TECHNICAL SESSIONS

★ Journal Paper

TUESDAY, NOVEMBER 15 - MORNING
Technical and Business Sessions

TIME	Ballroom C1/C2/C3	Meeting Room 12/13	Meeting Room 10/11	Meeting Room 6/7
	Advance Combustion: Part 1 of 2 (SETC1) This session focuses on advanced combustion technologies in both 4-stroke and 2-stroke engines. The scope of topics includes studies of mixture formation, dilution effects, ignition, abnormal combustion, engine efficiency, flame propagation, and emissions formation. 10:30 a.m. - 12:00 p.m. Organizers: William P. Attard, Fiat Chrysler Automobiles; Jaal B. Ghandhi, Univ. of Wisconsin Madison; Adrian Irimescu, Simona Silvia Merola, Istituto Motori CNR; Koji Yoshida, Nihon University Chairperson: Kai W. Beck, Mot GmbH Co-Chair: Koji Yoshida, Nihon University	**Diesel Engine (SETC4)** Papers in this session will pertain to studies of naturally aspirated and boosted diesel engines including their design, emission control, NVH, fuel system, fuel type, after-treatment, combustion quality, or engine control. 10:30 a.m. - 12:00 p.m. Organizers: Brian J. Callahan, Achates Power Inc.; Paul Litke, USAF; Luca Marchitto, Istituto Motori CNR; Masahiko Sugimoto, Kubota Corp.; Cinzia Tornatore, Istituto Motori CNR Chairperson: Paul Litke, USAF Co-Chair: Tadao Okazaki, Kubota Corp.	**Engine Controls: Part 1 of 3 (SETC8)** Papers in this session are related to design, development and testing of new or innovative electronic controls or control systems for internal combustion engines. Topics may include hardware, software and algorithm/function innovations as well as the associated sensors or actuators employed in the control system. Applications may range from very simple systems for 1-cylinder engines to more complex systems for high-performance or multi-cylinder engines. 10:30 a.m. - 12:00 p.m. Organizers: Ken Fosaaen, Kerdea Technologies; Tobias Kallerhoff, Robert Bosch GmbH; Yutaka Nitta, SUZUKI MOTOR CORPORATION Chairperson: Ken Fosaaen, Kerdea Technologies Co-Chair: Hiromi Deguchi, Suzuki Motor Corp.	**Functional Safety (SETC20)** Functional safety, defined as absence of unacceptable risk due to the hazards caused by mal-function in the systems is becoming a key factor in the development of vehicles and equipment and can pose a safety hazard. This increase in functional safety issues has raised the need for the automotive industry to develop its own functional safety standard. This session will highlight the approach of ISO 26262 may influence the safety level of related functions specific to small engine applications. 10:30 a.m. - 12:00 p.m. Organizers: Thomas L. Lago, QirraSound Technologies Europe AB; Takashi Mitome, Suzuki Motor Corp. Chairperson: Thomas L. Lago, QirraSound Technologies Europe AB Co-Chair: Takashi Mitome, Suzuki Motor Corp.
10:30 a.m.	Characterization of Different Injection Technologies for High Performance Two-Stroke Engines **(2016-32-0001/20168001)** Franz Winkler, Roland Oswald, Oliver Schoegl, Graz University of Technology; Nigel Foxhall, BRP-Powertrain GmbH & Co KG	Development of 2.4L Environmental-Friendly Diesel Engine with Mechanical Fuel Injection System **(2016-32-0062/20168062)** Yusuke Miyata, Kubota Corp.	Analysis of the Turbocharger Speed to Estimate the Cylinder-to-Cylinder Injection Variations - Part 1 - Time Domain Analysis **(2016-32-0081/20168081)** Giovanni Vichi, Michele Becciani, Isacco Stiaccini, Giovanni Ferrara, University of Florence; Lorenzo Ferrari, National Research Council of Italy; Alessandro Bellissima, Yanmar R&D Europe; Go Asai, Yanmar Co Ltd	Research on Severity Class Evaluation Based on Various Crash Situations Involved with Motorcycles for ISO 26262 **(2016-32-0057/20168057)** Yuji Arai, Makoto Hasegawa, Takeshi Harigae, Japan Automobile Research Institute
11:00 a.m.	A Study of Knocking in a Lean Mixture Using an Optically Accessible Engine **(2016-32-0002/20168002)** Yuki Yoshida, Kotaro Takeda, Zhimin Lin, Masanori Yamada, Nihon University Graduate School; Akira Iijima, Mitsuaki Tanabe, Hideo Shoji, Nihon University	Effects of EGR Addition onto Combustion Stability and Alternator Performance Variability of a Small, Single-Cylinder Diesel Generator **(2016-32-0063/20168063)** Marc Cyrill Besch, April Nicole Covington, Derek Johnson, Nathan Fowler, Robert Heltzel, West Virginia University	Analysis of the Turbocharger Speed to Estimate the Cylinder-to-Cylinder Injection Variations - Part 2 - Frequency Domain Analysis **(2016-32-0085/20168085)** Giovanni Vichi, Michele Becciani, Isacco Stiaccini, Giovanni Ferrara, University of Florence; Lorenzo Ferrari, National Research Council of Italy; Alessandro Bellissima, Yanmar R&D Europe; Go Asai, Yanmar Co Ltd	Examination of Hazard Analysis and Risk Assessment and Exposure Research in the Real Traffic Situation of ISO 26262 for Motorcycles **(2016-32-0058/20168058)** Makoto Hasegawa, Takanobu Kaneko, Japan Automobile Research Institute ★
11:30 a.m.	A Study on the Knocking Characteristics of an SI-HCCI Engine by Using In-Cylinder Visualization **(2016-32-0005/20168005)** Kotaro Takeda, Shimada Takashi, Yuki Yoshida, ZhiMin Lin, Akira Iijima, Hideo Shoji, Nihon University	Spray, Mixture and Combustion Characteristics of Small Injection Amount Fuel Spray Injected by Hole Nozzle for Diesel Engine **(2016-32-0064/20168064)** Keiya Nishida, Univ of Hiroshima; Takeru Matsuo, Mazda Motor Corp; Kang Yang, Youichi Ogata, Univ of Hiroshima; Daisuke Shimo, Mazda Motor Corp	Performance Analysis of Data-Driven Plant Models on Embedded Systems **(2016-32-0086/20168086)** Tobias Gutjahr, ETAS Inc.	Construction of an ISO 26262 C Class Evaluation Method for Motorcycles **(2016-32-0059/20168059)** Maki Kawakoshi, Takashi Kobayashi, Makoto Hasegawa, Japan Automobile Research Institute ★
