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CURRICULUM dell'attività scientifica

TITOLI SCIENTIFICI

dal 1996 - Ricercatore (ING-IND 07) presso il Dipartimento di Energia del Politecnico di Milano
1998 - Dottorato di Ricerca in Energetica conseguito presso il Politecnico di Milano.
1993 - Laurea in Ingegneria Aeronautica conseguita presso il Politecnico di Milano.

ATTIVITÀ DI RICERCA

Inizialmente l'attività di ricerca è stata focalizzata allo studio sperimentale e teorico della combustione non stazionaria di propellenti solidi e allo sviluppo delle relative tecniche diagnostiche basate sull'impiego di laser di potenza e di sistemi video ad alta velocità.
Attualmente l'attività di ricerca riguarda:

- studio del Precessing Vortex Core e del vortex breakdown in getti dotati di moto di swirl mediante tecniche ottiche (Stereo-PIV, LDV).
- Studio di correnti comprimibili di gas non-ideali mediante techniche ottiche (Schlieren, LDV)
- Sviluppo di tecniche ottiche di tipo Background Oriented Schlieren per l'applicazione a flussi comprimibili.
- studio sperimentale di fiamme a swirl mediante l'utilizzo di diagnostiche ottiche (spettroscopia, LDV, PIV, imaging ad alta velocità).
- studio delle prestazioni e lo sviluppo di camere di micro/mesocombustori per sistemi miniaturizzati di propulsione o di produzione di energia,

COLLABORAZIONE/PROGETTI

Ha partecipato a diversi programmi di ricerca finanziati da Enti Nazionali (MIUR, ASI, ENEA) ed Internazionali (EOARD).
E' stato Responsabile Scientifico di Unità di Ricerca nell'ambito di Progetti PRIN (2006, 2008) su microcombustori.
Ha collaborato con il Laboratoire de Combustion Détonique de l'Ecole Nationale Supérieure de Mécanique et d'Aérotechnique (ENSMA) di Poitiers.
Nel 2008 è stato Invited Professor presso l'INSA/CORIA (Institut National des Sciences Appliquées/COmplexe de Recherche Interprofessionnel en Aérothermochimie) di Rouen (Francia).
Collabora con il CNR-IENI.

E' stato reviewer per le seguenti riviste/conferenze: Journal of Propulsion and Power, AIAA Journal, Experiments in Fluid, International Journal of Hydrogen Energy, Applied Energy, Energies. The International Colloquium on the Dynamics of Explosions and Reactive Systems (ICDERS), Global Power and Propulsion Society (GPPS) Forum.

ASSOCIAZIONI

É stato membro di diversi comitati organizzativi di congressi internazionali di combustione e propulsione.
Membro del Combustion Institute.
Membro dell'Associazione Italiana di Velocimetria Laser e Diagnostica non Invasiva (AIVELA).

PUBBLICAZIONI SU RIVISTA/LIBRO

1. F. COZZI, E. GÖTTLICH, L. ANGELUCCI, V. DOSSENA, A. GUARDONE (2017). Development of a background-oriented schlieren technique with telecentric lenses for supersonic flow. In Journal of Physics: Conference Series (Vol. 778, No. 1, p. 012006). doi.org/10.1088/1742-6596/778/1/012006.
2. F. MARTINELLI, F. COZZI, A. COGHE (2012). Phase-locked analysis of velocity fluctuations in a turbulent free swirling jet after vortex breakdown. EXPERIMENTS IN FLUIDS, vol. online first, p. 1-13, ISSN: 0723-4864, doi: 10.1007/s00348-012-1296-2 2012.
3. F. COZZI, A. COGHE (2012). Effect of Air Staging on a Coaxial Swirled Natural Gas Flame. EXPERIMENTAL THERMAL AND FLUID SCIENCE, Volume 43, November 2012, Pages 32–39, ISSN: 0894-1777.
4. MINOTTI A, BRUNO C, COZZI F (2011). A LES simulation of a CH4/AIR microcombustor with detailed chemistry combustion. COMBUSTION SCIENCE AND TECHNOLOGY, vol. 183, pp. 554- 574, ISSN: 0010-2202
5. NEGRI M, COZZI F, MALAVASI S (2011). Self-synchronized phase averaging of PIV measurements in the base region of a rectangular cylinder, MECCANICA, vol 46, pp. 423- 435, ISSN: 0025-6455
6. COZZI F, OLIVANI A, CARATTI L, COGHE A (2010). Investigation of fine scale structure of turbulent and molecular diffusion in coaxial jets of He/CO2 in air by LDA and Rayleigh scattering EXPERIMENTAL THERMAL AND FLUID SCIENCE, vol 34, pp. 316- 322, ISSN: 0894-1777

