MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CURRICULUM VITAE (maximum 4 pages)

AGENCIA ESTATAL DE INVESTIGACIÓN

CV date	30/05/2022

Part A. PERSONAL INFORMATION

First and Family name	Pastora Isabel Vega Cruz		
Social Security, Passport, ID number	.	Age	
Researcher codes	WoS Researcher ID *(*)*	Researcher ID: E-3230-2018	
	SCOPUS Author ID*(*)*		
	Open Researcher and Contributor ID (ORCID) **	ORCID: 0000-0002-3504-2273	

A.1. Current position

Name of University/Institution	University of Salamanca			
Department	Computing and Automation			
Address and Country	Plaza de la Merced s/n. Facultad de Ciencias. 3708 Salamanca			
Phone number	626048450	E-mail	pvega@usal.es	
Current position	Full Professor		From	06/06/1998
Key words	Advanced process control, Industrial automation			

A.2. Education

PhD	University	Year
Degree in Physics (Electronics speciality)	University of Salamanca	1982
Grado de Salamanca	University of Salamanca	1983
PhD. in Science	University of Valladolid	1987

A.3. Research, innovation and teaching assessment

Research six-year period: Five periods
Teaching five-year period: Seven periods
Transference and innovation six-year period: One (All possible)

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

General research lines: Advanced continuous process control, optimal operation of processes and plant-wide control.
Specific research lines: Distributed model predictive control, Control fuzzy, Economic model predictive control, Optimization.
Applications: Integrated wastewater systems, wastewater treatment plants,
Scientific production:

Research projects: more than 50
Research projects as main researcher: More than 30
Journal papers: more than 50
Conferences: More than 130

Part C. RELEVANT MERITS

C.1. Institutional responsibilities

Member of the Committee Euro-Inf (National Agency for Quality Assessment and Accreditation, ANECA) (From 2020)

Member of the Committee for Research Quality Assesment (CENAI) (National Agency for Quality Assessment and Accreditation, ANECA) From (2015-2019)

Head of Department of Computer Science and Automation of the University of Salamanca (last period 2014-2018)

Vice-rector for Innovation and Infrastructures. University of Salamanca (From December 2009 to December 2013)

Member of the Executive Committee CADEP-CRUE

C.2. Publications

P. Vega, R. Lamanna, S. Revollar, M. Francisco. “Simultaneous design and control of chemical processes – part I : revision and classification”. Computers and Chemical Engineering 71, 618-635. JCR Q1 (30/133) (2014)

P. Vega, R. Lamanna, S. Revollar, M. Francisco. “Simultaneous design and control of chemical processes – part II : an illustrative example”. Computers and Chemical Engineering 71, 602-617. JCR Q1 (30/133) (2014)

P. Vega, S. Revollar, M. Francisco, J. M. Martin, “Integration of set point optimization techniques into nonlinear MPC for improving the operation of WWTPs”. Computers and Chemical Engineering, 68, 78-95 JCR Q1 (2014).

Francisco, M., Skogestad, S., and Vega, P. “Model predictive control for the self-optimized operation in wastewater treatment plants: Analysis of dynamic issues.” Computers & Chemical Engineering, 82, 259-272. JCR Q1 (2015).

El bahja, H., Vega, P., Revollar, S. , F., Francisco, M. “One Layer nonlinear Economic closed loop predictive Control of Wastewater Treatment Plants”. Applied Science 8 (5) pp. 657. JCR Q3. Publication date (**2018**)

El bahja, H., Vega, P., Tadeo, F., Francisco, M. “A constrained closed loop MPC based on positive invariance concept for a wastewater treatment plant”. International Journal of Systems Science, pp. 2101-2115. Vol. 49, Issue 10. JCR Q1. (**2018**)

Vega, P., Revollar, S., & Francisco, M. “One Layer Nonlinear Economic Closed-Loop Generalized Predictive Control for a Wastewater Treatment Plant”. Applied Sciences, 8(5), 657. JCR Q3 (**2018**).