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	Advance Combustion: Part 2 of 2 (SETC1) This session focuses on advanced combustion technologies in both 4-stroke and 2-stroke engines. The scope of topics includes studies of mixture formation, dilution effects, ignition, abnormal combustion, engine efficiency, flame propagation, and emissions formation. 1:30 p.m. - 3:00 p.m. Organizers: William P. Attard, Fiat Chrysler Automobiles; Jaal B. Ghandhi, Univ. of Wisconsin Madison; Adrian Irimescu, Simona Silvia Merola, Istituto Motori CNR; Koji Yoshida, Nihon University Chairperson: Kai W. Beck, Mot GmbH Co-Chair: Koji Yoshida, Nihon University	**Engine Controls: Part 2 of 3 (SETC8)** Papers in this session are related to design, development and testing of new or innovative electronic controls or control systems for internal combustion engines. Topics may include hardware, software and algorithm/function innovations as well as the associated sensors or actuators employed in the control system. Applications may range from very simple systems for 1-cylinder engines to more complex systems for high-performance or multi-cylinder engines. 1:30 p.m. - 3:00 p.m. Organizers: Ken Fosaaen, Kerdea Technologies; Tobias Kallerhoff, Robert Bosch GmbH; Yutaka Nitta, SUZUKI MOTOR CORPORATION Chairperson: Ken Fosaaen, Kerdea Technologies Co-Chair: Yutaka Nitta, Suzuki Motor Corp.	**Materials: Part 1 of 2 (SETC14)** This session will focus on the structure, processing, and properties of materials in small engine applications. Some possible topics include lightweighting of engine and vehicle components; heat treatment and surface processing; fatigue, fracture, and wear; coatings; and advanced ceramic, metallic, and polymeric materials. 1:30 p.m. - 3:00 p.m. Organizers: Mark Degler, Mercury Marine; Hirotaka Kurita, Yamaha Motor Co., Ltd.; David Elijah Palmer, BRP US Inc.; Leonid Tartakovsky, Technion Israel Inst. of Technology Chairperson: Brian J. Callahan, Achates Power Inc. Co-Chair: Aki Kodai, Kawalski Heat Treating	**Two Stroke Engine: Part 1 of 2 (SETC17)** This session contains manuscripts focused on two-stroke engines. Topics such as emissions, performance, and efficiency will be explored. Advanced combustion control, direct fuel injection, simulation models and experimental results will be presented. 1:30 p.m. - 3:00 p.m. Organizers: Brian J. Callahan, Achates Power Inc.; Pierre Duret, IFP School; Giovanni Ferrara, Univ. of Florence; Tomoo Shiozaki, Honda R&D Co., Ltd. Chairperson: Giovanni Ferrara, Univ. of Florence Co-Chair: Tomoo Shiozaki, Honda R&D Co., Ltd.
1:30 p.m.	Thermodynamic Split of Losses Analysis of a Single Cylinder Gasoline Engine with Multiple Spark Plug - Ignition Coil Configurations **(2016-32-0008/20168008)** Balagovind Nandakumar Kartha, Srikanth Vijaykumar, Pramod Reddemreddy, Bosch Ltd., India	Applying Combustion Chamber Surface Temperature to Combustion Control of Motorcycle Engines **(2016-32-0087/20168087)** Satoshi Ichihashi, Keihin Corp.	Development of Heat Resistant Titanium Alloy for Exhaust Valves Applicable for Motorcycles **(2016-32-0023/20168023)** Shinji Kasatori, Yuji Marui, Honda R&D Co., Ltd.; Hideto Oyama, Kosuke Ono, Kobe Steel, Ltd. ★	Guidelines for the Optimization of a Muffler in a Small Two Stroke Engine **(2016-32-0050/20168050)** Francesco Testa, Universita degli Studi di Modena; Vincenzo Gagliardi, Marco Ferrari, EMAK Spa; Stefano Fontanesi, Universita degli Studi di Modena; Andrea Bertani, EMAK Spa ★
2:00 p.m.	Effect of Flight Altitude on the Knock Tendency of SI Reciprocating Turbocharged Engines **(2016-32-0006/20168006)** Ran Amiel, Leonid Tartakovsky, Technion Israel Inst. of Technology	Improved Fuel Metering for Port Fuel Injection by Controlled Valve Operation **(2016-32-0080/20168080)** Christian Steinbrecher, Haris Hamedovic, Andreas Rupp, Thomas Wortmann, Robert Bosch GmbH ★	High Performance Aluminum Casting Alloys for Engine Applications **(2016-32-0019/20168019)** David Weiss, ECK Industries Inc.	Two-Stroke Engine Cleanliness via a Fuel Additive **(2016-32-0048/20168048)** Garrett Parker, Stuart Bartley, Michael Nicholls, Lubrizol Corporation
2:30 p.m.	Influence of Calcium-Based Additives with Different Properties on Abnormal Combustion in an SI Engine **(2016-32-0007/20168007)** Kento Shimizu, Shuhei Takahata, Kenta Miura, Hideo Shoji, Akira Iijima, Nihon University; Toshimasa Utaka, Kazushi Tamura, Idemitsu Kosan Co Ltd	Experimental Investigations Regarding the Potential of an Electronic Ignition Timing Control for a Lawn Mower Engine **(2016-32-0083/20168083)** Michael Zisser, Hans-Juergen Schacht, Reinhard Stelzl, Bernhard Schweighofer, Hannes Wegleiter, Stephan Schmidt, Graz University of Technology; Jakob Trentini, Viking GmbH; Jan-Philipp Banzhaf, Tim Gegg, Andreas Stihl AG & Co KG	Durability Improvement of Engine Valves and Interfacing Systems **(2016-32-0020/20168020)** Balasubramanian Thiruvallur Loganathan, Srivenkata Subramani Narasimhan, Lakshminarasimhan Varadha Iyengar, Ajith Kumar Sandur, Sudhagar Vediappan, TVS Motor Co Ltd	Development of High-Performance 25 cm^3 Two-Stroke SI Engine for Light Weight Arborist-Chainsaw **(2016-32-0049/20168049)** Kuniyoshi Eto, Masaru Nozawa, Masato Nara, Buhei Kobayashi, Daiki Shibasaki, Ken Shirai, Yamabiko Corp.
