

Curriculum vitae

Prof. Mhamed Hammoudi



I-IDENTIFICATION

Name: HAMMOUDI

First name: Mhamed

Date and place of birth: April 20, 1969 in Algiers (Algeria)

Algerian nationality

Professional address 1: Faculty of Physics U.S.T.H.B, BP 32 el alia 16111 Bab-Ezzouar
Algiers, Algeria (<https://www.usthb.dz/>)

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Communication

Language	Written	Speaking
Arabe	Good	Good
French	Excellent	Excellent
English	Good	Fairly Good
Spanish	Fairly Good	Good

Current functions:

Full Professor - University Professor / Research Director at the Houari-Boumediene University of Science and Technology (USTHB): Faculty of Physics / Department of Energy and Fluid Mechanics.

II-EDUCATION

University Professor	Since 2019
Accreditation to direct research in the field of energy physics and fluid mechanics	Since 2013
Reviewers for the scientific journal of the hydrogen sector, International Journal of Hydrogen Energy, Elsevier. https://www.journals.elsevier.com/international-journal-of-hydrogen-energy .	Since 2012
Researcher at Hydrogen Research Institute (Trois-Rivieres, Quebec, Canada): Researcher: Hydrogen production axis from electrolyzer powered by renewable energies (wind, solar, hybrid) at HRI Trois Rivières Quebec, Canada	2010-2012
Research expert at the Renewable Energy Development Center Renewable Energy Development Center CDER Photovoltaic production and hydrogen production within the Hydrogen division	2005-2010
PhD in physics, fluid mechanics and energy option Two-phase flow through porous media and static mixers applied to mixing processes. H-B University of Science and Technology, Algiers, Algeria	2008
Master's degree in physics option Fluid mechanics and energy Theme: Flow through porous media Faculty of Physics, H-B University of Sciences and Technologies, Algiers, Algeria	1998
Postgraduate Diploma in Physics Fluid Mechanics and Energy Option H-B University of Science and Technology, Algiers, Algeria	1994

III- Professional experiences:

Head of the Master's program in Green Hydrogen Science and Technology, Faculty of Physics, USTHB	Since October 2025
Expert Consultant with PwC for the Study on the Technical-Economic Theme in the Agricultural sector.	Since September 2025
Development of technical and economic decision support software (LCoE, LCoW, LCoH) in the field of green hydrogen, from solar, wind and hybrid sources, as part of a master's degree.	February-July 2025
Expert Consultant with PwC for the Study on the Technical-Economic Theme in the Renewable Energy sector, green Hydrogen, Power to X.	Mars-July 2024
Member of the Board of Directors of the Green Energy Cluster-Algeria for a 3rd term (2024-2027)	Since Jan 2024
Member of the Board of Directors of the Green Energy Cluster-Algeria	Since June 2023
Member of the Group developing the technical-economic feasibility study for the production of Liquid Green Hydrogen/Power to X in Algeria with the company Air Product	Mars-October 2023
Chief of Staff at the Ministry of Energy Transition and Renewable Energy	During 2022
Responsible for the development of the National Energy Transition Strategy at the Ministry of Energy Transition and Renewable Energy	During 2022
Responsible for the development of the National Energy Model at the Ministry of Energy Transition and Renewable Energy Mission carried out in collaboration with JWS/GIZ on the one hand and in collaboration with UNDP.	During 2022
Member of the team developing the law on energy transition and renewable energies and coordinator of the UNDP Assistance mission.	During 2022
Member of the National Commission of Interministerial experts for the development of plans for the extension of agricultural perimeters in the far South / Responsible for the Energy Section for the Prime Minister's Office.	During 2022
Member of the National Commission of Interministerial Experts for the High Energy Council / Representing the MTEER in the area of Energy Transition and Renewable Energy.	During 2022
Local expert for European technical assistance dedicated to the implementation of renewable energy strategies for Algeria.	2019-2022
Local expert for the Power to X project dedicated to Algeria with Fraunhofer Ise, Fraunhofer Isi and kfw	2021-2022
University full professor (university professor diploma)	Since 1999
Researcher at the HRI Hydrogen Research Institute Trois-Rivers Québec Canada: Green Hydrogen Production, Uses in Fuel Cells and Hybrid Vehicles II	2010-2012
Reviewers for International Journal of Hydrogen Energy (IJHE)	Since 2012
Director of Development of the Sotraco Group (Algerian Multi-sector Industrial Group)	2014-2021
Technical Director Grupotec Algeria (Algerian JV In Renewable Energy / EPC and O&M)	2014-2019
Development Director Constalica Algeria (Algerian-Portuguese JV in Renewable/Industrial Energy)	2014-2021
Managing Director and Founder of Agri EPC Agriculture & Energy	2015-2022
Managing Director and Founder of Green Sphere, a Franco-Algerian joint venture in the carbon credit sector.	2018-2022