7. ARANEO L, COGHE A, COZZI F., OLIVANI A, SOLERO G (2008). Natural Gas Burners for Domestic and Industrial Appliances. Application of the Particle Image Velocimetry. In: SCHRDER ANDREAS, WILLERT CHRISTIAN. "Particle Image Velocimetry New Developments and Recent Applications" Series: Topics in Applied Physics. vol. 112, p. 245-257, HEIDELBERG: Springer, ISBN/ISSN: 978-3-540-73527-4
8. OLIVANI A, SOLERO G, COZZI F., COGHE A (2007). Near field flow structure of isothermal swirling flows and reacting non-premixed swirling flames. EXPERIMENTAL THERMAL AND FLUID SCIENCE, vol. 31, p. 427-436, ISSN: 0894-1777
9. ANDREA O, COZZI F (2006). Effects of Hydrogen Addition on a Confined Lean Non-Premixed Natural Gas Swirled Flame. In: AFGAN N.H.,ORECCHINI F., SANTIANGELI A. 1st World Congress of Young Scientists on Hydrogen Energy Systems HYSYDAYS. p. 409-414, NEW YORK: Begell House, Inc., ISBN/ISSN: 1-56700-230-7
10. COZZI F, COGHE A (2006). Behavior of Hydrogen Enriched Non-Premixed Swirled Natural Gas Flames. INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol. 31, p. 669-677, ISSN: 0360-3199
11. NOVOZHILOV B.V, COZZI F., DELUCA L.T (2002). Limit cycles for solid propellant burning rate at constant pressure. In: K.K. KUO AND L. T. DELUCA. Combustion of Energetic Materials, ISBN/ISSN: 1-56700-198-X
12. COZZI F., BALASINI A., HESSLER R. O. (2000). Errors and Noise in Laser Recoil Measurements. COMBUSTION EXPLOSION AND SHOCK WAVES, vol. 36, p. 31-42, ISSN: 0010-5082
13. COZZI F., DELUCA L.T., AND NOVOZHILOV B.V. (1999). Linear Stability and Pressure-Driven Response Function of Solid Propellants with Phase Transition. JOURNAL OF PROPULSION AND POWER, vol. 15, p. 806-815, ISSN: 0748-4658
14. DELUCA L.T., COZZI F., GERMINIASI G., LEY I., AND ZENIN A.A. (1999). Combustion Mechanism of an RDX-Based Composite Propellant. COMBUSTION AND FLAME, vol. 118, p. 248-261, ISSN: 0010-2180

PUBBLICAZIONI/PRESENTAZIONI CONGRESSI

1. R. SHARMA, F. COZZI (2017). Experimental Study of Unconfined and Confined Isothermal Swirling Jets. World Academy of Science, Engineering and Technology, International Journal of Mechanical, Aerospace, Industrial, Mechatronic and Manufacturing Engineering, 11(2), 350-360.
2. F. COZZI, G. FELISATI, M. QUADRIO (2016) Velocity measurements in nasal cavities by means of SPIV - Preliminary tests,. XXIV National Meeting della Associazione Italiana di VElocimetria LAser e diagnostica non invasiva (AIVELA): http://www.aivela.org/XXIV_Convegno/friday_28.html
3. R. SHARMA, F. COZZI, A. COGHE (2016) Phase-averaged characterization of turbulent isothermal free swirling jet after vortex breakdown.18th International Symposium on the Application of Laser and Imaging Techniques to Fluid Mechanics · LISBON | PORTUGAL · JULY 4 – 7, 2016. http://ltces.dem.ist.utl.pt/lxlaser/lxlaser2016/finalworks2016/papers/02.4_2_233paper.pdf
4. A. SPINELLI, F. COZZI, V. DOSSENA, P. GAETANI, M. ZOCCA, A. GUARDONE (2016). Experimental Investigation of a Non-Ideal Expansion Flow of Siloxane Vapor MDM. In ASME Turbo Expo 2016: Turbomachinery Technical Conference and Exposition. American Society of Mechanical Engineers. ISBN: 978-079184974-3.
5. F. COZZI, R. SHARMA, A. COGHE, F. ARZUFFI (2015). An experimental investigation on Isothermal free swirling jet. In XXXVIII Meeting of the Italian Section of the Combustion Institute. ISBN 978-88-88104-25-6.
6. M. CARMINE, R. CHELI, F. COZZI, A. SPINELLI, M. ZOCCA, A. GUARDONE (2015). Evidence of complex flow structures in a converging-diverging nozzle caused by a recessed step at the nozzle throat. In 45th AIAA Fluid Dynamics Conference. ISBN: 978-162410362-9.
7. A. SPINELLI, A. GUARDONE, F. COZZI, M. CARMINE, R. CHELI, M. ZOCCA, P. GAETANI, V. DOSSENA (2015) Experimental Observation of Non-Ideal Nozzle Flow of Siloxane Vapor MDM. 3rd International Seminar on ORC Power Systems - ASME ORC 2015. www.asme-orc2015.be/proceedings/documents/103.pdf
8. S. LOMBARDI, K. BIZON, A. COGHE, F. COZZI AND G. CONTINILLO (2015) DMD analysis of experimental PIV data of a swirled jet. Proceedings of the 25th International Colloquium on the Dynamics of Explosions and Reactive Systems, Paper 208, 2015. http://www.icders.org/ICDERS2015/abstracts/ICDERS2015-208.pdf
9. R. DONDÈ, A. CAPRUZZI, F. COZZI (2014) Ignition delay of kerosene/water emulsion. French Italian Joint Combustion Meeting, IFRF and the Combustion Institute. Pisa, Italy.
10. B. VERCELLI; S. MAFFI; R. DONDÈ; S. DE IULIIS; F. COZZI (2013) FT-IR measurements performed at the exhaust of a meso-scale combustor working at 0.1 and 0.3 MPa. European Combustion Meeting 2013. Lund, Sweden.
11. A. MINOTTI, F. COZZI, F. CAPELLI (2013). CH4/air Mesocombustor at 3 bar: Numerical simulation and experiments. In Applied Mechanics and Materials (Vol. 431, pp. 137-150). Trans Tech Publications. ISSN: 16609336. DOI: 10.4028/www.scientific.net/AMM.431.137
12. A. FRASSOLDATI, F. COZZI, S. DE IULIIS, G. RIVA (2013) CFD simulation of a meso-combustor with detailed kinetics. In XXXVI Meeting of the Italian Section of the Combustion Institute. ISBN 978-88-88104-15-7.
13. G. TORSELLO, F. PAROZZI, L. NERICCIO, L. ARANEO, F. COZZI F., M. CARCASSI, N. MATTEI (2012). Characterization of the Liquid Sodium Spray Generated by a Pipework Hole . In: -. Proceeding of the 2012

