SAE INTERNATIONAL

EVENT GUIDE
Includes Final Program
and Exhibit Directory

SAE/JSAE 2016 SMALL ENGINE TECHNOLOGY CONFERENCE & EXHIBITION

November 15-17, 2016

Embassy Suites
Charleston Convention Center

Charleston, South Carolina, USA

sae.org/setc

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SAE/JSAE 2016 SMALL ENGINE TECHNOLOGY CONFERENCE & EXHIBITION

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During the event attendees are to follow the established emergency guidelines of the facility where the emergency occurs. **Based on the location of the incident, report emergencies to the nearest venue representative and/or security personnel if available, or report to the SAE registration area.**

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In the event of an emergency or a major disruption to the schedule of events at the event, attendees and exhibitors may call this number to receive further information about the resumption of this event. Updates will also be provided via the SAE website at www.sae.org.

SAE EMERGENCY HOTLINE

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Open exchange of ideas

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ABOUT SETC

Since the first event in 1989, the Small Engine Technology Conference (SETC) continues to be the international technology conference for small engines and related products. SETC is jointly sponsored each year by the Society of Automotive Engineers of Japan, Inc. (JSAE) and SAE International.

SETC History

Conference	City	Country
SETC 1989	Milwaukee	USA
SETC 1991	Yokohama & Hamamatsu	Japan
SETC 1993	Pisa	Italy
SETC 1995	Milwaukee	USA
SETC 1997	Yokohama	Japan
SETC 1999	Madison	USA
SETC 2001	Pisa	Italy
SETC 2002	Kyoto	Japan
SETC 2003	Madison	USA
SETC 2004	Graz	Austria
SETC 2005	Bangkok	Thailand
SETC 2006	San Antonio	USA
SETC 2007	Niigata	Japan
SETC 2008	Milwaukee	USA
SETC 2009	Penang	Malaysia
SETC 2010	Linz	Austria
SETC 2011	Sapporo	Japan
SETC 2012	Madison	USA
SETC 2013	Taipei	Taiwan
SETC 2014	Pisa	Italy
SETC 2015	Osaka	Japan

FISITA Introduction

FISITA is an independent world body representing over 147,000 automotive engineers belonging to national automotive societies in 38 countries. FISITA was founded in 1948 to provide a global forum for the exchange of technical knowledge on every aspect of vehicle design and manufacture. FISITA brings together engineers and decision-makers from industry, academia and government to work towards the improvement of transportation systems, the conservation of energy and the protection of the environment.

www.fisita.com

INFORMATION

Registration
Pre-Function Area

Monday, November 14
3:00–5:00 p.m.

Tuesday, November 15
7:30 a.m.–4:00 p.m.

Wednesday, November 16
7:30 a.m.–4:00 p.m.

Thursday, November 17
7:30–11:00 a.m.

Exhibit Hours
Ballrooms A/B/C4

Tuesday, November 15
11:00 a.m.–6:00 p.m.

Wednesday, November 16
10:00 a.m.–3:30 p.m.

Thursday, November 17
10:00 a.m.–12:30 p.m.

Student Poster Competition
Ballrooms A/B/C4
Judging: Wednesday, November 16
3:00 pm

Networking Lunches
Ballrooms A/B/C4

Tuesday, November 15
12:00–1:30 p.m.

Wednesday, November 16
12:00–1:30 p.m.

Thursday, November 17
11:30 a.m.–12:30 p.m.

Networking Reception
Ballrooms A/B/C4

Tuesday, November 15
5:00–6:00 p.m.

SETC Banquet
Cannon Green: A Gathering Common *(Transportation Provided)*
Tickets can be purchased for $100

Wednesday, November 16
6:00–9:00 p.m.

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Networking Breaks
Foyer

Tuesday, November 15
10:00–10:30 a.m.

Ballrooms A/B/C4

Tuesday, November 15
3:00–3:30 p.m.
Sponsored by Lubrizol

Wednesday, November 16
10:00–10:30 a.m.
3:00–3:30 p.m.

Thursday, November 17
10:00–10:30 a.m.

Presentation Ready Room
Meeting Room 4

Tuesday, November 15
7:30 a.m.–4:00 p.m.

Wednesday, November 16
7:30 a.m.–4:00 p.m.

Thursday, November 17
7:30–11:00 a.m.