Director of Business Development AUtil Algerian Utilities of the Sotraco Group (Algerian)	2016-2020
Member of the Board of Directors of the Green Energy Cluster Algeria (Cluster Energie Solaire), which brings together more than 40 national and international companies, 2 research centres and universities	2018-2020
Chairman of the Board of Directors of the Green Energy Cluster Algeria (Cluster Energie Solaire), which brings together more than 40 national and international companies, 2 research centres and universities	2020-2022
Expert researcher at the Research and Technology Transfer Center (CRTT) St-Nazaire/France in the development of Ultrasonic Methods in Industry.	Intermittently 2004-2007
Expert researcher at the CDER Renewable Energy Development Centre in the Hydrogen Division	2005-2010
Working for ER2 subsidiary of CDER	2008-2010

Job Skills Details

III.1. PROFESSIONAL SKILLS ECONOMIC SECTOR / DEVELOPMENT STRATEGY:

- EPC Engineering Procurement & construction as technical director for Grupotec Algeria
- Project developer on behalf of AUTIL (Algerian Utilities) in the renewable energy sectors implemented in the energy, agriculture and industry sectors.
- Economic Study and Feasibility and Prospective Studies for Sotraco Group in the sectors:
 - Renewable energies (photovoltaic, wind and waste recovery)
 - Hybrid energy systems (SEH)
 - Batteries and storage systems
 - Carbon credits
 - Agriculture
 - Industrial
 - Biotechnology
- Determination of the Algerian Photovoltaic Solar Potential on the basis of 4385 Nodes with calculation of the LCOE, including the 1541 municipalities of Algeria,
- Determination of the Algerian wind potential on the basis of 43,850 knots with calculation of the LCOE including the 1,541 municipalities of Algeria,
- Determination of the Algerian Hybrid PV-Genset Potential on the basis of 4385 Nodes with calculation of the LCOE, including the 1541 municipalities of Algeria,
- Determination of the Algerian PV-Wind Hybrid Potential on the basis of 4385 Nodes with calculation of the LCOE, including the 1541 municipalities of Algeria,
- Determination of the Algerian Green Hydrogen Potential from the hybrid PV-Wind and hybrid potential on the basis of 4385 Nodes with calculation of the LCOH.
- Technico-economic studies on Power to X (e-fuel: e-methane, green ammonia, green methanol, diesel and green kerosene)

III.2. Study on behalf of economic companies:

III.2.1. Techno-economic study of Tunisian photovoltaic potential (2018-2019)

Study carried out on behalf of the MMI group, intended to identify photovoltaic solar production areas in Tunisia with high economic potential. The study is based on a grid of 1575 nodes of the Tunisian territory (having an area of 0.1 Latitude x 0.1 Longitude). The study makes it possible to estimate the photovoltaic solar energy of the sites vs. the type and yields of PV used and makes it possible to calculate the LCOE.

