



## Part A. PERSONAL INFORMATION

Part A. PERSONAL INFORMATION		CV date	16/April/2024
First name	RAUL		
Family name	PAYRI MARIN		
Gender (*)	MALE	Birth date (dd/mm/yyyy)	
ID number	...5397..Y		
e-mail	rpayri@mot.upv.es	ORCID code: 0000-0001-7428-5510	

### A.1. Current position

Position	Full Professor ( <i>Catedrático de Universidad</i> )		
Initial date	04/06/2009		
Institution	Universitat Politècnica de Valencia		
Department/Center	CMT-Clean Mobility&Thermofluids		
Country	Spain	Teleph. number	963879658
Keywords	Engines; Combustion; Injection; Sprays; Atomization; Fuels; CFD; hydrogen; turbines		

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

Period	Position/Institution/Country/Interruption cause
2002-2009	Professor ( <i>Titular de Universidad</i> ) / UPV (Spain)
2000-2002	Associate Professor ( <i>Titular de Escuela Universitaria</i> )
1996-2000	Assistant Professor ( <i>Profesor Asociado</i> ) / UPV (Spain)
1996-1996	Researcher FPI (CICYT. Ref AP95-24353970)

### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Industrial Engineer (6 years)	Universitat Politècnica de Valencia / Spain	1995
Ph.d Industrial Engineer	Universitat Politècnica de Valencia / Spain	1999

## Part B. CV SUMMARY

### • FELLOWSHIPS AND AWARDS

- 1995 5th position of 173 students in the Industrial Engineering degree, ETSII, UPV, Spain
- 1999 One of the six awards given by the university from the 130 Ph.D theses defended at Universitat Politècnica de València
- 2014 Haiting Award, Best Paper of the year: "Experimental Evaluation of the Best Approach for Diesel Spray Images Segmentation", Society of Experiments Mechanics, USA
- 2015 Full Bright scholarship to work three months in Argonne National Laboratory, USA
- 2019 Invited Keynote at 29<sup>th</sup> ILASS conference (over 400 participants), Paris, France
- 2019 Salvador de Maradiaga fellowship to work three months in Brighton University, UK

### • RESEARCH QUALITY

Four Spanish research periods awarded, 1996-2001, 2002-2007, 2008-2013, 2014-2019

One Spanish transfer period granted (maximum possible since it is a new program)

From web of science (Clarivate Analytics): 155 articles in total, 66 publications since 2017

h-index: 44 in Web of knowledge. The highest in Spain in Mechanical Engineering [indice\\_h INGENIERÍA \(grupodih.info\)](https://www.grupodih.info/). In web of knowledge, 5811 citations in total. From 2019 to 2023, an average of 510 citations/year

h-index: 46 in Scopus with 6774 citations and 191 documents

h-index: 56 in google scholar with 9552 citations

### • SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

4 post-doc supervised.	30 Graduate students supervised.
14+4 Ph.D supervised (4 on-going theses)	37 International students supervised.
70 Master students supervised	35 Tutoring of students at industrial placements

- ORGANISATION OF SCIENTIFIC MEETINGS

2008-2023 SAE world congress session organizer and other SAE Fuels and lubricants meetings  
 2017 Chairman of the Engine Combustion Network live meeting in València  
 2017 Chairman of the 28th ILASS-Europe 2017 with 250 participants  
 2022, 2024 Main Organizer of THIESEL2022 and THIESEL2024 [WebCMT \(upv.es\)](http://WebCMT.upv.es)

- INSTITUTIONAL RESPONSIBILITIES

2013-Present Elected member of the Industrial Engineering School board (ETSII), UPV  
 2017-Present Vice-dean of DMMT (Department of Thermal Engines and Machines), UPV

