(latest update: September 2018)

Curriculum Vitae – David Pallarès

Full name	David Jordi Pallarès i Tella
Birth date	April 23rd, 1975
Gender	Male
Nationalities	Swedish and Spanish
Languages	English, Swedish, Spanish and Catalan (all fluent)

Professional life

2016-present	Associate professor (Chalmers Univ. of Tech.) Modeling and diagnostics of fluidized bed processes
2010-2016	Assistant professor (Chalmers Univ. of Tech.) (16 months of parental leave included)
2008-2010	Researcher (Chalmers Univ. of Tech.) Modeling of fluidized bed combustion Modeling and diagnostics of fluidized bed processes
2002-2003	Advisor in energy investments in the Caribbean (Sabadell Bank)
2001-2002	Inspector of environmental impact (Catalan government)
1999-2001	Project employment (Chalmers Univ. of Tech.) Modeling of fluid dynamics in fluidized bed combustion

Education

2003-2008	PhD in Energy and Environment (specialization in Energy Conversion) Chalmers Univ. of Tech. (Gothenburg, Sweden) PhD thesis: "Fluidized Bed Combustion – Modeling and Mixing"
1994-1999	Mechanical Engineering (Energy track). UPC Barcelona.

Responsibilities

From 2018	vice-Head of Department for PhD studies, member of the Departmental Leading Board Dept. of Space, Earth and Environment (approximately 120 PhD students)
From 2010	Coordinator and supervisor of the experimental research in the fluidized bed laboratory
From 2008	Coordinator and supervisor and developer of the modeling of fluidized bed processes
From 2014	Member of the Management Board of the Center for Indirect Gasification of Biomass
2009-2018	Director of the Master's Programme in Sustainable Energy Systems

Publications and funding

Up to present, as author or co-author I have published around 40 papers in scientific journals and around 40 articles in international conferences.

Up to present, I have attracted funding for a total of 50.7 $MSEK_{2018}$ (25.28 $MSEK_{2018}$ as main applicant in 15 projects and 25.42 $MSEK_{2018}$ as co-applicant in 6 projects).

Supervision

- Main and assistant supervisor of respectively 2 and 7 PhD students, yielding 4 PhD theses so far
- Supervisor of 4 PhD internships
- Supervisor of 17 MSc theses (two of which awarded prizes)

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Research Projects

I have participated in the following research projects:

- "An overall CFB model" (2005-present)

Cooperation with industry (funded by Valmet Corporation)

A 3D model including all of fluid-dynamics, heat transfer and chemistry governing fluidized bed combustion for air-fired conditions is to be developed. Specific experimental tests providing data required by the model are developed within the project.

- "Competence center for Indirect Gasification of Biomass: modeling" (2011-present)

Swedish excellence center (funded by Swedish Energy Agency and industry)

Improvement of the knowledge on fluidized bed gasification by modeling and development of experimental techniques.

- "Experimental investigation of the gas-solids flow in FB units" (2014-present)

Cooperation with industry (funded by Valmet Corporation)

Diagnostic tools are applied in dedicated experimental tests in order to obtain key data for the modeling of CFB units. Development of new diagnostic tools is also included in the project objectives.

- "Cost-effective and flexible polygeneration units for maximised plant use" (2018-2021)

BioKraft *(funded by Swedish Energy Agency)*

Modeling tools at reactor and plant levels are applied in order to evaluate the performance of a new concept for retrofitting existing bubbling fluidized bed boilers into polygeneration units with flexible production of heat, power, steam and biogas.

- "Char conversion under indirect gasification in FB units" (2013-2017)

Cooperation with industry (funded by Swedish Energy Agency/Energiforsk)

Diagnostic tools are applied in dedicated experimental tests in order to obtain key data for the modeling of indirect gasification.

- "$NoCO_2$" (2012-2017)

ERC Advanced Grant *(funded by EU)*

Implementation of a model for chemical looping combustion which serves as a scale-up tool of the process. Intensive experimental work in cold down-scaled units is included.

- "Assessment of oxyfuel CFB combustion" (2009-2014)

Cooperation with industry (funded by Metso Power Oy)

An assessment of the possibilities, requirements and potential showstoppers of oxyfuel CFB combustion is to be carried out. This assessment includes planning of measurement campaigns, modeling and evaluation of the overall process.

