MARCO ARNESANO

EDUCATION

UNIVERSITA' POLITECNICA DELLE MARCHE — Ancona, Italy
Ph.D. in Mechanical and Management Engineering — February 2013
Thesis: *Design of a comfort-based smart metering system for sport and recreational buildings*
Advisor Prof. Gian Marco Revel

UNIVERSITA' POLITECNICA DELLE MARCHE — Ancona, Italy
Master's Degree cum laude in Mechanical Engineering — July 2009
Thesis: *Design and development of an infrared-based system for monitoring thermal conditions and thermo-hygrometric comfort in office environments*
Advisor Prof. Gian Marco Revel

UNIVERSITA' POLITECNICA DELLE MARCHE — Ancona, Italy
Bachelor's Degree in Mechanical Engineering — March 2006
Thesis: *Re-layout of an assembly line in a metalworking company*
Advisor Prof. Giancarlo Giaccchetta

LICEO SCIENTIFICO LEONARDO DA VINCI — Jesi, Italy
Scientific High School Diploma — July 2001

AWARDS AND HONORS

FFABR (Award Individual annual funding of basic research activities), MUR, 2017
SBO Certification for Buildings Automation, Schneider Electric, 2015

TEACHING EXPERIENCE

ECAMPUS UNIVERSITY — Novedrate, Italy

Instructor, Department of Theoretical and Applied Sciences: Measurements for Quality Control, 2022-present.
Lectures and exams for Master's Degree in Industrial Engineering (9 ECTS); emphasis on measurement systems and signal processing for diagnostic systems in quality control.

Instructor, Department of Theoretical and Applied Sciences: Mechanical and Thermal Measurement, 2019-2025.

Lectures and exams for Bachelor's Degree in Industrial Engineering (9 ECTS); emphasis on metrology and sensors for measuring displacement, temperature, velocity, pressure, force.

Instructor, Department of Theoretical and Applied Sciences: Measurements Laboratory and Advanced Statistics, 2019-2024.
Lecture and tutoring for Ph.D Program in Sciences Applied to Wellness and Sustainability; emphasis on uncertainty analysis, statistical analysis and data visualization.

Instructor, Department of Theoretical and Applied Sciences: Mechanical and Thermal Measurement, 2019-2021.
Lectures and exams for Bachelor's Degree in Computer and Automation Engineering (6 ECTS); emphasis on metrology and sensors for measuring displacement, temperature, velocity, pressure, force.

Instructor, Department of Theoretical and Applied Sciences: Sensor Systems for UAVs, 2017-present.
Lectures and exams for Bachelor's Degree in Computer and Automation Engineering (9 ECTS); emphasis on sensors for UAV control and measurements systems applied to UAVs.

Instructor, Department of Theoretical and Applied Sciences: Building Efficiency Measurement and Control, 2017-presente.
Lectures and exams for Bachelor's Degree in Civil Engineering (6 ECTS); emphasis on sensors and measurement systems for buildings monitoring and energy performance evaluation.

OSTRAVA UNIVERSITY Ostrava, Czech Republic

Instructor, Faculty of medicine: Biomechanics, 2022-present.
Lectures for Bachelor's Degree in Physiotherapy; emphasis on biomechanical analysis of human body and human movement.

Instructor, Faculty of medicine: Biophysics, 2022-today.
Lectures for Bachelor's Degree in Physiotherapy; emphasis on basic elements of modern Physics and of Theoretical Physics.

TEACHING INTERESTS

Metrology, Sensors, Measurements (applied to indoor environment, quality control, wearable systems), Data analysis.

LEADERSHIP AND SERVICE

Head of the Department of Theoretical and Applied Sciences, eCampus University, 2024-present.

Coordinator of the Bachelor and Master's Degree Programs in Computer and Automation Engineering, 2024 – present.

Member of the Academic Board of the PhD Science Applied to Wellness and Sustainability, 2020-present.

Coordinator of the Bachelor and Master's Degree Programs in Industrial Engineering, 2019 – 2024.

President of the Commission for the evaluation of acquired skills at the end of the training path by the ITS Foundation for Life Sciences (program 2018–2020, 2019–2021, and 2022–2024).

Member of the Examination Board for awarding the PhD title in Energy and Sustainable Development – Cycles XXXIII and XXXIV (CIRIAF, University of Perugia).

Member of the Examination Board for awarding the PhD title in Engineering Sciences at the Technische Universität Berlin (TU Berlin), Faculty VI – Planning Building Environment (05/01/2023).

Member of the final examination committee for the PhD in Applied Sciences for Well-being and Sustainability – Cycle XXXVI (University eCampus, Rectoral Decree 03/24 of 05/06/2024).

Member of the Examination Board for awarding the PhD title in Industrial Engineering – Cycles XXXV and XXXVI (Polytechnic University of Marche, Rectoral Decree No. 194 of 16/02/2024).

Member of the Evaluation Committee for the public selection 6/2023/PRO – Researcher position (INRIM – National Institute of Metrological Research, Decree No. 219/2024 of 20/06/2024).

