

Morning

6 June 2018 - Wednesday

8.00 - 9.00 Registration 'Sala Consiglio di Facoltà'

9.00 - 9.45 Plenary Welcome Address - Aula Magna 'G. Agnelli'

Chairpersons: C. Malvicino, *FCA* - F. Millo, *Politecnico di Torino*

- M. Gradu - *SAE International 2018 President*
- R. Vavassori - *CLEPA President*
- A. Nervo - *ANFIA President*

9.45 - 11.00 Plenary Opening Keynotes - Aula Magna 'G. Agnelli'

Chairpersons: C. Malvicino, *FCA* - F. Millo, *Politecnico di Torino*

- Outlook for Future Powertrains for Significant CO₂ Reductions
T. Johnson - *Corning Inc.*
- Connected and automated vehicles and advances in powertrain control to achieve unprecedented fuel economy gains
G. Rizzoni - *Ohio State University*
- Powertrains of the Future - in the Crossfire between Desire and Reality
M. Bargende - *Universitat Stuttgart*

11.00 - 11.40 Networking Break

11.40 - 13.00 Parallel Sessions

New Powertrain Developments – Aula Magna 'G. Agnelli'
Chairpersons: M. Bargende, *Universitat Stuttgart*
J. Macek, *Czech Technical University in Prague*

Aero & Rolling Resistance – Sala Consiglio di Facoltà
Chairpersons: M. Biglia, *DENSO*
F. Vestrelli, *FCA ITALY S.p.A*

Hybridization & Electrification – Aula 7
Chairpersons: M. Cisternino, *GM Global Propulsion Systems*
V. Ravello, *Centro Ricerche Fiat*

11.40

- Improvement of Diesel Engine Emissions and Fuel Consumption by Thermal Management
D. Queck, S. Visser, B. Van Moergastel - *DENSO Automotive Deutschland GmbH*
C. Massano, M. Harada - *DENSO Thermal Systems SpA*

- Potential of Porsche reference cars for aerodynamic development
F. Cogotti, M. Pfadenhauer, T. Wiegand - *Porsche AG*

- 3D Simulation and design space exploration for battery pack weight reduction
M. Buonfiglioli - *Siemens*

12.00

- The Key Role of Advanced, Flexible Fuel Injection Systems to Match the Future CO₂ Targets in an Ultra-light Mid-size Diesel Engine
2018-37-0005
A. Vassallo, F. Pesce - *GM Global Propulsion Systems*
C. Beatrice, G. Di Blasio, G. Belgiorio - *Istituto Motori*
G. Avolio - *Continental Corp.*

- Effects on the Aerodynamic Characteristics of Vehicles in Longitudinal Proximity Due to Changes in Style
2018-37-0018
G. Le Good, M. Resnick, P. Boardman, B. Clough - *Coventry University*

- Concept design of a scalable fully integrated electric power unit
M. Pennese, A. Lega - *Mecaprom*
L. Malafronte - *Università di Salerno*

12.20

- Model-based combustion control for mission-dependent optimization of emissions and fuel consumption in diesel engines
S. d'Ambrosio, R. Finesso, O. Marello, E. Spessa - *Politecnico di Torino*
P. Biffali, G. Dellora, G. Hardy, A. Schoni - *FPT Industrial*

- Application of adjoint methods on drag reduction of current production cars
2018-37-0016
G. Francesconi - *Politecnico di Torino*
L. Miretti - *Centro Ricerche Fiat ScpA*
L. Loreface, F. Pitillo, N. Paola - *FCA ITALY S.p.A.*

- Battery Stack Monitor Enhance Performances of Li-Ion Batteries in Hybrid and Electric Vehicles
C. Carriero, R. Zambon - *Analog Devices*

12.40

- Fundamental Investigations, Potentials and Operating Strategies for Pre-Chamber Spark Plugs in SI Engines
M. Sens - *IAV GmbH*

- Robust Optimization for Real World CO₂ Reduction
2018-37-0015
J. Gargoloff, B. Duncan, E. Tate, A. Alajbegovic, A. Belanger, B. Paul - *Exa Corporation*

- Structural Performance Analysis of vehicle equipment for the FABRIC dynamic power transfer system
D. Parena, D. Muscogiuri - *AMET*
V. Cirimele - *Politecnico di Torino*