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	Meeting Room 10/11	Meeting Room 6/7	Ballroom C1/C2/C3	Meeting Room 12/13
	Engine Controls: Part 3 of 3 (SETC8) Papers in this session are related to design, development and testing of new or innovative electronic controls or control systems for internal combustion engines. Topics may include hardware, software and algorithm/function innovations as well as the associated sensors or actuators employed in the control system. Applications may range from very simple systems for 1-cylinder engines to more complex systems for high-performance or multi-cylinder engines. 3:30 p.m. - 4:30 p.m. Organizers: Ken Fosaaen, Kerdea Technologies; Tobias Kallerhoff, Robert Bosch GmbH; Yutaka Nitta, SUZUKI MOTOR CORPORATION Chairperson: Ken Fosaaen, Kerdea Technologies Co-Chair: Yutaka Nitta, Suzuki Motor Corp.	**Materials: Part 2 of 2 (SETC14)** This session will focus on the structure, processing, and properties of materials in small engine applications. Some possible topics include lightweighting of engine and vehicle components; heat treatment and surface processing; fatigue, fracture, and wear; coatings; and advanced ceramic, metallic, and polymeric materials. 3:30 p.m. - 5:00 p.m. Organizers: Mark Degler, Mercury Marine; Hirotaka Kurita, Yamaha Motor Co., Ltd.; David Elijah Palmer, BRP US Inc.; Leonid Tartakovsky, Technion Israel Inst. of Technology Chairperson: Brian J. Callahan, Achates Power Inc. Co-Chair: Hirotaka Kurita, Yamaha Motor Co., Ltd.	**NVH Technology: Part 1 of 2 (SETC16)** All aspects of small engine related noise and vibration are covered in this session including: generation, experimental techniques, measurement, numerical analysis, NVH materials, source identification, NVH quality and novel solutions. 3:30 p.m. - 5:00 p.m. Organizers: Thomas L. Lago, QirraSound Technologies Europe AB; Hiroshi Yano, Kawasaki Heavy Industries, Ltd. Chairperson: Thomas L. Lago, QirraSound Technologies Europe AB Co-Chair: Hiroshi Yano, Kawasaki Heavy Industries, Ltd.	**Two Stroke Engine: Part 2 of 2 (SETC17)** This session contains manuscripts focused on two-stroke engines. Topics such as emissions, performance, and efficiency will be explored. Advanced combustion control, direct fuel injection, simulation models and experimental results will be presented. 3:30 p.m. - 4:30 p.m. Organizers: Brian J. Callahan, Achates Power Inc.; Pierre Duret, IFP School; Giovanni Ferrara, Univ. of Florence; Tomoo Shiozaki, Honda R&D Co., Ltd. Chairperson: Giovanni Ferrara, Univ. of Florence Co-Chair: Michihisa Mick Nakagawa, Kawasaki Heavy Industries, Ltd.
3:30 p.m.	New Method to Estimate the Flow Rate of LPL-EGR Using Cylinder Pressure Sensor **(2016-32-0084/20168084)** Shinichi Okunishi, Ken Ogawa, Honda R&D Co Ltd	Comparative Small Engine Testing Using Hybrid Composite Cylinder Liners **(2016-32-0022/20168022)** David Weiss, ECK Industries Inc.; Simon Beno, Chris Jordan, Intelligent Composites, LLC; Pradeep Rohatgi, University of Wisconsin	Experimental Acoustic Analysis of a Motorcycle Dissipative Muffler in Presence of Mean Flow **(2016-32-0039/20168039)** Andrea Floravanti, Giovanni Vichi, Isacco Stiaccini, Giovanni Ferrara, University of Florence; Lorenzo Ferrari, National Research Council of Italy	Development and Experimental Investigation of a Two-Stroke Opposed-Piston Free-Piston Engine **(2016-32-0046/20168046)** Stephan Schneider, German Aerospace Center (DLR); Marco Chiodi, FKFS; Horst Friedrich, German Aerospace Center (DLR); Michael Bargende, FKFS
4:00 p.m.	Alternative Engine Speed Sensing Using the Electric Signals of the Alternator **(2016-32-0088/20168088)** Bastian Reineke, Jonathan Müller, Stefan Grodde, Wolfgang Fischer, Henning Heikes, Robert Bosch GmbH ★	Application of Rapid Heat and Cool Molding to High Strength Outer Parts without Painting Treatment **(2016-32-0024/20168024)** Daisuke Sugio, Shinpei Okazaki, Honda R&D Co., Ltd.; Mitsuo Kaneko, FUJISEIKO Co., Ltd. ★		Mapping of Fuel Anti-Knock Requirements for a Small Remotely Piloted Aircraft Engine **(2016-32-0045/20168045)** Joseph K. Ausserer, Marc D. Polanka, Air Force Institute of Technology; Jacob Baranski, Innovative Scientific Solutions, Inc.; Paul Litke, Air Force Research Laboratory
4:30 p.m.		Thermoplastic Bearings for Lubricated Applications **(2016-32-0021/20168021)** Stephen Gurchinoff, Solvay Specialty Polymers LLC	Method for Optimizing Scooter Engine Mounts Position for Reduced Vibration **(2016-32-0042/20168042)** Bhaarath Rajagopal Jeyapaal, Vamsi Krishna, Kannan Marudachalam, TVS Motor Co., Ltd.	