International Congress on the Advances in Nuclear Powerplans. Chicago, 24/6/2012- 28/6/2012, p. 850-859, Chicago:-, ISBN: 9780894480911.

14. F. COZZI, S. DE IULIIS, F. CAPELLI, A. COGHE (2012). Performances of a mesocombustor at 0.3 MPa with preheated air. In: XXXV Meeting of the Italian Section of the Combustion Institute. p. 1-6, Ciajolo A., D'Anna A., Mastorakos E., Scala F., Politecnico di Milano, Milano, Italy, 10/10/2012-12/10/2012.
15. S. DE IULIIS, D. GIASSI, S. MAFFI, F. COZZI, R. DONDÈ (2012). Chemiluminescence measurements ina meso-scale combustor fueled with CH4/Air at 0.3 MPa . In: XXXV Meeting of the Italian Section of the Combustion Institute. p. 1-6, Ciajolo A., D'Anna A., Mastorakos E., Scala F. ., Politecnico di Milano, Milano, Italy, 10/10/2012-12/10/2012.
16. M. RECALCATI, F. COZZI, A. COGHE (2012). Measurement of entrainment rate in the initial region of swirling jets. In: XXXV Meeting of the Italian Section of the Combustion Institute. p. 1-6, Ciajolo A., D'Anna A., Mastorakos E., Scala F. , ISBN: 9788888104140, Politecnico di Milano, Milano, Italy, 10/10/2012-12/10/2012
17. F. COZZI, A. COGHE (2011). air staging in a swirled natural gas burner with radial injection. In: XXXIV Meeting of the Italian Section of the Combustion Institute. October 24-26, 2011, Roma, Italy.
18. D. GIASSI, S. DE IULIIS, S. MAFFI, F. COZZI, F. CAPELLI (2011). Efficiency and stability of a meso-scale combustor at 3 atm. In: XXXIV Meeting of the Italian Section of the Combustion Institute. October 24-26, 2011, Roma, Italy.
19. L . ARANEO, F. COZZI, G. TORSELLO, L. NERICCIO (2011). Impact of a high temperature sodium spray on a target: PDA preliminary characterization. In: DIPSI Workshop 2011. Droplet Impact Phenomena & Spray Investigations. 27/05/2011, Bergamo.
20. F. COZZI, A. COGHE (2011). Effect of air staging on a coaxial swirled natural gas flame. In: 7th Mediterranean Combustion Symposium. 11-15 September, 2011, Sardinia, Italy.
21. F. COZZI, S. DE IULIIS (2011). Performance of a mesoscale whirl combustor by means of flame chemiluminescence analysis. In: ECM 2011, 5th European Combustion Meeting. 28th June - 1st July 2011, Cardiff University, Cardiff, United Kingdom.
22. F. COZZI, L. P. M. COLOMBO, A. LUCCHINI, A. COGHE, A. MUZZIO, F. PACINI (2010). Background Oriented Schlieren characterization of the thermal boundary layer over a vertical heated plate in free convection . In: XVIII Convegno Nazionale A.I.VE.LA.. 15 – 16 dicembre 2010 , Università di “Roma Tre”, Roma, Italy.
23. S. LIU, B. RENOU, M. SJÖSTRAND, Y. D'ANGELO, F. COZZI (2010). Experimental Study of Combustion and Flow Dynamics in a Meso-Scale Whirl Combustor . In: 15th Int Symp on Applications of Laser Techniques to Fluid Mechanics. 05/07/2010-08/07/2010, Lisbon, Portugal.
24. F. COZZI, F. CAPELLI, F. MIRELLI, A. COGHE (2010). Flow Instabilities in a Swirl Burner. In: International Conference on “Processes and Technologies for a Sustainable Energy”. 27/06/2010-30/07/2010., Ischia, NA, Italy.
