



## CURRICULUM VITAE (CVA)

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

<b>Part A. PERSONAL INFORMATION</b>		<b>CV date</b>	06/07/2023
First name	Francisco Vicente		
Family name	TINAUT FLUIXA		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number	...3184..		
e-mail	<a href="mailto:ftinaut@mot.upv.es">ftinaut@mot.upv.es</a>	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-6948-7361	

(\*) Mandatory

### A.1. Current position

Position	Full Professor		
Initial date	15/02/2021		
Institution	Universitat Politècnica de València		
Department/Center	MMT	E.T.S. Ingenieros Industriales	
Country	SPAIN	Teleph. number	+34 963877659
Key words	Combustion engines, Hydrogen, Alternative fuels, Fuel cells		

### A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1992-2021	Full Professor. University of Valladolid
1987-1992	Professor. University of Valladolid

### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD	Universitat Politècnica de València (Spain)	1986
Master of Science	Carnegie-Mellon University (USA)	1985
Degree in Engineering (Energetics)	Universitat Politècnica de València (Spain)	1981

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

In February, 2021 I have joined to the teaching and research activities at the **Universitat Politècnica de València**, coordinating **R&D activities related to hydrogen**.

Previously, I have developed my professional life as a professor and researcher at the **University of Valladolid** and at the Technological Centre Cidaut Foundation. My research activity began with my doctoral thesis, with a Researcher Training Grant (1983-86) at the Polytechnic University of Valencia. During this period, I performed a stay for a Master of Science in Mechanical Engineering at **Carnegie-Mellon University (USA)**, with a **Fulbright Scholarship**.

After completing my doctoral thesis, I moved to the **University of Valladolid** (April 1986). At this University I have contributed to the organisation of teaching and research related to combustion engines, alternative fuels, renewable energies, hydrogen and fuel cells, within the current Dept. of Energy Engineering and Fluid Mechanics, as **Full Professor since 1992**.



In university management positions, I was the first **Director** of the Scientific and Technical Research Area of the Vice-Rectorate for Research of the University of Valladolid (1990 to 1992). I was also **Dean** of the E.T.S. Industrial Engineers of Valladolid (1992-1996).

In 1992, together with other professors of the ETSII-Valladolid, I promoted the creation of the **CIDAUT Technological Centre** (currently the CIDAUT Foundation for Research and Development in Transport and Energy). Due to my scientific and management responsibility in this Centre, I have supervised and scientifically guided the implementation of numerous R&D projects, both in official national and international calls for proposals, as well as research contracts with companies, always in the fields of energy and the environment. Other activities at the Centre have led to the generation of my own know-how, with the registration of associated patents in the field of biofuels and biomass gasification.

Additionally, I have contributed to the constitution of the **Research Group of Excellence Engines and Renewable Energies** (MYER) at the **University of Valladolid**, also recognised by the Junta de Castilla y León (GR 209, since 20 April 2009, then Consolidated Research Unit of Castilla y León UIC 112, July 2015-18). Within this group we have habitually maintained projects of the National Plan, developing R&D activity with doctoral theses and publications in journals and congresses. I have been presently recognized **six six-year research periods** (1984-89, 1990-96, 1997-2002, 2003-08, 2009-14, 2015-20) plus **one six-year transfer period** (1992-97).

Within the **university education activities**, we can highlight the teaching of subjects on engines, combustion, alternative fuels, energy technology, thermal power plants, hydrogen and fuel cells, and propulsion systems, in the degrees of Industrial Engineering, Master in Industrial Engineering, **Master in Energy** (official degree) and **Master in Automotive Engineering** (official degree, Univ. of Valladolid). Of the last Master, I was **promoter and coordinator** of its first eleven editions. I have had a positive teaching evaluation in **six five-year teaching periods** (all those requested, from 1988 to 2017). I have been the thesis advisor of 10 PhD students.

I have promoted and participated in the **foundation** of several **professional associations**: **ASEPA** (Spanish Association of Automotive Professionals, 1996 founding member, vice-president), **AeH2** (Spanish Hydrogen Association, 2002 founding member), **FACYL** (Cluster of Automotive Companies of Castilla y León, general secretary 2001-2020). I am also a member of **SAE** (Society of Automotive Engineering, USA, since 1990).

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

### **C.1. Publications** (*see instructions*)

P. Gabana, **F.V. Tinaut**, M. Reyes, J.I. Domínguez. Performance Evaluation of a Fuel Cell mCHP System under Different Configurations of Hydrogen Origin and Heat Recovery. **Energies**, 2023, 16, 6420. <https://doi.org/10.3390/en16186420>

M. Reyes, R. Sastre, **F.V. Tinaut**, J. Rodríguez-Fernández. Study and characterization of the instabilities generated in expanding spherical flames of hydrogen/methane/air mixtures. **International Journal of Hydrogen Energy**, Vol 47, Issue 53, pp. 22616-22632, **2022**. <https://doi.org/10.1016/j.ijhydene.2022.05.063>