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WEDNESDAY, NOVEMBER 16 - MORNING
Technical and Business Sessions

TIME	Meeting Room 12/13	Meeting Room 6/7	Meeting Room 10/11	Ballroom C1/C2/C3
	Engine Technology: Part 1 of 2 (SETC9) Advanced engine technologies, design, and development for thermal efficiency, performance, and emissions, including cycle simulation. 10:30 a.m. - 12:00 p.m. Organizers: Yuji Araki, Yamaha Motor Co., Ltd.; Satoshi INOUE, Honda R&D Co., Ltd.; Adrian Irimescu, Luca Marchitto, Istituto Motori CNR; Nagesh Mavinahally, Meggitt Control Systems Chairperson: Roland Kirchberger, Graz University of Technology Co-Chair: Yuji Araki, Yamaha Motor Co., Ltd.	**Hybrids, Electric Drives, and Fuel Cells (SETC12)** This session will discuss hybrid and EV applications 10:30 a.m. - 11:30 a.m. Organizers: Glenn Bower, University of Wisconsin-Madison; Jay Meldrum, Michigan Technological Univ.; Hisayuki Sugita, Suzuki Motor Corp. Chairperson: Jay Meldrum, Michigan Technological Univ. Co-Chair: Hisayuki Sugita, Suzuki Motor Corp.	**Measurement and Simulation: Part 1 of 4 (SETC15)** The session is associated with engine and vehicle simulation tasks and their related measurements. Simulation and measurement methodology as well as the simulation and measurement application on development tasks will find a place within the session 10:30 a.m. - 12:00 p.m. Organizers: Stephan Schmidt, Graz University of Technology; Tadao Okazaki, Kubota Corp.; Shigeru Fujii, Yamaha Motor Co., Ltd.; Giovanni Ferrara, Univ. of Florence Chairperson: Stephan Schmidt, Graz University of Technology Co-Chair: Shigeru Fujii, Yamaha Motor Co., Ltd.	**NVH Technology: Part 2 of 2 (SETC16)** All aspects of small engine related noise and vibration are covered in this session including: generation, experimental techniques, measurement, numerical analysis, NVH materials, source identification, NVH quality and novel solutions. 10:30 a.m. - 11:30 a.m. Organizers: Thomas L. Lago, QirraSound Technologies Europe AB; Hiroshi Yano, Kawasaki Heavy Industries, Ltd. Chairperson: Thomas L. Lago, QirraSound Technologies Europe AB Co-Chair: Hiroshi Yano, Kawasaki Heavy Industries, Ltd.
10:30 a.m.		Assessment of Minimum Fuel Consumption Operation Strategy for Hybrid Powersport Drive-Trains by Means of Dynamic Programming Method **(2016-32-0015/20168015)** Bernhard Schweighofer, Hannes Wegleiter, Michael Zisser, Paul Rieger, Christian Zinner, Stephan Schmidt, Graz University of Technology, Austria	Analysis of Low-Cost MEMS Accelerometer and Gyroscope Characteristics for Stochastic Sensor Simulation within Motorcycle Models **(2016-32-0027/20168027)** Alexander Winkler, Gernot Grabmair, University of Applied Sciences Upper Austria ★	Research on Combustion Noise for Controlled Auto Ignition Engine Fueled with Natural Gas Effect of Stroke Bore Ratio and Ignition Timing **(2016-32-0044/20168044)** Gaku Naoe, Honda R&D Co., Ltd.