25. S. LIU, B. RENOU, M. SJÖSTRAND, Y. D'ANGELO, F. COZZI (2010). Experimental Study of CH4-H2/Air Flames in a Meso-Scale Combustor. In: The Tenth International Conference on Combustion and Energy Utilization. 04/05/2010 - 08/05/2010., Mugla university, Turkey.
26. F. COZZI, A. COGHE, Y. D'ANGELO, B. RENOU,M. BOUKHALFA (2009). Experimental study of performances and internal flow field of a meso-scale vortex combustor. In: ECM 2009, 4th European Combustion Meeting. 14-17 Aprile 2009, Vienna University of Technology, Vienna, Austria.
27. A. MINOTTI, C. BRUNO, F. COZZI (2009). LES numerical simulations and experimental data of a micro combustion chamber. In: 3rd European Conference for Aero-Space Sciences. 6/07/2009-9/07/2009, Versailles, Paris, France.
28. F. COZZI, A. COGHE, G. PICHEO (2009). Experimental characterization of a meso-scale combustor by means of optical diagnostics. In: XX Congresso AIDAA. 29/06/2009-3/07/2009, Politecnico di Milano, Milano, Italy.
29. M. NEGRI, F. COZZI, S. MALAVASI (2009). Phase averaged flow field in the base region of a rectangular cylinder by unconditional PIV measurements. In: XVII Convegno AIVELA. Ancona, Italy.
30. F. COZZI, A. OLIVANI, L. CARATTI, A. COGHE (2009). Investigation of fine scale structure of turbulent and molecular diffusion in coaxial jets of He/CO2 in air by LDA and Rayleigh scattering. In: Sixth Mediterranean Combustion Symposium. 07/06/2009 - 11/06/2009, Ajaccio, France.
31. F. COZZI, S. MALAVASI, A. COGHE (2008). Analysis of Precessing Vortex Core (PVC) phenomena by post-processing of unconditional TR-PIV measurements. In: XVI A.I.VE.LA. National Meeting. 1-2 December 2008, Faculty of Engineering, University of Naples "Federico II", Napoli, Italy.
32. F. COZZI, A. COGHE, A. OLIVANI (2007). Combustion of NG + H2 fuel mixtures in a partially premixed swirl burner. In: Third European Combustion Meeting ECM 2007. Chania, Creta.
33. F. COZZI, A. COGHE, A. OLIVANI, M. ROGORA (2007). Stability and combustion efficiency of a meso-scale combustor burning different hydrocarbon fuels. In: 30th Meeting of The Italian Section of The Combustion Institute. 20-23 Giugno 2007, Ischia, Napoli, Italy.
34. COZZI F., COGHE A, OLIVANI A (2006). Thermal and chemical efficiencies of a meso-scale combustor for propulsive or power generation systems. In: Third International Conference on Green Propellants for Space Propulsion. , 17 - 20 September 2006, Poitiers, France.
35. OLIVANI A, COZZI F., COGHE A (2006). Analysis of Hydrogen Enriched Flames by Laser Diagnostics. In: 13th Int Symp on Application of Laser Techniques to Fluid Mechanics. 26-29 June, 2006, Lisbon, Portugal.

36. COZZI F., A. OLIVANI, G. SOLERO, A. COGHE (2005). Flame structure and flow field modifications induced in a lean natural gas swirled flame by hydrogen addition. In: European Combustion Meeting ECM 2005. 3-6 April, 2005, Louvain-La-Neuve, Belgium.
37. A. COGHE, F. COZZI, A. OLIVANI, G. SOLERO (2005). Experimental analysis of fuel injection procedure in a natural gas swirling flame.. In: European Combustion Meeting, ECM - 2005. Louvain-La-Neuve, Belgium.