

SCHEDA GRITT

Struttura	INTERMEC.Mo.Re
GRITT	Laboratory for Interdisciplinary Fluid Mechanics and Thermodynamics (LIFT)
Descrizione	Il Laboratorio LIFT svolge attività di studio in fluidodinamica, aerodinamica e termofluidodinamica dei sistemi industriali e del veicolo, attraverso tecniche computazionali (CFD) e sperimentali. I ricercatori del laboratorio hanno un'esperienza consolidata nell'ambito delle tecniche di promozione dello scambio termico, della ventilazione e dell'aerodinamica. La progettazione di sistemi di interesse industriale viene svolta attraverso ottimizzazione multiobiettivo. I settori di riferimento del laboratorio sono: settore meccanico, automobilistico e trasporti, energetico, ceramico, alimentare, biomedicale.
Responsabile unità	Prof. Enrico Stalio
Sito Web di riferimento	http://www.lift.unimore.it

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Attività e Servizi	Simulazione: simulazione numerica di sistemi termo-fluidodinamici attraverso l'utilizzo di software Open Source e commerciale per applicazioni industriali, software autocostruito per problemi specifici e fondamentali Prove sperimentali: misure di pressione, temperatura, velocità locali e portate, misure di scambio termico Ottimizzazione: sviluppo di procedure specifiche di ottimizzazione per problemi di carattere industriale di tipo progettuale Corsi specialistici: i ricercatori di LIFT tengono corsi specialistici in fluidodinamica, fluidodinamica computazionale, termo-fluidodinamica, ottimizzazione.
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Strumenti	<u>Strumentazione accreditata autorizzata dal DIF</u> • High-speed time-resolved stereo particle image velocimetry (PIV) • Pitot tube velocimetry • Vane anemometry <u>Altra strumentazione</u> • Radiator wind tunnel • Multi-channel pressure scanners • Pitot tube velocimetry • Vane anemometry • Thermocouples • Ultrasound pulsed laser doppler velocimetry (UPDV) • Multi-point high-speed video acquisition system • Malvern Panalytical's Spraytec spray droplet size measurement
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Personale impegnato (inquadramento)		
	Enrico Stalio	PA
	Diego Angeli	RTD-B
	Mauro Corticelli	PO
	Paolo Emilio Santangelo	RTD-A
	Marco Cavazzuti	Assegno di ricerca
	Adriano Leonforte	Assegno di ricerca (DISMI)
	Elisabetta Salerno	Assegno di ricerca (DISMI)
	Pietro Cingi	Dottorando (DISMI)
	Roberto Corsini	Dottorando
	Andrea Fregni	Dottorando
	Paolo Levoni	Collaboratore esterno

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Referenze (case history)	<i>Risultato/Prodotto</i>	<i>Cliente</i>
	<i>Descrizione sintetica del risultato ottenuto o del prodotto realizzato, eg: prototipi, modelli, sw, procedure ... con particolare riferimento alle tecnologie e metodologie applicate e agli aspetti innovativi</i>	<i>Azienda/Ente che ha commissionato l'attività e/o beneficiato del risultato e/o prodotto</i>
	Studio e ottimizzazione del raffreddamento di motori elettrici da competizione	Magneti Marelli S.p.A. – sede di Corbetta (MI)
	Studio del sistema di ventilazione di grandi gallerie autostradali - Tunnel del Monte Bianco: misure sperimentali, creazione del modello numerico completo, sviluppo dell'algoritmo di controllo della ventilazione	GEIE-TMB Courmayeur (AO)
	Formazione e evoluzione della schiuma durante l'imbottigliamento delle bevande gassate	SIDEL S.p.A. Parma (PR)
	Ottimizzazione di bruciatori a gas metano e gas povero per usi industriali - creazione di modelli parametrici	SACMI IMOLA S.C. Imola (BO)
	Determinazione di un modello fisico di radiatore	Ferrari SpA (MO)
	Sistemi di raffreddamento di moduli di potenza	Ferrari SpA (MO)

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Brevetti (se disponibile)		
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Pubblicazioni scientifiche	<i>Pubblicazioni Scientifiche dei componenti del gruppo</i> Cavazzuti, M., Corticelli, M.A., Karayiannis, T.G. Compressible Fanno flows in micro-channels: An enhanced quasi-2D numerical model for laminar flows (2019) Thermal Science and Engineering Progress, 10, pp. 10-26. Cimarelli, A., Leonforte, A., De Angelis, E., Crivellini, A., Angeli, D. On negative turbulence production phenomena in the shear layer of separating and reattaching flows (2019) Physics Letters, Section A: General, Atomic and Solid State Physics, 383 (10), pp. 1019-1026. Angeli, D., Stalio, E. A fast algorithm for Direct Numerical Simulation of turbulent convection with immersed boundaries (2019) Computers and Fluids, . Darwish, M., Orazi, L., Angeli, D. Simulation and analysis of the jet flow patterns from supersonic nozzles of laser cutting using OpenFOAM (2019) International Journal of Advanced Manufacturing Technology, . Cimarelli, A., Leonforte, A., Angeli, D. A priori analysis and benchmarking of the flow around a rectangular cylinder (2019) ERCOFTAC Series, 25, pp. 419-425. Allesina, G., Cingi, P., Gessani, G., Angeli, D. Exploratory modeling and experimental investigation of a vibrating-stripe wind energy converter (2018) International Journal of Heat and Technology, 36 (3), pp. 1031-1036. Bobinger, M., La Torraca, P., Mock, J., Becherer, M., Cattani, L., Angeli, D., Larcher, L., Lugli, P. Solution-Processing of Copper Nanowires for Transparent Heaters and Thermo-Acoustic Loudspeakers (2018) IEEE Transactions on Nanotechnology, 17 (5), art. no. 8345792, pp. 940-947. Cimarelli, A., Leonforte, A., Angeli, D. Direct numerical simulation of the flow around a rectangular cylinder at a moderately high Reynolds number (2018) Journal of Wind Engineering and Industrial Aerodynamics, 174, pp. 39-49. Santangelo, P.E., Corticelli, M.A., Tartarini, P. Experimental and Numerical Analysis of Thermal Interaction Between Two Droplets in Spray Cooling of Heated Surfaces (2018) Heat Transfer Engineering, 39 (3), pp. 217-228. Santangelo, P.E., Tartarini, P. Effects of load variation and purge cycles on the efficiency of Polymer Electrolyte Membrane Fuel Cells for stationary applications (2018) Journal of Renewable and Sustainable Energy, 10 (1), art. no. 014301, .
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