución energética del futuro (Energos). UFD DISTRIBUCION ELECTRICIDAD, S.A. 01/10/2009-31/12/2012. 211.753,75 €. **Participant**.

Patents

1. A. Céspedes, D. García and B. García, Sistema de Monitoreo en Línea para la Estimación del Tiempo de Vida Útil de los Aislamientos Celulósicos de Transformadores de Potencia". Patention process started in 2019. OWNER: UNIVERSIDAD DEL VALLE.

2. J. C. Burgos, B. García, A. Alonso, F. Poza, C. Sigüenza, O. Bellón, P. Mariño, Método y sistema de monitorización de transformadores de potencia, 01/06/2006, OWNER: UNION FENOSA DISTRIBUCION S.A..

Standarization commitees

Vocal of the Spanish normalising comitees CTN 207/SC 10 "Fluidos para aplicaciones electrotécnicas" and **CTN 207/SC 14** "Transformadores de potencia" of AENOR and is member of the **international working groups** IEC TC10-14 JWG 46, IEC WG 45 and IEC MT 30.