Within the aims of IFToMM Cross Disciplinary Group1
Securing our Future Environment - Air, Water, Energy

I4SDG 2023
IFToMM for Sustainable Development Goals
BILBAO, Spain — June 22-23, 2023

IFToMM

		WEDNESDAY, JUNE 21
20:00	21:30	Welcoming Pintxos Dinner at Plaza Nueva

		THURSDAY, JUNE 22			
8:00	9:00	Registration			
		Room 1: Aula de Conferencias			
9:00	9:30	Opening of the Conference			
9:30	10:15	Keynote Speech 1: Weathering IFToMM for our Upcoming Worldwide Technological Challenges - Experiences, Strategies and Visions from the EC Cockpit *Prof. Andres Kecskemethy. University of Duisburg - Essen. IFToMM President.*			
10:15	10:45	Coffee break			
		Room 1: Aula de Conferencias		**Room 2: P0A9A**	
10:45	11:00	Scientific Session 1A Robotics and Mechatronics I	Planning Real-time Energy Efficient Trajectories for a Two Degree-of-freedom Balanced Serial Manipulator. *Domenico Dona, Basilio Lenzo, and Giulio Rosati*	Scientific Session 1B Technical Developmpents for Sustainable Engineering I	An Automatic Measurement System for Shape Memory Alloys' Wire Resistivity Characterization. *Marco Siciliano, Francesco Lamonaca, Domenico Luca Carni, Stefano Rodino, Elio Matteo Curcio, Giuseppe Carbone, Domenico Mundo and Carmine Maletta*
11:00	11:15		Reducing energy consumption and driving torque in an underactuated robotic arm through natural motion. *Jason Bettega, Dario Richiedei, Iacopo Tamellin and Alberto Trevisani*		Fault Detection in Induction Machines of Air Handling Units. *Christian Saab and Bechara Nehme*
11:15	11:30		Online vs offline calibration of 5 DOFs robotic manipulator. *Francesco Cosco, Michele Perrelli, Rocco Adduci, Giuseppe Carbone, and Domenico Mundo*		Development of a remote-controlled scaled multi-actuated vehicle. *Stefano Lovato, Giovanni Righetti, Alice Canton, Basilio Lenzo, and Matteo Massaro*
11:30	11:45		Task-Specific Synthesis and Design of a mobile six-DoF Hexa Parallel Robot for Weed Control. *Tim Sterneck , Jannik Fettin and Moritz Schappler*		Functional Design and Prototyping of a Novel Soft Fingertip with Variable Stiffness. *Giovanni Colucci, Carmen Visconte and Giuseppe Quaglia.*
11:45	12:00		Optimization of the design parameters of the 6-DOF mobility platform. *Rybak L.A., Khurtasenko A.V., Perevuznik V.S., and Chuev K.V.*		Machine-learning based energy estimation on a high-speed transportation system. *Paolo Boscariol, Dario Richiedei, Iacopo Tamellin and Alberto Trevisani*
12:00	12:15	Scientific Session 2A Biomechanical and Medical Systems	Identification of surgical forceps using YOLACT++. *Shoko Memida and Satoshi Miura*	Scientific Session 2B Special Session: Engines and Powertrains *(coordinated by Tigran Parikyan)*	Crankshaft balancing design platform: a practical application. *Eugenio Brusa, Alberto Dagna, Cristiana Delprete and Chiara Gastaldi*
12:15	12:30		RehaWrist.q - Development of a 3 DoF Cable-Driven End-Effector Wearable Robot for Rehabilitation of the Wrist. *Giuseppe Quaglia, Andrea Botta, Giovanni Colucci and Yukio Takeda*		A Drop-in Phase Change Material-Based Augmented Cooling System for Track Capable Electric Vehicles. *Neeraj Shidore, Justin Skorski, Satish Ketkar, Jacob Wright and Madhu Raghavan*
12:30	12:45		Lifting Assist Device for Transfer in Cooperation with Caregivers. *Mari Kurata, Ming Jiang, Kotaro Hoshiba, Yusuke Sugahara, Takahiro Uehara, Masato Kawabata, Ken Harada and Yukio Takeda*		Decarbonizing Marine Sector: The Drop – In solution of Marine Sustainable Fuels following their lubricity performance. *Thomas Vernados, Ioannis Stathopoulos and Stamatis Kalligeros*
12:45	13:00		Design and prototyping of a semi-wearable robotic leg for sit-to-stand motion assistance of hemiplegic patients. *Micah J. P. Alampay, Ming Jiang, Yusuke Sugahara and Yukio Takeda*		On the influence of the actual load sharing factor in increasing the power density in gearboxes. *Carlo Rosso and Fabio Bruzzone*
