

Prof. **Stefania BRUSCHI**

Full professor, M.Sc., Ph.D.

Address

Department of Industrial Engineering – University of Padova

Educational Qualifications

1998: M.Sc. in Materials Engineering, University of Ferrara (Italy)

2002: PhD in Industrial Manufacturing Engineering with dissertation “A new approach in testing and modelling the material response in hot forging operations”, University of Parma (Italy)

Working Experiences

1999-2002:

Teaching assistant and supervisor of students of Mechanical Engineering (bachelor and master degrees), University of Padova

2003-2006: Assistant Professor in Manufacturing Engineering, University of Padova

2006-2011: Associate Professor in Manufacturing Engineering, University of Trento

Since October 1st, 2011, Full Professor in Manufacturing Engineering, University of Padova

Since October 1st, 2019, Head of the Department of Industrial Engineering, University of Padova

Since October 1st, 2019, Member of the Academic Senate of the University of Padova

Teaching Experiences

2004- present: Lecturer in “Fundamentals of Manufacturing Technologies” (bachelor degree in Mechanical Engineering), “Manufacturing technologies for Aerospace Materials” (master degree in Aerospace Engineering), “Manufacturing Technologies” (master degree in Materials Engineering), “Manufacturing of Biomedical Components” (master degree in Bioengineering), University of Padova

Research areas and activities

Major research interests deal with testing and modelling metal forming and machining processes. The following topics have been addressed:

- Testing and modelling material response to deformation in cold, hot and warm conditions. Within this topic, innovative testing procedures to qualify material behaviour in bulk and sheet forming operations have been designed and set up, as well as new models (both analytical and neural network-based) have been developed and applied to a wide variety of metallic materials (e.g. steels, superalloys, light alloys,..)
- Evaluation of the fracture occurrence in metal forming operations conducted at both room and elevated temperature. In the case of deforming in cold conditions, a ductile fracture criterion with a linear damage accumulation law was implemented and demonstrated to be effective in the damage and fracture occurrence prediction in cold forging process chains; whereas, in the case of forming at elevated temperatures, the theory of Continuum Damage Mechanics was applied, but properly modified to take into account the microstructural features characterizing the material under deformation.
- Design and optimization of innovative stamping operations, conducted at elevated temperatures, to evaluate: material formability of the new generations of HSS, high resistant aluminium alloys, titanium and magnesium alloys through the approach of forming limit curves and phenomenological fracture criteria; material anisotropy and texture evolution; phase transformation-related parameters as a function of the applied load; friction and heat transfer coefficients at the interface blank-dies.
- Evaluation of the tool wear and surface integrity of Additive Manufactured Ti6Al4V and CoCrMo alloy fabricated through SLM and EBM and then machined under various lubricating/cooling conditions. In particular, cryogenic cooling making use of liquid and gaseous nitrogen has been investigated and its effects evaluated both at conventional and micro-level.
- Design of innovative stamping and drilling processes devoted to magnesium alloy-based Fiber Metal Laminates: evaluation of interfacial bonding resistance at varying surface conditions of the metal sheets during both stamping and drilling.

The research activities have been carried out in the framework of EU-funded projects, Italian Government funded programs and research contracts with Italian and European manufacturing companies.

<i>Database</i>	<i># Articles (*)</i>	<i># Citations (*)</i>	<i>h-index (*)</i>
SCOPUS	272	4911	33

(*) data collected on October 20th, 2022.

Memberships

Member of the European Scientific Association for Material Forming (ESAFORM) since 2001.

Member of the Italian Association of Manufacturing Technologies (AITeM) since 1998.

Fellow member of CIRP (The International Academy for Production Engineering) since 2016; Vice-Chair of CIRP STC-F since August 2022.

Associate Editor of the Journal of Materials Processing Technology.

Track Chair of Manufacturing for NAMRC, member of the Board of the North American Association for Manufacturing Technologies.

Padova, November 9th, 2022

Personal Details

Mancin Simone, *PhD*

Associate Professor, Applied Thermodynamics and Heat Transfer

Researcher unique identifier:

Current Position

5/2017– Present	Associate Professor of Applied Thermodynamics and Heat Transfer, Department of Management and Engineering, University of Padua, Italy.
4/2019- Present	Visiting Professor , Department of Chemical Engineering in the College of Engineering, Design and Physical Sciences, Brunel University London, UK.

Previous Position

5/2014 – 5/2017	Assistant Professor , Department of Management and Engineering, University of Padua, Italy.
1/2013 – 5/2014	Senior Postdoc , competitive grant: “Nano-Engineered Surfaces for Flow Boiling Enhancement for High Density Electronic Cooling Applications” funded by University of Padua.
1/2011 – 12/2012	Research fellow , EU funded 7° FP: PRIMAE, Packaging of Future Integrated Modular Electronics, (ACP0-GA-2010-265413), University of Padua.
1/2009 – 12/2010	Postdoc , competitive grant: “Novel technologies for air-liquid thermal management system for aeronautical application”, University of Padua.
9/2005 – 12/2005	Research Fellow , EU funded 6° FP: SHERHPA, Sustainable Heat and Energy Research for Heat Pump Applications (COLL-CT-2004-500229), University of Padua.

Education

03/2009	PhD in Industrial Engineering – Applied Thermodynamics and Heat Transfer, Department of Applied Physics, University of Padua, Italy.
07/2005	MSc , <i>Summa cum laude</i> in Mechanical Engineering, Department of Applied Thermodynamics, University of Padua, Italy.