- EDITOR AND REVIEWING ACTIVITIES

2019-Present Editor in chief of International Journal of Engine Research, SAGE, UK  
 2016-Present Editorial board member of Frontiers in Mechanical Engineer, Switzerland  
 2014-Present Editorial board member of Atomization and Sprays, Begel house, UK  
 2017-2019 Editorial board member of International Journal of Engine Research, SAGE, UK  
 2014-2017 Evaluator of Spanish ANEP (National Research Program)  
 2017-2021 Evaluator of Italian CINECA (National Research Program)  
 2014 Evaluator of Spanish ANECA (National professor promotion)  
 2017-2020 Evaluator of Spanish RES (Supercomputing National Network)  
 2017 European FP7 Evaluator Project monitor and People program evaluator  
 2017 European H2020 Evaluator Twinning program  
 2021 Postdoc selection committee of Universidad Carlos III, Spain

- MAJOR INTERNATIONAL COLLABORATIONS

2011-Present One of the three leaders of the Engine Combustion Network that since 2011 holds monthly web meetings and has organized seven workshops with participation ranging from 90 to 150 researchers. The group is managed by me together with Lyle M. Pickett(Sandia, USA) and Gilles Bruneaux (IFPEN, France)  
 2015 Argonne National Laboratory (three months), using the Advanced Photon Source for x-ray measurements. Full Bright scholarship. My counterpart was Christ Powell, 8 journal publications together.  
 2019 Brighton University (three months), Salvador de Maradiaga program. My counterpart was Cyril Crua, 3 journal publications together.  
 2016-2018 5 journal publications together with General Motors, Warren, USA 2018,  
 2019 2 journal publications together with Jaguar Land Rover, UK

- COLLABORATION WITH INDUSTRY THROUGH PRIVATE FUNDING

Receive private funding from numerous companies from different countries.  
 Spain (Repsol, Renfe), France (PSA, Renault, Delphi), USA (General Motores, Carterpillar, Cummins), Germany (Daimler, Continental), Austria (BMW, LEC), Switzerland (Iveco), Belgium (Toyota), UK (Jaguar Land Rover). Since 2010 responsible for 26 projects with an overall budget of 3.0 M€ (direct research contracts with the industry)

- OTHER SOCIAL AND VOLUNTEERING ACTIVITIES OUTSIDE OF THE UNIVERSITY

Patron of the Fundación MUSOL since January 2011 [www.musol.org](http://www.musol.org)  
 MUSOL is an GNO with an average of over 3 million Euros of annual income in the last five years and 23 employees that performs cooperation projects in Angola, Senegal, Guatemala, and Bolivia together with social awareness in Spain ([Musol](http://Musol))

- MAJOR CONTRIBUTION TO CAREERS OF EXCELLENT RESEARCHERS

F. Javier Salvador is a full professor. I supervised his thesis (2003) and worked with him over all these years. His h-citation index in WoK is 35, the third-highest in Spain in Mechanical Engineering in Spain.  
 Jaime Gimeno is a full professor. I supervised his thesis (2008) and worked with him over all these years. His h-citation index is 25, the eighth in Mechanical Engineering in Spain.  
 Gabriela Bracho defended her ph.D in 2011. After working at General Electric (Germany), she came back to work as an assistant professor at CMT Motores Termicos research institute in my research team.  
 Julien Manin, permanent position at Sandia National Laboratory (USA). I supervised his thesis in 2011. He is a leading researcher in Optical techniques and author of over 85 contributions with an h-index of 34 in google scholar and over 3305 citations.

