EMILIO ROYO CARRATALÁ
Apt. 11 Beech House, 125 Rectory Road, Sutton Coldfield, B75 7SL, UK, 0044 7504353002, emrocar@hotmail.com

PERSONAL INFORMATION

Date of Birth: 07.04.1981
Nationality: Spanish
eMail: emrocar@hotmail.com
Mobile: 0044 7504353002

Pan European technical expert in electronic hardware design and hybrid electric powertrain development with experience in both the Automotive and Formula One industries.

PROFESSIONAL EXPERIENCE

ZYTEK AUTOMOTIVE — LICHFIELD, UK

12/2012 – Present

PRINCIPAL ELECTRONICS ENGINEER (12/2012 – Present)
In charge of power inverter product development and electronic hardware design. The responsibilities include:

- Responsibility for hardware EV[i] products across their entire life cycle.
- Management responsibility for three direct reports.
- System architecture design.
- Product specification and development.
- Technical lead for electronic design, including:
    - Medium and high-speed digital circuit design.
    - Analogue and SMPS[ii] circuit design.
    - Embedded design using 32 bit microcontrollers, FPGAs[iii] and CPLDs[iv].
    - Communications and networking design.
- Design for EMC compliance.
- Design for high reliability applications.
- Design for test and manufacture.
- PCB design and layout technical guidance.
- Specification of design and product validation programmes.
- Preparation of FMEAs[v].
- Troubleshooting and fault finding.

LOTUS CARS — HETHEL, UK

10/2011 – 11/2012

HYBRID HARDWARE TECHNICAL MANAGER (10/2011 – 11/2012)
Responsible for hybrid powertrain development for the Lotus Cars new products (new Esprit, Elite and Eterne). The role included:

- Deliverables, timing and budget responsibility for the Lotus hybrid programme.
- Management of a project team of engineers.
- Technical lead in the specification and development of the new electric drivetrain, from system to component levels.
- Definition of hybrid system architecture.
- Definition of system functionality and strategy.
- Technical liaison with suppliers and technological partners involved in the hybrid programme.

MERCEDES-BENZ HIGH PERFORMANCE ENGINES — BRIXWORTH, UK

09/2008 – 10/2011

HARDWARE ELECTRONICS ENGINEER (09/2009 – 10/2011)
Responsible for hardware electronic design of KERS[vi] 2011. This system was raced by the Mercedes GP, Vodafone-McLaren-Mercedes and Force India Formula One teams. The design duties included:

- Top level electrical architecture design.
- Analogue and digital circuit design.
- SMPS design.
- Embedded design using 32 and 8 bit microcontrollers.
- Communications and networking design: FlexRay / CAN / I^2C / SPI / RS232.
- Schematic design and capture.
- PCB design and layout technical guidance.
- Design for EMC compliance.
- Troubleshooting and fault finding.

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SYSTEMS INTEGRATION ENGINEER (09/2008 – 09/2009)
Heavily contributed to the development and support of KERS 2009, which was raced by the Vodafone-McLaren-Mercedes Formula One team. The role included:

- Specification of system subcomponents.
- Responsible for the Ground Fault Indication system.
- Fault finding and problem solving support.
- Definition of chassis commissioning procedures for HV[vii] use.
- Technical support to McLaren Racing regarding ground schemes and HV safety standards.

OMEC ENGINEERING — CORK, IRELAND

02/2006 – 08/2007

MECHANICAL ENGINEER (02/2006 – 08/2007)
Conducted numerous mechanical and structural projects. The role involved:

- Mechanical and structural design.
- Drafting and generation of detailed manufacturing drawings.
- Preparation and issue of tender documents.
- Technical liaison with customers and suppliers.

CMT MOTORES TÉRMICOS — VALENCIA, SPAIN

12/2004 – 02/2006

ASSISTANT RESEARCHER (12/2004 – 02/2006)
Actively collaborated with *PSA Peugeot-Citroën* on the following projects:

- Air mass estimation from in-cylinder pressure. Inlet valve closing gas temperature estimation.
- Trapped air mass estimation from in-cylinder pressure in operation with EGR[viii].

The main focus of these projects revolved around air pollution emissions reduction in turbocharged ICEs[ix].

EDUCATION

OXFORD BROOKES UNIVERSITY — OXFORD, UK

09/2007 – 08/2008
SUBJECT: Motorsport Engineering.
MAIN EMPHASIS: Energy Recuperation Systems, Vehicle Dynamics, Data Acquisition Systems, Engineering Management, Mechanical and Materials Engineering, CFD[x], FEA[xi].
FINAL DISSERTATION: KERS based on Super-Capacitors. The developed system was raced by the Oxford Brookes Formula Student Hybrid Car achieving the second position in the Formula Student UK event Class 1(A). Grade: 71% (Distinction).
DEGREE: MSc in Motorsport Engineering. Grade: 78% (Distinction).