11:00 a.m.	Mass Balancing Measures of a Linkage-Based Extended Expansion Engine **(2016-32-0096/20168096)** Patrick Pertl, Michael Lang, Stephan Schmidt, Roland Kirchberger, Graz University of Technology ★	Use of Anti-Windup Techniques for Control of Solid Oxide Fuel Cells **(2016-32-0016/20168016)** Maryam Sadeghi Reineh, Faryar Jabbari, University of California, Irvine	Development of a GPS-Enabled Compact Data Logger to Evaluate Small Engine Usage in Actual Applications **(2016-32-0032/20168032)** Andrew Bejcek, Honda R&D Americas, Inc.	A Hybrid Development Process for NVH Optimization and Sound Engineering Considering the Future Pass-by Homologation Demands **(2016-32-0043)** Bernhard J. Graf, Christian Hubmann, Markus Resch, Mehdi Mehrgou, AVL LIST GmbH ★
11:30 a.m.	Development of Oil-Cooled Engine for Optimization of Engine Cooling System **(2016-32-0089/20168089)** Koichi Tanaka, Kunio Arase, Amane Kitayama, SUZUKI MOTOR CORPORATION		Analysis of Conventional Motorcycles with the Focus on Hybridization **(2016-32-0031/20168031)** Paul W. Rieger, Christian Zinner, Stephan Schmidt, Stefan Hausberger, Graz University of Technology	
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	Emissions: Part 1 of 4 (SETC5) Papers in this session pertain to studies of exhaust emission control and the emission effects from fuels, engine controls, engine design, combuston quality, catalytic converters, diesel particulate filters, and other aftertreatment. The focus of the session is on reducing emissions and meeting international emission standards. 1:30 p.m. - 2:30 p.m. Organizers: Kai W. Beck, Mot GmbH; Jan Czerwinski, Univ. of Applied Sciences Biel-Bienne; Hiromi Deguchi, Suzuki Motor Corp.; Leonid Tartakovsky, Technion Israel Inst. of Technology Chairperson: Leonid Tartakovsky, Technion Israel Inst. of Technology Co-Chair: Shosaku Chiba, Honda R&D Co., Ltd.	**Engine Technology: Part 2 of 2 (SETC9)** Advanced engine technologies, design, and development for thermal efficiency, performance, and emissions, including cycle simulation. 1:30 p.m. - 3:00 p.m. Organizers: Yuji Araki, Yamaha Motor Co., Ltd.; Satoshi INOUE, Honda R&D Co., Ltd.; Adrian Irimescu, Luca Marchitto, Istituto Motori CNR; Nagesh Mavinahally, Meggitt Control Systems Chairperson: Roland Kirchberger, Graz University of Technology Co-Chair: Satoshi INOUE, Honda R&D Co., Ltd.	**HCCI: Part 1 of 2 (SETC11)** This session focuses on studies of auto ignition combustion including HCCI and other low tempertautre combustion regimes. Experimental and simultaion studies pertaining to various means of controlling combustion are welcome. 1:30 p.m. - 3:00 p.m. Organizers: William P. Attard, Fiat Chrysler Automobiles; Jaal B. Ghandhi, Univ. of Wisconsin Madison; Tatsuya Kuboyama, Chiba Univ.; Tomoo Shiozaki, Honda R&D Co., Ltd. Chairperson: Paul Litke, USAF Co-Chair: Tatsuya Kuboyama, Chiba Univ.	**Measurement and Simulation: Part 2 of 4 (SETC15)** The session is associated with engine and vehicle simulation tasks and their related measurements. Simulation and measurement methodology as well as the simulation and measurement application on development tasks will find a place within the session 1:30 p.m. - 3:00 p.m. Organizers: Shigeru Fujii, Yamaha Motor Co., Ltd.; Stephan Schmidt, Graz University of Technology; Giovanni Ferrara, Univ. of Florence; Tadao Okazaki, Kubota Corp. Chairperson: Stephan Schmidt, Graz University of Technology Co-Chair: Tadao Okazaki, Kubota Corp
1:30 p.m.	Effect of Air-Fuel Ratio and Operating Conditions on Particle Emissions from a Small Diesel Engine **(2016-32-0069/20168069)** Indranil Brahma, Cristobal Manzanares, Rob Jennings, Odinmma Ofili, Matthew Campbell, Abishek Raghavan, Daniel Johnson, Peter Stryker, Bucknell Univ.	Development of Hydraulic- Controlled Variable Valve Lift System for Scooter Engine **(2016-32-0095/20168095)** Guo-Rong Wun, Cheng-Tse Chuang, Yong-Fu Syu, Chia-Sheng Wang, Yuh-Yih Wu, Taipei Univ of Technology ★	Studies on the Effect of In-cylinder Charge Stratifications on High Load HCCI Combustion **(2016-32-0010/20168010)** Kei Yoshimura, Shunichi Mori, Kenjiro Nakama, SUZUKI MOTOR CORPORATION; Jin Kusaka, Waseda University ★	Investigations and Analysis of Working Processes of Two-Stroke Engines with the Focus on Wall Heat Flux **(2016-32-0028/20168028)** Pascal Piecha, Philipp Bruckner, Stephan Schmidt, Roland Kirchberger, Graz University of Technology; Florian Schumann, Stephan Meyer, Tim Gegg, Andreas Stihl AG & Co KG; Stefan Leiber, BRP-Powertrain GmbH & Co KG ★
2:00 p.m.	Effects of Port Injection Specifications on Emission Behavior of THC **(2016-32-0065/20168065)** Yoshinori Nakao, Yota Sakurai, Atsushi Hisano, Masahito Saitou, Masahide Kazari, Takahito Murase, Kozo Suzuki, Kawasaki Heavy Industries, Ltd. ★	The Effect of Cooled Exhaust Gas Recirculation for a Naturally Aspirated Stationary Gas Engine **(2016-32-0093/20168093)** Denis Neher, Fino Scholl, Maurice Kettner, Karlsruhe University of Applied Sciences; Danny Schwarz, Markus Klaissle, Senertec Kraft-Wärme-Energiesysteme GmbH; Blanca Giménez Olavarria, University of Valladolid ★	Effect of Streamer Discharge Assist on Combustion in a Supercharged HCCI Engine **(2016-32-0013/20168013)** Yuya Higuchi, Hiroto Tanaka, Hyota Hoshino, Munehiro Matsuishi, Nihon University Graduate School; Akira Iijima, Hideo Shoji, Nihon University ★	Measurement and Prediction of Heat Transfer Losses on the XMv3 Rotary Engine **(2016-32-0033/20168033)** Tiago J. Costa, Universidade do Minho; Mark Nickerson, Daniele Littera, Liquid-Piston Inc; Jorge Martins, Universidade do Minho; Alexander Shkolnik, Nikolay Shkolnik, LiquidPiston Inc; Francisco Brito, Universidade do Minho ★