Member of the Evaluation Committee for the recruitment of a fixed-term researcher (Junior position – RTDA) at Politecnico di Milano (Position 2024_RTDA_DMEC_4, SSD ING-IND/12).

PROFESSIONAL EXPERIENCE

ECAMPUS UNIVERSITY Novedrate, Italy

Scientific Advisor, DiSTA September 2024 - present

Supporting AWEAR, a U.S. startup company, for the development of a new wearable EEG device applied to mental health monitoring.

Scientific Advisor, DiSTA September 2024 - present

Supporting K-SPORT, a Italian startup company, for the development a wearable device applied to sport performance measurement.

Principal Investigator, DiSTA September 2023 - present

Coordination of the national project WEPOP - WEarable Platform for OptImised Personal comfort (PRIN2022).

Responsible Research Unit, DiSTA September 2019 – March 2023

Management of the national project NEXT.COM - Towards the NEXT generation of multiphysics and multidomain environmental COMfort models: theory elaboration and validation experiment (PRIN2017).

Responsible Research Unit, DiSTA September 2019 – October 2022

Management of the European project BIM-SPEED - Harmonised Building Information Speedway for Energy-Efficient Renovation (H2020).

POLYTECHNIC UNIVERSITY OF MARCHE Ancona, Italy

Member of Research Unit, DIISM 2017 –2019

Sub-task leader of the European project RENOZEB - Accelerating Energy renovation solution for Zero Energy buildings and Neighbourhoods (H2020).

Member of Research Unit, DIISM 2016 –2019

Work package leader of the European project P2ENDURE - Plug-and-Play product and process innovation for Energy-efficient building deep renovation (H2020).

Member of Research Unit, DIISM 2015 –2018

Task leader of the European project NEWTREND - New integrated methodology and Tools for Retrofit design towards a next generation of ENergy efficient and sustainable buildings and Districts (H2020).

Member of Research Unit, DIISM 2010 –2014

Task leader of the European project CETIEB - Cost-Effective Tools for Better Indoor Environment in Retrofitted Energy Efficient Buildings (FP7).

Member of Research Unit, DIISM 2010 –2014

Work package leader of the European project SPORTE2-Intelligent Management System to integrate and control energy generation, consumption and exchange for European Sport and Recreation Buildings (FP7).

TECNOPLAST GROUP **Monte San Vito, Italy**

Engineering Manager, 2006-2007

Management of the industrialization process applied to new products in the fields of domestic equipment production.

TECHNICAL SKILLS

Development of measurement systems, scientific computation, signal processing, machine learning, data analysis, coding in several environments.

PUBLICATIONS

1. G.M. Revel, E. Sabbatini, M. Arnesano, *A new thermography based system for real-time energy balance in the built environment*, **10th Rehva world congress, Clima 2010**, Antalya (Turkey). ISBN: 978-975-6907-14-6.
2. G.M. Revel, E. Sabbatini, M. Arnesano, *Development and experimental evaluation of a thermography measurement system for real-time monitoring of comfort and heat rate exchange in the built environment,* **Measurement Science and Technology**, 2012, 23(3), doi: 10.1088/0957-0233/23/3/035005.
3. G.M. Revel and M. Arnesano, *Design of a comfort-based monitoring approach for energy efficiency in Sport & Recreational buildings*, **7th International Conference on Energy Efficiency in Commercial Buildings** (IEECB'12), Lighting & Building Performance, Frankfurt (Germany).
4. G.M. Revel, M. Arnesano, F. Pietroni, *An innovative low cost IR system for real-time measurement of human thermal comfort*, Conference proceedings in **IAQ 2013: Environmental Health in Low Energy Buildings**, Vancouver (Canada).
5. G.M. Revel, M. Arnesano, F. Pietroni, *A low-cost sensor for real-time monitoring of indoor thermal comfort for ambient assisted living*, Conference proceedings in **ForItAAL 2013, 4° Forum Italiano per l'Ambient Assisted Living**, Ancona (Italy).
6. J. Frick, M. Reichert, G. Baumbach, S. Shuyang, A. Neuwirth, M. Krüger, K. Schmitt, J. Huber, M. Ebermann, L. Pockelé, A. Khanlou, A. Ekonomakou, J. Balau, G.M. Revel, M. Arnesano, F. Pietroni, *Monitoring and Improvement of Indoor Environments in Cultural Heritage*, Conference proceedings in **EWCHP 2013: European Workshop on Cultural Heritage Preservation**.
7. G.M. Revel, M. Arnesano, F. Pietroni, J. Frick, M. Reichert, M. Krüger, K. Schmitt, J. Huber, M. Ebermann, L. Pockelé, A. Khanlou, A. Ekonomakou, J. Balau, C. Pascale, F. De Falco, R. Landò, U. Battista, J. Stuart, *Advanced tools for the monitoring and control of indoor air quality and comfort*, **Environmental Engineering and Management Journal**, September 2013, Vol.12, No. 9.