III.2.2. Techno-economic study of Tunisian wind potential (2018-2019)

Study carried out on behalf of the MMI group, intended to identify wind energy production areas in Tunisia with high economic potential. The study is based on a grid of 1575 nodes of the Tunisian territory (having an area of 0.1 Latitude x 0.1 Longitude). The study makes it possible to estimate the wind energy of the sites vs. the machines used (3) and makes it possible to calculate the LCOE.

III.2. 3. Techno-economic study of Algerian photovoltaic potential (2018-2020)

Study carried out on behalf of the Sotraco group, intended to identify photovoltaic solar production areas in Algeria with high economic potential. The study is based on a grid of 4385 nodes of the Algerian territory (having an area of 0.25 Latitude x 0.25 Longitude). The study makes it possible to estimate the photovoltaic solar energy of the sites vs. the type and yields of PV used and makes it possible to calculate the LCOE.

III.2. 4. Techno-economic study of Algerian wind potential (2019-2020)

Study carried out on behalf of the Sotraco group, intended to identify wind energy production areas in Algeria with high economic potential. The study is based on a grid of 43850 nodes of the Algerian territory (having an area of 0.25 Latitude x 0.25 Longitude). The study makes it possible to estimate the wind energy of the sites vs. the machines used (6) and makes it possible to calculate the LCOE.

III.2. 5. Algerian HES Diesel/Photovoltaic hybrid energy system dedicated to the agricultural sector Technical-economic study (2020)

Study carried out on behalf of CES Algeria, intended to identify fuel savings, carbon credits and the economic impact for the agricultural sector throughout Algeria, using a PV / diesel hybrid energy system. The study is based on a grid of 4385 nodes of the Algerian territory (having an area of 0.25 Latitude x 0.25 Longitude). The study makes it possible to estimate the energy produced by the sites according to the rate of renewable energies ranging from 0% to 40% in energy and makes it possible to calculate the LCOE.

III.3. PROFESSIONAL SKILLS IN THE RESEARCH SECTOR

III. 3.1. Porous environments and mixers:

- Ordered and unordered porous media
- Static mixers
- Two-phase flow phenomena in liquid, gas and oil or emulsion in water
- Mixing processes and devices Work in collaboration with the Research and Technology Transfer Center (CRTT) St-Nazaire (France)
- Expert in mixing in engineering processes “agri-food, cosmetics, pharmaceutical, etc.) with the Research and Technology Transfer Center (CRTT) St-Nazaire (France)

- Ultrasonic measurement methods, dedicated to two-phase flow Work financed and carried out in collaboration with the Center for Research and Technology Transfer (CRTT) St-Nazaire (France)
- Corrosion test loops: Work carried out in collaboration with USTHB/SONATRACH
- Identification of sites and causes of corrosion in an industrial environment
- Protocols for injecting corrosion inhibitors into two-phase flows

III.3.2. Energy/hydrogen storage:

- Researcher in the H2Can/HRI-UQTR project: Production of H2 from wind energy.
A1.1. Optimized production of hydrogen by electrolyzer from a renewable energy system for fuel cells and hydrogen generators.
- Researcher within the NSERC Engage/HRI-NHC program: Development of a design and analysis tool for electrolyzers.
- Hydrogen production by electrolyser powered by photovoltaic solar panel, wind turbine (experimental, Comsol, Matlab, Simulink simulation) CDER
- Modeling of the alkaline electrolyzer (HRI project)
- Modeling of the PEM electrolyzer (Next Hydrogen and HRI Project)
- HRI project to design diagnostic tools using electrolyzer
- Hydrogen production using fossil gas reformers and CnHm micro-reformers (Comsol Simulation) CDER
- SOFC, PEMFC fuel batteries (Comsol Simulation) Expertise developed with the Renewable Energy Development Center (CDRE)
- PEMFC (Experimental, Simulink Simulation) fuel cells developed with the Hydrogen Research Institute of Canada and the University of Quebec at Trois-Rivières, Canada.
- 2nd generation battery-fuel cell hybrid electric vehicles (developed by IRH, Canada)
- Member of H2CAN (Canadian Network of Hydrogen Experts, in 2011)