M. Reyes, **F.V. Tinaut**, B. Giménez, A. Camaño. Combustion and flame front morphology characterization of H<sub>2</sub>-CO syngas blends in constant volume combustion bombs. **Energy and Fuels**, **2021**, 35(4), pp. 3497–3511. <https://doi.org/10.1021/acs.energyfuels.0c03598>

J.J. Ceballos, A. Melgar, **F.V. Tinaut**. Influence of Environmental Changes Due to Altitude on Performance, Fuel Consumption and Emissions of a Naturally Aspirated Diesel Engine. **Energies**, **2021**, 14, 5346. <https://doi.org/10.3390/en14175346>

B. Giménez, A. Melgar, A. Horrillo, **F.V. Tinaut**. A correlation for turbulent combustion speed accounting for instabilities and expansion speed in a hydrogen-natural gas spark ignition engine. **Combustion and Flame**. 223, pp. 15 - 27. **2020**. <https://doi.org/10.1016/j.combustflame.2020.09.026>



M. Reyes, **F.V. Tinaut**, A. Camaño. Experimental Study of Premixed Gasoline Surrogates Burning Velocities in a Spherical Combustion Bomb at Engine Like Conditions. **Energies**. 13, 2020. <https://www.mdpi.com/1996-1073/13/13/3430>

**F.V. Tinaut**; M. Reyes; A. Melgar; B. Giménez; Optical characterization of hydrogen-air laminar combustion under cellularity conditions. **International Journal of Hydrogen Energy**, Vol 44, Issue 25, pp. 12857-12871, 2019. <https://doi.org/10.1016/j.ijhydene.2018.11.134>

M. Reyes; **F.V. Tinaut**; B. Giménez; J.V. Pastor. Effect of hydrogen addition on the OH\* and CH\* chemiluminescence emissions of premixed combustion of methane-air mixtures. **International Journal of Hydrogen Energy**, Vol 43, Issue 242, pp-19778-19791, 2018. <https://doi.org/10.1016/j.ijhydene.2018.09.005>

M. Reyes; **F.V. Tinaut**; A. Horrillo; A. Lafuente. Experimental characterization of burning velocities of premixed methane-air and hydrogen-air mixtures in a constant volume combustion bomb at moderate pressure and temperature. **Applied Thermal Engineering**, Vol 130, pp. 684-697, 2018. <https://doi.org/10.1016/j.applthermaleng.2017.10.165>

M. Reyes; **F.V. Tinaut**; A. Melgar; A. Pérez. Characterization of the combustion process and cycle-to-cycle variations in a spark ignition engine fuelled with natural gas/hydrogen mixtures. **International Journal of Hydrogen Energy**, Vol 41, Issue 3, pp. 2064-2074, 2016, <http://dx.doi.org/10.1016/j.ijhydene.2015.10.082>

M. Reyes; **F.V. Tinaut**; B. Giménez; A. Pérez. Characterization of cycle-to-cycle variations in a natural gas spark ignition engine. **Fuel**, Vol. 140, pp. 752-761, 2015. <http://dx.doi.org/10.1016/j.fuel.2014.09.121>

J.F. Pérez, A. Melgar, **F.V. Tinaut**. Modeling of fixed bed downdraft biomass gasification: Application on lab-scale and industrial reactors. **Int. Journal Energy Research**. 38 - 3, pp. 319 - 338. 2014. <http://dx.doi.org/10.1002/er.3045>

M. Reyes, **F.V. Tinaut**, C. Andrés, A. Pérez. A method to determine ignition delay times for Diesel surrogate fuels from combustion in a constant volume bomb: Inverse Livengood-Wu method. **Fuel**, Vol. 102, pp. 289-298, 2012. <http://dx.doi.org/10.1016/j.fuel.2012.07.041>

**F.V. Tinaut**, B. Giménez, D. Iglesias, M. Lawes. Experimental Determination of the Burning Velocity of Mixtures of n-Heptane and Toluene in Engine-like Conditions. **Flow, Turbulence and Combustion** Vol: 89, Issue 2, pp. 183, 2012. <http://dx.doi.org/10.1007/s10494-011-9373-9>

## C.2. Congresses

**F.V. Tinaut**, P. Gabana, M. Reyes, J.I. Domínguez A performance comparison of different configurations of a Fuel Cell mCHP system in terms of energy, emissions, and costs. **22nd European Hydrogen Energy Conference. EHEC2022**. Madrid, Spain. 18-20th May, 2022

M. Reyes; **FV Tinaut**; B. Giménez Olavarría; A. Camaño. Experimental characterization of burning velocities of premixed iso-octane, n-heptane and n-heptane/toluene in-air mixtures in a combustion bomb at engine-like conditions. **11th Mediterranean Combustion Symposium**. Tenerife (Spain). Jun 2020.

JJ. Jairo; **FV Tinaut**; A. Melgar. Fuel consumption and pollutant emissions analysis of a Diesel engine for interurban buses depending on ambient and operative conditions. **23rd International Transport and Air Pollution Conference**. Thessaloniki (Greece). May 2019.