8. G.M. Revel and M. Arnesano, *Perception of the thermal environment in sports facilities through subjective approach,* **Building and Environment**, 2014, Vol. 77, pp 12-19
9. G.M. Revel, M. Arnesano and F. Pietroni, *A Low-Cost Sensor for Real-Time Monitoring of Indoor Thermal Comfort for Ambient Assisted Living*. **Ambient Assisted Living**, Springer International Publishing Switzerland 1: 3-12 DOI: 10.1007/978-3-319-01119-6-1
10. G.M. Revel and M. Arnesano, *Measuring overall thermal comfort to balance energy use in sports facilities,* **Measurement**, 2014, Vol. 55, pp 382-393
11. G.M. Revel, M. Arnesano and F. Pietroni, *Development and validation of a low-cost infrared measurement system for real-time monitoring of indoor thermal comfort,* **Measurement Science and Technology**, 2014, Vol. 25 (085101), 10pp
12. G.M. Revel, M. Arnesano, F. Pietroni, M. Schmidt and O. Kaschtschejewa, *Evaluation in a controlled environment of a low-cost IR sensor for indoor thermal comfort measurement*, **12th International Conference on Quantitative Infrared Thermography** (QIRT2014), Bordeaux (France).
13. G.M. Revel, M. Arnesano, F. Pietroni, J. Frick, M. Reichert, M. Krüger, K. Schmitt, J. Huber, M. Ebermann, L. Pockelé, *The Monitoring of Indoor Air Quality and Comfort: The Experience of The Project Cetieb*, **Procedia Environmental Science, Engineering and Management,** 2014, Vol. 1, pp. 87-92.
14. I. Petri, Y. Rezgui, T. Beach, H. Li, M. Arnesano, G. M. Revel, *A semantic service oriented platform for energy efficient buildings*, **Clean Technologies and Environmental Policy**, 2015, pp. 1-14.
15. G.M. Revel, M. Arnesano, F. Pietroni, *A method to employ low-cost IR sensors for the indoor thermal comfort measurement - Application in a classroom*, Conference proceedings in **MMT14,** Ancona (Italy), 2014, pp. 87-94
16. G.M. Revel, M. Arnesano, F. Pietroni, J. Frick, M. Reicher, K. Schmitt, J. Huber, M. Ebermann, U. Battista, F. Alessi, *Cost-effective technologies to control indoor air quality and comfort in energy efficient building retrofitting*, **Environmental Engineering and Management Journal**, 2015, Vol. 14 (7), pp. 1487-1494.
17. G.M. Revel; F. Pietroni; S. Casaccia; L. Scalise; M. Arnesano; F. Seri; L. Zampetti; E.P. Tomasini, *Sensors for Home And Building Applications: Some Research Projects,* Conference proceedings in **MMT15,** Milano (Italy), 2015.
18. G.M. Revel, M. Arnesano, F. Pietroni, *Integration of real-time metabolic rate measurement in a low-cost tool for the thermal comfort monitoring in AAL environments*, **Biosystems and Biorobotics**, 2015, Vol. 11, pp 101-110
19. M. Arnesano, G.M. Revel, F. Seri, *A tool for the optimal sensor placement to optimize temperature monitoring in large sports spaces*, **Automation in Construction**, 2016, Vol. 68, pp. 223-234.

20. F. Naspi, M. Arnesano, L. Zampetti, F. Stazi, G.M. Revel, M. D'Orazio, *Experimental study on occupants' interaction with windows and lights in Mediterranean offices during the non-heating season*, **Building and Environment**, 2018, Vol. 127, pp. 221-238.
21. L. Zampetti, M. Arnesano, G.M. Revel. *Experimental testing of a system for the energy-efficient sub-zonal heating management in indoor environments based on PMV*. **Energy and Buildings**, 2018, Vol. 166, pp.229-238.
22. M. Arnesano, G.M. Revel, L. Zampetti, R. Sebastian, A. Gralka, R. Bornemann, E. Willems, L. Visser, T. Hartmann. *Plug-and-Play product, process and sensing innovation for Energy-efficient building deep renovation.* Conference proceedings **World Sustainable Energy Days 2018 (WSED2018),** Wels (Austria), 2018.
23. Z.D. Belafi, F. Naspi, M. Arnesano, A. Reith, G.M. Revel. *Investigation on window opening and closing behavior in schools through measurements and surveys: A case study in Budapest*, **Building and Environment**, 2018, Vol. 143, pp 523-531.
24. M. Arnesano, A. Calvaresi, F. Pietroni, L. Zampetti, S. Magnani, O. Casadei, G.M Revel, *A Sub-Zonal PMV-Based HVAC and Façade Control System for Curtain Wall Buildings*, Conference proceedings **Sustainable Places 2018,** Aix-les Bains (France), 2018, pp. 1138-1143.
25. R. Sebastian, A. Gralka, R. Olivandese, M. Arnesano, G.M. Revel, T. Hartmann., C. Gutsche, *Plug-and-Play Solutions for Energy-Efficiency Deep Renovation of European Building Stock*, Conference proceedings **Sustainable Places 2018,** Aix-les Bains (France), 2018, pp. 1157-1162.
26. M. Arnesano, J .Dyson, M. Fagiani, A. Mancini, G.M. Revel, M. Severini, S. Squartini, L. Zampetti, P. Zingaretti, *An IoT Solution for Energy Management at Building and District Level*, Conference proceedings **14th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA)**, 2018, Oulu (Finland), pp. 366-372.
27. F. Naspi, M. Arnesano, G.M. Revel, G. Aird, B. Klebow, F. Stazi, M. D'Orazio, *Data-driven Behavioural Modelling for Building Energy Simulation Based on Scripted Profiles*, Conference proceedings **4th Building Simulation and Optimization Conference (BSO)**, 2018, Cambridge (UK), pp. 331-337.
28. M. Arnesano, F. Naspi, L. Claudi, G.M. Revel, *A framework for comfort assessment in buildings and districts retrofit process*, Conference proceeding **7th International Building Physics Conference (IBPC)**, 2018, Syracuse (USA), pp. 1301-1306.
29. M. Arnesano, L. Zampetti, G.M. Revel, R. Sebastian; A. Gralka, C. Macciò, E. Raggi, M. Mililli, *IEQ measurement and assessment tools for Plug-and-Play deep renovation in buildings*, Conference proceeding **7th International Building Physics Conference (IBPC)**, 2018, Syracuse (USA), pp. 745-750.
30. F. Naspi, M. Arnesano, F. Stazi, M. D'Orazio, G.M. Revel, *Measuring Occupants' Behaviour for Buildings' Dynamic Cosimulation*, **Journal of Sensors**, 2018, pp. 17.