III.3.3. Renewable energy

- Renewable energies Work carried out within the Hydrogen Research Institute (HRI) of Trois Rivières Ca, on the storage and valorization of renewable energies (Photovoltaic, wind and hybrid).
- Carrying out technical-economic studies across the entire Algerian territory allowing the parameterized estimation of the production costs of renewable energies (photovoltaic, wind and hybrid sectors) from a network comprising 4385 measurement nodes. Allowing you to calculate all points (LCOE, DSCR, TRI, IRR equity, profitability index, ROI and NPV).
- Supervision of 4 doctoral theses in renewable energies and supervision of 6 Master theses in renewable energies (Hybrid, Solar Photovoltaic, wind and energy storage)
- Work on renewable energies carried out in collaboration with the Center for the Development of Renewable Energy (CDER) in Algiers on the production of hydrogen by electrolysis.
- Expert in Photovoltaic and Solar Thermal Installations with ER2-CDER (Study and Realization in Renewable Energies) subsidiary of the Center for the Development of Renewable Energies

III. 4. PROFESSIONAL SKILLS

- Easier in new mandates
- Great adaptability
- Flexibility in different technical areas

- Availability at the workplace
- Ability to work in a team and adapt to the requirements of the work mandate (travel, travel and overtime)
- Good communicator
- Ability to manage stressful situations and ability to push my colleagues to go further in their work
- Business development model
- Business plan
- Development and investment strategy
- Expertise in energy and renewable energies
- Expertise in developing industrial and service projects.
- A very good knowledge of Algerian companies, research centers and universities constituting the entire renewable energy value chain in Algeria, through the Algeria Solar Energy Cluster.

III.5. COMPUTER SKILLS

Computer:

- Software : PVSYST, SAM, Homer-Pro, Matlab, Simulink, Comsol, Fluent
- Microsoft software : Word, Excel Advanced, Power-point

IV- Teaching activities

IV.1 Educational activities

IV.1.1 Lessons

<i>College year</i>	<i>Grade</i>	<i>Module taught</i>
1995-1998	Assistant professor	Basic physics module at the Faculty of Physics from USTHB for common core engineering science-Biologist.
1998-1999	Assistant professor	Fundamental Physics at USTH Faculty of Physics Physics module for common core biology
1999-2007	Full professor	Fundamental Physics at USTH Faculty of Physics Physics module for common core biology.
2007-2009	Full professor	Microsoft Office
2003 - 2008	Full professor	Pedagogical module for the 4th year of Physics. Faculty of Physics, USTHB
2006-2010	Full professor	Computing for workers, teachers and PG students (Matlab, Linux, Office).
2008 – 2010	Lecturer / Full Professor	Co-responsible for the TP Stage Physics license
2012 - 2021	Lecturer / Full Professor	Basic Physics Module and Energy Conversion, Energy Storage at USTHB
Since 2023	Full professor	Green Hydrogen production by Renewable energies , Water production and utilisation and economic aspect in energy at USTHB

IV.1.2 Educational output

- Design and production of assemblies for the practical work of the didactic module of the 4th year of Physics. Faculty of Physics, USTHB
- Construction of a practical work manual dedicated to the didactic module.
- Design and construction of facilities for practical work for the Bachelor TP-internship at the Faculty of Physics.

IV.1.3 Research activities

Academic research projects

Period	Project title	Grade	Project No.
1999-2003	Two-phase flows with or without phase change	Research Associate	D 1602/11/99
2004-2007	Study of biphasic flows in a confined environment: Application to consolidated and unconsolidated cases in porous media	Researcher	D 1602/13/04
2008-2011	Analysis of two-phase flows with or without phase change: Study of mixing processes.	Researcher	No. 0022007070
2010-2012	Hydrogen production from wind energy: A1.1. Optimized production of hydrogen by electrolyzer from a renewable energy system for fuel cells and hydrogen generators	Researcher	H2Can/IRH-UQTR Canadian Hydrogen Research Network and Natural Sciences and Engineering Research Council of Canada (NSERC)
2011-2012	Development of a design and analysis tool for electrolyzers	Researcher	(CRNSG ENGAGE/IRH-Next Hydrogen Co NHC.