2:30 p.m.		Effect of Variable Cooling System for Fuel Economy Improvement on Scooter with Air Cooled Engine **(2016-32-0092/20168092)** Tomokazu Kobayashi, Kazuyuki Kosei, Sadaaki Ito, Satoshi Iijima, Honda R&D Co., Ltd.	Reforming Controlled Homogenous Charge Compression Ignition -Simulation Results **(2016-32-0014/20168014)** Amnon Eyal, Leonid Tartakovsky, Technion Israel Inst. of Technology	Evaporation and Cold Start Behavior of Bio-Fuels in Non-Automotive Applications **(2016-32-0034/20168034)** Stephan Jandl, Hans-Juergen Schacht, Stephan Schmidt, Graz University of Technology; Ute Dawin, Armin Kölmel, Andreas Stihl AG & Co KG; Stefan Leiber, BRP-Powertrain GmbH & Co KG ★
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	Emissions: Part 2 of 4 (SETC5) Papers in this session pertain to studies of exhaust emission control and the emission effects from fuels, engine controls, engine design, combuston quality, catalytic converters, diesel particulate filters, and other aftertreatment. The focus of the session is on reducing emissions and meeting international emission standards. 3:30 p.m. - 5:00 p.m. Organizers: Kai W. Beck, Mot GmbH; Jan Czerwinski, Univ. of Applied Sciences Biel-Bienne; Hiromi Deguchi, Suzuki Motor Corp.; Leonid Tartakovsky, Technion Israel Inst. of Technology Chairperson: Leonid Tartakovsky, Technion Israel Inst. of Technology Co-Chair: Hiromi Deguchi, Suzuki Motor Corp.	**HCCI: Part 2 of 2 (SETC11)** This session focuses on studies of auto ignition combustion including HCCI and other low tempertautre combustion regimes. Experimental and simultaion studies pertaining to various means of controlling combustion are welcome. 3:30 p.m. - 5:00 p.m. Organizers: William P. Attard, Fiat Chrysler Automobiles; Jaal B. Ghandhi, Univ. of Wisconsin Madison; Tatsuya Kuboyama, Chiba Univ.; Tomoo Shiozaki, Honda R&D Co., Ltd. Chairperson: Paul Litke, USAF Co-Chair: Tomoo Shiozaki, Honda R&D Co., Ltd.	**Measurement and Simulation: Part 3 of 4 (SETC15)** The session is associated with engine and vehicle simulation tasks and their related measurements. Simulation and measurement methodology as well as the simulation and measurement application on development tasks will find a place within the session 3:30 p.m. - 5:00 p.m. Organizers: Stephan Schmidt, Graz University of Technology; Tadao Okazaki, Kubota Corp.; Giovanni Ferrara, Univ. of Florence; Shigeru Fujii, Yamaha Motor Co., Ltd. Chairperson: Stephan Schmidt, Graz University of Technology Co-Chair: Shigeru Fujii, Yamaha Motor Co., Ltd.	**Lubricants (SETC13)** This session contains one paper that investigates the effect of viscosity grade on engine deposits and fuel economy in motorcycles run on a chassis dynamometer. 3:30 p.m. - 4:00 p.m. Organizers: Michael J. Marcella, Lubrizol Corp.; Tohru Nakazono Chairperson: Kai W. Beck, Mot GmbH Co-Chair: Tohru Nakazono, Yanmar Co., ltd.
3:30 p.m.	Development of a NO_x Storage-Reduction Catalyst Based Min-NO_x Strategy for Small-Scale NG-Fueled Gas Engines **(2016-32-0072/20168072)** Fino Scholl, Paul Gerisch, Denis Neher, Maurice Kettner, Karlsruhe University of Applied Sciences; Thorsten Langhorst, Karlsruhe Institute of Technology; Thomas Koch, KIT Karlsruhe Institute Of Technology; Markus Klaissle, SenerTec Kraft-Wärme-Energiesysteme GmbH ★	Influence of Supercharging and EGR on Multi-stage Heat Release in an HCCI Engine **(2016-32-0009/20168009)** Yuki Takamura, Takahiro Shima, Hirotaka Suzuki, Keito Agui, Nihon University Graduate School; Akira Iijima, Hideo Shoji, Nihon University	Comparison of Different Downsizing Strategies for 2- and 3-Cylinder Engines by the Use of 1D-CFD Simulation **(2016-32-0037/20168037)** Christian Zinner, Stephan Jandl, Stephan Schmidt, Graz University of Technology	
4:00 p.m.	Development of Base Metal Catalyst and Its Compatibility Study for Motorcycle Applications **(2016-32-0071/20168071)** Koji Ueno, Hiroyuki Horimura, Akiko Iwasa, Yuji Kurasawa, Honda R&D Co., Ltd.; Pascaline Tran, Ye Liu, BASF Corp ★	A Study of HCCI Operating Range Expansion by Applying Reaction Characteristics of Low-Carbon Alternative Fuels **(2016-32-0011/20168011)** Keito Agui, Hirotaka Suzuki, Yuki Takamura, Akira Iijima, Hideo Shoji, Nihon University	Establishment of Fuel Economy Estimation Method Focused on Transmission Efficiency of Rubber Belt Type CVT **(2016-32-0036/20168036)** Takamori Shirasuna, Ryoh Hatakeyama, Yukio Sakai, Honda R&D Co., Ltd. ★	
4:30 p.m.	Improvement of the Thermal Durability of an Exhaust Gas Purifying Catalyst Using Size-Controlled Pt-Hydroxide Clusters **(2016-32-0070/20168070)** Toyofumi Tsuda, Kazuya Miura, Akio Hikasa, Keiji Hosoi, Fumikazu Kimata, SUZUKI MOTOR CORPORATION ★	Influence of EGR on Knocking in an HCCI Engine Using an Optically Accessible Engine **(2016-32-0012/20168012)** Zhimin Lin, Kotaro Takeda, Yuki Yoshida, Nihon University Graduate School; Akira Iijima, Hideo Shoji, Nihon University	1-D Simulation Model Developed for a General Purpose Engine **(2016-32-0030/20168030)** Takahiro Tsuchiyama, Tatsuya Kuboyama, Yasuo Moriyoshi, Chiba University; Toshiro Kiura, Hibiki Koga, Takayuki Aoki, Honda R&D Co., Ltd.	