31. A. Calvaresi, M. Arnesano, F. Pietroni, G.M Revel, *Measuring Metabolic Rate to Improve Comfort Management in Buildings*, **Environmental Engineering and Management Journal**, 2018, Vol. 17, 2287-2296.
32. F. Naspi, F. Stazi, M. Arnesano, F. Seri, L. Zampetti, G.M. Revel, M. D'Orazio, *Measuring users-windows interactions in buildings: behavioural models for the summer season*. **Tema: Technology, Engineering, Materials and Architecture**, 2018, Vol. 4, n. 1, 01-12.
33. L. Guardigli, F. Della Fornace, O. Casadei, F. Frani, L. Nicolini, G.M. Revel, M. Arnesano. *Development of a curtain wall prototype with dynamic behaviour (SmartSkin)*. **TECHNE**, 2018, Vol. 16, pp. 218-225.
34. I. Pigliautile, S. Casaccia, A. Calvaresi, N. Morresi, M. Arnesano, A.L. Pisello, G.M. Revel, *A comprehensive human comfort assessment protocol based on multidomain measurements and surveys*, Conference proceedings **AiCARR 51st International Conference "The human dimension of building energy performance"**, 2019, Venice (IT), pp. 49-61.
35. L. Claudi, M. Arnesano, P. Chiariotti, G. Battista, G.M. Revel, *A soft-sensing approach for the evaluation of the acoustic comfort due to building envelope protection against external noise*, **Measurement**, 2019, Vol. 146, pp. 675-688.
36. M. Vavallo, M. Arnesano, G.M. Revel, A. Mediavilla, A. Ferreiro Sistiaga, A. Pracucci, S. Magnani, O. Casadei, *Accelerating Energy Renovation Solution for Zero Energy Buildings and Neighbourhoods—The Experience of the RenoZEB Project*, Conference proceedings **Sustainable Places 2019,** Cagliari (Italy), 2019, pp.6.
37. M. Arnesano, B. Bueno, A. Pracucci, S. Magnani, O. Casadei, G.M. Revel, *Sensors and control solutions for Smart-IoT façade modules*, Conference proceedings **Measurements and Networking 2019**, Catania (Italy), 2019, pp.6.
38. M. Arnesano et al*., Citizen-Oriented Technologies in the Cities of Tomorrow*. In: **The First Outstanding 50 Years of "Università Politecnica delle Marche**", 2019, pp. 143-160.
39. M. Moglie, M. Simoncini, E. Mancini, V. Suraci, M. Arnesano, *eLearning Course Design in Higher Education to Maximize Students' Performance*. In: **Higher Education Learning Methodologies and Technologies Online**. HELMeTO 2019. Communications in Computer and Information Science, Vol 1091.
40. I. Pigliautile, S. Casaccia, N. Morresi, M. Arnesano, A.L. Pisello, G.M. Revel, *Assessing occupants' personal attributes in relation to human perception of environmental comfort: Measurement procedure and data analysis*. **Building and Environment**, 2020, vol. 177.
41. N. Morresi, S. Casaccia, M. Sorcinelli, M. Arnesano, G.M. Revel, *Analysing performances of Heart Rate Variability measurement through a smartwatch*. In: **IEEE Medical Measurements and Applications, MeMeA 2020** - Conference Proceedings, Institute of Electrical and Electronics Engineers Inc., 2020, p. 1-6.

