



# Ramon Costa-Castelló

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*Departament d'Enginyeria de Sistemes, Automàtica i Informàtica Industrial (ESAII)  
Escola Tècnica Superior d'Enginyeria Industrial de Barcelona (ETSEIB)  
Universitat Politècnica de Catalunya (UPC)*

*January 4, 2025*

I was born in Lleida (Catalunya, Spain), in 1970, I obtained a degree in computer science in 1993 at the Facultat d'Informàtica de Barcelona (FIB) of the Universitat Politècnica de Catalunya (UPC), in 2001 I got the doctorate in the Advanced Automation and Robotics (AAR) program at Institut de Cibernètica of the UPC.

Since 2023 I am Full professor (“Catedrático de Universidad”) in the Systems and Automation Engineering field (área de Ingeniería de Sistemas y Automática) with assignment to the Automatic Control department (Department of Enginyeria de Sistemes Automàtica i Informàtica Industrial, ESAII) from and the IRI institute (Institut de Robòtica i Informàtica Industrial) from CSIC-UPC. My teaching activity is developed at the Escola Tècnica Superior d'Enginyeria Industrial de Barcelona (ETSEIB) and specifically to the master's degree in industrial engineering (MUEI) and the Automation and Robotics Master (MUAR). I am currently coordinator of 3 subjects (Process Control, Nonlinear Control, System Identification).

During these years, I have supervised 32 final thesis projects and master thesis and a eleven PhD thesis (two of them obtained the extraordinary prize).

I carry out my research within the framework of the Advanced Control System (Sistemes Avançats de Control, SAC) research group. My research work has focused on the application of automatic control techniques to energy systems. In particular, I have developed different projects related to hydrogen systems, energy storage (especially electrochemical systems: batteries, redox flow batteries, hydrogen storage), comfort management in buildings, and energy management in vehicles and microgrids. In this type context, my work has focused on the construction of control-oriented models (digital twin design), optimal controller design (i.e MPC), state and parameter estimation techniques (i.e. state of charge and state of health estimation), and implementation of these systems in real applications.

The results of my research have been published in 106 JCR journal publications (Q1:53, Q2: 24, Q3:20, Q4: 9). H-index (Scholar Google: 34, ResearchGate 31, Scopus: 27, WOS : 25).

The webpage:

<https://ramon-costa.staff.upc.edu/>

contains detailed information on these publications.

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## Education

- 1995–2001 **Doctorate degree in Computer Science**, *Institut d'Organització i Control de Sistemes Industrials (IOC)*, Barcelona.
- 1993–1995 **Master degree in Automatic Control**, *Institut de Cibernètica (IC)*, Barcelona.
- 1988–1993 **Bachelor's degree in Computer Science**, *Facultat d'Informàtica de Barcelona (FIB)*, Barcelona.
- 1987–1988 **COU**, *IES Joan Oró*, Lleida, *Secondary Education*(preuniversity).
- 1984–1987 **BUP**, *IES Joan Oró*, Lleida, *Secondary Education*.
- 1974–1984 **EGB**, *CEP Príncep de Viana*, Lleida, *Elementary Education*.

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## Positions

- 2023– **Full Professor (Catedrático de Universidad)**, *Universitat Politècnica de Catalunya*, Barcelona, Permanent Position.
- 2008–2023 **Associate Professor (Titular de Universidad)**, *Universitat Politècnica de Catalunya*, Barcelona, Permanent Position.
- 2005–2008 **Lecturer (Contratado Doctor)**, *Universitat Politècnica de Catalunya*, Barcelona.
- 2000–2005 **Teaching Assistant (Asociado Tipo III)**, *Universitat Politècnica de Catalunya*, Barcelona.
- 1997–2000 **Teaching Assistant (Asociado Tipo II)**, *Universitat Politècnica de Catalunya*, Barcelona.
- 1994–1997 **FPI Grant (Becario FPI)**, *Universitat Politècnica de Catalunya*, Barcelona.