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TECHNICAL SESSIONS

★ Journal Paper

THURSDAY, NOVEMBER 17 - MORNING
Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Ballroom C1/C2/C3	Meeting Room 12/13	Meeting Room 10/11	Meeting Room 6/7
	Emissions: Part 3 of 4 (SETC5) Papers in this session pertain to studies of exhaust emission control and the emission effects from fuels, engine controls, engine design, combuston quality, catalytic converters, diesel particulate filters, and other aftertreatment. The focus of the session is on reducing emissions and meeting international emission standards. 8:30 a.m. - 10:00 a.m. Organizers: Kai W. Beck, Mot GmbH; Jan Czerwinski, Univ. of Applied Sciences Biel-Bienne; Hiromi Deguchi, Suzuki Motor Corp.; Leonid Tartakovsky, Technion Israel Inst. of Technology Chairperson: Leonid Tartakovsky, Technion Israel Inst. of Technology Co-Chair: Yutaka Nitta, Suzuki Motor Corp.	**Engine Components (SETC7)** This session focuses on hardware attached to the engine such as support systems, injectors, EGR valves, manifolds, turbo-chargers, water pumps, and ignition systems. 8:30 a.m. - 10:00 a.m. Organizers: Adrian Irimescu, Luca Marchitto, Istituto Motori CNR; Takahito Murase, Kawasaki Heavy Industries, Ltd. Chairperson: Giovanni Ferrara, Univ. of Florence Co-Chair: Takahito Murase, Kawasaki Heavy Industries, Ltd.	**Measurement and Simulation: Part 4 of 4 (SETC15)** The session is associated with engine and vehicle simulation tasks and their related measurements. Simulation and measurement methodology as well as the simulation and measurement application on development tasks will find a place within the session 8:30 a.m. - 10:00 a.m. Organizers: Shigeru Fujii, Yamaha Motor Co., Ltd.; Stephan Schmidt, Graz University of Technology; Giovanni Ferrara, Univ. of Florence; Tadao Okazaki, Kubota Corp. Chairperson: Stephan Schmidt, Graz University of Technology Co-Chair: Tadao Okazaki, Kubota Corp	**Vehicle Dynamics and Safety: Part 1 of 2 (SETC18)** This session will focus on the application of technology to improve the stability, handling, ride and comfort of two and three wheeled vehicles. 8:30 a.m. - 10:00 a.m. Organizers: Derek L. Cleasby, Bosch Engineering GmbH Chairperson: Thomas L. Lago, QirraSound Technologies Europe AB Co-Chair: Masayuki Baba, Honda R&D Co., Ltd.
8:30 a.m.	The Effect of Lean Operation, Ignition Advance, and Compression Ratio on the Performance and Emissions of a Propane Fueled Electronic Fuel Injected Engine **(2016-32-0068/20168068)** Joel Prince Lobo, James Howard Lee, Eric Oswald, Spenser Lionetti, Robert Garrick, Rochester Institute of Technology	Boosting Technologies and Limits for Small Combustion Engines **(2016-32-0077/20168077)** Roland Baar, Valerius Boxberger, Maike Sophie Gern, Technische Universitat Berlin	Strength Analysis of Motocrosser Frame on Jump-Landing **(2016-32-0029/20168029)** Shohei Suzuki, SUZUKI MOTOR CORPORATION	Investigation of the Behavior of Three-Wheel Vehicles When They Pass Over a Low Road Surface **(2016-32-0051/20168051)** Keisuke Terada, Takayuki Sano, Kenichi Watanabe, Takashi Kaleda, Kazuhisa Takano, Yamaha Motor CO.,LTD ★
9:00 a.m.	Effect of Ethanol Blended Fuel on Two Wheeler Tail Pipe Mass Emissions **(2016-32-0076/20168076)** Rahul Sharma, Srikanth Setlur, Satish Vemuri, Chithambaram Subramoniam, TVS Motor Co Ltd	Characterization of Small-Scale Turbochargers for Unmanned Aerial Systems **(2016-32-0078/20168078)** Mark R. Mataczynski, Paul Litke, USAF; Benjamin Naguy, University of Dayton Research Institute; Jacob Baranski, Innovative Scientific Solutions, Inc.	The Design of Eco-Driving Scheme of Energy Saving Race Car **(2016-32-0026/20168026)** Meichun Peng, Jiahao Wang, Guangdong Univ. of Tech.; Jiaru li, Honda Automobile (China) Co.,Ltd.	Development of the Compact and Light Wheel Forces and Moments Sensor for Motorcycles **(2016-32-0053/20168053)** Hisato Tokunaga, Kazuhiro Ichikawa, Takumi Kawasaki, Akiyuki Yamasaki, Kawasaki Heavy Industries, Ltd.; Tatsuo Ichige, Tomoyuki Ishimori, Yoichi Sansho, A&D Company,Limited