**FV. Tinaut**; M. Reyes; A. Horrillo; D. Casado. Dimensioning of the propulsion system of a passenger car based on a fuel cell and on-board hydrogen storage. **EHEC18: 21st European Hydrogen Energy Conference**. Málaga (Spain). March 2018.

**FV. Tinaut**; M. Reyes; A. Melgar; M. Rodríguez. Optical Characterization of hydrogen-air laminar combustion under cellularity conditions. **EHEC18: 21st European Hydrogen Energy Conference**. Málaga (Spain). March 2018.

M. Reyes; **FV. Tinaut**. Characterization of the Burning Velocity of Hydrogen/Methane Blends in a Constant Volume Combustion Bomb. **8th International Conference on Mechanical and Aerospace Engineering**. Prague (Czech Republic). July 2017.

M. Reyes; **FV. Tinaut**; A. Horrillo; A. Pérez. Characterization of hydrogen lean combustion in a SI engine through the burning velocity. **WHEC16: 21st World Hydrogen Energy Conference**. Zaragoza (Spain). Jun 2016.

**FV. Tinaut**; D. Sopena; A. Horrillo; A. Melgar; A.J. Buitrago. PEMFC hybrid powertrain for railway vehicles. **WHEC16: 21st World Hydrogen Energy Conference**. Zaragoza (Spain). Jun 2016.

**FV. Tinaut**; M. Reyes; B. Giménez Olavarría; A. Pérez. Characterization of combustion process and cycle-to-cycle variations in a spark ignition engine fuelled with natural gas/hydrogen mixtures. **SPEIC14: Towards Sustainable Combustion 2014, Portuguese and Spanish Sections of Combustion Institute**. Lisbon (Portugal). Nov 2014.

### C.3. Research projects

"Advanced MEAS Ensuring High Efficiency HDV (MEASURED)". **Clean Hydrogen JU**. Universitat Politècnica de València. June 2023-May 2026. Main Res.: J. Benajes. Res.#: 6. Amount: 200,000.00€

"Engine Optimisation Using Hydrogen as a Fuel for Global Decarbonisation (BIOH2FUEL)". TED2021-130596B-C21. **Spain Research Agency**. Universitat Politècnica de València. Dec 2022-Nov 2024. Main Res.: J. Benajes. Res.#: 7. Amount: 152,145.00€

"Renewable and flexible fuel power generation technology enabling the multi-sectorial decarbonization with zero emissions (ALL-In Zero)" 101069888. **Commission of the European Communities**. Universitat Politècnica de València. Sept 2022-Aug 2026. Main Res.: R. Novella. Res.#: 10. Amount: 763,125.00€.

"Definition of fuel cell powertrain architectures for the decarbonization of road freight transport supporting the hydrogen economy deployment (DEFIANCE)" CIPROM/2021/039. **Valencia Innovation Agency (Spain)**. Universitat Politècnica de València. Jan 2022-Dec 2025. Main Res.: J.M. Desantes. Res.#: 7. Amount: 560,605.50€

"Design of advanced control strategies for the new generation of fuel cell trucks promoting the decarbonisation of the transport sector (DIVERGENT)" TED2021-131463B-I00. **Spain Research Agency**. Universitat Politècnica de València. Dec 2022-Nov 2024. Main Res.: J.M. Desantes. Number of Researchers: 7. Amount: 299,000.00€

"Technology demonstrator of an electric vehicle battery pack (DETEBAT-VE)" INNEST/2021/120. **Valencia Innovation Agency (Spain)**. Universitat Politècnica de València. Oct 2021-Sep 2023. Main Res.: J.A. Broatch. Res.#: 22. Amount: 419,005.90 €.

"Study and characterisation of dual combustion for the reduction of CO2 emissions in the transport sector. Characterisation of flame propagation". PID2019-106957RB-C22. **Ministry of Science and Innovation (Spain)**. Univ Valladolid, Jun 2020-May 2021. Main Res.: B. Giménez and M. Reyes. Res.#: 4. Amount: 129,470 €.

"Characterisation of the effects of turbulence and cycle-by-cycle fluctuations on combustion in ignition engines with alternative gaseous fuels" (ENE2012-34830) **MINECO (Spain)**. Gral. Dir. Scientific and Technical Research. University of Valladolid December 2012 - December 2015. Main Res.: Blanca Giménez Olavarría. Res.#: 6. Amount: 37,000.00 €.

### C.4. Contracts, technological or transfer merits

"2.0L Multi Cylinder Test with NH3" 4600000144. **Aramco Overseas Company B.V.** Universitat Politècnica de València. Jul 2022-Jul 2024. Main Res.: J. Benajes. Res.#: 11. Amount: 500,000.00€.

"NECEMO: Net-Zero CO2 Emissions in Mobility" 20220661. **REPSOL S.A.** Universitat Politècnica de València. Jun 2022-Dec 2024. Main Res.: J. Benajes. Res.#: 9. Amount: 263,325.81€

"Support for the study on new alternative fuels in waste collection vehicles". **ECOEMBES**. Tinaut Fluixá, F.V. 13/02/2020 - 31/12/2020. 5,000 €.