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## Languages

- Catalan Mother Tongue  
Spanish Correct  
English Average

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## Active Research Interests

- Control Systems Theory : Robust Control, Adaptive Control, Nonlinear Control.
- Energy Management Systems: Automotive applications, Stationary applications, Hybrid systems, Combined Heat and Power systems.
- Fuel cell systems (PEMFC,SOFC): Modelling and Control.
- Electrolizers (PEM,SOEC): Modelling and Control.
- $H_2$  storage and transport.
- Vanadium Redox Flow Batteries (VRFB): Modelling and Control.
- Digital Repetitive Control. Iterative Learning Control.
- Control in Power electronic applications : Active Filter Control, Network impedance handling, Automotive applications.
- Automatic Control Teaching : Virtual and Remote Laboratories, Interactive applications

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## Current Teaching

- Process Control. Master's degree in Industrial Engineering (ETSEIB-UPC). Mandatory subject. Coordinator : Prof. R. Costa-Castelló.
- Nonlinear Control. Master's degree in Automatic Control and Robotics (ETSEIB-UPC). Mandatory subject. Coordinator : Prof. R. Costa-Castelló.
- System Identification. Master's degree in Automatic Control and Robotics (ETSEIB-UPC). Elective subject. Coordinator : Prof. R. Costa-Castelló.

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## PhD Thesis Supervision

- Modelling and control of a redox flow batteries (2023). Alejandro Clemente León. Supervisor : R. Costa-Castelló. Mark: "Excellent Cum Laude".
- Modelling and control of beam-fluid interaction system (2022). Bin Wang. Supervisor: Na Jing and R. Costa-Castelló. Mark: "Excellent".
- Modelling and control of high temperature proton exchange membrane fuel cells for combined heat and power comfort applications (2022). Victor Sanz i López. Supervisor: C. Batlle and R. Costa-Castelló. Mark: "Excellent".
- Advances in nonlinear observer design for state and parameter estimation in energy systems (2022). Andreu Cecilia. Supervisor : Maria Serra and R. Costa-Castelló. Mark: "Excellent Cum Laude"
- Discrete-Time Adaptive-Repetitive Controllers for LCL-Based Inverters ( 2021). Larco Barros, Ciro. Supervisor : R. Costa-Castelló and JM Olm. Mark: "Excellent Cum Laude".
- Modeling and Control for a Fuel Cell System (2021). Yashan Xing. Supervisor : Na Jing and R. Costa-Castelló. Mark: "Excellent Cum Laude". Industrial Engineering area Extraordinary PhD award 2020-2021.
- Control and management of energy storage systems in microgrids (2020). Unnikrishnan Raveendran Nair. Supervisor : R. Costa-Castelló. Mark : "Excellent Cum Laude".
- Energy flexible and smart-grid/energy ready buildings (2020). Thibault Quentin Péan. Supervisor : J. Salom and R. Costa-Castelló. Mark : "Excellent".
- Optimal management of micro-grid energy systems through economic predictive control (2019). Sampietro, J. L. Supervisor : R. Costa-Castelló and V. Puig.
- Energy Efficient Control of Electrostatically Actuated MEMS (2016). Fargas Marques, Andreu. Supervisor : R. Costa-Castelló. Mark : "Excellent".
- Digital Repetitive Control Under Varying Frequency Conditions (2012). Ramos Fuentes, German Andres. Supervisor : R. Costa-Castelló. Mark : "Excellent Cum Laude". Industrial Engineering area Extraordinary PhD award 2011-2012.
  
- Monitoring and optimal operation of redox flow batteries (under development, expected 2025). Thomas Paul Puleston. Supervisors : M. Serra and R. Costa-Castelló.
- Modelling and Monitoring of Combined Metal Hydride Storage Tank and PEM Electrolyser System (under development, expected 2026). Mingrui Chen. Supervisors : Na Jing and R. Costa-Castelló.
- Interactive design for Lure type systems (under development, expected 2026). Cristina Lampón. Supervisors : José Manuel Díaz Martínez and R. Costa-Castelló.
- Data-driven control techniques for microgrids. (under development, expected 2026). Ce Xu Zheng. Supervisors : V. Puig and R. Costa-Castelló.