13:00	13:15		Comprehensive control strategy design for a wheelchair power-assist device. *Valerio Cornagliotto, Michele Polito, Laura Gastaldi and Stefano Pastorelli*		Driveability Constrained Models for Optimal Control of Hybrid Electric Vehicles. *Federico Miretti and Daniela Misul*
13:15	13:30		Analytical Synthesis of the Seven-Bar Linkage 7-RR(RRRR)RR used for Medical Disinfection Robot. *Elida-Gabriela Tulcan, Alexandru Oarcea and Erwin-Christian Lovasz*		Torsional Dynamic Performance of a Transmission Test Bench: an Investigation on the Effect of Motors Controllers Parameters. *Enrico Galvagno, Mauro Velardocchia, Antonio Tota, Luca Zerbato, and Angelo Domenico Vella*
13:30	13:45		Design of a Novel Medical Rolling Walker for Use in Hospital Environment. *Ángela Alonso and Saioa Herrero*		
13:45	14:45	Lunch			
		Room 1: Aula de Conferencias		**Room 2: P0A9A**	
14:45	15:00	Scientific Session 3A Technical Developmpents for Sustainable Engineering II	Overturning stability for the SNAP Cargo family of pedal-assisted ultralight vehicles. *Francesco Passarella, Giacomo Mantriota and Giulio Reina*	Scientific Session 3B Special Session: Service Systems for Sustainability *(coordinated by Maria Cristina Valigi)*	Sustainable design of machine guards. *Luca Landi, Silvia Logozzo and Maria Cristina Valigi*
15:00	15:15		Gas bearings applications in automotive fuel cell technology. *Federico Colombo, Luigi Lentini, Terenziano Raparelli and Andrea Trivella*		Robotic System for Hand Rehabilitation based on Mirror Therapy. *Monica Tiboni, Amici Cinzia and Bussola Roberto*
15:15	15:30		Numerical simulation of cylindrical lithium-ion cells impact. *M. A. Cardo-Palomares, J. C. Paredes-Rojas, A. A. Cazares-Duran and C. R. Torres-SanMiguel*		Development of energy optimization strategies for catenary-free tramways. *Alessio Cascino, Gabriele Ciappi, Enrico Meli and Andrea Rindi*
15:30	15:45		Conceptual design and numerical analysis of a photobioreactor to cultivate Arthrospira. *A.A. Casarez-Duran, C. R. Torres-SanMiguel, J. C. Paredes-Rojas, M. A. Cardoso-Palomares and G. M. Urriolagoitia-Calderón*		Multibody simulation of an underactuated gripper for sustainable waste sorting. *Gabriele Maria Achilli, Silvia Logozzo and Monica Malvezzi*
15:45	16:00		Movement smoothness metrics in human-machine interaction. *Mattia Antonelli, Elena Caselli, Laura Gastaldi, Luc Janssens, Stefano Pastorelli, Anna Bjerkefors and Yves Vanlandewijck*		Preliminary study on a handle with haptic devices for collaborative robotics in a remote maintenance. *Gabriele Maria Achilli, Francesco Chinello, Cheng Fang, Pedro Gomez Hernandez, Silvia Logozzo and Maria Cristina Valigi.*
16:00	16:15				Joint stiffness analysis and regulation for underactuated soft grippers based on monolithic structure. *Mihai Dragusanu, Danilo Troisi, Domenico Prattichizzo and Monica Malvezzi*
16:15	16:45	Cofee break			
		Room 1: Aula de Conferencias			
17:00	17:20	Scientific Session 4A Cross Disciplinary Session	Teaching Appropriate Technologies with the Applied Mechanics approach to sensitize students to their future role in environmental sustainability and social justice. *Walter Franco*		
17:20	17:40		Humanitarian Techniques in the Teaching of Technical Sciences. *Tikhomirov G.V., Egorova O.V., Bazanchuk G.A. and Kurakov S.V.*		
17:40	18:00		Alternative methods of facial reconstruction with applicability in archaeology. *Lucian Micle and Erwin-Christian Lovasz*		
18:00	18:20		The key role of advanced research on engines and powertrains for sustainable mobility, transportation and power generation. *Tigran Parikyan*		
20:00	22:30	Conference Dinner - Sociedad Bilbaina			