13.00 - 14.30 Networking Lunch

Afternoon	14.30 - 15.30 Parallel Sessions		
	<p style="text-align: center;">New Powertrain Developments – Aula Magna ‘G. Agnelli’ Chairpersons: C. Vafidis, <i>Centro Ricerche Fiat</i> C. Schernus, <i>FEV</i></p>	<p style="text-align: center;">Aero & Thermal Management – Sala Consiglio di Facoltà Chairpersons: T. Kuthada, <i>FKFS</i> L. Loreface, <i>FCA ITALY S.p.A.</i></p>	<p style="text-align: center;">Alternative & E-Fuels – Aula 7 Chairpersons: M. Ferrera, <i>Centro Ricerche Fiat</i> B. M. Vaglieco, <i>Istituto Motori</i></p>
	<p>14.30 • Techniques for CO₂ Emission Reduction over a WLTC. A Numerical Comparison of Increased Compression Ratio, Cooled EGR and Water Injection 2018-37-0008 F. Bozza, V. De Bellis, L. Teodosio, D. Tufano, E. Malfi - <i>Università di Napoli Federico II</i></p>	<p>• Underhood Airflow Management T. Yasuda - DENSO Corporation</p>	<p>• Methanol, From Electrons to Engines G. Dolan, E. Dekker - Methanol Institute</p>
	<p>14.50 • Fundamental Investigations about Heated Fuel Injection on SI Engines 2018-37-0003 M. Sens - <i>IAV GmbH</i></p>	<p>• Maximizing Coasting of 48V Vehicles with Cold-Storage Evaporator 2018-37-0023 M. Özbek, S. Nishida, M. Biglia, V. Kohli, A. Inaba, T. Györög, M. Nishikawa - <i>DENSO Corporation</i></p>	<p>• Autogas LPG: A Low-Carbon Solution, Available Today and Ready for Tomorrow C. Nourigat - European LPG Association (AEGPL)</p>
	<p>15.10 • Real-World Fuel Saving Potential of VVA Functionalities for Light-Duty Diesel Engines T. Koerfer - FEV Group GmbH</p>	<p>• A Comprehensive Approach for Estimation of Automotive Component Life Due To Thermal Effects 2018-37-0019 A. El-Sharkawy - FCA US LLC</p>	<p>• Influence of combustion efficiency on quasi-dimensional simulation of spark ignition engines fueled with methane and hydrogen 2018-37-0012 A. Irimescu, F. Catapano, S. Di Iorio, P. Sementa - Istituto Motori</p>
	15.30 - 16.10 Networking Break		
	16.10 - 17.30 Plenary Session - Legislation Framework & Future Scenarios - Aula Magna ‘G. Agnelli’		
	Chairpersons: C. Malvicino, <i>FCA</i> - F. Millo, <i>Politecnico di Torino</i>		
	<ul style="list-style-type: none"> • A Model Based Definition of a Reference CO₂ Emissions Value for Passenger Cars under Real World Conditions 2018-37-0031 Z. C. Samaras, D. Tsokolis A. Dimaratos L. Ntziachristos S. Doulgeris - <i>Aristotle University of Thessaloniki</i> N. Ligterink W. Vonk R. Cuelenaere - <i>TNO Automotive</i> • New WLTP CO₂ Regulation Impact on Electrified Powertrain Components Characteristics and Vehicle Road Load Parameter Optimization L. Orofino - <i>FCA ITALY S.p.A.</i> A. Piu - <i>Centro Ricerche Fiat SCpA</i> • An integrated framework to deal with the gap between type-approval and in-use vehicle fuel consumption and CO₂ emissions G. Fontaras, J. Pavlovic, B. Ciuffo - <i>EU Commission Joint Research Centre</i> • Heavy Duty Vehicle Powertrain and Drivetrain Efficiency a VECTO-Based Evaluation for the Needs of Future European CO₂ Targets Definition A. Tansini, N. Zacharof, B. Ciuffo, G. Fontaras - <i>EU Commission Joint Research Centre</i> 		
	17.30 - 18.15 Plenary Closing Keynotes - Aula Magna ‘G. Agnelli’		
Chairpersons: C. Malvicino, <i>FCA</i> - F. Millo, <i>Politecnico di Torino</i>			
<ul style="list-style-type: none"> • The CO₂ Challenge: Off Cycle Credits Rules, Role and Impact C. Malvicino - <i>FCA ITALY S.p.A.</i> • Leveraging SMEs Automotive Competence for Supporting Mobility Evolution: the Regione Piemonte Approach G. Cipolla - <i>Ceipiemonte</i> 			
Congress Dinner 20.45	<p>“ESPERIA” Restaurant Società Canottieri C.so Moncalieri, 2 - 10131 - Torino</p>		
Visit to Turin Auto Show Parco Valentino			