Fellowships

2021 – Present	Research Associate at Italian Institute of Nuclear Physics, INFN, IT
4/2019- Present	Visiting Professor , Department of Chemical Engineering in the College of Engineering, Design and Physical Sciences, Brunel University London, UK.
8/2018	Visiting Professor at QGECE (Queensland Geothermal Energy Centre of Excellence), Queensland University, Brisbane, AU. Project: “Innovative heat transfer solutions for future sustainable energy”.
2/2015	Visiting Professor at QGECE (Queensland Geothermal Energy Centre of Excellence), Queensland University, Brisbane, AU. Project: “Advanced Computational Fluid Dynamics for single and two-phase heat transfer in porous media”.
5/2013 – 8/2013	Visiting Researcher at CTRC, Cooling Technologies Research Center, Purdue University, IN, USA. Project: “Development of measurement technique to evaluate the performance of miniaturized heat pipes”.

Supervision

- 2 Post-doc
- 15 postgraduate students’ supervision (3 PhD student has already graduated)
- 60 Graduate/undergraduate students

Teaching Duties

2019	At undergraduate level: Heat Transfer at the Bachelor degree in Chemical Engineering, Brunel University London, UK.
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2014-Present	Thermodynamics and Heat Transfer , Bachelor course in Management Engineering, University of Padua, Italy. (2 nd year)
2016-Present	Applied Thermo-Fluid Dynamics , Bachelor course in Mechanical Engineering, University of Padua, Italy. (3 rd year)
2013	Thermodynamics and Heat Transfer , Bachelor course in Mechanical Engineering, University of Padua, Italy. (2 nd year)
<ul style="list-style-type: none"> • At postgraduate level: 	
2019- Present	Renewable Energy Technique , Master degree in Environmental engineering
2016 – Present	Thermal Management of Electronics Components , Master degree in Mechatronics Engineering, University of Padua, Italy. (2 nd year)
2006-2014	Applied Thermodynamics , Master course in Mechanical Engineering, University of Padua, Italy (1st year); Advanced Heat Transfer , Master course in Mechanical Engineering, University of Padua, Italy. (2 nd year)
<ul style="list-style-type: none"> • At PhD level: 	
2020	Lecturer and Organizer of the First International Summer School on Latent Thermal Energy Storage for a Sustainable Future, 7-11 September 2020.
2018	Course of “Measuring technique in Thermo-Fluid-Dynamics” for the PhD students of the School of Doctorate in Mechatronics and Product Innovation Engineering.
2017	Training School of COST Action NANOUPTAKE: “Best Practice on Single and Two-Phase Heat Transfer with Nanofluids. Tips and Tricks for Medium and High Temperature Nanofluids”.
2016	PhD course in collaboration with Dr. Kamel Hooman during his visiting period at University of Padova, “Renewable power generation: enabling technologies”. School of Doctorate in “Ingegneria Meccatronica e dell’Innovazione del prodotto”.
2010-2013	Course of “Measuring technique in Thermo-Fluid-Dynamics” for the PhD students of the School of Doctorate in Industrial Engineering and in Energy Engineering.

Institutional responsibilities

2022 - Present	Project manager of the Third Mission of the Department of Management and Engineering, of the University of Padova, Italy.
2020 - Present	Member of the Scientific commission of the University of Padua
2018 – Present	Project manager of the International program for students exchange, Product Innovation Engineering, School of Engineering, University of Padova.
2019- Present	Member of the Scientific commission of the Department of Management and Engineering of the University of Padova, Italy.
2015 – Present	Faculty member Doctoral School in Mechatronics and Product Innovation Engineering, University of Padua, Italy.

Commissions of Trust

2022	President of the PhD evaluation committee at CNRS, University of Haute – Alsace, FR
2021	Member of PhD evaluation committees: Mr. P.M. Sivaram, NIT of Tiruchirapalli, IN
2021	External reviewer expert for Leverhulme Trust (UK) for 500k£ grant.
2020	External PhD examiner at Dalhousie University, Canada.
2019	Member of Scientific commission of the Dept. of Management and Engineering at University of Padova, Italy
2019	Member of Evaluation Commission for PhD defence at Politecnico di Torino, Torino, Italy.
2018	Responsible for International program for student exchange, University of Padova, Italy.
2017	Member of Evaluation Commission for an Assistant Professor position at INRiM, Torino, Italy.
12/2016	Member of PhD evaluation committee, PhD candidate: Alexander Athanassiou, Prof. Andreas Mortensen, EPFL, Lausanne, Switzerland.
04/2016	Member of evaluation committee of the PhD course “Sustainable Energies and Technologies”, Free University of Bozen-Bolzano, Prof. Andrea Gasparella, Bolzano, Italy.
2015 – Present	External Reviewer for the PhD “Sustainable Energy and Technologies – SET”, Free University of Bozen-Bolzano.

Research**Member of various Committees and International Bodies**

2020- Present	Proponent and Member of Management Committee, <i>NANOConVEX</i> , CIG Action of European Commission.
2016 – 2019	Member of the Scientific commission B1 - Thermodynamics & transfer processes, International Institute of Refrigeration (IIR-IIF).
2016 –2020	Member, <i>NANO-UPTAKE</i> , COST Action of European Commission.
2016 –Present	Member of International Institute of Refrigeration (IIR-IIF).
2014 – Present	Member of ASME, American Society of Mechanical Engineers.

Serving on the Editorial Boards

2021	Guest Editor of <i>International Journal of Thermofluids</i> , Elsevier, London, UK for a special Issue: “Surface Functionalization for Advanced Heat Transfer Solutions”
2021	Guest Editor of <i>International Journal of Thermofluids</i> , Elsevier, London, UK for a special Issue: “Special Issue on 3rd European Symposium on Nanofluids (ESNf)”
2020 - Present	Associate Editor of Heat Transfer Reserch, HTR, Begel House, Danbury, CT, USA.
2019 –Present	Associate Editor of <i>Part C: Journal of Mechanical Engineering Science</i> , Institution of Mechanical Engineers, SAGE, Thousand Oaks, CA, USA.
2019 –Present	Member of the Editorial Board of <i>International Journal of Thermofluids</i> , Elsevier, London, UK.
2019 - Present	Guest Editor of <i>Heat Transfer Engineering</i> for a Special Issue on: “ICNF2019 – 1 st International Conference on Nanofluids - Special Issue”. www.icnf2019.com Expected Special Issue for Summer 2020.
2018	Guest Editor of <i>Applied Sciences</i> (MDPI) for a Special Issue on: “ <i>Advanced Applications of Phase Change Materials</i> ”. Expected Special Issue for mid-2019.
2018 – Present	Member of the Editorial Board of <i>Heliyon</i> , Elsevier, London, UK.
2017 – Present	Associate Editor of <i>Heat Exchanger Design Handbook</i> , HEDH, Begel House, Danbury, CT, USA.