9:30 a.m.	Effect of Ethanol Blended Fuel on Fuel Injected Two Wheeler Vehicular Mass Emissions **(2016-32-0075/20168075)** Srikanth Setlur, Satish Vemuri, Chithambaram Subramoniam, Rahul Sharma, TVS Motor Co Ltd	Experimental Study on Optimization of the Intake Ports for Improving the Thermal Efficiency of Small Engines for Motorcycles **(2016-32-0079/20168079)** Daisuke Fukui, Yoshinari Ninomiya, SUZUKI MOTOR CORPORATION	FE Based Steering Bearing Design Optimization for Angular Contact Ball Bearings **(2016-32-0025/20168025)** Govardan Daggupati, Bapanna Dora Karedla, Chandan Bansilal Chavan, Gagandeep Singh Risam, TVS Motor Co Ltd	Novel Low Cost Experimental Procedures to Estimate Lateral Force Characteristics of a Tire **(2016-32-0054/20168054)** Barath Mohan, KVM Raju, Sai Praveen Velagapudi, TVS Motor Co., Ltd.; Chandramouli Padmanabhan, IIT Madras
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Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Meeting Room 12/13	Meeting Room 10/11	Ballroom C1/C2/C3	Meeting Room 6/7
	Alternative Fuels (SETC2) This session includes papers focused on the gaseous and particulate emissions performance from operating small engines, both diesel and gasoline on oxygenated fuel blends. 10:30 a.m. - 11:30 a.m. Organizers: Simona Silvia Merola, Istituto Motori CNR; Tohru Nakazono; Paul Richards; Cinzia Tornatore, Istituto Motori CNR; Hiroya Ueda, Honda R&D Co., Ltd. Chairperson: Kai W. Beck, Mot GmbH Co-Chair: Hiroya Ueda, Honda R&D Co., Ltd.	**Collegiate Events (SETC3)** Papers in this session discuss innovations regarding entries in the SAE Collegiate Design Series (CDS) events. This year two papers describe Formula SAE innovations. The first discusses a novel approach to improved fuel economy using part load mapping. The second describes a highly integrated parallel hybrid design for the Formula Hybrid competition. 10:30 a.m. - 11:00 a.m. Organizers: Geoffrey McCullough, Queen's Univ. of Belfast; Takashi Mitome, Suzuki Motor Corp. Chairperson: Jay Meldrum, Michigan Technological Univ. Co-Chair: Takashi Mitome, Suzuki Motor Corp.	**Emissions: Part 4 of 4 (SETC5)** Papers in this session pertain to studies of exhaust emission control and the emission effects from fuels, engine controls, engine design, combuston quality, catalytic converters, diesel particulate filters, and other aftertreatment. The focus of the session is on reducing emissions and meeting international emission standards. 10:30 a.m. - 11:30 a.m. Organizers: Kai W. Beck, Mot GmbH; Jan Czerwinski, Univ. of Applied Sciences Biel-Bienne; Hiromi Deguchi, Suzuki Motor Corp.; Leonid Tartakovsky, Technion Israel Inst. of Technology Chairperson: Leonid Tartakovsky, Technion Israel Inst. of Technology Co-Chair: Keiya Nishida, Univ. of Hiroshima	**Vehicle Dynamics and Safety: Part 2 of 2 (SETC18)** This session will focus on the application of technology to improve the stability, handling, ride and comfort of two and three wheeled vehicles. 10:30 a.m. - 11:00 a.m. Organizers: Masayuki Baba, Honda R&D Co., Ltd.; Derek L. Cleasby, Bosch Engineering GmbH Chairperson: Thomas L. Lago, QirraSound Technologies Europe AB Co-Chair: Masayuki Baba, Honda R&D Co., Ltd.
10:30 a.m.	Research on Applying Butanol-Gasoline Blend Fuel on Scooter Engine **(2016-32-0056/20168056)** Qi-Jun Huang, Chia-Hong Chung, Yong-Fu Syu, Yuh-Yih Wu, Chao-Kai Li, National Taipei University of Technology	The Development of a Small Restricted Turbocharged Racecar Engine **(2016-32-0061/20168061)** Da Wang, Jilin University; Dingchao Qian, China FAW Technology Ctr; Bo Wang, Columbia University	Technology Evaluation for Two Wheeler Based Personal Mobility in Emerging Markets beyond 2020 **(2016-32-0074/20168074)** Pradeep Ramachandra, Manohar Halahali, Prashanth Anantha, Bosch Limited	Side View Assist - The Worlds First Rider Assistance System for Two-Wheelers **(2016-32-0052/20168052)** Michael Schoenherr, Mathieu Grelaud, Robert Bosch GmbH; Ami Hirano, Bosch Corporation Japan ★
11:00 a.m.	Influence of Ethanol Content, Compression Ratio and Cylinder Head Material on Idling Speed, Warm-Up Time and Emissions of a Non-Road Small Single Cylinder Gasoline Engine **(2016-32-0055/20168055)** Carlos Alberto Romero, Luz Adriana Mejia, Universidad Tecnologica de Pereira; Yamid Carranza, Universidad Tecnológica de Pereira		Multiscale, Multiphysics Computational Chemistry Methods Based on Artificial Intelligence Integrated Ultra-Accelerated Quantum Molecular Dynamics for the Application to Automotive Emission Control **(2016-32-0067/20168067)** Akira Miyamoto, Kenji Inaba, Yukie Ishizawa, Manami Sato, Rei Komuro, Masashi Sato, Ryo Sato, Patrick Bonnaud, Ryuji Miura, Ai Suzuki, Naoto Miyamoto, Nozomu Hatakeyama, Masanori Hariyama, Tohoku Univ. ★	