-Estimation and decentralized control of hybrid storage systems containing lithium-ion batteries. (under development, expected 2026) Miquel Martí Florencia. Supervisors : A. Cecilia and R. Costa-Castelló.

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## Professional Societies

**IEEE**, *Senior Member*, (22 years) .

- o Control System Society

**IFAC**, *Affiliate*, (22 years) .

- o IFAC Technical Committee 7.1 on "Automotive Control"
- o IFAC Technical Committee 9.4 on "Control Education"

**CEA**, *Secretary of the association*, , (25 years).

- o Grupo Temático de Educación en Automática.
- o Grupo Temático de Ingeniería de Control

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## R+D+I Projects (last 10 years)

-SINGLE: Electrified Single Stage Ammonia Cracking to Compressed Hydrogen. HORIZON-101112144-SINGLE. [01/05/2023-05-30/04/2026] PI: Maria Serra Prat. 196,250 €.

-ACROBA: Avances en Ciberseguridad en Redes eléctricas inteligentes a través de OBServadores y Aprendizaje profundo. [01/10/2023-31-12/04/2026] PI: Ramon Costa Castelló . €.

-MASHED: Efficient Management of Energy Systems including Hybrid Electrochemical Energy Storage using Digitalisation Technologies. TED2021-129927B-I00. PI: Ramon Costa Castelló & Vicenç Puig. 247,480 €. [01/12/2022-30/11/2024]

-MAFALDA: Manufacture, automation and integration of vanadium redox flow batteries in renewable energy systems. PID2021-126001OB-C31. PI: Ramon Costa Castelló & Maria Serra. 150,887 €. [01/01/2022-31/12/2024]

-VBFR 50W Module manufacturing. PTI+ TRANS-ENER-F. TRE2103000. PI (local): Ramon Costa Castelló. 249,380 €. [01/01/2021-31/12/2023]

-FLOWBAT: Large-scale energy storage system using vanadium redox flow battery: 1 kW scale experimental demonstration. CSIC 201980E101. PI : Ramon Costa Castelló. 133.200,00 € [15/10/2019-14/05/2021]

-DOVELAR: Control and energy management of hybrid fuel cell-based electric vehicles. RTI2018-096001-B-C32 PI : Ramon Costa Castelló and Maria Serra Prat. 121.000 € [01/01/2019-31/12/2021].

-INN-BALANCE: Innovative cost improvements for balance of plant components of automotive PEMFC systems. Commission of European Communities. H2020-735969-INN-BALANCE. PI: Maria Serra Prat. 240.125,00 €. [01/01/2017-31/12/2019]

-MICAPEM: Parameter estimation, diagnosis and control for the improvement of efficiency and durability of PEM fuel cells. MIN DE ECONOMIA Y COMPETITIVIDAD. DPI2015-69286-C3-2-R. PI : Maria Serra Prat and Ramon Costa Castelló. 171.820,00 € [01/01/2016-31/12/2016].

-INCITE: Innovative controls for renewable sources integration into smart energy systems. Commission of European Communities. H2020-675318-INCITE. PI: Carlos Ocampo. 229.337,24 €. [01/12/2015-30/11/2019].

-COSIN: Synthetic fuels. ACC10. RIS3CAT COMRDI15-1-0037-06. PI: Maria Serra Prat. 40.002,99 €. [01/11/2016-31/10/2019].

- REFER: Energy reduction and flexibility in buildings in rehabilitation. ACC10. RIS3CAT COMRDI15-1-0036-11. PI: Maria Serra Prat. 24.998,13 €. [01/06/2016-31/12/2018].
- SAC: Advanced Control Systems. Sistemes Avançats de Control. AGAUR. 2017 SGR 482. PI : Vicenç Puig. 62.280,00 €. [01/01/2017-31/12/2019].
- ACES : Advanced Control of Energy Systems. AGAUR. 2014 SGR 267. PI : Josep M. Olm. 30.000,00 €. [01/01/2014-30/04/2017].
- MESPEM. Development of control systems for efficiency and durability improvement in PEM fuel cell based systems. CICYT DPI2011-25649 (01/10/2012-31/12/2014). IP: Maria Serra Prat
- COCORED. Advanced control techniques to improve the operation of VSI converters connected to the grid. DPI2010-15110. IP : Roberto Griñó Cubero. [100.000 €] (1/1/2011-31/12/2013.)
- CENIT VERDE (UPC-CTT-C-07936). Lear Corporation-ACES. IP : Domingo Biel Solé. [393.116 €]. (1/09/2009-1/09/2012)

