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AGENCIA
ESTATAL DE
INVESTIGACIÓN

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	Manuel Octavio		
Family name	Valcuende Payá		
Gender (*)	Male	Birth date	
ID number			
e-mail		https://www.upv.es/ficha-personal/mvalcuen	
Open Researcher and Contributor ID(ORCID)		0000-0002-9967-1554	

A.1. Current position

Position	Full Professor (Catedrático de Universidad)		
Initial date	19/02/2019		
Institution	Universitat Politècnica de València		
Department/Center	Dpto. Construcciones Arquitectónicas	E.T.S. Arquitectura	
Country	Spain	Teleph. number	
Key words	Concrete, Durability, Monitoring, Sensors, Mechanical properties		

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

Period	Position/Institution/Country/Interruption cause
1991 - 1996	Profesor Asociado - Universitat Politècnica de València - Spain
1996 - 2019	Titular de Universidad - Universitat Politècnica de València - Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Architect	Universitat Politècnica de València	1989
PhD	Universitat Politècnica de València	1994

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

Sexenios de investigación: 3 (2010; 2016; 2022); Total citations: 1104; Average number of citations/year during the last 5 years (2021-2025): 117; h index: h-16

Scientific contributions

In the last 15 years, my research focuses on the development of advanced technologies for monitoring the durability of concrete structures:

- Author of 55 articles (mostly in JCR Q1 and Q2), 89 conference publications, 26 exhibition publications (mainly international touring exhibitions), 4 books and 30 book chapters.
- Participation in the last five years in 7 competitive R+D+i projects financed in public calls, 3 European and 4 nationals, all of them related to monitoring and specifically 4 with the durability and monitoring of concrete. In two of the national projects, I have been IP. In the framework of these projects, I have published 15 articles in Q1 and Q2 journals, I have been the supervisor of 3 doctoral theses, and I have developed 5 patents, one of which has a European extension and two of them have been commercialised in 2022 and 2024 to the company Witeklab. One of the main achievements has been to develop a new methodology for the measurement of the corrosion rate of reinforcement in concrete structures, i.e the steel section loss. The great advance of this new technique is that it makes it feasible to carry out real-time monitoring of corrosion by means of sensors. Studies on the reliability of this system have shown it to be more accurate than systems based on polarization resistance measurement or those using galvanostatic techniques. Additionally, involvement in international projects has allowed for collaborations with universities (Politecnico di Milano, T.U. Dresden, Malta, Ben-Gurion), research centers, and companies across Europe (Banagher, Enel, Nafen, API, Stress, Penetron), with

ongoing connections. The research works have also been presented at international conferences, including those organized by the International Society of Electrochemistry or the European Corrosion Congress.

- 19-week stay in 2013 at the Universidad de Oriente in Santiago de Cuba, through a project of the Agencia Española de Cooperación Internacional (AP/042089/11) to participate in a research project on the inspection of buildings declared World Heritage by UNESCO.
- Secretary (2015-2024) of the Technical Committee C1 of the Scientific-Technical Association of Structural Concrete (ACHE).

Contributions to society

My research contributes to improving the durability and safety of reinforced concrete structures. Increasing durability and thus service life is directly related to a reduction in maintenance costs, waste generation and consumption of natural resources. In short, my research work strives to achieve more sustainable constructions.

- Author of 8 patents: related to concrete durability and monitoring. Two are marketed by the company Witeklab, one of which has a European extension (Corrochip sensor). This sensor received the "TOP 3 Winner Project Digitalization Category" award at the Construmat fair in Barcelona in 2023, is recommended by the certification body SOCOTEC, has been installed, among others, in the Castro viaduct (A6 motorway, Lugo) which collapsed due to corrosion in 2022 and has been referenced in the press (La Vanguardia, Levante, Inversión y Finanzas, Valencia plaza, …)
- 7 R&D&I projects with companies (last 5 years): 3 contracts with ACCIONA (corrosion monitoring of 2 bridges on the A2 motorway and reinforced concrete pieces in the port of Gijón), 1 with RDC (corrosion monitoring of prestressed concrete rafts in La Coruña and País Vasco), 1 con EMR (monitoring of the dome of the Escuelas Pías in Valencia).

Contributions to the training of young researchers.