IV.2. Industrial research project

Since June 1999: Member of a research team within the framework of a research project with SONATRACH entitled: "METHOD OF EVALUATION OF ANTI-ICING CORROSION IN POLYPHASIC FLOW". » R&D Project - SH-1

IV.3. Internships and scientific training

Postdoctoral Fellowship 2010 -2012

Hydrogen Research Institute: Hydrogen Production by Electrolysis
University of Quebec at Trois-Rivières. Canada for 22 months.

Engage Project (HRI/Next Hydrogen) 2011-2012

Hydrogen Research Institute/ Next Hydrogen: Modeling and manufacturing of high-capacity PEM electrolysis for Next Hydrogen

Scientific training course 2010

Hydrogen Research Institute: Production of hydrogen by renewable energy, University of Quebec at Trois-Rivières. Canada, for 2 months.

Scientific training course 2007, 2004

Technology Transfer Research Center (CRTT): characterization of ultrasonic emulsions, St-Nazaire, Nantes, France, for 5 months.

Scientific cooperation

- Associate researcher at the Algiers Renewable Energies Development Center, Thermal Division 2005-2009.
- Associate researcher at the Algiers Renewable Energy Development Center, Hydrogen Division, Hydrogen production by renewable energy sources since 2009.

Scientific activities

A) Description of the fields and research themes invested as well as the expected results and impacts

The research carried out over the past seven years revolves around five themes, three of which are theoretical and numerical on the theme of renewable energies and two of an experimental and theoretical nature, relating to the mixtures of two-phase fluids induced by the presence of porous fluidized environments and porous as well as on static mixers, very present in industrial processes:

The first is oriented towards the study of the production of renewable energy through a hybrid system, taking into account the solar, wind and specific potential of Algeria. The second theme concerns the storage of renewable energies through an energy vector, namely hydrogen, whose production in quantity and quality is studied according to operational and climatic conditions. The third theme concerns the study of the potential uses of hydrogen in fuel cells, methanization and motorization, as well as the determination of the costs of hydrogen production throughout the territory (1541 municipalities within 4385 sites studied). The fourth theme is the study of multiphase flows in a fixed and fluidized porous environment and the determination of mixing times at the macro, meso and microscopic scale. Finally, the fifth theme is the study of two-phase flows through a static mixer and the determination of mixing times at macro, meso and microscale.

In what follows, we present the fields and research themes invested as well as the expected results and impacts.

1) Hybrid energy systems (SEH) are considered as a particular orientation towards the development and integration of renewable energies and more particularly in Algeria [1, 2], with the launch of calls for tenders of 50 MW/year of Sonatrach and SKTM which show the growing interest in this mode of energy production. HES generally consist of one or more conventional sources (diesel or gas turbine generator), supplemented by intermittent renewable sources. Estimating the yields of this type of installation is closely linked to the modeling of the different parts of this type of installation in order to determine, on the one hand, the quantities of fuel stored and, on the other hand, to identify the penetration rates. optimal ENR for each site [1]. The objective of the research theme is to identify the different existing models of each component of the system, to make a contribution to them through a more precise modeling of the elements of this type of installation and then to simulate their hourly behavior on a year in different regions of Algeria [1, 2]. The study of the penetration rate of renewable energy on fuel conservation has been specially studied and presented [3].

2) The second part deals with the storage of renewable energies thanks to an energy vector, namely hydrogen [4, 5, 6] whose production in quantity and quality is studied according to operating conditions such as temperature and the operating pressure [1, 3] as well as the climate

through the study of the performance of hydrogen production systems as a function of the ambient temperature of the region.