## Patents

- Harmonic Selective, Reactive and Imbalance current compensator. R. Griñó Cubero, R. Cardoner Parpal, R. Costa Castelló, E. Fossas Colet. P200700109. Spain. 01/07/2010. Salicrú S.A.

## Books

- Automatic Control with Interactive Tools. José Luis Guzmán, Ramon Costa-Castelló, Manuel Berenguel, Sebastián Dormido. Springer (2023). ISBN: 978-3-031-09919-9.
- Sistemes de Control en Temps Discret. Ramon Costa Castelló and Enric Fossas. Edicions UPC (2014). ISBN: 978-84-9880-492-8. [In Catalan]
- Digital Repetitive Control under Varying Frequency Conditions. Germán A. Ramos, Ramon Costa-Castelló, Josep M. Olm. Lecture Notes in Control and Information Sciences Series. Vol. 446. ISBN 978-3-642-37777-8. DOI : 10.1007/978-3-642-37778-5
- Control automático con herramientas interactivas. José Luis Guzmán Sánchez, Ramon Costa Castelló, Manuel Berenguel Soria, Sebastián Dormido Bencomo. Pearson. Mayo 2012. ISBN: 978-84-8322-750-3.
- Formación I: Robótica Industrial. Luis Basañez, Ramon Costa, Andreu Fargas, Cristóbal Vela. Septiembre 2003. (ISBN: 84-920933-6-6) [In Spanish, only in CD format]
- Experiències Pràctiques de Control Avançat. Ramon Costa Castelló, Jan Rosell Gratacòs, Luis Basañez Villaluenga. CPDA. Maig 2000. (ISBN 84-95355-23-X). [In Catalan].
- Control amb Computador. Simulació en entorn MATLAB. Oriol Causí Casamor, Miquel Angel Mañanas Villanueva, Ramon Costa Castelló, Luis Basañez Villaluenga. CPDA. Octubre 1999. (ISBN 84-95355-04-3) [In Catalan].

## References

Alejandro Clemente, Thomas Puleston, Andreu Cecilia, Ramon Costa-Castelló, and Lluís Trilla. Blending deep-learning and observers for improved state of charge estimation in vanadium flow batteries. *ISA Transactions*, 2024.

Pol Baldomà Mitjans, Andreu Cecilia, and Ramon Costa Castelló. Protocolo de

enmascaramiento para observador en pila de combustible. *Revista Iberoamericana de Automática e Informática industrial*, sep. 2024.

Thomas Puleston, Andrea Trovò, Giacomo Marini, Maria Serra, Ramon Costa-Castelló, and Massimo Guarnieri. Design and experimental validation of an optimal remixing procedure for vanadium flow batteries affected by faradaic imbalance. *Journal of Power Sources*, 624:235487, 2024.

Mingrui Chen, Carles Batlle, Bryan Escachx, Ramon Costa-Castelló, and Jing Na. Sensitivity analysis and calibration for a two-dimensional state-space model of metal hydride storage tanks based on experimental data. *Journal of Energy Storage*, 94:112316, 2024.

Thomas Puleston, Andreu Cecilia, Ramon Costa-Castelló, and Maria Serra. Nonlinear observer for online concentration estimation in vanadium flow batteries based on half-cell voltage measurements. *Computers & Chemical Engineering*, page 108664, 2024.

Alejandro Clemente, Manuel Montiel, Félix Barreras, Antonio Lozano, Bryan Escachx, and Ramon Costa-Castelló. Online estimation of the state of charge and state of health of a vanadium redox flow battery. *Journal of Power Sources*, 598:234181, 2024.