Francisco, M., Mezquita, Y., Revollar, S., Vega, P., & De Paz, J. F. “Multi-agent distributed model predictive control with fuzzy negotiation”. Expert Systems with Applications, 129, 68-83. JCR Q1 (**2019**)

Sánchez, A., Martín, M., Vega, P. Biomass based sustainable Ammonia production: Digestion vs Gasification. ACS Sustainable Chemistry & Engineering Design. JCR Q1 (**2019**)

P. Vallejo, P. Vega. Analytical Fuzzy Predictive Control applied to wastewater treatment biological processes. Complexity Volume January 2019, Article ID 5720185, 29 pages. https://doi.org/10.1155/2019/5720185, ISSN: 1076-2787. JCR Q1(**2019**)

S. Revollar, R. Villanova, P. Vega, M. Francisco, M. Meneses. “Wastewater Treatment Plant Operation: Simple Control Schemes with a Holistic Perspective.
Sustainability , 12(3), 768; https://doi.org/10.3390/su12030768: 21. JCR Q2 (**2020**)

S. Revollar, M. Meneses, R. Villanova, P. Vega, M. Francisco.”Quantifying the Benefit of a Dynamic Performance Assessment of WWTP”.
Processes. 7 https://doi.org/10.3390/pr8020206. JCR Q2 (**2020**)

R Casado-Vara, I Sittón-Candanedo, F De la Prieta, S Rodríguez, P. Vega. Edge Computing and Adaptive Fault-Tolerant Tracking Control Algorithm for Smart Buildings: A Case Study. Cybernetics and Systems 51 (7), 685-697. JCR Q2 (**2020**)

K. Morales, M. Francisco; H. Álvarez; P. Vega; S. Revollar, Collaborative control applied to BSM1 for wastewater treatment plant. Processes 2020, 8, 1465; doi:10.3390/pr8111465. JCR Q2 (**2020**)

Cembellín, M. Francisco, P. Vega. Distributed Model Predictive Control applied to a sewer system. Processes 2020, 8(12), 1595; https://doi.org/10.3390/pr8121595 - JCR Q2. Dec (**2020**)

Revollar, S.; Meneses, M.; Vilanova, R.; Vega, P.; Francisco, M. Eco-Efficiency Assessment of Control Actions in Wastewater Treatment Plants. Water, 2021, 13, 612. https://doi.org/10.3390/w13050612) JCR Q2 (**2021**)

P. Vallejo, P. Vega. Practical computational approach for the stability analysis of fuzzy model-based predictive control of substrate and biomass in activated sludge processes. Processes 2021, 9(3), 531; https://doi.org/10.3390/pr9030531 - 17 Mar 2021. JCR Q2 (**2021**)

E. Masero, M. Francisco, , J.M. Maestre, S. Revollar and P. Vega. A hierarchical distributed MPC based on fuzzy negotiation for multiple agent. Expert Systems with Applications. JCR Q1 (**2021**)

A. Sánchez, , E. Castellano, M. Martín, P. Vega. Evaluating ammonia as green fuel for power generation: a thermo-chemical perspective”. Applied Energy, 293 (2021). 116956. IF (2020): 9.746. https://doi.org/10.1016/j.apenergy.2021.116956
ISSN 0306-2619. JCR Q1Julio (**2021**)

P. Vallejo, P. Vega. Integración de la estrategia FMBPC en una estructura de lazo cerrado. Aplicación al control de fangos activados. Revista RIAI Iberoamericana de Automática e Informática Industrial. Vol 19, Num 1
https://doi.org/10.4995/riai.2021.15793. JCR Q3 (**2022**)

A. Sánchez, Qi Zhang, M. Martín, P. Vega. Towards a new renewable power system using energy storage: An economic and social analysis. ISSN 0196-8904, Energy Conversion and Management, Elsevier, vol 252 Ener 2022, 115056.JCR Q1 (**2022**)
https://doi.org/10.1016/j.enconman.2021.115056..

C.3. Research projects

Metodología de diseño de estrategias de control jerárquico y distribuido basadas en MPC para sistemas integrados y redes de distribución (DPI2012-39381-C02-01). Proyecto del Plan Nacional DPI del MINECO. 2013-2016. Head researcher USAL

Desarrollo de estrategias de control distribuido y jerárquico aplicadas a plantas de tratamiento de aguas. Proyecto financiado por la Fundación Samuel Solórzano (ETSII, USAL): Referencia: FS/21-2015. Fecha: 2016 – 2017. Researcher

Implementación de un sistema de control inteligente para mejorar la operación de procesos integrados. Aplicación a una estación depuradora de aguas residuales (EDAR) y a una planta de producción de bollería y repostería. Proyecto financiado por la Fundación Samuel Solórzano (FS/31-2017). Fechas: 01/01/2018 - 31/12/2018. Researcher.

