

## Unai's short CV (Résumé)

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Unai Ugalde received a BSc. degree in Electronic Physics from the University of the Basque Country (UPV/EHU) in 1991; later he earned the so-called “Research Sufficiency” in Photovoltaics from the Universidad Politécnica de Madrid (UPM) in 1998, as well as MSc. and PhD degrees in Electronic Engineering from the UPV/EHU in 2000 and 2014 respectively.

From 2001 to 2003 he was with the Faculty of Science and Technology, part-time; he then moved to the Faculty of Engineering, full-time, both in the UPV/EHU. Now he holds a permanent position, and lectures on Analog Electronics and Low-power Electronic DC-DC conversion. He belongs to [APERT](#) where he researches in the field of Power Electronics, and is currently supervising two PhD theses.

As of January 2024, he is author of:

- 7 Q1 and 4 Q2 journal papers
- 2 patents
- Electronic-related entries in specialized dictionaries
- Several magazine and popular science articles

## PUBLICATIONS

### Relevant Papers in “Engineering, Electrical and Electronic” (unless otherwise noted)

1. A. DeMarcos, E. Robles, Unai Ugalde, I. Mtz. de Alegria, J. Andreu, “Interleaving Modulation Schemes in Asymmetrical Dual Three-Phase Machines for the DC-Link Stress Reduction”. *Machines* 11(2):267; 2023. DOI: 10.3390/machines11020267. JCR (2022): JIF = 2.6, Ranking **Q2** (62/136 in *Engineering, Mechanical*; also 145/275 in *Engineering, Electrical and Electronic*).
2. E. Robles, M. Fernandez, J. Andreu, E. Ibarra, J. Zaragoza, Unai Ugalde, “Common-mode voltage mitigation in multiphase electric motor drive systems”. *Renewable and Sustainable Energy Reviews* 157:111971-111991; 2022. DOI: 10.1016/j.rser.2021.111971. JCR: JIF = 15.9, Ranking **Q1** (2/46 in *Green & Sustainable Science & Technology* and 8/119 in *Energy & Fuels*).
3. I. Aretxabaleta, I. Mtz. de Alegria, J.I. Garate, Unai Ugalde, J.L. Martín, “Multiple current amplifier-based gate driving for parallel operation of discrete SiC MOSFETs”. *IET Power Electronics*, 15(4), pp.317-324; 2022. DOI: 10.1049/pel2.12232. JCR: JIF = 2.0, Ranking **Q3** (190/352).
4. E. Robles, M. Fernandez, J. Andreu, E. Ibarra, Unai Ugalde, “Advanced power inverter topologies and modulation techniques for common-mode voltage elimination in electric motor drive systems”. *Renewable and Sustainable Energy Reviews* 140:110746-110771; 2021. DOI: 10.1016/j.rser.2021.110746. JCR: JIF = 16.799, Ranking **Q1** (1/47 in *Green & Sustainable Science & Technology* and 8/119 in *Energy & Fuels*).

5. D. Cabezuelo, I. Kortabarria, J. Andreu, Unai Ugalde, B. Blanqué, P. Andrada, “Synchronized Switching Modulation to Reduce the DC-Link Current in SRM Drives”. *IEEE Access* 8, pp. 57849-57858, 2020. DOI: 10.1109/access.2020.2982269. JCR: JIF = 3.367, Ranking **Q2** (94/273).
6. Unai Ugalde, R. Bárcena, K. Basterretxea, “Generalized Sampled-data Holds to Reduce Energy Consumption in Resonant Systems”. *Control Engineering Practice* 26, pp. 28-40, 2014. DOI: 10.1016/j.conengprac.2014.01.006. JCR: JIF = 1.814, Ranking **Q2** (73/249).
7. Unai Ugalde, R. Bárcena, and K. Basterretxea, “Easy tuning of fractional-order holds to reduce transient energy consumption of lightly damped resonant systems”. *IET Control Theory and Applications* 8(10), pp. 838-846, 2014. DOI: 10.1049/iet-cta.2013.0740. JCR: JIF = 2.048, Ranking **Q1** (59/249).
8. Unai Ugalde, R. Bárcena, and K. Basterretxea, “Generalized sampled-data hold functions with asymptotic zero-order hold behavior and polynomial reconstruction”. *Automatica* 48(6), pp. 1171-1176, 2012. DOI: 10.1016/j.automatica.2012.03.004. JCR: JIF = 2.919, Ranking **Q1** (23/243).