- Direction of 14 doctoral theses: some linked to national and European competitive research projects. The PhDs of the last 3 theses read form part of the research group of this research project application and have carried out stays abroad.
- Of the 14 PhD graduates, 9 are university lecturers, 1 is a CSIC researcher, 1 is responsible for R&D&I in the company Urdecon (construction sector).
- FPI grant tutor

Part C. RELEVANT MERITS

C.1. Publications *(Last 10 years)*

- Ramón J.E.; Martínez I.; Gandía J.M.; Castillo A.; Valcuende M. (2025). "A Concrete Resistivity Method Based on a Simple Measuring Cell for Onsite Corrosion Monitoring: Study on Concrete Under Varying Conditions. Structural Control and Health Monitoring, 225 (1), 1 - 24. (JCR, Q1)
- Monzón P.; Vengut R.; Soto J.; Valcuende M. (2025). "Influence of Corrosion-Inhibiting Monolayers on the Bond Strength and Durability of Reinforced Concrete Structures Under Service Conditions". Materials, 18 (7) (JCR, Q2)
- Lliso-Ferrando J.R.; Arenós A.; Monzón P.; Valcuende M. (2025). "Durability of Mortars with Partial Cement Replacement by Recycled Brick Powder. Applied Sciences 15(8) (JCR, Q2)
- Martínez-Ibernón A.; Gasch I.; Lliso-Ferrando J.R.; Valcuende M. (2023). "Development of a new Ni voltammetric sensor for hardened concrete conditions estimate". Sensors and Actuators Reports, 5, 100155. (JCR, Q1).
- Lliso-Ferrando J.R.; Soto J.; Gasch I.; Valcuende M. (2023). "Significance of macrocell currents in reinforced concrete columns partially immersed in seawater". Construction and Building Materials, 389, 131739. (JCR, Q1).
- Lliso-Ferrando, Josep Ramon; Gandía-Romero, Jose M.; Soto Camino, Juan; Valcuende Payá, Manuel Octavio. (2023) OC, HPC, UHPC and UHPFRC Corrosion Performance in the Marine Environment. Buildings, 13 (1), 1 – 27. (JCR, Q2).
- Lliso-Ferrando J.R.; Gasch I.; Martínez-Ibernón A.; Valcuende M. (2022). "Effect of macrocell currents on rebar corrosion in reinforced concrete structures exposed to a marine environment". Ocean Engineering, 257, 111680. (JCR, Q1).

- Ramón J.E.; Gandía-Romero J.M.; Bataller R.; López J.; Valcuende M.; Soto J. (2022). "Real-time corrosion monitoring of an ultra-high performance fibre-reinforced concrete offshore raft by using an autonomous sensor sytem". Structural Control & Health Monitoring, 29 (11), 1 - 16. (JCR, Q1).
- Valcuende M.; Lliso J.R.; Ramón J.E.; Soto J. (2021). "Corrosion resistance of ultra-high performance fibre-reinforced concrete. Constr. and Build. Materials, 36.124914. (JCR, Q1).
- Valcuende M.; Lliso J.R.; Roig M.; Gandía J.M. (2021). "Porous Structure of Ultra-High-Performance Fibre-Reinforced Concretes". Materials, 14 (7), 1637. (JCR, Q1).
- Ramón J.E.; Gandía J.M.; Bataller R.; Alcañiz M.; Valcuende M.; Soto J. (2020). "Potential step voltammetry: An approach to corrosion rate measurement of reinforcements in concrete". Cement and Concrete Composites, 110, 103590 (JCR, Q1).
- Martínez-Ibernón A.; Ramón J.E.; Gandía J.M.; Gasch I.; Valcuende M.; Alcañiz M.; Soto J. (2019). "Characterization of electrochemical systems using potential step voltammetry. Part II: Modeling of reversible systems". Electrochimica Acta (328), 135111. (JCR, Q1).
- Monzón P.; Ramón J.E., Gandía J.M.; Valcuende M.; Soto J.; Palací D. (2019). "PLS multivariate analysis applied to corrosion studies on reinforced concrete". Journal of Chemometrics, 33: 1-12 (JCR, Q1)
- Gandía J.M.; Ramón J.E.; Bataller R.; Palací D.; Valcuende M.; Soto J. (2017). "Influence of the area and distance between electrodes on resistivity measurements of concrete". Materials and Structures, 50:71, 1-12 (JCR, Q1)