3) The third theme is the study of the potential uses of hydrogen produced from a diesel-PV hybrid system [1, 3] in fuel cells, methanization and motorization. The use of hydrogen produced from a wind-diesel hybrid source in a fuel cell has been studied on the Djanet site [2] then on several sites in different regions of Algeria [7], in order to compare their production-use potential. The economic impact of the production of hydrogen from a renewable photovoltaic source on the whole of the national territory (1541 municipalities out of 4385 sites studied) has been studied [6]. It has been used to map and identify the least costly wilayas and thus allow the emergence of a sustainable local economy [6].

4) The fourth theme concerns the experimental study of multiphase flows in a fixed and fluidized porous medium and the determination of mixing times at the macro, meso and micro scale. This study aims to work on two aspects, the first experimental to extend the speed measurement method from an ultrasonic probe already used in our previous work [8]. A second aspect is the generalization of the determination of the mixing quality, through the quantification of macro-mixing, meso and micro-mixing times, already used in previous works on other flow schemes [9].

5) The fifth topic that we approached is the experimental study of two-phase flows through a static mixer and the determination of the mixing time at the macro, meso and microscale, following the work on static mixers carried out [9]. The objective of the study is to study the quality of the mixing of fluids according to the flow regimes and the number of static mixers in place. A theoretical study has proposed new correlations to identify diets for optimal mixing rates.

B) Scientific output

I. International Publications

[1] Youcef Zenati , **M'hamed Hammoudi**, Abderraouf Arabi, Jack Legrand and El-Khider Si-Ahmed, Pressure Drops for Turbulent Liquid Single-Phase and Gas–Liquid Two-Phase Flows in Komax Triple Action Static Mixer, *Fluids* 2025, 10, 259. <https://doi.org/10.3390/fluids10100259>

[2] M. Hosni, **M. Hammoudi** , Ek. SiAhmed, J. Legrand, L. Douib, Single and two-phase flows in a horizontal pipe with a Kenics static mixer: effect of pressure drop on mixing, *The Canadian Journal of Chemical Engineering* - Manuscript number CJCE-21-0271 (2022) .

[3] H. Ouldrebai, EK Si-Ahmed, **M. Hammoudi**, J. Legrand, Y. Salhi & J. Pruvost “A Laser Multi-Reflection Technique Applied for Liquid Film Flow Measurements”, *Experimental Techniques* volume 43, pages213–223 (2019)

[4] Kirati SK, **Hammoudi M.** , Mousli IAM, “Hybrid Energy System for hydrogen production in the Adrar region (Algeria): production rate and purity level”. International Journal of Hydrogen Energy 43 (2018) 3378-3393.

[5] Baik M., **Hammoudi M.**, Salhi Y., Kirati SK, “Hydrogen production by hybrid system and its conversion by fuel cell in Algeria; Djanet”. International Journal of Hydrogen Energy 43 (2018) 3466-3474.

[6] Kirati SK, **Hammoudi M.** , Mousli IAM, “Effect of temperature and pressure on production rate and purity level of hydrogen and oxygen produced by an electrolyzer supplied by HES in the Adrar region”. The 2nd International Symposium on Sustainable Hydrogen, ISSH2' 2017 Proceedings, Edited by UNESCO, November 2017.

[7] **Hammoudi M.** , Henaou C., Agbossou K., Dubé Y., Doumbia ML., New multi-physics approach for modeling and design of alkaline electrolyzers. International Journal of Hydrogen Energy 37 (2012) 13895 – 13913.

[8] **Christian Henaou, Kodjo Agbossou, Mhamed Hammoudi** , Yves Dubé, Alben Cardenas, Simulation tool based on a physics model and an electrical analogy for an alkaline electrolyzer, Journal of Power Sources 250 (2014) 58-67.

[9] Mousli I., **Hammoudi M.** , Kirati SK, “Comparative study of LCOE and Hydrogen production costs by PV-electrolyser system in different representative regions of Algeria.”. The 2nd International Symposium on Sustainable Hydrogen, ISSH2' 2017 Proceedings, Edited by UNESCO, November 2017.