Reviewer of the following journals

International Journal of Thermofluids, Part C: Journal of Mechanical Engineering Science, Renewable Energy, Applied Energy, Solar Energy, Applied Thermal Engineering, Energy, International Journal of Thermal Science, Journal of Heat Transfer, Science and Technology for the Built Environment, Heat Transfer Engineering, International Communication in Heat and Mass Transfer, International Journal of Heat and Mass Transfer, International Journal of Refrigeration, Experimental Heat Transfer, Experimental Thermal and Fluid Science, Journal of Porous Media.

International advisory panels:

2023	Chair of MNF 2023, Micro Nano Flow Conference , Vicenza, Italy.
2021	Chair of the Organizing Committee of 13th IIR Conference on Phase-Change Materials and Slurries for Refrigeration and Air Conditioning, PCM2021 - Storing Energy can Make the Difference , Vicenza, Italy. (Assigned by IIR/IIF)
2021	Member of the Organizing Committee of 6th IIR Conference on Thermodynamic Properties and Transfer Processes of Refrigerants, TPTPR2021 , Vicenza, Italy. (Assigned by IIR/IIF)
2020	Chair of the “First International Summer School on Latent Thermal Storage for a Sustainable Future - From PCM to Final Application” LTES2020 .
2019	Member of the International Scientific Advisory Board of “ METFOAM 2019 ”, Detroit, USA.
2019	Member of the International Scientific Advisory Board of “1 st International Conference on Nanofluids (ICNf) and the 2nd European Symposium on Nanofluids (ESNf)”.
2015	Member of the International Scientific Advisory Board of the “17th IAHR International Conference on Cooling Tower and Heat Exchanger”, Gold Coast, Queensland, Australia.

Award and Prizes

2015	Outstanding Paper Award for the paper: “ <i>A method for thermal performance characterization of ultra-thin vapor chambers cooled by natural convection</i> ”, at International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK) and International Conference on Nanochannels, Microchannels and Minichannels (ICNMM), San Francisco, CA, July 6-9, 2015.
2012	Best Oral Presentation at the 30 th Italian Heat Transfer Conference.
2011	Unione Italiana Termofluidodinamica award for the PhD thesis.
2008	Best Master Thesis “WORK-ING 2007” (National prize).

Industrial Grants (summing up to over 400 k€)

2014-2020	Academic research – Yearly institutional grants. Total around € 24.000,00.
2020	Academic research – PhD position granted by HSLU, Lucern, CH. € 65.000,00.
2020	Academic teaching – Summer school grant for the organization of the “First International Summer School on Latent Thermal Storage for a Sustainable Future - From PCM to Final Application” LTES2020. €12.000,00.
2014	Industrial research activity – De Rigo Refrigeration srl, “Development of an ultra-efficient refrigeration cabinet”. € 30.000,00.
2016	Industrial research activity – De’ Longhi Spa. “Development and characterization of an innovative thermal energy storage system for cordless heating appliances”. € 27.500,00. 2 Patents.
2017	Industrial research activity – Columbia spa, “Development of an innovative refrigeration cabinet”. € 30.000,00.
2018	Industrial research activity – A.D. Tubi Inossidabili SpA. “Metal foams for industrial applications”. € 30.000,00.
2019	Industrial research activity – Calearo Antenne. “Thermal management of the next generation of automotive Antennas”. € 6.000,00.
2020	Industrial research activity – Fraccaro. “Thermo fluid dynamic analysis of Radiant strips for industrial applications. Part 1” €8.000,00
2021	Industrial research activity – Fraccaro. “Thermo fluid dynamic analysis of Radiant strips for industrial applications. Part 2” €28.400,00
2021	Industrial research activity – Enerblue. “Design of Innovative Heat Pump with low refrigerant charge and low acoustic impact” €36.000,00.
2021	Industrial research activity – NOVATEK (IT). “Innovative 2MWh latent thermal energy storage for building heating and DHW ” €60.000,00
2021	Industrial research activity – PETRONAS (IT). “Development of an innovative dual-circuit latent thermal energy storage for air-conditioning using Roll Bond technology” €50.000,00

Competitive grants (summing up to over 1650 k€)

2012	Academic research – Young researcher grant. “Nano-Engineered Surfaces for Flow Boiling Enhancement for High Density Electronic Cooling Applications”. € 19.200,00 + salary (around € 50.000,00).
2015	Academic research – Visiting professor position. € 40.000,00.
2015	Academic research - “An Innovative Nanoparticles Deposition Method for Nucleate Boiling Enhancement”. € 38.000,00.
2020	Academic research - Visiting professor position. € 7.500,00.
2019	Academic Research – International Research: “Advanced Solar Refrigeration for Buildings in Kuwait”. € 100.000,00)
2022	EDF EU grant – NEUMANN €325.000,00
2022	EU grant HORIZON-JU-Clean-Aviation-2022-01– Thema4HERA – “Thermal Management for the Hybrid Electric Regional Aircraft” €730.000,00
2022	EU grant HORIZON-MSCA-2021-PF-01-01 – ET4PCM – Electrical tomography for phase change monitoring €215.000,00