Desarrollo de técnicas de control predictivo jerárquico basadas en sistemas multiagente. Aplicación a sistemas de gran escala. (DPI2015-67341- C2-1-R). Universidades: USAL, UVA, Universidad Simón Bolívar (Venezuela), Universidad Nacional de Colombia. Proyecto del Plan Nacional DPI del MINECO. 2016-2020. Head researcher USAL.

Sustainable operation of integrated water systems through intelligent and distributed supervision and control methodologies (DPI 7939105434-105434-4-19) Universidades: USAL, UVA, UAB, Universidad Simón Bolívar (Venezuela), Universidad Nacional de Colombia. Proyecto del Plan Nacional DPI del MINECO. 2020-24. Coordinator and co-head researcher USAL

C.5. Some relevant conferences

Revollar, S., Vega, P., Francisco, M., & Vilanova, R. (2018, October). A hierachical Plant wide operation in wastewater treatment plants: overall efficiency index control and event-based reference management. In 2018 22nd International Conference on System Theory, Control and Computing (ICSTCC) (pp. 201-206). IEEE. **2018**

Revollar, S., Vilanova, R., Francisco, M., & Vega, P. (2018). PI Dissolved Oxygen control in wastewater treatment plants for plantwide nitrogen removal efficiency. IFAC-PapersOnLine, 51(4), 450-455.

K. Morales R., H. Alvarez, M. Francisco , S. Revollar, P. Vega (2018) Collaborative Control Strategy Applied to an Aerobic Reactor. Proceedings of the XVII Latin American Conference in Automatic Control Quito, 24 - 26, Octubre, **2018**

R. Casado-Vara, F. de la Prieta, S. Rodríguez, J. L. Calvo, S. Marquez, G. Kumar Venayagamoorthy, P. Vega, J. Prieto. Adaptive fault-tolerant tracking control algorithm for IoT systems: smart building case study. Conference: SOCO **2019**: 14th International Conference on Soft Computing Models in Industrial and Environmental Applications Sevilla, Spain. May 2019

K. Morales - Rodelo, P. Vega, M. Francisco, S. Revollar. Influence of fuzzy layer in distributed control structure applied to four coupled tanks. IEEE 4th Colombian Conference on Automatic Control (CCAC), **2019**.

A. Sánchez, M. Martín, P. Vega. Biomass Based Sustainable Ammonia Production AIChE annual Meeting. 13th November, **2019**,

Alvar Sanchez Fernnadez, Maria Jesus De La Fuente, Gregorio Sainz and Pastora Vega. Distributed Fault Detection for Large-scale Industrial Processes. 21st IFAC World Congress, 2020, (Contributed paper), **2020**

Silvana Revollar, Montse Meneses, Ramon Vilanova, Pastora Vega, Mario Francisco. Activated Sludge Process Control Strategy Based on the Dynamic Analysis of Environmental Costs.Conference: 2020 24th International Conference on System Theory, Control and Computing (ICSTCC). Romania. October **2020**

Antonio Sánchez*, Qi Zhangb, Mariano Martín and Pastora Vega. Integrating Energy Storage in Power Production: a Powerful Tool for the Implementatiom of Renewable Energies. Boston (USA) AIche **2021**.

C.6. Thesis (last ten years)

Supervision of the thesis “Diseño simultáneo de procesos y control predictivo basados en normas y técnicas de control predictivo. Author: Mario Francisco Sutil. Supervisor: Pastora Vega. University of Salamanca, Octubre (2011).

Supervision of the thesis “Algoritmos genéticos para el diseño integrado de procesos químicos. Autor: Silvana Roxani Revollar Chávez. Supervisors: Rosalba Lammana, Pastora Vega. University Simón Bolívar (Venezuela), (2011)

Supervision of the thesis “Advanced control strategies based on invariance set theory and economic MPC: Application to WWTP”. Author: Hicham El Bahja. Supervisors: Pastora Vega, Mario Francisco. University of Salamanca (2017).

Supervision of the thesis “Control predictivo basado en modelos fuzzy de sistemas complejos. Aplicación al control y supervisión de procesos de depuración de aguas. Author: Pedro Vallejo LLamas. Supervisor: Pastora Vega. University of Salamanca (2021).

Supervision of the thesis "On the decarbonization of Chemical and Energy Industries: Power-to-X Design Strategies” Author: Antonio Sánchez García. Supervisors: Mariano Martín, Pastora Vega. University of Salamanca (2021).