7 June 2018 - Thursday

8.30 – 9.30 Plenary Session - From Well to Wheels to Life Cycle Assessment - Aula Magna 'G. Agnelli'
Chairperson: M. Pierini, *Università di Firenze*

- Zero-CO₂ Powertrains and their Different Shades of Green
C. Schernus - *FEV Europe GmbH*
- CO₂ mitigation through on-board capture from vehicle exhausts
T. A. Hatton - *Massachusetts Institute of Technology (MIT)*
- Economic and Climate Advantages of Secondary-Loop Motor Vehicle Air Conditioners (MACs)
2018-37-0030
S. Andersen, K. Taddonio, M. Soffer, N. Sherman - *Institute for Governance & Sustainable Development*
T. Craig, L. Leitzel - *Mahle*
J. Baker, S. Chowdhury - *Mahle Behr Troy Inc*
S. Kapoor, P.V. Nagarhalli, J. Meena - *Tata Motors Ltd*

9.30 – 11.10 Parallel Sessions

Alternative & E-Fuels – Aula Magna 'G. Agnelli'
Chairpersons: M. Ferrera, *Centro Ricerche Fiat*
B. M. Vaglieco, *Istituto Motori*

Aero & Thermal Management – Sala Consiglio di Facoltà
Chairpersons: T. Kuthada, *FKFS*
L. Lorefice, *FCA ITALY S.p.A.*

Lightweighting – Aula 7
Chairpersons: G. Belingardi, *Politecnico di Torino*
G. Mastinu, *Politecnico di Milano*

Morning

9.30	<ul style="list-style-type: none"> • Vision 2050: how low carbon liquid fuels and efficient vehicles will contribute to the low emission mobility A. Bartelloni - <i>FuelsEurope</i> 	<ul style="list-style-type: none"> • Thermal management architectures virtual evaluation for HEV/ PHEV 2018-37-0025 W. Ferraris, M. Rostagno, F. Bettoja - <i>Centro Ricerche Fiat SCpA</i> 	<ul style="list-style-type: none"> • Take-home Messages from the Applications of Life Cycle Assessment on Lightweight Automotive Components 2018-37-0029 M. Delogu, L. Zanchi C. A. Dattilo, M. Pierini - <i>Università di Firenze</i> S. Maltese - <i>Università di Bologna</i> R. Riccomagno - <i>Magneti Marelli SpA</i>
9.50	<ul style="list-style-type: none"> • The Eni approach to eco-sustainable solutions for mobility and environmental protection G. Tannoia - <i>ENI</i> 	<ul style="list-style-type: none"> • Reduced Model of a Vehicle Cabin for transient thermal Simulation 2018-37-0022 D. Klemm, N. Widdecke, J. Wiedemann - <i>FKFS</i> W. Roessner - <i>Daimler AG</i> 	<ul style="list-style-type: none"> • Sustainable composites for lightweight car interior components P. Russo - <i>CNR</i>
10.10	<ul style="list-style-type: none"> • Natural gas: a global answer to the transport system challenges A. Gerini - <i>NVGA</i> 	<ul style="list-style-type: none"> • A dynamic test bench for the cooling water pump characterization under real operating conditions 2018-37-0024 R. Cipollone, D Di Battista - <i>Università dell'Aquila</i> M. Borasso, M. Benincasa - <i>Meccanotecnica Umbra S.p.A</i> 	<ul style="list-style-type: none"> • Lightweight plastic technologies to support weight saving for the automotive industry M. Terragni - <i>ENGEL Italy</i>
10.30	<ul style="list-style-type: none"> • A Lean CNG Combustion for Highest Engine Efficiencies Above 43% Utilising an Ignition Chamber M. Weissner - <i>Volkswagen AG</i> 	<ul style="list-style-type: none"> • Virtual simulation for clutch thermal behavior prediction 2018-37-0024 F. Tosi - <i>Politecnico di Torino</i> M. Gautero, L. Lorefice, N. Paola - <i>FCA ITALY S.p.A</i> 	<ul style="list-style-type: none"> • Affordable Lightweight Automobiles ALLIANCE project: first results of environmental and economic assessment from a Life-Cycle perspective 2018-37-0027 M. Delogu, F. Del Pero, L. Zanchi - <i>Università di Firenze</i> M. Ierides, V. Fernandez - <i>Bax Innovation Consulting</i> K. Seidel - <i>FKA mbH</i> D. Thirunavukkarasu - <i>RWTH Aachen University</i> T. Bein - <i>Fraunhofer LBF</i>
10.50	<ul style="list-style-type: none"> • Achieving CO₂ and Emissions Reduction with a Single Fuel - DME Global Update C. Kidder - <i>International DME Association</i> 	<ul style="list-style-type: none"> • Topology and Shade Optimization of Automotive Designs using Continuous Adjoint CFD F. Campos, E. de Villiers, G. Karpouzias - <i>ENGYS Ltd, UK</i> P. Geremia - <i>ENGYS Srl, Italy</i> 	<ul style="list-style-type: none"> • Extended Target Weighing Approach - Balancing CO₂- Emissions, Costs and Mass during Product Development A. Albers, S. Revfi, M. Spadinger - <i>Karlsruhe Institute of Technology (KIT)</i>