### **Q1-Q2 contributions in other scientific areas**

1. N. Arroyo-Lamas, Unai Ugalde, I. Arteagoitia, M. Brito da Cruz, A. Mata, J.F. Marqués, “UVC irradiation on Titanium implants induced fibroblasts response and modulated interleukins patterns”. *Clin Oral Impl Res*, 34(S27):134; 2023. DOI: 10.1111/clr.14162. JCR: JIF (2022) = 4.3, Ranking **Q1** (12/91 in *Dentistry, Oral Surgery & Medicine*; also 38/96 in *Engineering, Biomedical*).
2. N. Arroyo-Lamas, I. Arteagoitia, Unai Ugalde, “Surface Activation of Titanium Dental Implants by Using UVC-LED Irradiation”. *Int J Mol Sci* 22(5):2597; 2021. DOI: 10.3390/ijms22052597. JCR: JIF = 6.208, Ranking **Q1** (69/297) in *Biochemistry and Molecular Biology*).
3. N. Arroyo-Lamas, Unai Ugalde, I. Arteagoitia, “Decontamination of Ti Oxide Surfaces by Using Ultraviolet Light: Hg-Vapor vs. LED-Based Irradiation”. *Antibiotics* 9(11):724; 2020. DOI: 10.3390/antibiotics9110724. JCR: JIF = 4.639, Ranking **Q2** (76/276 in *Pharmacology & Pharmacy*).
4. N. Arroyo-Lamas, I. Arteagoitia, Unai Ugalde, “Hydrocarbons Decontamination of Three Titanium Dental Implants by Using Ultraviolet LED Irradiation”. *Clin Oral Impl Res*, 30:225; 2019. DOI: 10.1111/clr.181\_13509. JCR: JIF = 3.723, Ranking **Q1** (21/87 in *Engineering, Biomedical*).

### **Recent Conference Papers**

1. Ander DeMarcos, Unai Ugalde, Jon Andreu, Markel Fernandez, Endika Robles, “Influence of PWM techniques on the DC-Link capacitor power losses of multiphase VSIs”, *IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society*, Brussels, Belgium, 2022, pp. 1-6, DOI: 10.1109/IECON49645.2022.9968610

## **RESEARCH PROJECTS AND CONTRACTS (2018-2023)**

### **Projects**

1. “Equipos de POtencia basados en GAllium Nitride (EPOGAN)”. KK-2023/00091. Eusko Jaularitza / Gobierno Vasco (programa ELKARTEK). Mar 2023 - Dec 2024. € 90,993. Head of Project: I. Kortabarria. Type of participation: researcher.
2. “MultiphaseWBG: Sistema de propulsión multifase conconvertidor de banda ancha para aplicaciones de vehículo eléctrico”. Ministerio de Ciencia e Innovación PID2020-115126RB-I00. Sep 2021 - Aug 2024. € 118,338. Heads of Project: J. Andreu and I. Kortabarria. Type of participation: researcher.
3. “HarvestGen: Generación termoeléctrica de alta corriente y ultrabaja tensión para recuperación de calor residual”. KK-2020/00113. Eusko Jaularitza/Gobierno Vasco (programa ELKARTEK). Jan 2020 - May 2022. € 42,980. Head of Project: I. Mtz. de Alegría. Type of participation: researcher.
4. “ENSOL2: Development of advanced photovoltaic technologies”. KK-2020/00077. Eusko Jaularitza/Gobierno Vasco (programa ELKARTEK). Jan 2020 - Dec 2021. € 106,320. Head of Project: J. Andreu. Type of participation: researcher.
5. “ENSOL: Development of advanced photovoltaic technologies”. KK-2018/00040. Eusko Jaularitza/Gobierno Vasco (programa ELKARTEK). Jan 2018 - Dec 2019. € 47,921.50. Head of Project: J. Andreu. Type of participation: researcher.

### **Contracts**

1. “Convertidores para BT. Optimizador de red (Astra CC) (PT10872)” Client: Ormazabal. Dec 2023 - May 2026. € 26,600. Head Researcher: Estefanía Planas.
2. “Convertidores para red de MT. Master de microrred (PT10871)” Client: Zigor. Dec 2023 - Dec 2024. € 34,000. Head Researcher: Estefanía Planas.
3. “Desarrollo de un optimizador de red para redes de distribución en BT (PT10866).” Client: i-DE Redes eléctricas inteligentes, S.A.U. Dec 2023 - Nov 2024. € 51,000. Head Researcher: Estefanía Planas.
4. “Hazitek IKERTU II (PT10726)” Client: JEMA Energy, S.A. Dec 2021 - Dec 2024. € 198.361. Head Researcher: I. Martinez de Alegría.
5. “Desarrollo de un prototipo de convertidor de potencia integrado en FPL ‘Flexible Power Link’ para mallado de líneas de MT (PT10681)” Client: i-DE Redes eléctricas inteligentes, S.A.U. Sep 2020 - Aug 2021. € 68,000. Head Researcher: Estefanía Planas.

## **PhD THESES BEING SUPERVISED**

1. A. de Marcos. “Optimización del bus de continua para la mejora de las prestaciones de convertidores de potencia del tren de tracción de vehículos eléctricos”. Completing estimation: 2025.
2. N. Arroyo-Lamas. “Photofunctionalization of Dental Implants”. Completing estimation: 2024.