

Hassan ASSOUM

1. Name and academic rank

Hassan Assoum, Associate Professor at Beirut Arab University, full time and member at LaSIE Laboratory in France (UMR CNRS 7356)

2. Education – degree, discipline, institution, year

- H.D.R: Ability to conduct researches diploma from France (obtained in 2022)
- Ph.D., Mechanical Engineering, University of La Rochelle, France, 2013.
- M.Sc., Mechanical Engineering, University of Technology of Compiègne, France, 2010.

3. Academic and Professional experience

3.1. Academic experience

- Beirut Arab University (BAU), Lebanon, Fall 2014-present, full time.
- University of La Rochelle, France, Lecturer, 2013-2014, full time.
- University of La Rochelle, France, Lecturer, September 2011-August 2013, part time.

3.2. Non-academic experience

Peugeot-Citroen: Centre of Research - Paris, Full time, 2010.

4. Professional credentials, certificates, or licensing

Authorization to practice engineering profession in Lebanon, since 2014.

5. Professional development activities

- Invited professor to SYDNEY University (2023)
- Scholarship for PhD student (SAFAR 2020-2023)
- Research stays in La Rochelle University funded by the AUF (2022).

6. Contribution to the discipline

6.1. Service activities

Member of the Faculty of Engineering Scientific Research committee at BAU.

Member of the University committee of Graduate Studies and Research

Member of the Faculty of Engineering Self-study Report committee at BAU.

6.2. Publications

6.2.1. Journal publications

- El Zohbi, B.; Assoum, H. H.; Alkheir, M.; Afyouni, N.; Meraim, K. A.; Sakout, A.; El Hassan, M. Experimental Investigation of the Aero-Acoustics of a Rectangular Jet Impinging a Slotted Plate for Different Flow Regimes. *Alexandria Engineering Journal* 2024, 87, 404–416. <https://doi.org/10.1016/j.aej.2023.12.047>.
- Yakhni, M. F.; Cauet, S.; Sakout, A.; Assoum, H.; Etien, E.; Rambault, L.; El-Gohary, M. Variable Speed Induction Motors' Fault Detection Based on Transient Motor Current Signatures Analysis: A Review. *Mech Syst Signal Process* 2023, 184. <https://doi.org/10.1016/j.ymsp.2022.109737>.
- Yakhni, M. F.; Cauet, S.; Sakout, A.; Assoum, H.; El-Gohary, M. Online Condition Monitoring of a Vacuum Process Based on Adaptive Notch Filters; *Studies in Systems, Decision and Control*; Springer Science and Business Media Deutschland GmbH, 2023; Vol. 467. https://doi.org/10.1007/978-3-031-27540-1_6.
- Assoum, H. H.; El Kheir, M.; Eldin Afyouni, N.; El Zohbi, B.; Abed Meraim, K.; Sakout, A.; El Hassan, M. Control of a Rectangular Impinging Jet: Experimental

Investigation of the Flow Dynamics and the Acoustic Field. *Alexandria Engineering Journal* 2023, 79, 354–365. <https://doi.org/10.1016/j.aej.2023.07.078>.