C.2. Congress

- Martínez A; Gasch I; Lliso JR; Gandía JM; Valcuende M; Soto J (2024). Optimisation of resources in voltametric sensor systems. 2 vs. 3 electrodes. XVII International Workshop on Sensors and Molecular Recognition (IWOSMOR 2024). (148-151). Valencia, España:
- Martínez A; Lliso JR; Gasch I; Valcuende M; Gandía JM.; Soto J (2023). Initial proposal of a novel voltammetric sensor system for the detection of concrete carbonation by means of PCA model. Conference on Self-Healing, Multifunctional and Advanced Repair Technologies in Cementitious Systems (SMARTINCS'23). (5004). Ghent, Belgium: EDP Science
- Martínez A; Gasch I; Soto J; Gandía JM; Lliso JR; Valcuende MO (2023). Electronic Tongues for The Control of Reinforcement Concrete Structures Durability. 74th Annual Meeting of the International Society of Electrochemistry (ISE 2023). Lyon, France.
- Martínez A; Lliso JR; Gasch I; Valcuende M; Gandía JM.; Soto J (2022). Enhancement of the reinforcement concrete structures by means of smart monitoring systems. EN 1st International Conference on Sustainable Construction and Demolition (SCD 2021). Technology, energy and environment in construction. (157 - 166). Valencia, Spain.
- Martínez A; Gandía JM; Gasch I; Valcuende M (2020). Hydronium Detection in Hardened Concrete. 15th International Conference on Durability of Building Materials and Components. 843-850. International Center for Numerical Methods in Engineering (CIMNE)
- Martínez A; Lliso JR; Calabuig R; Valcuende M (2019). Chlorides penetration forecast by means of ionic resistance value. Conference on Durable Concrete for Infrastructure under Severe Conditions - Smart admixtures, self-responsiveness and nano-additions. (233 - 236). Ghent, Belgium: Magnel Laboratory for Concrete Research.

C.3. Research projects (last 10 years).

- Ref. CPP2023-010657. "Safety and durability of critical reinforced concrete structures using smart sensors: prediction, prevention and control of corrosion processes (SEGHOSENS). Agencia Estatal de Investigación. Proyectos de colaboración público-privada. IP: M. Valcuende (en UPV). 01/01/2025 – 31/12/2027. 134944 € (UPV). Lead Researcher
- Ref. CIAICO/2022/035. "Restauración y rehabilitación sostenible de viviendas tradicionales en contextos históricos (Re-Habitat). Generalitat Valenciana. Programa I+D+i de la Conselleria de Innovación, Universidades, Ciencia y Sociedad Digital De la Generalitat Valenciana. IP: C. Mileto (UPV). 01/01/2023 - 31/12/2025. 88811 €. Researcher.
- Ref. PID2020-119744RB-C21. "Monitorización inteligente para reducir la incertidumbre en la vida útil: sensores de corrosión potenciostáticos (SMART)". Agencia Estatal de Investigación. Programa Estatal de I+D+I Orientada a los Retos de la Sociedad. IP: J. Soto, J.M. Gandía-Romero (UPV). 01/09/2021 – 31/08/2024. 185130 €. Researcher.

- Ref: 760824. “Rethinking coastal defence and green-energy service infrastructures through enhanced durability high-performance fiber reinforced cement-based materials (Reshealience)”. European Commission H2020. IP Spain: P. Serna. 01/01/2018-01/01/2022. 5557595 € (Spain: 431092 €). Researcher
- Ref: BIA2016-78460-C3-3-R. “Durabilidad y vida útil del hormigón de alto rendimiento”. Agencia Estatal de Investigación. Programa Estatal de I+D+I Orientada a los Retos de la Sociedad. IP: J. Soto, M. Valcuende. 30/12/2016-30/12/2019. 110110 €. Lead Researcher
- Ref: 2018-1-UK01-KA202-048122. “Digital skills for workplace mentors in construction sector. European Commission. IP: J. Cárcel. 01/09/2018-31/08/2020. 68345 €. Researcher
- Ref: PGI05560. “Construction and demolition waste management policies for resource efficiency. Europ. Com. IP: J. Cárcel. 01/06/2018-01/06/2023. 213044 €. Researcher
- Ref 2015-1-UK01-KA202-013406. “Training in smart metering technologies for construction site managers". Europ. Com. IP: J. Cárcel. 01/10/2015-01/03/2018. 374503 €. Researcher
- Ref: IDI-20141102. “Proyecto de investigación y desarrollo de ecohormigón ultra-ligero con nanosílice y lodo de papel”. CDTI, Ministerio de Economía y Competitividad. IP: C. Parra. 13/02/2015-31/05/2016. 271860 €. Researcher