Romeo Ortega, Alexey Bobtsov, Nikolay Nikolaev, and Ramon Costa-Castelló. Parameter estimation of two classes of nonlinear systems with non-separable nonlinear parameterizations. *Automatica*, 163:111559, 2024.

Andreu Cecilia, Daniele Astolfi, Michelangelo Bin, and Ramon Costa-Castelló. Canceling output disturbances in observer design through internal model filters. *Automatica*, 162:111529, 2024.

Andreu Cecilia, Daniele Astolfi, and Ramon Costa-Castelló. A new nonlinear observer for liquid water estimation in fuel cells. *IEEE Transactions on Control Systems Technology*, pages 1–12, 2024.

Thomas Puleston, Maria Serra, and Ramon Costa-Castelló. Vanadium redox flow battery capacity loss mitigation strategy based on a comprehensive analysis of electrolyte imbalance effects. *Applied Energy*, 355:122271, 2024.

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Andreu Cecilia, Maria Serra, and Ramon Costa-Castelló. Real-time parameter estimation of polymer electrolyte membrane fuel cell in absence of excitation. *International Journal of Hydrogen Energy*, 52:37–48, 2024.

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Miquel Martí-Flores, Andreu Cecilia, and Ramon Costa-Castelló. Modelling and estimation in lithium-ion batteries: A literature review. *Energies*, 16(19), 2023.

Pedro Fornaro, Thomas Puleston, Paul Puleston, Pedro Battaiotto, Ramon Costa-Castelló, and Maria Serra-Pratt. Electric vehicle charging station based on wind energy:

Evaluation of the power profile for vanadium redox flow batteries estimation. *IEEE Latin America Transactions*, 21(9):1056–1062, 2023.

Andreu Cecilia and Ramon Costa-Castelló. Estimation of the liquid water saturation in pem fuel cells: A low-power peaking-free dead-zone observer approach. *ISA Transactions*, 2023.

Mauro Carignano and Ramon Costa-Castelló. Toyota mirai: Powertrain model and assessment of the energy management. *IEEE Transactions on Vehicular Technology*, 72(6):7000–7010, 2023.

Yashan Xing, Lucile Bernadet, Marc Torrell, Albert Tarancón, Ramon Costa-Castelló, and Jing Na. Offline and online parameter estimation of nonlinear systems: Application to a solid oxide fuel cell system. *ISA Transactions*, 133:463–474, 2023.

Alejandro Clemente, Manuel Montiel, Félix Barreras, Antonio Lozano, and Ramon Costa-Castelló. Experimental validation of a vanadium redox flow battery model for state of charge and state of health estimation. *Electrochimica Acta*, 449:142117, 2023.

P. Cardona, R. Costa-Castelló, V. Roda, J. Carroquino, L. Valiño, and M. Serra. Model predictive control of an on-site green hydrogen production and refuelling station. *International Journal of Hydrogen Energy*, 48(47):17995–18010, 2023.

Thomas Puleston, Andreu Cecilia, Ramon Costa-Castelló, and Maria Serra. Vanadium redox flow batteries real-time state of charge and state of health estimation under electrolyte imbalance condition. *Journal of Energy Storage*, 68:107666, 2023.

Bin Wang, Ramon Costa-Castelló, Jing Na, Oscar de la Torre, and Xavier Escaler. Modeling and adaptive parameter estimation for a piezoelectric cantilever beam. *IEEE Transactions on Circuits and Systems I: Regular Papers*, 70(1):481–491, 2023.

Alejandro Clemente, Andreu Cecilia, and Ramon Costa-Castelló. Online state of charge estimation for a vanadium redox flow battery with unequal flow rates. *Journal of Energy Storage*, 60:106503, 2023.

Jorge L. Anderson, Jerónimo J. Moré, Paul F. Puleston, and Ramón Costa-Castelló. Fuel cell module control based on switched/time-based adaptive super-twisting algorithm: Design and experimental validation. *IEEE Transactions on Control Systems Technology*, 31(1):434–441, 2023.