2022	EU grant HORIZON-MSCA-2021-SE-01-01 - Micro-FloTec: Microscale enabled advanced flow and heat transfer technologies featuring high performance and low power Consumption. €92.000,00
2022	UNIMPRESA Grant – WATER Water fouling: Understanding and Mitigation €50.000,00

Invited Talks, Distinguished lectures and keynotes

2022	Keynote lecture at 8th World Congress on Momentum, Heat and Mass Transfer. “ <i>Optimizing the Next Generation of Heat Sinks for Immersion Cooling: Think, Print and Test</i> ”.
2021	Keynote lecture at SESBT2021: “ <i>On the design of latent thermal energy storage</i> ”
2020	IMechE Webinar. June 17, 2020. “Enabling technologies for efficient latent Thermal Energy Storages: a research path”. > 350 participants .
2020	Invited talk at “AIChE Spring Meeting & GCPS”, Houston, (April 2-6, 2020). Now post-poned to August 16-20, 2020. “ <i>Unexpected technologies for heat transfer enhancement</i> ”.
2020 (cancelled)	Keynote Lecture at “The 2 nd International Conference on Supercritical CO ₂ Power Cycles” June 19-21, 2020.
2019	Invited Lecture at International Workshop on Latent Heat Engineering, Mito, JAPAN. “ <i>Enable technologies for efficient LTES: a research path. From stochastic to periodic structures via additive manufacturing</i> ”.
2019	Distinguished Lecture at the Department of Chemical Engineering, Brunel University London, UK. “ <i>From macro-scale to Nano-scale for smart and sometimes unexpected new heat transfer solutions</i> ”.
2019	Invited Lecture at Next Generation Air-Conditioning Workshop, CEEE, University of Maryland, USA. “ <i>Heat Transfer Design Considerations for New Fluids</i> ”.
2019	Invited talk at METFOAM 2019, Detroit, USA. “ <i>Metal foam applications: from laboratory to market</i> ”.
2018	Keynote speaker at the Workshop on Phase Change Materials and Thermal Energy storages. Lucerne University of Applied Sciences and Arts, Lucerne, Switzerland. “ <i>PCM – Modelling and Experimental Analysis</i> ”.
2018	Distinguished Lecture QGECE (Queensland Geothermal Energy Centre of Excellence), Queensland University, Brisbane (AU) – “ <i>From macro-scale to Nano-scale for smart and sometimes unexpected new heat transfer solutions</i> ”.
2018	Invited Lecture – at CECAM workshop on Hot Colloids, Lion, France, “ <i>Nanoparticles as Enabling Technology for Future Two-Phase Heat Transfer Applications</i> ”.
2017	Keynote Speaker at “International Conference on Nanomaterials and Nanochemistry”, Atlanta, Georgia, USA, 29-30 November, 2017. Presentation: “ <i>Nanoparticles for Advanced Two-Phase Heat Transfer Solutions</i> ”.
2017	Invited Seminar at Collaborative Research Center “Interaction between Transport and Wetting Processes, Technische Universität Darmstadt, Presentation: “ <i>Nanofluids for Boiling Heat Transfer Applications: from a Hopeless Task to New Research Opportunities</i> ”.
2015	Invited Seminar at QGECE (Queensland Geothermal Energy Centre of Excellence), Queensland University, Brisbane (AU). Presentation Title: “ <i>Mini, Micro, Nano Heat Transfer</i> ”.
2013	Mechanical Engineering Seminar at Purdue University, IN, USA. Presentation Title: “ <i>Metal Foams for Heat Transfer Applications: Will it Remain Just a Good Idea?</i> ”.
2006-2021	I presented the results of my research activity through oral presentations in more than 30 International and in 9 National scientific congresses and conferences.

Publications

Citation profile (Source: Scopus)

h-index: **28**Total publications: >**200**Indexed documents: **151**Textbook: **1**Citations: **2652**Chapter in International Book: **3**