C.4. Contracts, technological or transfer merits

Patents

- **Patent 1**. Valcuende M.O.; Soto J.; Gandía J.M.; Ramón J.E.; Martínez I.; Castillo A.. (P202530963). Método y dispositivo sensor para el cálculo de la resistividad del hormigón. Universidad Politécnica de Valencia; Agencia Estatal CSIC, 21 Oct 2025. Spain
- **Patent 2**. Valcuende M.O.; Soto J.; Gasch I.; Gandía J.M.; Martínez A.; Lliso J.R. (P202430363). “Procedimiento para la monitorización de pH en materiales porosos”. Universidad Politécnica de Valencia, 08 May 2024. Spain
- **Patent 3**. Valcuende M.O.; Soto J.; Gasch I.; Gandía J.M.; Martínez A.; Lliso J.R. (P202430162). “Procedimiento para la monitorización del contenido de cloruros en materiales porosos”. Universidad Politécnica de Valencia, 06 Mar 2024. Spain
- **Patent 4**. Valcuende M.O.; Soto J.; Gasch I.; Gandía J.M.; Martínez A.; Lliso J.R. (P202330861). “Electrodo de Referencia para Sistemas de Monitorización de Estructuras de Hormigón Armado y su uso. Universidad Politécnica de Valencia, 18 Oct 2023. Spain. **Patent in exploitation by Witeklab company.**
- **Patent 5**. Valcuende M.O.; Soto J.; Martínez Sierra M.P.; Gandía J.M.; Ramón Zamora J.E. (P202230539). “Procedimiento de Monitorización de la Resistividad Eléctrica de una Estructura de Hormigón Armado. Universidad Politécnica de Valencia; Agencia Estatal Consejo Superior de Investigaciones Científicas, 17 Jun 2022. Spain
- **Patent 6**. Valcuende M.O.; Bataller R.; Gandía J.M.; Ramón J.E.; Soto J.; Alcañiz M. (ES2545669) “Sensor, red de sensores, método y programa informático para determinar la corrosión en una estructura de hormigón armado”. Universidad Politécnica de Valencia. 06 May 2015. **Patent with international extensión in Europe (European patent nº 3293509, EP 16789359.3). Patent in exploitation by Witeklab company.**
- **Patent 7**. Valcuende M.O.; Gandía J.M.; Monzón P.; Soto J. (ES2537602). “Disolución inhibidora de la corrosión en elementos de acero”. U. Polit. Valencia, 07 Feb 2015. Spain
- **Patent 8**. Valcuende M.O.; Gandía J.M.; García E.; Soto J. (ES2545669). “Sensor para la determinación de la profundidad y velocidad de carbonatación del hormigón. Universidad Politécnica de Valencia. 06 May 2015. Spain. **Concession with prior review.**

Contracts

- “Adaptación del Sensor de Velocidad de Corrosión en Estructuras de Hormigón para Su Alimentación y Comunicación Inalámbricas”. Empresa: Witeklab. 01/01/20-31/07/20.14740 €.
- “Instalación de Sistema de Monitorización Remoto de Velocidad de Corrosión en Infra-estructura Existente Pk 64+800 Autovía A-2. Empresa ACCIONA.15/01/20-15/10/20.19176 €
- “Sistema de medida con galgas extensométricas adaptadas para materiales cementicios”. Empresa: Research & Development Concretes S.L. 22/11/2018-31/12/2018. 8500 €
- “Sistema de monitorización de procesos de corrosión marina en bateas de hormigón de altas prestaciones. Empresa Research & Development Concretes S.L. 16/02/2017-16/07/2017. 23798 €