- Alkheir, M.; Assoum, H.; Afyouni, N. E.; El Zohbi, B.; Meraim, K. A.; Sakout, A.; El Hassan, M. Interaction of a Rectangular Jet with a Slotted Plate in Presence of a Control Mechanism: Experimental Study of the Aeroacoustic Field. In *Mater. Res. Proc.*; Carrera E., Djavanroodi F., Asad M., Eds.; Association of American Publishers, 2023; Vol. 31, pp 614–621. <https://doi.org/10.21741/9781644902592-63>.
- Afyouni, N. E.; Alkheir, M.; Assoum, H.; El Zohbi, B.; Abed-Meraim, K.; Sakout, A.; El Hassan, M. Effect of a Control Mechanism on the Interaction between a Rectangular Jet and a Slotted Plate: Experimental Study of the Aeroacoustic Field. *Fluids* 2023, 8 (12). <https://doi.org/10.3390/fluids8120309>.
- Yakhni, M. F.; Hosni, H.; Cauet, S.; Sakout, A.; Etien, E.; Rambault, L.; Assoum, H.; El-Gohary, M. Design of a Digital Twin for an Industrial Vacuum Process: A Predictive Maintenance Approach. *Mach.* 2022, 10 (8). <https://doi.org/10.3390/machines10080686>.
- El Hassan, M.; Assoum, H.; Bukharin, N.; Al Otaibi, H.; Mofijur, M.; Sakout, A. A Review on the Transmission of COVID-19 Based on Cough/Sneeze/Breath Flows. *Eur. Phys. J. Plus* 2022, 137 (1). <https://doi.org/10.1140/epjp/s13360-021-02162-9>.
- Assoum, H. H.; Hamdi, J.; Alkheir, M.; Meraim, K. A.; Sakout, A.; Obeid, B.; Hassan, M. E. Tomographic Particle Image Velocimetry and Dynamic Mode Decomposition (Dmd) in a Rectangular Impinging Jet: Vortex Dynamics and Acoustic Generation. *Fluids* 2021, 6 (12). <https://doi.org/10.3390/fluids6120429>.
- Alkheir, M.; Assoum, H. H.; Afyouni, N. E.; Meraim, K. A.; Sakout, A.; Hassan, M. E. Combined Stereoscopic Particle Image Velocimetry Measurements in a Single Plane for an Impinging Jet around a Thin Control Rod. *Fluids* 2021, 6 (12). <https://doi.org/10.3390/fluids6120430>.
- Hamdi, J.; Assoum, H.; Abed-Meraïm, K.; Sakout, A. Analysis of the Effect of the 3C Kinematic Field of a Confined Impinging Jet on a Slotted Plate by Stereoscopic PIV. *Eur J Mech B Fluids* 2019, 76, 243–258. <https://doi.org/10.1016/j.euromechflu.2019.02.012>.
- Assoum, H. H.; Hamdi, J.; Abed-Meraïm, K.; Kheir, M. A.; Mrach, T.; Soufi, L. E.; Sakout, A. Spatio-Temporal Changes in the Turbulent Kinetic Energy of a Rectangular Jet Impinging on a Slotted Plate Analyzed with High Speed 3D Tomographic-Particle Image Velocimetry. *Int. J. Heat Technol.* 2019, 37 (4), 1071–1079. <https://doi.org/10.18280/ijht.370416>.
- Hamdi, J.; Assoum, H.; Abed-Meraïm, K.; Sakout, A. Volume Reconstruction of an Impinging Jet Obtained from Stereoscopic-PIV Data Using POD. *Eur J Mech B Fluids* 2018, 67, 433–445. <https://doi.org/10.1016/j.euromechflu.2017.09.001>.

- Assoum, H. H.; El Hassan, M.; Abed-Meraim, K.; Sakout, A. The Vortex Dynamics and the Self Sustained Tones in a Plane Jet Impinging on a Slotted Plate. *Eur J Mech B Fluids* 2014, 48, 231–235. <https://doi.org/10.1016/j.euromechflu.2014.06.008>.
- El Hassan, M.; Assoum, H. H.; Martinuzzi, R.; Sobolik, V.; Abed-Meraim, K.; Sakout, A. Experimental Investigation of the Wall Shear Stress in a Circular Impinging Jet. *Phys. Fluids* 2013, 25 (7). <https://doi.org/10.1063/1.4811172>.
- Assoum, H. H.; Hassan, M. E.; Abed-Meraim, K.; Martinuzzi, R.; Sakout, A. Experimental Analysis of the Aero-Acoustic Coupling in a Plane Impinging Jet on a Slotted Plate. *Fluid Dyn. Res.* 2013, 45 (4). <https://doi.org/10.1088/0169-5983/45/4/045503>.
- El Hassan, M.; Assoum, H. H.; Sobolik, V.; Vétel, J.; Abed-Meraim, K.; Garon, A.; Sakout, A. Experimental Investigation of the Wall Shear Stress and the Vortex Dynamics in a Circular Impinging Jet. *Exp Fluids* 2012, 52 (6), 1475–1489. <https://doi.org/10.1007/s00348-012-1269-5>.
- Assoum, H. H.; Sakout, A.; Abed-Meraim, K.; Alia, A.; Hassan, M. E.; Vetel, J. Experimental Investigation of the Vibration of a Slotted and a Non-Slotted Plates and the Acoustic Field in a Plane Impinging Jet. In *Proc. European Conf. Noise Control*; Prague, 2012; pp 801–806.