Patents: 2

1. **WO2020065693 (A1) - HEATING DEVICE WITH PHASE-CHANGE MATERIAL**
2. **WO2020065692 (A1) - HEATING DEVICE**

Journal papers

1. Longo, G.A., Mancin, S., Righetti, G., Zilio, C., Hydrocarbon refrigerants condensation local heat transfer coefficients inside a brazed plate heat exchanger (BPHE), (2023) *International Journal of Heat and Mass Transfer*, 201, art. no. 123615.
2. Longo, G.A., Mancin, S., Righetti, G., Zilio, C., Experimental measurement of thermophysical properties of some commercial phase change materials (PCM) for air conditioning applications, (2022) *International Journal of Refrigeration*, 144, pp. 202-210.
3. Righetti, G., Zilio, C., Longo, G.A., Hooman, K., Mancin, S., Experimental study on the effect of metal foams pore size in a phase change material based thermal energy storage tube, (2022) *Applied Thermal Engineering*, 217, art. no. 119163
4. Calati, M., Hooman, K., Mancin, S., Thermal storage based on phase change materials (PCMs) for refrigerated transport and distribution applications along the cold chain: A review, (2022) *International Journal of Thermofluids*, 16, art. no. 100224, .
5. Zhang, S., Pu, L., Mancin, S., Ma, Z., Xu, L., Experimental study on heat transfer characteristics of metal foam/paraffin composite PCMs in large cavities: Effects of material types and heating configurations, (2022) *Applied Energy*, 325, art. no. 119790,
6. Longo, G.A., Mancin, S., Righetti, G., Zilio, C., Local heat transfer coefficients of R32 and R410A boiling inside a brazed plate heat exchanger (BPHE), (2022) *Applied Thermal Engineering*, 215, art. no. 118930,
7. Zhao, C., Opolot, M., Liu, M., Wang, J., Bruno, F., Mancin, S., Hooman, K., Periodic structures for melting enhancement: observation of critical cell size and localized melting, (2022) *International Journal of Heat and Mass Transfer*, 195, art. no. 123107
8. Zhang, S., Pu, L., Mancin, S., Dai, M., Xu, L., Role of partial and gradient filling strategies of copper foam on latent thermal energy storage: An experimental study, (2022) *Energy*, 255, art. no. 124517, .
9. Longo, G.A., Mancin, S., Righetti, G., Zilio, C., Local heat transfer coefficients of R32 and R410a condensation inside a brazed plate heat exchanger (BPHE), (2022) *International Journal of Heat and Mass Transfer*, 194, art. no. 123041,
10. Noro, M., Mancin, S., Cerboni, F., High Efficiency Hybrid Radiant and Heat Pump Heating Plants for Industrial Buildings: An Energy Analysis, (2022) *International Journal of Heat and Technology*, 40 (4), pp. 863-870.
11. Martelletto, F., Doretto, L., Mancin, S., Numerical simulation through experimental validation of latent and sensible concrete thermal energy storage system, (2022) *Journal of Energy Storage*, 51, art. no. 104567.
12. Favero, G., Berti, G., Bonesso, M., Morrone, D., Oriolo, S., Rebesan, P., Dima, R., Gregori, P., Pepato, A., Scanavini, A., Mancin, S., Experimental and numerical analyses of fluid flow inside additively manufactured and smoothed cooling channels, (2022) *International Communications in Heat and Mass Transfer*, 135, art. no. 106128.
13. Zhao, C., Opolot, M., Liu, M., Wang, J., Bruno, F., Mancin, S., Hooman, K., Review of analytical studies of melting rate enhancement with fin and/or foam inserts, (2022) *Applied Thermal Engineering*, 207, art. no. 118154.
14. Riehl, R.R., Mancin, S., Estimation of thermophysical properties for accurate numerical simulation of nanofluid heat transfer applied to a loop heat pipe, (2022) *International Journal of Thermofluids*, 14, art. no. 100158.
15. Subramani, P., Arivazhagan, N., Selvaraj, S.K., Mancin, S., Manikandan, M., Influence of hot corrosion on pulsed current gas tungsten arc weldment of aerospace-grade 80A alloy exposed to high temperature aggressive environment, (2022) *International Journal of Thermofluids*, 14, art. no. 100148.
16. Opolot, M., Zhao, C., Liu, M., Mancin, S., Bruno, F., Hooman, K., A review of high temperature (≥ 500 °C) latent heat thermal energy storage, (2022) *Renewable and Sustainable Energy Reviews*, 160, art. no. 112293.
17. Calati, M., Zilio, C., Righetti, G., Longo, G.A., Hooman, K., Mancin, S., Latent thermal energy storage for refrigerated trucks [Stockage d'énergie thermique latente pour les camions frigorifiques], (2022) *International Journal of Refrigeration*, 136, pp. 124-133.
18. Righetti, G., Longo, G.A., Mancin, S., Zilio, C., Shape optimization of lattice-frame materials obtained via additive manufacturing during air forced convection, (2022) *Experimental Heat Transfer*, .
19. Guarda, D., Wahli, F., Gwerder, D., Martinez-Garcia, J., Stamatiou, A., Worlitschek, J., Mancin, S., Schuetz, P., Phase Change Material numerical simulation: enthalpy-porosity model validation against liquid fraction data from an X-ray computed tomography measurement/system, (2022) *Nondestructive Testing and Evaluation*, 37