[10] Baik M., **Hammoudi M.** , Kirati SK, Salhi Y., “Contribution to the study of the production of wind energy and hydrogen in different sites of Algeria.”. The 2nd International Symposium on Sustainable Hydrogen, ISSH2' 2017 Proceedings, Edited by UNESCO, November 2017.

[11] **M. Hammoudi**, J. Legrand, EK Si-Ahmed, A. Salem, Flow analysis by pulsed ultrasonic velocimetry technique in Sulzer SMX static mixer, Chemical Engineering Journal, Volume 139, Issue 3, 15 June 2008, Pages 562– 574

[12] **M. Hammoudi**, EK SI-Ahmed J. Legrand, Dispersed two-phase flow analysis by pulsed ultrasonic velocimetry in SMX static mixer, Flow analysis by pulsed ultrasonic velocimetry technique in Sulzer SMX static mixer, Chemical Engineering Journal, Volume 191, 2012, 463– 474.

II. Communications at international conferences

International communications with deed				
Article title	Author position	Title of the event and location	Year	URL address

Hydrogen quantity and quality produced by electrolyzer system fed by “HES” in Sahara site of Algeria	2 nd	The 1st ^{International} Symposium on Sustainable Hydrogen, Algiers	2016	https://www.cder.dz/spip.php?rubrique437
Simulation of hydrogen production from RE Energy and its utilization by fuel cell in Algeria; Djanet	2 nd	The 1st ^{International} Symposium on Sustainable Hydrogen, Algiers	2016	https://www.cder.dz/spip.php?rubrique437
Effect of temperature and pressure on production rate and purity level of hydrogen and oxygen produced by an electrolyzer supplied by HES in the Adrar region	2 nd	The 2nd ^{International} Symposium on Sustainable Hydrogen, Algiers	2017	https://www.cder.dz/spip.php?rubrique470 ISBN: 978-9931-9366-1-9
Contribution to the study of the production of wind energy and hydrogen in different sites of Algeria.	2 nd	The 2nd ^{International} Symposium on Sustainable Hydrogen, Algiers	2017	https://www.cder.dz/spip.php?rubrique470 ISBN: 978-9931-9366-1-9
Comparative study of LCOE and Hydrogen production costs by PV-electrolyser system in different representative regions of Algeria.	2 nd	The 2nd ^{International} Symposium on Sustainable Hydrogen, Algiers	2017	https://www.cder.dz/spip.php?rubrique470 ISBN: 978-9931-9366-1-9
On Liquid Film Measurements using laser multi-reflection technic	3 rd	10th world congress of chemical engineering, Barcelona, Spain	2017	www.wcce10.org/images/site/Programa_Largo_WCCE10_DIGITAL.PDF

1. **May 2012** : K. Ettahir, L. Boulon, K. Agbossou, S. Kelouwani, **M. Hammoudi** , Design of an Energy Management Strategy for PEM Fuel Cell Vehicles, 21st IEEE, International Symposium On Industrial Electronics, ISIE, 28-31 May Hangzhou, China.
2. **May 2011**: - **M. Hammoudi** , C. Henao, K. Agbossou, Y. Dubé, Inter-Dependence and Relative Influence of Physical and Electrochemical Phenomena in Alkaline Electrolysis , Hydrogen and Fuel Cells International Conference and Exhibition, (HFC) 16-18 May 2011, Vancouver, Canada.
3. **May 2011**: - C. Henao, **M. Hammoudi** , K. Agbossou, Y. Dubé, A new modeling approach for alkaline electrolyzers using thermodynamic, electrochemical and material properties, Hydrogen and Fuel Cells International Conference and Exhibition, (HFC) 16-18 May 2011, Vancouver, Canada.
4. **May 2011**: - K. Belmokhtar, ML Doumbia, K. Agbossou, **M. Hammoudi** , Hydrogen Production from Hybrid Wind Energy System, Hydrogen Fuel Cell Conference, (HFC) 16-18 May 2011, Vancouver, Canada.