42. S. Casaccia, N. Morresi, M. Arnesano, G. M. Revel (2020). *Measuring Physiological Parameters to Predict Human Thermal Comfort Using Wearable Technologies*. In: **IV Forum Misure**. Settembre 2020.
43. M. Arnesano, G. Pandarese, M. Martarelli, F. Naspi, K.L. Gurunatha, C. Sol, M. Portnoi, F.V. Ramirez, I.P. Parkin, I. Papakonstantinou, G.M. Revel, *Optimization of the thermochromic glazing design for curtain wall buildings based on experimental measurements and dynamic simulation*, **Solar Energy**, vol. 216, 2021, pp. 14-25.
44. N. Morresi, S. Casaccia, M. Sorcinelli, M. Arnesano, A. Uriarte, J.I. Torrens-Galdiz, G.M. Revel, *Sensing physiological and environmental quantities to measure human thermal comfort through Machine Learning techniques*. **IEEE SENSORS JOURNAL**, 2021, p. 12322-12337.
45. F. Seri, M. Arnesano, M.M. Keane, G.M. Revel, *Temperature Sensing Optimization for Home Thermostat Retrofit*. **Sensors**, vol. 21, 2021.
46. S.A. Mansi, C. Porcaro, I. Pigliautile, A.L. Pisello, M. Arnesano, *Application of physiological measurements for thermal comfort assessment*. In: **XXI Congresso Nazionale CIRIAF, Sviluppo Sostenibile, Tutela dell'Ambiente e della Salute Umana**, pp. 328-335, 2021.
47. S.A. Mansi, G. Barone, C. Forzano, I. Pigliautile, M. Ferrara, A.L. Pisello, M. Arnesano, *Measuring human physiological indices for thermal comfort assessment through wearable devices: A review*. **Measurement**, vol. 183, 2021, ISSN: 0263-2241, doi: 10.1016/j.measurement.2021.109872.
48. M. Arnesano, S.A. Mansi, I. Pigliautile, A.L. Pisello, Measurement of thermal comfort sensation through wearable sensors in controlled environment. In: **Atti del V Forum Nazionale delle Misure**, pp. 641-642, 2021, 16-18 September, Giardini Naxos (Italy).
49. S. Serroni, M. Arnesano, G. Pandarese, M. Martarelli and G. Marco Revel, *IoT infrared sensor for continuous monitoring of building envelope thermal performances*, 2021 **6th International Conference on Smart and Sustainable Technologies (SpliTech)**, 2021, pp. 1-6, doi: 10.23919/SpliTech52315.2021.9566448.
50. N. Morresi, S. Casaccia, M. Arnesano, G.M. Revel, *Impact of the measurement uncertainty on the monitoring of thermal comfort through AI predictive algorithms,* **Acta IMEKO**, 2021, 10 (4), pp. 221-229. doi: 10.21014/acta_imeko.v10i4.1181.
51. S.A. Mansi, I. Pigliautile, C. Porcaro, A.L. Pisello, M. Arnesano, *Application of wearable EEG sensors for indoor thermal comfort measurements*, **Acta IMEKO**, 2021, 10 (4), pp. 214-220. DOI: 10.21014/acta_imeko.v10i4.1180.
52. S. Serroni, M. Arnesano, L. Violini, G.M. Revel, *An IoT measurement solution for continuous indoor environmental quality monitoring for buildings renovation*, **Acta IMEKO**, 2021, 10 (4), pp. 230-238, doi: 10.21014/acta_imeko.v10i4.1182.
53. A. Campanati, A. Marani Andrea, M. Giannoni, M. Orciani, F. Fabiani, R. Napolitano, M. Arnesano, E.P. Tomasini, A. Offidani, *Efficacy of calcipotriol plus betamethasone*

dipropionate foam on psoriatic skin lesions beyond human eyes: An observational study, **Health Science Reports**, 2022, 5:e597, doi:10.1002/hsr2.597.