11.10 – 11.40 Networking Break

		11.40 - 12.40 Parallel Sessions		
Morning		Hybridization & Electrification – Aula Magna 'G. Agnelli'	Aero & Thermal Management – Sala Consiglio di Facoltà	Lightweighting – Aula 7
		Chairpersons: M. Cisternino, <i>GM Global Propulsion Systems</i> V. Ravello, <i>Centro Ricerche Fiat</i>	Chairpersons: T. Kuthada, <i>FKFS</i> L. Lorefice, <i>FCA ITALY S.p.A.</i>	Chairpersons: G. Belingardi, <i>Politecnico di Torino</i> G. Mastinu, <i>Politecnico di Milano</i>
	11.40	<ul style="list-style-type: none"> Conventional and Electrically Heated Diesel Oxidation Catalyst Physical Based Modeling 2018-37-0010 P. Ferreri, G. Cerrelli, Y. Miao, S. Pellegrino - <i>GM Global Propulsion Systems</i> L. Bianchi - <i>Powertech Engineering S.r.l.</i> 	<ul style="list-style-type: none"> Thermal Management of High Voltage Batteries J. Tissot, K. Azzouz, I. Traore, P. Leblay - <i>Valeo Thermal Systems</i> 	<ul style="list-style-type: none"> Research and development of a light-weighted cross member for commercial vehicles S. Cecchel, D. Ferrario - <i>Streparava SpA</i> G. Cornacchia, A. Panvini - <i>Università di Brescia</i>
	12.00	<ul style="list-style-type: none"> Eco-driving Optimization Tool for Hybrid Vehicles with Low CO₂ Emissions J. Macek, P. Steinbauer, P. Denk, Z. Sika, J. Morkus - <i>Czech Technical University in Prague</i> 	<ul style="list-style-type: none"> Powertrain Thermal Management for CO₂ Reduction 2018-37-0020 T. Castiglione, F. Rovense, S.G. Bova - <i>Università della Calabria</i> 	<ul style="list-style-type: none"> Application of Continuously Galvanized Steel in Europe: driving forces and game changers S. Koellerer - <i>Voestalpine Steel Division</i>
	12.20	<ul style="list-style-type: none"> Transient EGR control with 48V E-boost simulation using integrated model based development J. Dalby - <i>Ricardo UK Ltd</i> 	<ul style="list-style-type: none"> Total Thermal Management of Battery Electric Vehicles (BEVs) 2018-37-0026 S. Chowdhury, L. Leitzel, M. Zima, M. Santacesaria <i>Mahle Behr Troy Inc.</i> G. Titov, J. Lustbader, J. Rugh, J. Winkler - <i>National Renewable Energy Laboratory</i> A. Khawaja, M. Govindarajalu - <i>FCA US LLC</i> 	<ul style="list-style-type: none"> Challenges and opportunities in design of new lightweight vehicle components at the age of Industry 4.0 and Automotive 4.0 G. Belingardi - <i>Politecnico di Torino</i> G. Mastinu - <i>Politecnico di Milano</i>
12.40 - 13.30 Plenary Keynotes - Aula Magna 'G. Agnelli'				
Chairpersons: C. Malvicino, <i>FCA</i> - F. Millo, <i>Politecnico di Torino</i>				
<ul style="list-style-type: none"> The New FCA 3-cyl and 4-cyl Turbo Gasoline Engines M. G. Lisbona - <i>Powertrain Engineering FCA EMEA</i> Redefine the Future of Mobility P. Antonioli - <i>GM Global Propulsion Systems</i> 				
		13.30 - 14.30 Networking Lunch		
		14.30 - 15.50 Parallel Sessions		
Afternoon		Hybridization & Electrification – Aula Magna 'G. Agnelli'	Aero & Rolling Resistance – Sala Consiglio di Facoltà	New Powertrain Developments – Aula 7
		Chairpersons: M. Cisternino, <i>GM Global Propulsion Systems</i> V. Ravello, <i>Centro Ricerche Fiat</i>	Chairpersons: M. Biglia, <i>DENSO</i> F. Vestrelli, <i>FCA ITALY S.p.A.</i>	Chairpersons: C. Beatrice, <i>Istituto Motori</i> M. Sens, <i>IAV GmbH</i>