SETC GENERAL COMMITTEE

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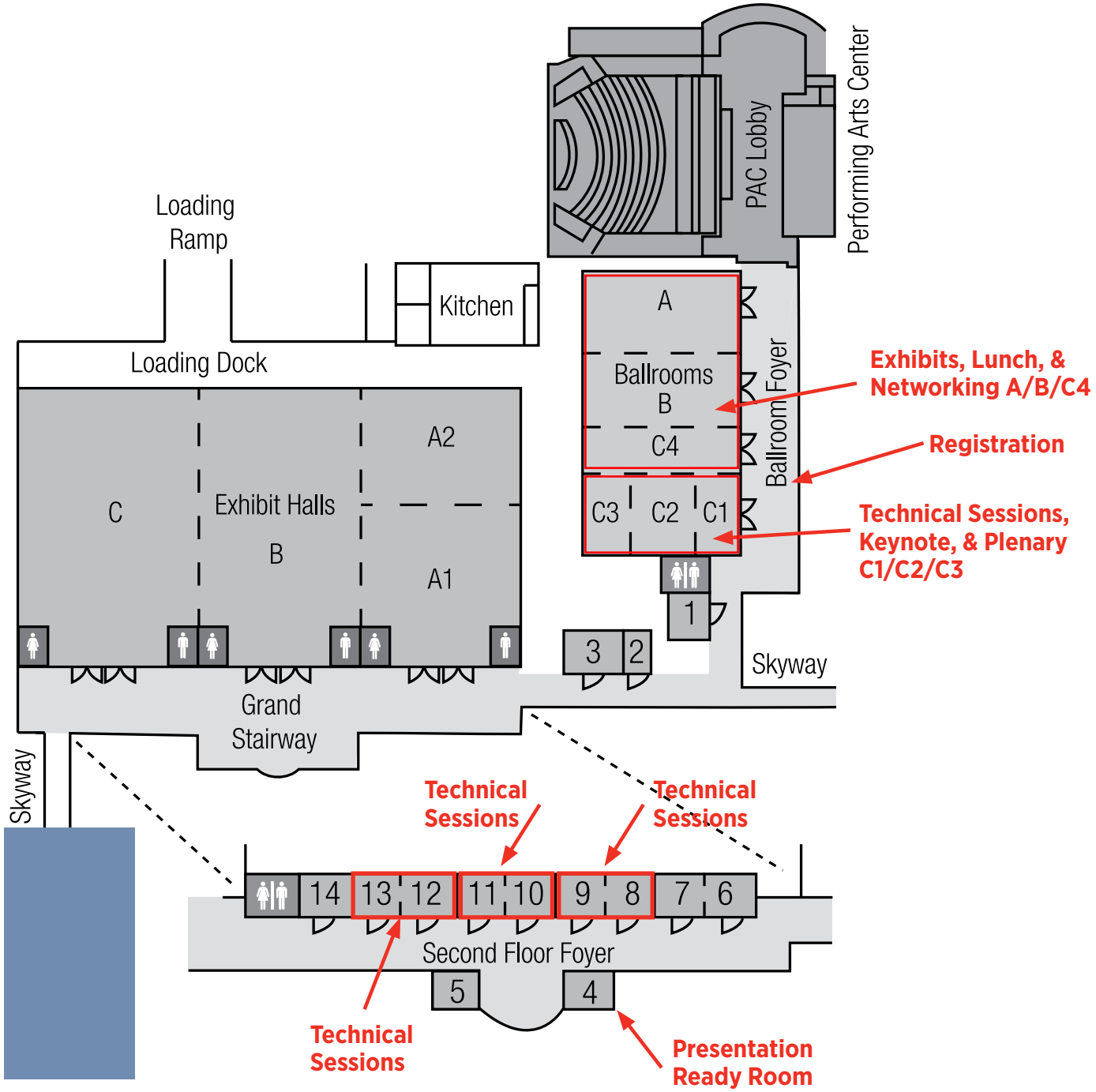
LEMA *Japan Land Engine Manufacturers Association*
JBIA *Japan Boating Industry Association*

FLOOR PLAN


Performing Arts Center
PAC Lobby
Loading Ramp
Kitchen
Loading Dock
A
Ballrooms
B
C4
Ballroom Foyer
Exhibits, Lunch, & Networking A/B/C4
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Technical Sessions, Keynote, & Plenary C1/C2/C3
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C2
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C
Exhibit Halls
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A2
A1
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Skyway
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Skyway
Technical Sessions
Technical Sessions
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Second Floor Foyer
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Technical Sessions
Presentation Ready Room

EVENT-AT-A-GLANCE

November 14
MONDAY

8:30–9:00 a.m.
Tour Registration

9 a.m.–4 p.m.
Technical Tours
Robert Bosch NA Plant, Boeing South Carolina Final Assembly, and Cummins Technical Center, Charleston