- (5), pp. 508-518.
20. Noro, M., Mancin, S., Riehl, R. Energy and Economic Sustainability of a Trigeneration Solar System Using Radiative Cooling in Mediterranean Climate. 2021, *Sustainability*, 13, 11446.
 21. Zhao, C., Opolot, M., Liu, M., Bruno, F., Mancin, S., Hooman, K. Phase change behaviour study of PCM tanks partially filled with graphite foam (2021) *Applied Thermal Engineering*, 196, art. no. 117313.
 22. P. Rebesan, M. Ballan, M. Bonesso, A. Campagnolo, S. Corradetti, R. Dima, C. Gennari, G.A. Longo, S. Mancin, M. Manzolaro, G. Meneghetti, A. Pepato, E. Visconti, M. Vedani, Pure molybdenum manufactured by Laser Powder Bed Fusion: Thermal and mechanical characterization at room and high temperature, (2021), *Additive Manufacturing*, 47, 102277.
 23. Righetti, G., Zilio, C., Doretto, L., Longo, G.A., Mancin, S. On the design of Phase Change Materials based thermal management systems for electronics cooling (2021) *Applied Thermal Engineering*, 196, art. no. 117276, .
 24. Calati, M., Righetti, G., Doretto, L., Zilio, C., Longo, G.A., Hooman, K., Mancin, S. Water pool boiling in metal foams: From experimental results to a generalized model based on artificial neural network (2021) *International Journal of Heat and Mass Transfer*, 176, art. no. 121451.
 25. Mulka, R., Kujawska, A., Zajączkowski, B., Mancin, S., Buschmann, M.H. Drying silica-nanofluid droplets (2021) *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 623, art. no. 126730.
 26. Longo, G.A., Mancin, S., Righetti, G., Zilio, C. Comparative analysis of microfin vs smooth tubes in R32 and R410A condensation (2021) *International Journal of Refrigeration*, 128, pp. 218-231.
 27. Calati, M., De Monte, E., Mancin, S., Numerical analysis of the effects of the structure shape and orientation of kelvin cell porous structures during air forced convection, *Applied Sciences*, 2021, 11(13), 6189
 28. Opolot, M., Zhao, C., Liu, M., Mancin, S., Bruno, F., Hooman, K. Investigation of the effect of thermal resistance on the performance of phase change materials (2021) *International Journal of Thermal Sciences*, 164, art. no. 106852.
 29. Favero, G., Bonesso, M., Rebesan, P., Dima, R., Pepato, A., Mancin, S. Additive manufacturing for thermal management applications: from experimental results to numerical modeling (2021) *International Journal of Thermofluids*, 10, art. no. 100091.
 30. Zhao, C., Opolot, M., Liu, M., Bruno, F., Mancin, S., Flewell-Smith, R., Hooman, K. Simulations of melting performance enhancement for a PCM embedded in metal periodic structures (2021) *International Journal of Heat and Mass Transfer*, 168, art. no. 120853.
 31. Calati, M., Doretto, L., Zilio, C., Mancin, S. 3D numerical simulation of a novel ventilated roof: thermal performance analysis and fluid flow behavior (2021) *Science and Technology for the Built Environment*, 27 (6), pp. 819-831.
 32. Mancin, S., Noro, M. Reversible heat pump coupled with ground ice storage for annual air conditioning: An energy analysis (2020) *Energies*, 13 (23), art. no. 13236182.
 33. Longo, G.A., Mancin, S., Righetti, G., Zilio, C., Ceccato, R., Salmaso, L. Machine learning approach for predicting refrigerant two-phase pressure drop inside Braze Plate Heat Exchangers (BPHE) (2020) *International Journal of Heat and Mass Transfer*, 163, art. no. 120450.
 34. Doretto, L., Martelletto, F., Mancin, S. Numerical analyses of concrete thermal energy storage systems: effect of the modules' arrangement (2020) *Energy Reports*, 6, pp. 199-214.
 35. Righetti, G., Doretto, L., Sadafi, H., Hooman, K., Mancin, S. Water pool boiling across low pore density aluminum foams (2020) *Heat Transfer Engineering*, 41 (19-20), pp. 1673-1682.
 36. Opolot, M., Zhao, C., Liu, M., Mancin, S., Bruno, F., Hooman, K. Influence of cascaded graphite foams on thermal performance of high temperature phase change material storage systems (2020) *Applied Thermal Engineering*, 180, art. no. 115618.
 37. Doretto, L., Righetti, G., Longo, G.A., Zilio, C., Mancin, S. On the hysteresis phenomenon during flow boiling heat transfer on a hydrophilic carbon/carbon surface (2020) *International Communications in Heat and Mass Transfer*, 117, art. no. 104795.
 38. Longo, G.A., Mancin, S., Righetti, G., Zilio, C., Ortombina, L., Zigliotto, M. Application of an Artificial Neural Network (ANN) for predicting low-GWP refrigerant boiling heat transfer inside Braze Plate Heat Exchangers (BPHE) (2020) *International Journal of Heat and Mass Transfer*, 160, art. no. 120204.
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 158. Mancin S, Zilio C, Rossetto L, (2013). Experimental evaluation of a mini-VCS for electronic cooling applications: R1234yf vs R134a. Fourth IIR Conference on Thermophysical Properties and Transfer Processes of Refrigerants, Delft, The Netherlands, June 17-19. ISBN: 9782913149991.
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 163. Mancin S, Rossetto L, (2012). An assessment on forced convection in metal foams. Journal of Physics: Conference Series, Vol. 395, 012048, 6th European Thermal Sciences Conference (Eurotherm 2012), Poitiers - Futuroscope - France, September 4-7.
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 165. Zilio C, Mancin S, Diani A, Rossetto L, (2011). Aluminum foams as possible extended surfaces for air cooled condenser. Proc. of 23rd IIR International Congress of Refrigeration. Prague, Czech Republic August 21-26, ISBN: 9782913149892. ISI: 000310485801049.
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175. Cavallini A, Del Col D, Mancin S, Rossetto L, (2007). An updated model for condensation of halogenated refrigerants inside enhanced tubes. Proc. of International Congress of Refrigeration 2007. Beijing, August 21-26. ISBN: 13 978-2-913149-59-5
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180. Mancin S, Righetti G, Zilio C, Longo GA, R1233zd(E) and R245fa Flow Boiling Heat Transfer and Pressure Drop inside a 4.2 mm ID Microfin Tube, 17th International Refrigeration and Air Conditioning Conference at Purdue, July 9-12, 2018, Purdue, Indiana.
181. Mancin S, Zilio C, Righetti G, Doretti L, Longo GA, R134a Flow Boiling inside a 4.3 mm ID Microfin Tube, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016, Purdue, Indiana, US, ID2265.
182. Longo GA, Mancin S, Righetti G, Zilio C, HFO1234ze(E) And HFC134a Flow Boiling Inside a 4mm Horizontal Smooth Tube, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016, Purdue, Indiana, US, ID2167.
183. Longo GA, Mancin S, Righetti G, Zilio C, HFO1234ze(E) Boiling Inside a Brazed Plate Heat Exchanger, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016, Purdue, Indiana, US, ID2166.
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188. Diani A, Tamura M.T., Mancin S., Barbosa J., Rossetto L., (2014), R1234yf Flow Boiling Heat Transfer Inside a 3.4 mm ID Microfin Tube, 15th International Refrigeration and Air Conditioning Conference at Purdue, July 14-17.
189. Mancin S, Diani A, Doretti L, Rossetto L, (2013). Flow boiling in rectangular channel filled with high porosity copper foam: heat transfer measurements and two-phase flow visualizations. 8th International Topical Team Workshop on Two-phase systems for ground and space applications, Bremen, Germany, September 17-19.
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191. Mancin S, Zilio C, Diani A, Rossetto L, (2012). Material and height effects on the heat transfer performance of metal foams cooled by air in forced convection. AIP CONFERENCE PROCEEDINGS, vol. 1453, p. 231-236, ISSN: 0094-243X, doi: 10.1063/1.4711181.
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195. Mancin S, Del Col D, Rossetto L, (2012). Superheating effects on partial condensation of R32 inside a plate heat exchanger prototype. Proc. of ECI 8th International Conference on Boiling and Condensation Heat Transfer Ecole