6.2.2. Conference Proceedings

- Mjalled, A.; El Hassan, M.; Assoum, H. H.; Mönnigmann, M. Data-Driven Modeling Using Convolutional Neural Network for Experimental Velocity Fields of an Impinging Jet. In *Eur. Model. Simul. Symp., EMSS; Affenzeller M., Bruzzone A.G., Jimenez E., Longo F., Petrillo A., Eds.; Cal-Tek srl, 2023; Vol. 2023-September*. <https://doi.org/10.46354/i3m.2023.emss.027>.
- Mrach, T.; Alkheir, M.; El Hassan, M.; Assoum, H. H.; Etien, E.; Abed-Meraim, K. Experimental Study of the Thermal Effect on the Acoustic Field Generated by a Jet Impinging on a Slotted Heated Plate. *Energy Rep.* 2020, 6, 497–501. <https://doi.org/10.1016/j.egy.2020.11.207>.
- Hamdi, J.; Assoum, H. H.; Alkheir, M.; Abed-Meraim, K.; Cauet, S.; Sakout, A. Analysis of the 3D Flow of an Impinging Jet on a Slotted Plate Using TR-Tomo PIV and Proper Orthogonal Decomposition. *Energy Rep.* 2020, 6, 158–163. <https://doi.org/10.1016/j.egy.2020.11.269>.
- El Hassan, M.; Assoum, H. H.; Bukharin, N.; Abed-Meraim, K.; Sakout, A. Investigation of Thermo-Physical Fluid Properties Effect on Binary Fluid Ejector Performance. *Energy Rep.* 2020, 6, 287–292. <https://doi.org/10.1016/j.egy.2019.11.076>.
- Assoum, H. H.; Hamdi, J.; El-Hassan, M.; Abed-Meraim, K.; El Kheir, M.; Mrach, T.; El Asmar, S.; Sakout, A. Turbulent Kinetic Energy and Self-Sustaining Tones: Experimental Study of a Rectangular Impinging Jet Using High Speed 3D

Tomographic Particle Image Velocimetry. *J. Mech. Eng. Sci.* 2020, 14 (1), 6322–6333. <https://doi.org/10.15282/jmes.14.1.2020.10.0495>.