UNIVERSIDAD POLITÉCNICA DE VALENCIA — VALENCIA, SPAIN

09/2002 – 12/2004
SUBJECT: Industrial Engineering.
MAIN EMPHASIS: Digital Electronics, Analogue Electronics, Power Electronics, Control Engineering, Systems and Automation, Mechanical and Materials Engineering, Industrial Installations, Product Design, Project Management, Thermodynamics and Heat Transfer, Hydraulic Systems, Manufacturing Processes.
FINAL DISSERTATION: Development of an Expert System based on Fuzzy Logic to assess damage in an ICE using oil samples. This project was developed in collaboration with the EMT (Valencian Municipal Transports Company) and REPSOL YPF. Grade: 100%.
DEGREE: Industrial Engineer (5 years university degree). Grade: 80.3% (obtained the fourth top mark out of 256 people).

UNIVERSIDAD POLITÉCNICA DE VALENCIA — VALENCIA, SPAIN

09/1999 – 09/2002
SUBJECT: Electronics Engineering.
MAIN EMPHASIS: Analogue Electronics, Digital Electronics, Electronic Instrumentation, Communications, Power Electronics, Control Engineering, Industrial Informatics, Electrical Engineering, Industrial Automation, Robotics.
FINAL DISSERTATION: Development of an Auto-Guided Vehicle. Grade: 98%.
DEGREE: Electronics Engineer (3 years university degree). Grade: 86.2% (obtained the highest result out of 109 people).

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PROFESSIONAL DEVELOPMENT

- Multivariable and Robust Control (PhD module - UPV[xii]).
- Galaxies and Cosmology (MOOC - California Institute of Technology).
- Exploring Quantum Mechanics (MOOC - University of Maryland).
- Digital Signal Processing (MOOC[xiii] - École Polytechnique Fédérale de Lausanne).
- Advanced Techniques of Measurement in Engines (PhD module - UPV).
- Engine Air Management Processes (PhD module - UPV).
- Combustion Processes in Internal Combustion Engines (PhD module - UPV).
- Inspiring Leadership through Emotional Intelligence (MOOC - Case Western Reserve University).
- Competitive Strategy (MOOC - Ludwig-Maximilians-Universität München).
- Introduction to Operations Management (MOOC - University of Pennsylvania).
- Lean Competency System Training (Level 1A - OEE[xiv]).
- Certificate in Advanced English (University of Cambridge).

SKILLS

ENGINEERING

- **HARDWARE DESIGN EXPERIENCE:** 32 bits Infineon and Freescale family of microcontrollers, Intel 8051, Altera FPGAs, Lattice CPLDs, analogue electronics, electronic instrumentation, communications, switch-mode power supplies, functional safety to ISO26262 up to ASIL D, schematic design and capture, system modelling and simulation.
- **PROGRAMMING LANGUAGES:** C, C++, Matlab programming language, 8051 assembler language, VHDL.
- **SOFT SKILLS:** excellent analytical and technical skills, sound presentation and communication skills, highly motivated and capable of working on concurrent activities, able to work under large amount of pressure, experience managing technical as well as non-technical personnel, team player with the ability to work unsupervised.
- **OTHERS:** experience working with HV, proficiency in field-oriented control, experience contributing in FMEAs, extensive experience in troubleshooting and fault finding, experience in project leadership and business development.

SW PACKAGES

- **EXCELLENT:** Microsoft Excel, Microsoft Outlook, Microsoft Power Point, Microsoft Word.
- **PROFICIENT:** Altium, OrCAD, PSpice, Matlab, Simulink, Microsoft Project.
- **ADVANCED:** Catia V5, CADStar, AutoCAD.

LANGUAGES

- **ENGLISH:** Business Fluent.
- **SPANISH:** Native.
- **GERMAN:** Basic.

ADDITIONAL INFORMATION

- Chartered Status (CEng) and Member of the IMechE.
- Awarded one of the twelve national '2007 Cajastur - Fernando Alonso' scholarships.
- Contributed to the 2nd International 'Conference on Informatics in Control, Automation & Robotics' with the research article 'Fuzzy Diagnosis Module Based on Interval Fuzzy Logic. Oil Analysis Application'.
- Genuine interest for theoretical physics.
- Keen on classical music. Hold a degree in clarinet.
- Enjoy practising martial arts.

REFERENCES

References are available on request.

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[i] Electric Vehicle.
[ii] Switched Mode Power Supply.
[iii] Field Programmable Gate Array.
[iv] Complex Programmable Logic Device.
[v] Failure Mode and Effects Analysis.
[vi] Kinetic Energy Recovery System.
[vii] High Voltage.
[viii] Exhaust Gas Recirculation.
[ix] Internal Combustion Engine.
[x] Computational Fluid Dynamics.
[xi] Finite Elements Analysis.
[xii] Universidad Politécnica de Valencia.
[xiii] Massive Open Online Course.
[xiv] Operational Effectiveness and Efficiency Limited.