- Polytechnique Fédérale de Lausanne. p. 1-10, Lausanne, Switzerland, June 3-7.
196. Mancin S, Del Col D, Rossetto L, (2012). Condensation of R32 and R410 inside a brazed plate heat exchanger. Proc. of XXX UIT Heat Transfer Conference. ISBN: 9788874885091, Bologna, Italy, June 25-27.
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 198. Diani A, Mancin S, Zilio C, Rossetto L, (2011). Experimental and numerical analysis of a finned surface. Atti del XXIX Congresso UIT sulla Trasmissione del Calore. Torino, 20-22 Giugno.
 199. Mancin S, Zilio C, Rossetto L, Cavallini A, (2010). Experimental and analytical study of heat transfer and fluid flow through aluminum foams. AIP Conference Proceedings, vol. 1254, p. 305-310, ISSN:0094-243X, doi: 10.1063/1.3453829.
 200. Mancin S, Zilio C, Rossetto L, Cavallini A, (2010). Foam height effects on heat transfer performance of 20 PPI aluminum foams. Proc. of ASME-ATI-UIT Conference. Sorrento, May 16-19, ISBN: 978-884672659-9.
 201. Zilio C, Mancin S, (2009). Effects of lubricant on carbon dioxide heat transfer in transcritical refrigerating cycles. Proc. of XIII European Conference - The future of refrigeration. Milan, Italy, June 12-13.
 202. Cavallini A, Mancin S, Rossetto L, Zilio C, (2008). Heat transfer performance of aluminum foams during single phase air flow. Proc. of ThETA2. Cairo, Egypt, December 17-20, p. 475- 482, ISBN: 978-1-4244-3575-3.
 203. Mancin S, Cavallini A, Del Col D, Rossetto L, (2006). Thermal performance of R410A condensing in a microfin tube. Proc. of 11th International Refrigeration and Air Conditioning Conference. Purdue, West Lafayette, July 14-17.
 204. Mancin S, Zilio C, Rossetto L, Cavallini A, (2009). Pore size effects on heat transfer and fluid flow through Aluminum foams. Atti del UIT XXVII Congresso sulla Trasmissione del Calore. Reggio Emilia, 22-24 Giugno, p. 197-203, ISBN: 978-88-7488-312-7.
 205. Cavallini A, Mancin S, Rossetto L, Zilio C, (2007). A new experimental test rig for the thermal-fluid- dynamic characterization of enhanced surfaces during single phase air flow. Atti del XXV Congresso Nazionale UIT sulla Trasmissione del Calore. Trieste, 18-20 Giugno.
 206. Cavallini A, Mancin S, Rossetto L, Zilio C, (2007). Forced convection in enhanced surfaces: heat transfer and pressure drop measurements. Atti del 62° Congresso Nazionale ATI. Salerno, 11-14 Settembre, vol. 1, p. 451-456, NAPOLI: Cuzzolin Editore, ISBN: 978-88-87998-77-1.
 207. Del Col D, Fantini F, Mancin S, Rossetto L, Zilio C, (2006). Single phase heat transfer and pressure drops in cellular structures. Atti del XXIV Congresso Nazionale UIT sulla Trasmissione del Calore Napoli, 21-23 Giugno.
 208. F. Fantini, S. Mancin, L. Rossetto, "Porous Media for Modern Thermal Application", Pubblicazione interna al Dipartimento di Fisica Tecnica dell'Università degli Studi di Padova. Padova, 2005.

Padova, 11/10/2022

Simone Mancin

Curriculum vitae di Massimo Benettoni

Laureato in Ingegneria Meccanica presso l'Università di Padova

Dal 1/12/1994 a 31/01/1996 assunto presso l'I.N.F.N., sezione di Padova con contratto ex art. 36 con profilo di tecnologo.

Dal 01/02/1996 assunto presso la sezione di Padova nel profilo di tecnologo.

Dal 2005 inquadrato come primo tecnologo.

Principali attività svolte

Esperimento CMS, progetto muon barrel drift tube chambers (1995- 2020)

- Prototipazione, sviluppo e progettazione delle camere a muoni del barrel di CMS.
- Produzione e gestione di disegni, documenti, procedure
- Progettazione della linea di assemblaggio e di tools di assemblaggio presso LNL
- Progettazione delle attrezzature di installazione delle camere a muoni del barrel di CMS.
- Partecipazione e coordinamento dell'installazione delle camere del Barrel di CMS
- Progettazione e costruzione di dispositivi per la manutenzione post-installazione delle camere in situ.
- Progettazione, costruzione e messa in opera di schermatura in Pb e borated PE
- Partecipazione ad interventi di manutenzione delle camere a muoni e delle camere RPC del barrel di CMS.

Proposta di esperimento SuperB (2009 – 2012)

Progetto di radiografia muonica Mu-Steel (2010- 2013)

Esperimento Belle II (2013 – 2016)

- Progettazione, produzione, e installazione della meccanica di supporto e integrazione di un sistema di calibrazione dei PMT mediante laser e fibre ottiche.
- Partecipazione ai test per la definizione della procedura di costruzione e incollaggio delle barre di quarzo sintetico. Partecipazione alla costruzione dei rivelatori TOP.

Proposta di esperimento Nessie (2012-2014)

Progetto RICH2 upgrade, esperimento LHCb (2013 – 2020)

- Progettazione e prototipazione della meccanica di supporto e raffreddamento del nuovo rivelatore a sensori MaPMTs e della relativa elettronica di read-out del rivelatore RICH2 di LHCb.
- Realizzazione di prototipi con condotti di raffreddamento mediante foratura profonda e validazione delle simulazioni termiche mediante campagna di misure sperimentali su diverse geometrie e setup.
- Integrazione del design del Particle Detector Array di RICH2 con il corrispettivo di RICH1 per massimizzare la condivisione di parti comuni e intercambiabili.
- EDR, Engineering Design Review e PRR, Procurement readiness review
- Definizione di specifiche, tolleranze, della procedura di costruzione e qualifica, avviamento della produzione, qualifica del materiale e dei trattamenti

Progetto ITS upgrade, esperimento Alice (2013 – 2019)

- Disegno e prototipazione delle strutture di supporto del nuovo rivelatore ITS Outer Barrel (upgrade di fase 1) dell'esperimento Alice.