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

### **C.1. Most Cited International Journal Publications (over 100 citations in WoS)**

R. Reitz; H. Ogawa; Raul Payri; T Fansler; Sage L. Kokjohn; Y. Moriyoshi; AK Agarwal; D. Arcoumanis; D. Assanis; C. Bae; K. Boulouchos; M Canakci; S Curran; I Denbratt; M Gavaises; R. Novella; Onorati, A; Richter, M; Shuai, S; Siebers, D; Su, W; Trujillo, M; Uchida, N; Vaglieco, BM; Wagner, RM; Zhao, H; IJER editorial: The future of the internal combustion engine. INTERNATIONAL JOURNAL OF ENGINE RESEARCH, Vol 21, 3-10, 2020, 401 citations in WoS

Payri et al, The influence of cavitation on the internal flow and the spray characteristics in diesel injection nozzles, FUEL 83 (4-5), pp. 419-431, 2004, 338 citations in WoS

Payri et al, Using spray momentum flux measurements to understand the influence of diesel nozzle geometry on spray characteristics, FUEL 84 (5), pp. 551-561, 2005, 295 citations in WoS

Desantes, JM; Payri, R et al; Development and validation of a theoretical model for diesel spray penetration, FUEL 85 (7-8), pp. 910-917, 2006, 163 citations in WoS

Payri et al; Diesel nozzle geometry influence on spray liquid-phase fuel penetration in evaporative conditions, FUEL 87 (7), pp. 1165-1176, 2008, 151 citations in WoS

Bardi, M; Payri, R et al; Engine Combustion Network: comparison of spray development, vaporization, and combustion in different combustion vessels, Atomization and Sprays, 22 (10), pp. 807-842, 2012, 138 citations in WoS

Benajes, J; Payri R et al; Experimental characterization of diesel ignition and lift-off length using a single-hole ECN injector, Applied Thermal Engineering, (1-2), pp. 554-563, 2013, 135 citations in WoS

Desantes, JM; Payri R et al; Influence of cavitation phenomenon on primary break-up and spray behavior at stationary conditions, FUEL, 89 (10), pp. 3033-3041, 2010, 129 citations in WoS

Payri et al, Study of cavitation phenomena based on a technique for visualizing bubbles in a liquid pressurized chamber, International Journal of Heat and Fluid Flow, 30 (4), pp. 768-777, 2009, 124 citations in WoS

Payri et al, Effects of nozzle geometry on direct injection diesel engine combustion process, Applied Thermal Engineering, 29 (10), pp. 2051-2060, 2009, 115 citations in WoS

Macian V, et al; Innovative measurement techniques series:: Part 3 -: New technique for determination of internal geometry of a diesel nozzle with the use of silicone methodology, Experimental Techniques 27 (2), pp. 39-43, 2003, 113 citations in WoS

Payri et al; A new methodology for correcting the signal cumulative phenomenon on injection rate measurements, Experimental Techniques 32 (1), pp. 46-49, 2008, 109 citations in WoS

Payri et al; Fuel temperature influence on diesel sprays in inert and reacting conditions, Applied Thermal Engineering 35, pp. 185-195, 2012, 108 citations in WoS

Payri et al; The effect of temperature and pressure on thermodynamic properties of diesel and biodiesel fuels, FUEL 90 (3), pp. 1172-1180, 2011, 105 citations in WoS

Payri et al; A contribution to the understanding of cavitation effects in Diesel injector nozzles through a combined experimental and computational investigation, Computers and fluids 58, pp. 88-101, 2012, 101 citations in WoS

Meijer et al; Engine Combustion Network (ECN): characterization and comparison of boundary conditions for different combustion vessels, Atomization and Sprays 22 (9), pp. 777-806, 2012, 100 citations in WoS

### **C.2. Recent Public Research projects**

-. Design of efficient and stable low-NO<sub>x</sub> Hydrogen burners.

GENERALITAT VALENCIANA, CIPROM/2022/24, 600 k€

Principal investigator: Raul Payri, Researchers: 7

-. Safe continuous combustion of hydrogen in gas turbines for clean transportation. AGENCIA

ESTATAL DE INVESTIGACION, PID2021-125812OB-C21, 2022-2025, 223 k€

Principal investigator: Raul Payri, Researchers: 5

-. Use of micromixers for stable hydrogen combustion in zero-emission aviation.