Jorge Luis Anderson, Jerónimo José Moré, Paul Federico Puleston, Vicente Roda, and Ramon Costa-Castelló. Control super-twisting con adaptación basada en cruce por cero. análisis de estabilidad y validación. *Revista Iberoamericana de Automática e Informática industrial*, 20(1):104–114, dic. 2022.

Thomas Puleston, Alejandro Clemente, Ramon Costa-Castelló, and Maria Serra. Modelling and estimation of vanadium redox flow batteries: A review. *Batteries*, 8(9), 2022.

Víctor Sanz i López, Ramon Costa-Castelló, and Carles Batlle. Literature review of energy management in combined heat and power systems based on high-temperature proton exchange membrane fuel cells for residential comfort applications. *Energies*, 15(17), 2022.

Pedro Fornaro, Thomas Puleston, Paul Puleston, Maria Serra-Prat, Ramon Costa-Castelló, and Pedro Battaiotto. Redox flow battery time-varying parameter estimation based on high-order sliding mode differentiators. *International Journal of Energy Research*, 46(12):16576–16592, July.

Germán Andrés Ramos and Ramon Costa-Castelló. Energy management strategies for hybrid energy storage systems based on filter control: Analysis and comparison. *Electronics*, 11(10), 2022.

Andreu Cecilia and Ramon Costa-Castelló. Addressing the relative degree restriction in nonlinear adaptive observers: A high-gain observer approach. *Journal of the Franklin Institute*, 359(8):3857–3882, 2022.

Yashan Xing, Jing Na, Mingrui Chen, Ramon Costa-Castelló, and Vicente Roda. Adaptive nonlinear parameter estimation for a proton exchange membrane fuel cell. *IEEE Transactions on Power Electronics*, 37(8):9012–9023, 2022.

Andreu Cecilia, Subham Sahoo, Tomislav Dragičević, Ramon Costa-Castelló, and Frede Blaabjerg. On addressing the security and stability issues due to false data injection attacks in dc microgrids—an adaptive observer approach. *IEEE Transactions on Power Electronics*, 37(3):2801–2814, 2022.

Qian Xun, Vicente Roda, Yujing Liu, Xiaoliang Huang, and Ramon Costa-Castelló. An adaptive power split strategy with a load disturbance compensator for fuel cell/supercapacitor powertrains. *Journal of Energy Storage*, 44:103341, 2021.

Holman Bueno-Contreras, Germán Andrés Ramos, and Ramon Costa-Castelló. Power quality improvement through a upqc and a resonant observer-based mimo control strategy. *Energies*, 14(21), 2021.

José Manuel Díaz, Ramon Costa-Castelló, and Sebastián Dormido. An interactive software tool to learn/teach robust closed-loop shaping control systems design. *IEEE Access*, 9:125805–125821, 2021.

Germán Andrés Ramos, Tomàs Montobbio de Pérez-Cabrero, Carles Domènech-Mestres, and Ramon Costa-Castelló. Industrial robots fuel cell based hybrid power-trains: A comparison between different configurations. *Electronics*, 10(12), 2021.

Alejandro Clemente, Manuel Montiel, Félix Barreras, Antonio Lozano, and Ramon Costa-Castelló. Vanadium redox flow battery state of charge estimation using a concentration model and a sliding mode observer. *IEEE Access*, 9:72368–72376, 2021.

Andreu Cecilia, Subham Sahoo, Tomislav Dragicevic, Ramon Costa-Castelló, and Frede Blaabjerg. Detection and mitigation of false data in cooperative dc microgrids with unknown constant power loads. *IEEE Transactions on Power Electronics*, 36(8):9565–9577, 2021.

Unnikrishnan Raveendran Nair, Monika Sandelic, Ariya Sangwongwanich, Tomislav Dragicevic, Ramon Costa-Castelló, and Frede Blaabjerg. An analysis of multi objective energy scheduling in pv-bess system under prediction uncertainty. *IEEE Transactions on Energy Conversion*, 36(3):2276–2286, September 2021.