54. G. Cosoli, S.A. Mansi, M. Arnesano, *Combined use of wearable devices and Machine Learning for the measurement of thermal sensation in indoor environments*. **2022 IEEE International Workshop on Metrology for Living Environment**, p.p. 1-6, Cosenza (IT), 25-27 May, 2022, doi: 10.1109/MetroLivEnv54405.2022.9826956.
55. G. Battista, S. Serroni, M. Martarelli, M. Arnesano, G.M. Revel, *Innovative measurements for Indoor Environmental Quality (IEQ) assessment in residential buildings*. **2022 IEEE International Workshop on Metrology for Living Environment**, pp. 170-17, Cosenza (IT), 25-27 May, 2022, doi: 10.1109/ MetroLivEnv54405.2022.9826982
56. S.A. Mansi, I. Pigliautile, M. Arnesano, A.L. Pisello, *A novel methodology for human thermal comfort decoding via physiological signals measurement and analysis*, **Building and Environment**, 2022, vol. 222 (109385), doi: 10.1016/j.buildenv.2022.109385.
57. S.A. Mansi, G. Cosoli, A.L. Pisello, I. Pigliautile, G.M. Revel, M. Arnesano, Marco, *Thermal discomfort in the workplace: measurement through the combined use of wearable sensors and machine learning algorithms*. **2022 IEEE International Workshop On Metrology For Industry 4.0 And IoT**, pp. 54-59, Trento (IT), 7-9 June 2022, doi: 10.1109/MetroInd4.0IoT54413.2022.9831610
58. A. Costantino, M. Ferrara, M. Arnesano, E. Fabrizio, *Off-the-shelf wearable sensing devices for personalized thermal comfort models: A systematic review on their use in scientific research*, **Journal of Building Engineering**, 2023, vol. 70, p. 106379, doi: 10.1016/j.jobe.2023.106379.
59. G. Cosoli, S.A. Mansi, I. Pigliautile, A.L. Pisello, G.M Revel, M. Arnesano, *Enhancing personal comfort: A machine learning approach using physiological and environmental signals measurements,* **Measurement**, vol. 217, 2023, ISSN 0263-2241, *doi:* 10.1016/j.measurement.2023.113047.
60. S.A. Mansi, C. Pappalettera, F. Vecchio, M. Arnesano, *A novel approach based on EEG Entropy measurement for indoor human thermal comfort estimation*, Conference proceedings **11th International Conference on Indoor Air Quality, Ventilation & Energy Conservation in Buildings (IAQVEC 2023)**, Tokyo (Japan), May 20-23, 2023.
61. I. Pigliautile, A. Rosati, S.A. Mansi, M. Arnesano, A.L. Pisello, *Decoding human perception for building indoor environmental comfort: test the Hue-Heat-Hypothesis via physiological and psychological response analysis*, Conference proceedings **11th International Conference on Indoor Air Quality, Ventilation & Energy Conservation in Buildings (IAQVEC 2023)**, Tokyo (Japan), May 20-23, 2023.
62. G. Cosoli, S.A. Mansi, G.M. Revel and M. Arnesano, *Propagation of the Measurement Uncertainty of Wearable Sensors for Thermal Comfort Assessment*, **2023 IEEE International Workshop on Metrology for Living Environment**, pp. 1-5, Milano (IT), 29-31 May 2023, doi: 10.1109/MetroLivEnv56897.2023.10164004.

63. M. Arnesano, S.A. Mansi, *Embedded Sensors, Ubiquitous Connectivity and Tracking*. In: Lynn, T., Rosati, P., Kassem, M., Krinidis, S., Kennedy, J. (eds) Disrupting Buildings. Palgrave Studies in Digital Business & Enabling Technologies. Palgrave Macmillan, Cham, 2023, https://doi.org/10.1007/978-3-031-32309-6_2.
64. S. Serroni, M. Arnesano, M. Mamoun and G. M. Revel, *Development of ML algorithm to improve in situ measurement of the thermal properties of a building*, Conference proceedings **2023 8th International Conference on Smart and Sustainable Technologies (SpliTech)**, Split/Bol, Croatia, 2023, pp. 1-6, doi: 10.23919/SpliTech58164.2023.10193356.
65. S. Serroni, M. Arnesano, M. Martarelli and G. M. Revel, *Experimental validation and uncertainty analysis of an innovative IoT infrared sensor for in-situ wall thermal transmittance measurement*, **Measurement Science and Technology**, 2023, Vol. 34 (125801), 10pp, doi: 10.1088/1361-6501/acf064.
66. G. Cosoli, S.A. Mansi, G.M. Revel, M. Arnesano, *Wearable devices and ML algorithms to assess indoor thermal sensation: metrological analysis*. In: **Atti del VII Forum Nazionale delle Misure**, pp. 665-666, 2023, 13-15 September, Bologna (Italy).
67. G. Cosoli, S.A. Mansi, G.M. Revel, M. Arnesano. *Wearable devices and Machine Learning algorithms to assess indoor thermal sensation: metrological analysis*. **ACTA IMEKO**, 2023, vol. 12, p. 1-8, doi: 10.21014/actaimeko.v12i3.1570.
68. R. Jamali, A. Generosi, J.Y. Villafan, M. Mengoni, L. Pelagalli, G. Battista, M. Martarelli, P. Chiariotti, S.A. Mansi, M. Arnesano, P. Castellini. *Facial Expression Recognition for Measuring Jurors' Attention in Acoustic Jury Tests*. **Sensors**, 2024, vol. 24, 2298. https://doi.org/10.3390/s24072298.
69. C. Pappalettera, S.A. Mansi, M. Arnesano, et al. *Decoding influences of indoor temperature and light on neural activity: entropy analysis of electroencephalographic signals*. **Pflugers Arch - Eur J Physiol,** 2024. https://doi.org/10.1007/s00424-024-02988-z.
70. L. Panni, G. Cosoli, M. Arnesano, F. Citarelli, L. Antognoli and L. Scalise. *Metrological Characterization of a Wearable Device for the Assessment of Gait Parameters*, **2024 IEEE International Symposium on Medical Measurements and Applications (MeMeA)**, 26-28 June, Eindhoven, Netherlands, 2024, pp. 1-6, https://doi.org/10.1109/MeMeA60663.2024.10596895.
71. M. Arnesano, *Development and Application of EEG Signal Pattern Analysis and Artificial Neural Network for Indoor Comfort Measurement*, **2024 IEEE International Workshop on Metrology for Living Environment (MetroLivEnv)**, 12-14, Chania, Greece, 2024, pp. 11-15, https://10.1109/MetroLivEnv60384.2024.10615866.
72. I. Ciuffreda, G. Cosoli, G. M. Revel, M. Arnesano and S. Casaccia, *A Non-Intrusive Ultrasound-Based Sensing Technique for Activity Detection: Proof of Concept Towards Optimized Personalized Comfort,* **2024 IEEE International Workshop on Metrology**