AGENCIA ESTATAL DE INVESTIGACION, TED2021-129719B-C22, 2022-2024, 322 k€

Principal investigator: Raul Payri, Researchers: 6

- Expansion of the scientific calculation cluster rigel-upv

AGENCIA ESTATAL DE INVESTIGACIÓN, EQC2021-007509-P, 2021-2024, 1500 k€

Principal investigator: V. Botti, Researchers: 7

- Research and development of a highly automated and safe streamlined process for increased lithium-ion battery repurposing and recycling

EUROPEAN COMMISSION (reference 101104241), 2023-2026, 535 k€

Principal investigator: J.V. Pastor. Researchers: 15

- Technological demonstrator of a battery pack for electric vehicles

AGENCIA VALENCIANA DE LA INNOVACION, INNEST/2021/120, 2021-2023, 419 k€

Principal investigator: A. Broachth. Researchers: 22

- Air insulation by spray and chamber design, burn duration reduction

RESEARCH ASSOCIATION FOR COMBUSTION, PROJECT ID: 6013182, 2021-2023, 262 k€

Principal investigator: J. Benajes, Researchers: 11

- Emissions soot model

CLEAN SKY JOINT UNDERTAKING, reference 821418, 2021-2023, 240 k€

Principal investigator: Jesús Benajes, Researchers: 16

- Study of primary atomization using DNS simulations and very high resolution optical techniques

AGENCIA ESTATAL DE INVESTIGACION, RTI2018-099706-B-I00-AR, 2018-2021, 181 k€

Principal investigator: Raul Payri, F.J. Salvador, Researchers: 6

- High performance CFD calculation for thermo-fluiddynamic processes

AGENCIA ESTATAL DE INVESTIGACION, EQC2019-006094-P-AR, 2019-2021, 199 k€

Principal investigator: Raul Payri, Researchers: 16

- Study of the injection process in pressurized atmospheres

AGENCIA ESTATAL DE INVESTIGACION, EQC2018-004605-P, 2018-2020, 255 k€

Principal investigator: Raul Payri, Researchers: 7

### **C.3. Recent Contracts, technological or transfer merits**

Spray investigation of a dual fuel methanol-diesel injector in non reactive and reactive conditions

CATERPILLAR INC, 2023-2024, 150 k€

Principal investigators: Raul Payri. Researchers: 7

Understanding the effect of DME on the spray characteristics of a common rail injector

CATERPILLAR INC, 2022-2023, 70 k€

Principal investigator: J. Javier Lopez. Researchers: 4

Design of a new water dosing system for fuel cell applications

EATON, 2022-2024, 150 k€

Principal investigator: R. Payri. Researchers: 10

- Study of spray microscopic and macroscopic characteristics in a heavy-duty injector

CUMMINS INC, 2021-2022, 124 k€

Principal investigator: Jaime Gimeno García. Researchers: 5

- Reactivity controlled of compression ignition technology development for heavy duty vehicles

ARAMCO OVERSEAS COMPANY B.V, 2021-2022, 220 k€

Principal investigator: Jesús Benajes Calvo, Raúl Payri Marín. Researchers: 8

- Estudio teórico-experimental sobre el problema del LSPI (low speed pre-ignition) en motores GDI desde el punto de vista del lubricante y combustible

Repsol, 2019-2021, 210 k€

Principal investigator: Vicente Macián Martínez. Researchers: 8

- Gasoline direct injection CFD spray modelling

NV TOYOTA MOTOR EUROPE, 2018-2019, 160 k€

Principal investigator: Raúl Payri. Researchers: 8

- Understanding the urea injection process in real engine conditions: characterization of the spray

JAGUAR LAND ROVER LIMITED, 2018-2019. 65 k€

Principal investigator: Jesús Benajes Calvo. Researchers: 7

- Understanding the interaction between a diesel spray and a plate in high pressure and high temperature conditions: experiments and computational study

CATERPILLAR INC, 2017-2018, 165 k€

Principal investigators: Raul Payri. Researchers: 13

**RAUL | PAYRI |  
MARIN**

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