Unnikrishnan Raveendran Nair, Monika Sandelic, Ariya Sangwongwanich, Tomislav Dragicevic, Ramon Costa-Castelló, and Frede Blaabjerg. Grid congestion mitigation and



battery degradation minimisation using model predictive control in pv-based microgrid. *IEEE Transactions on Energy Conversion*, pages 1–11, 2021.

Jose Manuel Diaz, Ramon Costa Castelló, and Sebastián Dormido. Un enfoque interactivo para el análisis y diseño de sistemas de control utilizando el método del lugar de las raíces. *Revista Iberoamericana de Automática e Informática industrial*, 8(2):176–192, 2021.

Eneko Lerma, Ramon Costa-Castelló, Roberto Griño Cubero, and Carlos Sanchis. Herramientas para la docencia de control digital en grados de ingeniería. *Revista Iberoamericana de Automática e Informática industrial*, 18(2):193–203, 2021.

Andreu Cecilia, Maria Serra, and Ramon Costa-Castelló. Nonlinear adaptive observation of the liquid water saturation in polymer electrolyte membrane fuel cells. *Journal of Power Sources*, 492:229641, 2021.

J. Na, Y. Xing, and R. Costa-Castelló. Adaptive estimation of time-varying parameters with application to roto-magnet plant. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 51(2):731–741, 2021.

Juan Carlos Paredes Rojas, Christopher Rene Torres San Miguel, Rubén Vázquez Medina, José Alfredo Leal Naranjo, Fernando Elí Ortiz Hernández, and Ramón Costa Castelló. Pollutant emissions and combustion efficiency assessment of engines using biodiesel. *Applied Sciences*, 10(23), 2020.

Julio Luna, Ramon Costa-Castelló, and Stephan Strahl. Chattering free sliding mode observer estimation of liquid water fraction in proton exchange membrane fuel cells. *Journal of the Franklin Institute*, 357(18):13816 – 13833, 2020.

Yashan Xing, Ramon Costa-Castelló, and Jing Na. Temperature control for a proton-exchange membrane fuel cell system with unknown dynamic compensations. *Complexity*, 2020:8822835, 2020.

Alejandro Clemente, Germán Andrés Ramos, and Ramon Costa-Castelló. Voltage  $H_\infty$  control of a vanadium redox flow battery. *Electronics*, 9(10), 2020.

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U. R. Nair and R. Costa-Castelló. A model predictive control-based energy management scheme for hybrid storage system in islanded microgrids. *IEEE Access*, 8:97809–97822, 2020.

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Andreu Cecilia, Javier Carroquino, Vicente Roda, Ramon Costa-Castelló, and Félix Barreras. Optimal energy management in a standalone microgrid, with photovoltaic generation, short-term storage, and hydrogen production. *Energies*, 13(6):1454, March 2020.

- A. Cecilia and R. Costa-Castelló. Observador de alta ganancia con zona muerta ajustable para estimar la saturación de agua líquida en pilas de combustible tipo PEM. *Revista Iberoamericana de Automática e Informática industrial*, 17(2):169–180, 2020.
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- G. A. Ramos, R. I. Ruget, and R. Costa Castelló. Robust repetitive control of power inverters for standalone operation in DG systems. *IEEE Transactions on Energy Conversion*, 35(1):237–247, March 2020.
- U. Raveendran Nair, R. Costa Castelló, and A. Baños. Reset control for dc–dc converters: An experimental application. *IEEE Access*, 7:128487–128497, 2019.
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- Thibault Q. Péan, Ramon Costa-Castelló, Elena Fuentes, and Jaume Salom. Experimental testing of variable speed heat pump control strategies for enhancing energy flexibility in buildings. *IEEE Access*, 7:37071–37087, 2019.
- Thibault Q. Péan, Jaume Salom, and Ramon Costa-Castelló. Review of control strategies for improving the energy flexibility provided by heat pump systems in buildings. *Journal of Process Control*, 74:35 – 49, 2019.
- José Luis Sampietro, Vicenç Puig, and Ramon Costa-Castelló. Optimal sizing of storage elements for a vehicle based on fuel cells, supercapacitors, and batteries. *Energies*, 12(5), 2019.
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