for Living Environment (MetroLivEnv), 12-14 June, Chania, Greece, 2024, pp. 16-21, https://10.1109/MetroLivEnv60384.2024.10615476.

73. G. Cosoli et al., *Measuring the Occupants' Well-Being in the Built Environment: Towards the Integration of Physiological and Environmental Parameters in a Multidomain BIM-Based Platform*, **2024 IEEE International Workshop on Metrology for Living Environment (MetroLivEnv)**, 12-14 June, Chania, Greece, 2024, pp. 454-459, https://10.1109/MetroLivEnv60384.2024.10615597.
74. V. M. Gnecco et al., *Definition of the Acclimatation Time in Test Room Experiments Through Objective Physiological Indicators*, **2024 IEEE International Workshop on Metrology for Living Environment (MetroLivEnv)**, 12-14 June, Chania, Greece, 2024, pp. 1-5, https://10.1109/MetroLivEnv60384.2024.10615970.
75. L. Panni, G. Cosoli, M. Arnesano, L. Scalise, *Wearable devices and ML algorithms to assess indoor thermal sensation: metrological analysis. In:* Atti del **VIII Forum Nazionale delle Misure**, pp. 603-608, 2024, 12-14 September, San Vincenzo (Italy).
76. I. Ciuffreda, G. Cosoli, G.M. Revel, M. Arnesano, S. Casaccia, *Actrivity detection of people in indoor environment: a measurement system based on non-intrusive ultrasound and AI techniques. In:* Atti del **VIII Forum Nazionale delle Misure**, pp. 673-674, 2024, 12-14 September, San Vincenzo (Italy).
77. O. Kuznetsov, E. Frontoni, M. Arnesano, K. Kuznetsova, *Efficient Zero-Knowledge Proofs for Set Membership in Blockchain-Based Sensor Networks: A Novel OR-Aggregation Approach*. **J. Sens. Actuator Netw**. 2024, vol. 13, https://doi.org/10.3390/jsan13060078
78. O. Kuznetsov, N. Poluyanenko, K. Kuznetsova, E. Frontoni, M. Arnesano, *Hybrid Population-Based Hill Climbing Algorithm for Generating Highly Nonlinear S-boxes*. **Computers**, 2024, vol. 13, https://doi.org/10.3390/computers13120320
79. O. Kuznetsov, E. Frontoni, K. Kuznetsova, M. Arnesano. *Optimizing Merkle Proof Size Through Path Length Analysis: A Probabilistic Framework for Efficient Blockchain State Verification*. **Future Internet** 2025, 17, 72. https://doi.org/10.3390/fi17020072
80. V. Martins Gnecco, A. Chiucchiù, S.A. Mansi, I. Pigliautile, G. Cosoli, M. Arnesano, A.L. Pisello, *Exploring acclimation time in test-room environments via physiological indicators: Evolving human-centric personalized comfort measurement procedures*, **Building and Environment**, 2025, 277, 112924, https://doi.org/10.1016/j.buildenv.2025.112924

Patents

1. Sistema e metodo per il monitoraggio del comfort termico. Application MO2013A000279, Patent N. 0001422135 (2013).
2. Sistema e procedimento per la misura di un tempo di maturazione/lievitazione di impasti. Application N. 102021000031004 (2021).