Within the aims of IFToMM Cross Disciplinary Group1
Securing our Future Environment – Air, Water, Energy

I4SDG 2023
IFToMM for Sustainable Development Goals
BILBAO, Spain — June 22-23, 2023

IFToMM

		FRIDAY, JUNE 23

Room 1: Aula de Conferencias

9:00	9:45	Keynote Speech 2: Renewable Energy: technology challenges and opportunities for a sustainable development. Mr. Jose Luis Villate (Director of the Renewable Energy and Thermal Efficiency department of TECNALIA)

Time		Room 1: Aula de Conferencias		Room 2: P0A9A	
9:45	10:00	Scientific Session 5A Robotics and Mechatronics II	A framework for improving energy efficiency and sustainability of collaborative robots. *Paolo Boscariol, Enrico Clochiatti, Lorenzo Scalera and Alessandro Gasparetto*	Scientific Session 5B Special Session: Educational experiences in mechatronics *(coordinated by Alberto Borboni)*	Machine learning algorithm for robotic inverse kinematic problem. *Alberto Borboni and Nataliya Shakhovska*
10:00	10:15		Modeling and Parametric Analysis of Quasi-Translational Parallel Continuum Manipulators. *Luigi Tagliavini, Oscar Altuzarra, Giuseppe Quaglia and Víctor Petuya*		Robot Motion planning in ROS environment. *Alberto Borboni, Cinzia Amici, Ivan Archetti, Leonardo Archetti and Rodolfo Faglia*
10:15	10:30		Energy Efficiency of a SCARA-Like Manipulator with Elastic Balancing. *Luca Bruzzone, Shahab E. Nodehi, G. Berselli and Pietro Fanghella*		Intersubjective dynamics in Cooperative Robots. *Lorenzo Romagnoli*
10:30	10:45		Deep learning technique to identify abrupt movements in human-robot collaboration. *Michele Polito, Elisa Digo, Stefano Pastorelli and Laura Gastaldi*		A code of ethics for social cooperative robots. *Elena Guerra*
10:45	11:15	Coffee break			

Time		Room 1: Aula de Conferencias		Room 2: P0A9A	
11:15	11:30	Scientific Session 6A Sustainable Energy Systems	Experimental Investigation to Enhance Performances of MRE in Energy Harvesting. *Renato Brancati, Giandomenico Dii Massa and Andrea Genovese*	Scientific Session 6B Linkages, Gearing, Transmissions and Actuators	Influence of design parameters in energy lost for eccentric cam mechanisms with translational roller follower. *P. Català, L. Jordi and J.M. Veciana*
11:30	11:45		Dynamic motion evaluation of a novel hybrid Wind & Wave integrated platform. *Ermando Petracca, Emilio Faraggiana, Massimo Sirigu, Giuseppe Giorgi and Giovanni Bracco*		Friction Models for a Sustainable Design: Friction Coefficient in Lubricated Conformal Pairs. *Enrico Ciulli*
11:45	12:00		Model and Control Analysis for a Point absorber wave energy converter. *Fabián G. Pierart, Claudio Villegas, Cristian Basoalto, Mathias Hüsing and Burkhard Corves*		Evolution of Gear Machining Technology in a Japanese Manufacturer – Realization of Skiving Method as an Application of 5-Axes Machining Center. *Daisuke Matsuura and Tsune Kobayashi*
12:00	12:15		Novel Pseudo 3D Design of Solar Thermal Facades with Triangle and Trapeze Solar Thermal Collectors for Increased. *Denisa Rusea, Macedon Moldovan and Ion Visa*		A vibration exciter for dynamic testing of large structures. *Renato Brancati, Domenico De Falco, Giandomenico Di Massa, Stefano Pagano, Ernesto Rocca*
12:15	12:30		Fast frequency-domain based tool for FOWT platforms preliminary design. *María Alonso-Reig, Iñigo Mendikoa and Victor Petuya*		Low Cost 3D printed Pneumatic Linear Actuator. *Daniela Maffiod Terenziano Raparelli and Walter Incardona*
12:30	12:45	Scientific Session 7A Extended abstracts	SDGs Initiatives in Ricoh Technology R&D. *Yoshihisa Ohta*		Development of Orientation Modules with Linear Actuation. *Florin Florescu, Radu Sebastian Zaharia, Ioan-Emil Popescu and Erwin-Christian Lovasz*
12:45	13:00		Heat and mass transfer characteristics in drying process of viscous liquid film. *Koichi Kato, Sotaro Ogawa, Shinichi Kuramoto and Kazuyoshi Fushinobu*		Analytical Synthesis of Five-Bar Linkage 5-RTRTR. *Demjen Tivadar, Alexandru Oarcea, Carmen Sticlaru, Marco Ceccarelli and Erwin-Christian Lovasz*
13:00	13:15		Optimal Design of Gravity Compensator for Robotic Manipulators for Energy Saving Drive Widely within Workspace. *Takumi Yamamoto, Nobuyuki Iwatsuki and Kotaro Hoshiba*		
13:15	13:30		Visualization and Numerical Analysis of Temporal Change of Ink Viscosity over the Depth-wise Direction at Inkjet Head Nozzle. *Yoshihiro Harada, Norika Okochi and Kazuyoshi Fushinobu*		
13:30	13:45		Mechanical study of the submersible mixer structure of a wastewater biological treatment plant. *Javier Hermosa, Javier Corral, Natalia Alegría, Igor Peñalva and Charles Pinto*		

Room 1: Aula de Conferencias

13:45	14:15	Closing of the Conference
14:15	15:15	Farewell Lunch
16:00	18:00	Sailing to sea - Boat Trip