- "Advanced Biomass Combustion Modelling for Clean Energy Production" (2009-2012)

ERA-NET Bioenergy EU program (funded by Swedish Energy Agency)

Experimental background for reliable modeling of biomass combustion in fluidized units is to be attained. Experimental work is focused on the study of characteristic times for conversion and mixing of different types of biomass under various conversion environments.

- "Tracking of fuel dispersion" (2007-2010)

Waste Refinery (funded by Swedish Energy Agency)

Fuel dispersion in a fluidized bed reactor is to be experimentally evaluated. Tracking through digital image analysis at both cold and hot conditions is performed, with the corresponding demands on the design of the camera probes and analysis code.

- "Mixing in fluidized bed units for heat and power production" (2005-2008)

Combustion/gasification for heat and power production (funded by Swedish Energy Agency)

Solids mixing in fluidized bed combustors and gasifiers is studied through the development of experimental particle tracking methods.

- "Advanced CFB for clean and efficient coal power" (2003-2006)

Research Programme of the Research Fund for Coal and Steel (funded by EU)

Developed experimental methods for the determination of the fuel mixing pattern in fluidized beds. Measurement campaigns with corresponding evaluation of were carried out. Experimental data was used for formulation of semi-empirical modeling tools.

- "Simulation of circulating fluidized beds with combustion/gasification of biomass" (1998-2001)

Non-Nuclear Energy Programme JOULE III (funded by EU)

Developed the fluiddynamical module of a process model for energy conversion in fluidized bed units. Different modules encoded by the nine European partners were linked together as final project task.

Teaching

PhD courses

2013, 2016 "The Finite Volume Method Applied to Heat Transfer and Reacting Flows"
Co-lecturer
Chalmers Univ. of Tech., 7.5 ECTS

2009 "Fluidized Bed Technology for Energy Applications"
Lecturer
Research Centre for Energy Resources and Consumption (CIRCE, Spain), 2 ECTS

MSc courses

2010-present "Combustion Engineering" (MEN031)
Examiner (up to 2016) and main co-lecturer
Chalmers Univ. of Tech., 7.5 ECTS

2012 "Fluidized Bed Combustion"
Lecturer
Carlos III University (Spain), 2 ECTS

2010 Guest lecturer, "Bioenergy"
University of Seville (Spain), 7.5 ECTS

BSc courses

2006-2011 "Thermal Energy Conversion" (SEE020)
&2016-present Examiner (2016-present) and main co-lecturer
Chalmers University of Technology, 7.5 ECTS

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Academic service

Evaluator of applications for research funding

2018 Evaluator for The Netherlands Organisation for Scientific Research (NWO) of applications for national funding within the energy field

2017 Evaluator for RANNÍS (Icelandic Centre for Research) of applications for national funding within the waste-to-energy field

Evaluation of higher educational programmes

2013 Evaluator for NOKUT (Norwegian Agency for Quality Assurance in Education) of an application by a national university for establishing an MSc programme on Sustainable Energy Engineering

PhD grading committee

2017 Technische Universität Wien, dissertation by Egon Zehetner
"Cold Flow Model Study on a Sorbent Based Multistage Fluidized Bed System for Continuous CO2 Capture"

2017 University College of Southeast Norway, dissertation by Chameera Jayarathna
"Development of a fluidized bed particle classifier for application in calcium looping with indirect heat transfer"

2016 Carlos III University of Madrid, dissertation by Eduardo Cano
"Fundamental studies of vibrated fluidized beds"

2015 University of the Basque Country, dissertation by Jon Álvarez
"Valorization of agro-forestry wastes and sewage sludge by fast pyrolysis in a conical spouted bed reactor"

2014 Carlos III University of Madrid, dissertation by Jesús Gómez
"Agglomeration and fluidization quality in rotating fluidized bed units"

2010 Carlos III University of Madrid, dissertation by Sergio Sánchez
"Two-dimensional fluidized bed dynamics"

Patents

The two patented concepts below are being comercially exploited by a start-up company (BioShare AB) through an agreement on intellectual property rights.

- "Recovery of Chemicals from Fuel Streams"
  Patent PCT/IB2018/054187, June 2018
- "Bubbling Fluidized Bed Reactor with Circulation among Integrated Bubbling Zones"
  Patent PCT/IB2018/054189, June 2018