	14.30	<ul style="list-style-type: none"> Supercar Hybridization: A Synergic Path to Reduce Fuel Consumption and Improve Performance 2018-37-0009 L. Rolando, F. Millo - <i>Politecnico di Torino</i> F. Pulvirenti, M. Medda - <i>Ferrari SpA</i> 	<ul style="list-style-type: none"> FCA Full Scale Wind Tunnel : WLTP and coast down test performed with wind tunnel method 2018-37-0017 M. Stellato, L. Betti - <i>FCA ITALY S.p.A.</i> 	<ul style="list-style-type: none"> Virtual Engine Development Toward CO₂ Emission Reduction: Downsized Turbocharged Engine with focus on Post-Oxidation and use of Alternative Fuels F. Cupo, M. Chiodi, H. J. Berner - <i>FKFS</i> M. Bargende - <i>Universität Stuttgart</i>
	14.50	<ul style="list-style-type: none"> Experimental investigation and modelling of a 1.5 kW axial turbine designed for waste heat recovery through a Rankine cycle 2018-37-0007 O. Dumont, V. Lemort - <i>University of Liège</i> M. Diny - <i>PSA Peugeot Citroen</i> 	<ul style="list-style-type: none"> Thermal Truck from Driving Dynamics to Predict Real Rolling Resistance J. Neubeck, W. Krantz, J. Wiedemann - <i>FKFS</i> 	<ul style="list-style-type: none"> Potentials of variable cross section compressor regarding surge line and compressor efficiency using engine test bench measurements and engine process simulation 2018-37-0004 J. Flinte, P. Elts - <i>Technische Universität Braunschweig</i> T. Sextro, J. Seume - <i>Leibnitz Universität Hannover</i>
	15.10	<ul style="list-style-type: none"> 48V hybrid system technologies to develop the most efficient and cleanest Diesel 2018-37-0011 R. Romanato, F. Duma, R. Fuso, F. Acquaviva, Tripodi - <i>GM Global Propulsion Systems</i> L. Passilly, M. Vieracker - <i>Continental Automotive GmbH</i> 	<ul style="list-style-type: none"> Numerical analysis of aerodynamic impact on passenger vehicles during cornering 2018-37-0014 E. Josefsson, R. Hagvall, M. Urquhart, S. Sebben - <i>Chalmers University</i> 	<ul style="list-style-type: none"> Using a Traffic Simulator to Evaluate and Minimize Carbon Dioxide Emissions in Conventional and Hybrid Electric Vehicles over Real World Emissions Tests 2018-37-0001 T. Donateo, M. Giovinazzi, A. Tamborino - <i>Università del Salento</i>
15.30	<ul style="list-style-type: none"> Assessment of Waste Heat Recovery Potential in Heavy Duty Trucks F. Galuppo, T. Reiche, Volvo V. Lemort - <i>University of Liège</i> 	<ul style="list-style-type: none"> Motorsport and CO₂ Reduction: The Link Between Two Distant Worlds D. Zinelli - <i>Dallara</i> 	<ul style="list-style-type: none"> Numerical Assessment of the CO₂ Reduction Potential of Variable Valve Actuation on a Light Duty Diesel Engine 2018-37-0006 A. Piano, F. Millo - <i>Politecnico di Torino</i> D. Di Nunno, A. Gallone - <i>GM Global Propulsion Systems</i> 	

15.50 - 16.30 Conference Closing Plenary Keynotes - Aula Magna 'G. Agnelli'	
Chairpersons: C. Malvicino, FCA - F. Millo, Politecnico di Torino	
<ul style="list-style-type: none"> • CO2 Regulation in Europe and Its Consequences P. Dolejsi - ACEA • CO2 Regulation: the EU and future of mobility K. C. Scheel - VDA 	
16.30 - 16.45 Conference Closing Remarks by Conferenc Chairpersons	
16.45 End of Conference	

8 June 2018 - Friday	
9.00 - 13.00 Technical Tours	
Morning	<p>Timetables</p> <p><i>to be defined</i></p> <p>FCA - Wind Tunnels - Orbassano</p> <p>Plant General Motors - Torino Plant</p> <p>Maserati - Grugliasco Plant</p>