5. **August 2010: M. Hammoudi** , EK Si-Ahmed, J. Legrand, A. Arhaliass, 'Note on Dispersed two phase flow analysis by PUV in SMX', 8th World Congress of Chemical Engineering, Canada .
6. **October 2007: M. Hammoudi** , J. Legrand, EK Si-Ahmed, A. Salem, Analysis of Monophasic Flows within an SMX-Type Static Mixer by Pulsed Ultrasonic Velocimetry, International Conference on Process Engineering Béjaïa, 28, 29 and October 30, 2007.
7. **June 2006: M. Hammoudi** , EK Si-Ahmed, J. Legrand, A. Salem, MIXING 2006 “ EXPERIMENTAL INVESTIGATION OF A VELOCITY FIELD THROUGHOUT STATIC MIXER SMX” 12th European Conference on Mixing Bologna, 27-30 June 2006.
8. **September 2005: Y. SALHI, M. HAMMOUDI** , EK SI AHMED, F. ALOUI and M. SOUHAR: Analysis of pressure and velocity distributions of turbulent asymmetric flow in a symmetric flat duct with sudden expansion. ECI, Castelvechio Pascoli, Lucca, Italy 25-30 September, 2005.
9. **September 2005: Y. SALHI, M. HAMMOUDI** , L. AZZOUN and EK SI AHMED: On the velocity and pressure fields of a turbulent asymmetric flow with sudden expansion. HEFAT 2005, Cairo, Egypt, 19-22 September 2005.
10. **June 2004: K.DAOUD, M. HAMMOUDI** , H. ABCHICHE, Experimental analysis of hydrodynamics and influence of temperature in a dryer, International thermal science seminar, ITSS II, ASME-ZSIS, June 13-16, 2004, Bled, Slovenia.
11. **August 2002: K.DAOUD, M.HAMMOUDI** , H.ABCHICHE, Z. DJELLAB, *A study of transport phenomena in a dryer with immersed channels* ; 15th International Congress of Chemical and Process Engineering, August 25-29, 2002; Prague, Czech Republic.
12. **October 2002: K. DAOUD, M. HAMMOUDI** , H. ABCHICHE, Hydrodynamic study and modeling of a food dryer by a piston reactor model with double dispersion , 4th Francophone Days on gas-liquid and gas-liquid-solid reactors October 8, 2002 ; Heurbeumont-sur-Semois; Belgium.
13. **June 2001: K.DAOUD, M.HAMMOUDI** , A.LESLOUS, The approach of Nedderman by the plug in consideration of rubbing forces between particles and wall friction , poster N° 13-13; 3rd European Congress of Chemical Engineering; June 26-28, 2001; Nuremberg; Germany.
14. **August 2001: K.DAOUD, M.HAMMOUDI** , A.LESLOUS, Determination of velocity fields in gravity flow with a new approach ; To post; HUN-Partec Congress;International conference practical aspects of particle technology; Budapest; Hungary; August 21-24, 2001
15. **August 1999: K.DAOUD, M.HAMMOUDI** , A.LESLOUS , Contribution to the modeling of the gravity flow inside a cylindrical silo , N° 172; 14th French Congress of Mechanics; August 30-Sept 3, 1999; Toulouse; France.

II. Communications at national conferences

1. **April 2007:** Y. SALHI, **M. HAMMOUDI** , EK SI AHMED. Note on transition from stratified flow to ladle/plug flow in horizontal pipe. JSP11, USTHB, April 2007.
2. **December 2004:** **M. HAMMOUDI** , EK SI-AHMED, K Daoud, K, Chikh: Statistical and dynamic characterization of granular flows in cylindrical storage silos. CNPA 2004 Tizi Ouzou 5- 7 Décembre 2004.
3. **December 2004:** **M. HAMMOUDI** , EK SI AHMED: Measurement of the velocity profiles of a two-phase flow by pulsed ultrasonic velocimetry (VUP): application to the characterization of a clogged porous medium. CNPA 2004 Tizi Ouzou 5- 7 Décembre 2004.
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