- Sviluppo della procedura di integrazione e del tool di movimentazione e inserzione e sostituzione degli stave Outer Barrel dell'ITS di Alice.
- Partecipazione alla definizione del disegno dei servizi di cooling, alimentazione e segnali a bordo barrel
- EDR, Engineering Design Review e PRR, Procurement readiness review

Esperimento CMS, nuovo rivelatore Barrel Timing Layer BTL (2017 – in corso)

- R&D della meccanica di supporto e raffreddamento del nuovo rivelatore a SiPM (Barrel Timing Layer) e della relativa elettronica di elaborazione, esperimento CMS, per la definizione del design e delle specifiche in vista della stesura del TDR.

Progetto di radiografia muonica MuTomCa (2020- in corso)

- Progettazione, prototipazione e costruzione di rivelatore composto da tubi a drift per la radiografia muonica di contenitori di combustibile nucleare.

Rivelatore Gamma Beam Profiler Esperimento Lux-e (2021- in corso)

- Progettazione, prototipazione e costruzione della meccanica di precisione per la movimentazione controllata dei rivelatori su supporti in zaffiro

Esperimento AGATA (2022- in corso)

- Progettazione e verifica strutturale di carpenteria portante per il rivelatore

Servizio Progettazione Meccanica (2021- in corso)

- Responsabile del Servizio Progettazione Meccanica della sezione di Padova

Incarichi in commissioni tecniche, incarichi di RUP, incarichi presso CERN

- Presidente Commissione gara atto GE n. 12870 del 23.07.2021 - CIG: 89043359B0
- Responsabile del procedimento per acquisizione di parti in composito di fibra di carbonio per esp. Alice ITS, 2018
- Presidente della Commissione per la valutazione della congruità economica della gara per la lavorazione finale dei moduli del 1° supermodulo della cavità RFQ di Ifmif-Eveda (2015).
- Responsabile Unico del procedimento per la lavorazione del 3° supermodulo della cavità RFQ di Ifmif-Eveda (2010)
- Presidente della Commissione per la valutazione della congruità economica della gara di acquisizione di un centro di lavoro a 5 assi per l'officina meccanica dell'INFN di Padova, aprile 2010.
- Membro della commissione esaminatrice del bando di acquisizione di blocchi di rame OFE per il progetto speciale IFMIF (2009-2010)
- Responsabile del procedimento per l'acquisizione di una macchina di misura a coordinate CMM (2009)
- Responsabile del procedimento per l'acquisizione di una gru semovente per officina meccanica, (anno 2008)
- Membro della commissione tecnica per la valutazione di congruità per l'assegnazione della costruzione di parti di TOF di AMS-2 (2005)
- Presidente della commissione per gara a licitazione privata per l'acquisto di macchina utensile ad elettroerosione a filo, INFN Sez. di Padova (2005-2006).
- Presidente della commissione tecnica per la valutazione di congruità della gara per l'acquisto di componentistica del circuito di raffreddamento per l'esperimento AMS.
- Membro del comitato per l'Engineering Design Review dei forward RPC di CMS (10/2002).

- Partecipazione alla stesura del MoU con IHEP Beijing per la produzione delle strutture di supporto delle camere MB4 di CMS (valore "in kind" al 2001: 350 kChf), con visite al sito di produzione (Pechino) per la firma del MoU e per la definizione delle procedure di quality control.
- Membro della commissione CERN per l'appalto della produzione di 255 pannelli di honeycomb delle camere a drift del barrel di CMS (valore al 2000: circa 1000 kChf);
- Membro della commissione INFN Bologna per l'appalto della lavorazione meccanica dei profili in alluminio per le camere a drift del barrel di CMS.

Incarichi in commissioni di concorso INFN e Università'

- Presidente della commissione esaminatrice di concorso n. MIB/C6/23461, anno 2021- 2022
- Membro della commissione esaminatrice per la selezione pubblica di cui al bando BA/OT8/218 per l'assunzione a tempo determinato di personale tecnico presso INFN Sezione di Bari.
- Membro della commissione esaminatrice per la selezione pubblica di cui al bando 2008/81, per titoli ed esami, per l'assunzione a tempo indeterminato di n. 1 unità area Tecnica Dipartimento di Fisica dell'Università degli Studi di Padova.
- Membro della commissione esaminatrice di concorso per l'assunzione di personale tecnico, bando 2006/54, Università' di Padova.
- Presidente della commissione esaminatrice di concorso per l'assunzione di personale tecnico, bando 2005/154, Università' di Padova.
- Presidente della commissione esaminatrice di concorso n.9580/2002, presso la sez. di Padova.
- Presidente della commissione esaminatrice di concorso n.8992/2001, presso la sez. di Padova.
- Membro della commissione esaminatrice di concorso n.8190/2000 presso INFN di Torino.
- Membro della commissione per la selezione di personale n.BA/C6/83 presso INFN Bari (2000).
- Presidente della commissione esaminatrice concorso n.7704/1999 presso la sezione di Padova.

Partecipazione a corsi di istruzione, formazione, aggiornamento

- Corsi di istruzione e aggiornamento Ansys[®], presso INFN sedi varie.
- Corsi periodici di aggiornamento, software CAD NX[®], presso INFN Padova.
- Corso di istruzione GD&T (tolleranze di forma e posizione)
- Corsi per l'utilizzo della macchina di misura a coordinate Zeiss Accura[®] con software Calypso[®]
- Corso di istruzione Microsoft Project[®] e Microsoft Excel[®]
- Corso di istruzione Termografia infrarossi
- Corso di istruzione test non distrutti

Padova, gennaio 2023