November 15
TUESDAY

8:30–10 a.m.
Opening Ceremony and Keynote Speakers

10–10:30 a.m.
Networking Break with Exhibits

10:30 a.m. – noon
Technical Sessions

Noon – 1:30 p.m.
Networking Lunch with Exhibits

1:30–3 p.m.
Technical Sessions

3–3:30 p.m.
Networking Break with Exhibits
Sponsored by:
– Lubrizol

3:30–5 p.m.
Technical Sessions

5–6:00 p.m.
Welcome Reception with Exhibits

November 16
WEDNESDAY

8:30–10 a.m.
Plenary Session

10–10:30 a.m.
Networking Break with Exhibits

10:30 a.m. – noon
Technical Sessions

Noon – 1:30 p.m.
Networking Lunch with Exhibits

1:30–3 p.m.
Technical Sessions

3–3:30 p.m.
Networking Break with Exhibits

3:30–5 p.m.
Technical Sessions

6–9 p.m.
Banquet
Cannon Green: A Gathering Common
Sponsored by:
– Robert Bosch LLC

November 17
THURSDAY

8:30–10 a.m.
Technical Sessions

10–10:30 a.m.
Networking Break with Exhibits

10:30–11:30 a.m.
Technical Sessions

11:30 a.m.–12:30 p.m.
Networking Lunch with Exhibits

12:30–1:30 p.m.
Closing Ceremony

EXHIBIT HOURS
Tuesday 11 a.m.–6:00 p.m.
Wednesday 10 a.m.–3:30 p.m.
Thursday 10 a.m.–12:30 p.m.

REGISTRATION HOURS

Monday	3–5 p.m.
Tuesday	7:30 a.m.–4 p.m.
Wednesday	7:30 a.m.– 4 p.m.
Thursday	7:30 – 11 a.m.

EVENT-AT-A-GLANCE
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SPECIAL EVENTS

TUESDAY, NOVEMBER 15

Opening Ceremony and Keynote Speakers
8:30–10:00 a.m.
See page 8

Networking Break
10:00–10:30 a.m.

Networking Lunch with Exhibits
12:00–1:30 p.m.

Networking Break with Exhibits
3:00–3:30 p.m.
Sponsored by Lubrizol

Welcome Reception with Exhibits
5:00–6:00 p.m.

WEDNESDAY, NOVEMBER 16

Plenary Session
8:30–10:00 a.m.
See page 9

Networking Break with Exhibits
10:00–10:30 a.m.

Networking Lunch with Exhibits
12:00–1:30 p.m.

Networking Break with Exhibits
3:00–3:30 p.m.

SETC Banquet
6:00–9:00 p.m.
Cannon Green: A Gathering Common
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THURSDAY, NOVEMBER 17

Networking Break with Exhibits
10:00–10:30 a.m.

Networking Lunch with Exhibits
11:30 a.m.–12:30 p.m.

Closing Ceremony and Awards Presentation
12:30–1:30 p.m.
See page 9

OPENING CEREMONY AND KEYNOTE SPEAKERS

OPENING CEREMONY SPEAKER

Tuesday, November 15, 8:30–10:00 a.m.

Ballroom C1/C2/C3

Tony Szczotka, Moderator
Regional Business Unit Leader,
Two-Wheeler & Powersports
Robert Bosch LLC

KEYNOTE SPEAKERS

Zoran Filipi
Chair & Executive Director, Timken Endowed Chair in Vehicle System Design
Clemson University

Thermal Barrier Coatings for Improved HCCI Engine Efficiency and Operating Range: Small Engine Perspective
Homogeneous Charge Compression Engine (HCCI) concept is an attractive option for future gasoline-fueled small engine applications. Autoignition, combustion, and low-end operating stability in an HCCI engine critically depend on the interplay between the in-cylinder thermal environment and chemical kinetics; therefore, in-depth characterization of this complex interdependence is required to overcome barriers to practical introduction of HCCI. Small size exacerbates the impact of heat losses on the near-wall zone, hence a particular relevance of thermal barrier coatings in the context of small engine applications. Highlights of the heat transfer research will include characterization of the heat transfer in the HCCI engine using experiments with heat flux probes mounted on both the cylinder head and the piston, the effect of the combustion chamber deposits (CCD) on near-wall phenomena, and on-going effort to engineer thermal barrier coatings (TBC) capable of producing most desirable effects on thermal efficiency, combustion efficiency and emissions of UBHC and CO.

Jaal Ghandhi
Chairman, Mechanical Engineering, Grainger Professor of Sustainable Energy
University of Wisconsin-Madison

Some Impacts of Sustainability Consideration on Small Engines
Readily available and low cost fossil-derived fuels have a limited supply and there are still barriers to the widespread penetration of bio-derived fuels. This will eventually put pressure on the fuel supply. In light of this, the role of the small engine will be explored with an eye toward electrification and other displacement technologies. The different areas of the small engine industry will be addressed separately, and we will focus the discussion from a technological perspective. Other large-scale environmental considerations will also be discussed.