PRESENTATIONS

1. “Design of a comfort-based monitoring approach for energy efficiency in Sport & Recreational buildings”, International conference Improving Energy Efficiency in Commercial Buildings (IEECB’12), 19/04/2012, Frankfurt.
2. “An Innovative Low Cost IR System for Real-Time Measurement of Human Thermal Comfort“, International conference ASHRAE IAQ 2013 – Environmental Health in Low Energy Buildings, 17/10/2013, Vancouver.
3. “Smart metering and monitoring for building benchmarking” workshop Sport Facilities: a challenge for energy efficiency, 21/11/2013, Bilbao.
4. “Sistema a basso costo per il monitoraggio ed il controllo del comfort termo-igrometrico” National Conference That’s Smart, 20/03/2014, Milan.
5. “A Smart metering system for sport facilities” al workshop Advanced Energy Management Solutions for Commercial/Public Buildings, 03/07/2014, Cardiff.
6. “A method to employ low-cost IR sensors for the indoor thermal comfort measurement” IX Congresso Nazionale di misure Meccaniche e Termiche, 12/09/2014, Ancona.
7. “The Monitoring Of Indoor Air Quality And Comfort: The Experience Of The Project Cetieb”, International conference Ecomondo2014, 05/11/2014, Rimini.
8. “Una soluzione innovativa per la gestione ottimale delle piscine: l’esperienza del progetto SportE2” workshop at Forum Piscine, 19/02/2015, Bologna.
9. “Investire nella qualità: le misure per garantire la qualità degli ambienti sportivi” workshop CONI - Ottimizzare la gestione energetica degli impianti sportivi, 18/04/2015, Ancona.
10. “Le misure per garantire la qualità degli ambienti sportivi e il progetto SportE2” workshop CONI - Ottimizzare la gestione energetica degli impianti sportivi complessi, 12/06/2015, Florence.
11. “Il sistema intelligente per la gestione energetica integrata degli impianti sportivi” workshop Palazzetti per l’Italia-Atto II, 04/03/2016, Rimini.
12. “Prospettive future per le smart home: nuove tecnologie e strumenti per la gestione intelligente degli edifici” workshop Confartigianato Building Smart – Progettare e realizzare oggi l’infrastruttura del futuro, 31/05/2016, Ancona.
13. “Coprire per risparmiare” at Convegno D’Autunno 2016 Professione Acqua, 01/12/2016, Cervia.
14. “Integrate Your Body: Human Physiological Responses as a Potential Driving Factor in IEQ Controls” at ASHRAE Annual Conference 2017, online.
15. “The Heat is On: Future Proofing Building for Climate Changes in Smart Buildings and Energy Efficiency sectors”, Beyond Energy Efficiency, 18/05/2017, San Leadro (USA).
16. “Research and Innovation Activities in Nanotechnology Concerning Energy Efficient Buildings”, International conference Energy in Buildings, 21/10/2017, Athen.
17. “Verso la Piscina 4.0” at ForumPiscine 2018, 21/02/2018 Bologna.
18. “A sub-zonal PMV-based HVAC and façade control system for curtain wall buildings“, International conference Sustainable Places 2018, 18/06/2018, Aix-les Bain.

19. “IEQ measurement and assessment tools for Plug-and-Play deep renovation in buildings“, International conference 7th International Building Physics Conference (IBPC), 24/09/2018, Syracuse.
20. "Misura del benessere in ambienti indoor: una sfida per la creazione di nuovi modelli di comfort" at Giornata della Misurazione 2021, 30/03/2021, Online.
21. “Combined use of wearable devices and Machine Learning for the measurement of thermal sensation in indoor environments“, International conference IEEE International Workshop on Metrology for Living Environment 2022, 25/05/2022, Cosenza.
22. "Seminar on innovative measurement and control systems for curtain wall buildings based on sub-zonal approach" at 10th Meeting of the "Erasmus+ Project Skybelt”, 04/01/2023, University Putra Malaysia, Malaysia.
23. “Measuring indoor thermal comfort: a multidomain perspective based on innovative sensors, wearables and machine learning“, International conference IEEE International Workshop on Metrology for Living Environment 2023, 30/05/2023, Milano.
24. “WEPOP Project – Wearable Platform for Personalized Comfort” al convegno nazionale XXIV Congresso nazionale CIRIAF, 11/04/2024, Perugia.
25. “Development and application of EEG signal pattern analysis and artificial neural network for indoor comfort measurement “, International conference IEEE International Workshop on Metrology for Living Environment 2024, 12/05/2024, Chania.
26. “Definition of the acclimatation time in test room experiments through objective physiological indicators “, International conference IEEE International Workshop on Metrology for Living Environment 2024, 12/05/2024, Chania.

POSTERS

1. G.M. Revel, M. Arnesano, F. Pietroni, M. Schmidt and O. Kaschtschejewa, Evaluation in a controlled environment of a low-cost IR sensor for indoor thermal comfort measurement, 12th International Conference on Quantitative Infrared Thermography (QIRT2014), Bordeaux (France), 2014.
2. M. Arnesano, F. Naspi, L. Claudi, G.M. Revel, A framework for comfort assessment in buildings and districts retrofit process, Conference proceeding 7th International Building Physics Conference (IBPC), 2018, Syracuse (USA).
3. M. Arnesano, S.A. Mansi, I. Pigliautile, A.L. Pisello, Measurement of thermal comfort sensation through wearable sensors in controlled environment. In: Atti del V Forum Nazionale delle Misure, pp. 641-642, 2021, 16-18 September, Giardini Naxos (Italy)
4. M. Arnesano, M. De Luca, S. Balatti, P. Arpaia, G. Cosoli, L. Gargiulo, N. Moccaldi, L. Pasquini, F. Feyisa, T. Zanto, A. Forenza, Single-Channel ear-EEG for Emotion Monitoring: a Feasibility Study, Bay Area Affective Science Annual Meeting, 2025, Stanford (USA).