- Assoum, H. H.; Hamdi, J.; El Hassan, M.; Mrach, T.; Abed Meraim, K.; Sakout, A. Energy Transfers between Aerodynamic and Acoustic Fields in a Rectangular Impinging Jet. *Energy Rep.* 2020, 6, 812–816. <https://doi.org/10.1016/j.egy.2020.03.009>.
- Assoum, H. H.; El Hassan, M.; Hamdi, J.; Alkheir, M.; Meraim, K. A.; Sakout, A. Turbulent Kinetic Energy and Self-Sustaining Tones in an Impinging Jet Using High Speed 3D Tomographic-PIV. *Energy Rep.* 2020, 6, 802–806. <https://doi.org/10.1016/j.egy.2019.12.018>.
- Alotaibi, H. M.; El Hassan, M.; Assoum, H. H.; Meraim, K. A.; Sakout, A. A Review Paper on Heat Transfer and Flow Dynamics in Subsonic Circular Jets Impinging on Rotating Disk. *Energy Rep.* 2020, 6, 834–842. <https://doi.org/10.1016/j.egy.2020.11.124>.
- Jabado, A. H.; El Hassan, M.; Assoum, H. H.; Hammoud, A.; Meraim, K. A.; Sakout, A. A Review of Cavity Heat Transfer under Separated/Reattached Flow Conditions. *Energy Rep.* 2022, 8, 949–956. <https://doi.org/10.1016/j.egy.2021.11.066>.
- El Zohbi, B.; Bukharin, N.; Assoum, H. H.; Abed-Meraim, K.; Sakout, A.; El Hassan, M. Investigation of the Effects of the Jet Nozzle Geometry and Location on the Performance of Supersonic Fluid Ejectors. *Energy Rep.* 2022, 8, 228–233. <https://doi.org/10.1016/j.egy.2022.01.029>.
- Alkheir, M.; Assoum, H. H.; Hamdi, J.; Mrach, T.; EL Hassan, M.; Sakout, A. Experimental Study of the Vortex Organization in a Rectangular Impinging Jet in the Presence of Self-Sustained Tones. *Energy Rep.* 2022, 8, 1486–1492. <https://doi.org/10.1016/j.egy.2021.11.275>.
- Hamdi, J.; Assoum, H. H.; Abed-Meraïm, K.; Sakout, A. Volume Reconstruction of a Plane Jet Impinging on a Slotted Plate Using the Phase Averaging Technique. In *Energy Procedia*; El Ganaoui M., Belarbi R., Mimet A., Bennacer R., Eds.; Elsevier Ltd, 2017; Vol. 139, pp 404–409. <https://doi.org/10.1016/j.egypro.2017.11.229>.
- Assoum, H. H.; Hamdi, J.; Abed-Meraïm, K.; El Hassan, M.; Hammoud, A.; Sakout, A. Experimental Investigation the Turbulent Kinetic Energy and the Acoustic Field in a Rectangular Jet Impinging a Slotted Plate. In *Energy Procedia*; El Ganaoui M., Belarbi R., Mimet A., Bennacer R., Eds.; Elsevier Ltd, 2017; Vol. 139, pp 398–403. <https://doi.org/10.1016/j.egypro.2017.11.228>.
- Assoum, H. H.; Hamdi, J.; Abed-Meraïm, K.; El Hassan, M.; Ali, M.; Sakout, A. Correlation between the Acoustic Field and the Transverse Velocity in a Plane Impinging Jet in the Presence of Self-Sustaining Tones. In *Energy Procedia*; El

Ganaoui M., Belarbi R., Mimet A., Bennacer R., Eds.; Elsevier Ltd, 2017; Vol. 139, pp 391–397. <https://doi.org/10.1016/j.egypro.2017.11.227>.

- Jabado, A. H.; Assoum, H. H.; Hammoud, A.; Meraim, K. A.; Sakout, A.; El Hassan, M. Review-Heat Transfer Inside Cavity Flows Trends. In IOP Conf. Ser. Earth Environ. Sci.; IOP Publishing Ltd, 2022; Vol. 1008. <https://doi.org/10.1088/1755-1315/1008/1/012002>.
- Hamdi, J.; Assoum, H.; Alkheir, M.; Cauet, S.; Rambault, L.; Abed-Meraïm, K. Comparison of the Dynamics of Parallel Planes in a Confined Jet Impinging on a Slotted Plate Using TR-PIV Measurements. In IOP Conf. Ser. Earth Environ. Sci.; IOP Publishing Ltd, 2022; Vol. 994. <https://doi.org/10.1088/1755-1315/994/1/012008>.
- Dahanni, H.; Rima, A.; Abahri, K.; Hachem, C. E.; Assoum, H. Impact of the 3D Morphology on the Hygro-Thermal Transfer of Hygroscopic Materials: Application to Spruce Wood. In J. Phys. Conf. Ser.; Qin M., Rode C., Eds.; IOP Publishing Ltd, 2021; Vol. 2069. <https://doi.org/10.1088/1742-6596/2069/1/012008>.