Hiroshi Ito
General Manager, Planning Division Motorcycle & Engine Company
Kawasaki Heavy Industries, Ltd.

Where Motorcycles Should Go When Automatic Drive and ICT Technology Has Realized to Automobiles?
They say some advanced countries or regions such as EU, California, the USA, are considering to prohibit internal combustion engines by 2050. Toyota announced last October that they will no longer be selling automobiles powered only by internal combustion engine, by the same year. What will happen to motorcycles? Many people say motorcycles will survive with the simple schematic change to an electric motor and battery. It may not be so simple. There are other critical and essential technologies, such as ICT and auto drive, which are expected to be realized within 10-30 years. These technologies could pose a threat to the existence of motorcycles, if they are not successfully utilized for motorcycles, as they have been for other automobiles. With their applications, traffic accidents may decrease dramatically with motorcycles, as well.

PLENARY PANEL DISCUSSION

Wednesday, November 16, 8:30–10:00 a.m.
Ballroom C1/C2/C3

Towards Safer and More Sustainable Small Engines and Applications

Tony Szczotka, Moderator
Regional Business Unit Leader,
Two-Wheeler & Powersports
Robert Bosch LLC

Panelists

Janet Buyer
Mechanical Engineer
U.S. Consumer
Product Safety
Commission

Geoff Liersch
Senior Managing
Officer of Two-
Wheeler &
Powersports
Bosch Corp. Japan

Dr. Thomas Wallner
Principal Mechanical
Engineer
Argonne National
Laboratory

CLOSING CEREMONY AND AWARD PRESENTATIONS

Thursday, November 17, 12:30–1:30 p.m.
Ballroom C1/C2/C3

Takeshi Araki
Director
Kawasaki Heavy Industries Ltd

Dr. Leonid Tartakovsky
Director Int.Comb. Engines Lab.
Technion Israel Inst of Technology

TECHNICAL SESSIONS WEEK AT A GLANCE

	TUE		WED		THUR			
	AM	PM	AM	PM	AM	PM	Room No.	Page No.
Advance Combustion: Part 1 & 2 (SETC1)	✔	✔	-	-	-	-	Ballroom C1/C2/C3	11, 12
Alternative Fuels (SETC2)	-	-	-	-	✔	-	Meeting Room 12/13	18
Collegiate Events (SETC3)	-	-	-	-	✔	-	Meeting Room 10/11	18
Diesel Engine (SETC4)	✔	-	-	-	-	-	Meeting Room 12/13	11
Emissions: Part 1 - 4 (SETC5)	-	-	-	✔	✔	-	Ballroom C1/C2/C3	15, 16, 17, 18
Engine Components (SETC7)	-	-	-	-	✔	-	Meeting Room 12/13	17
Engine Controls: Part 1 - 3 (SETC8)	✔	✔	-	-	-	-	Meeting Room 10/11	11, 12, 13
Engine Technology: Part 1 & 2 (SETC9)	-	-	✔	✔	-	-	Meeting Room 12/13	14, 15
Functional Safety (SETC20)	✔	-	-	-	-	-	Meeting Room 6/7	11
HCCI: Part 1 & 2 (SETC11)	-	-	-	✔	-	-	Meeting Room 6/7	15, 16
Hybrids, Electric Drives, and Fuel Cells (SETC12)	-	-	✔	-	-	-	Meeting Room 6/7	14
Lubricants (SETC13)	-	-	-	✔	-	-	Meeting Room 12/13	16
Materials: Part 1 & 2 (SETC14)	-	✔	-	-	-	-	Meeting Room 6/7	12, 13
Measurement and Simulation: Part 1 - 4 (SETC15)	-	-	✔	✔	✔	-	Meeting Room 10/11	14, 15, 16, 17
NVH Technology: Part 1 & 2 (SETC16)	-	✔	✔	-	-	-	Ballroom C1/C2/C3	13, 14
SETC Closing Ceremony (SETCCL)	-	-	-	-	-	✔	Ballroom C1/C2/C3	20
Two Stroke Engine: Part 1 & 2 (SETC17)	-	✔	-	-	-	-	Meeting Room 12/13	13, 14
Vehicle Dynamics and Safety: Part 1 & 2 (SETC18)	-	-	-	-	✔	-	Meeting Room 6/7	17, 18

TECHNICAL SESSIONS

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
	Planned by Small Engine Technology Conference Technical Committee / Small Engine Technology Conference General Committee The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org

TECHNICAL SESSIONS

TUESDAY, NOVEMBER 15 - AFTERNOON
Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Ballroom C1/C2/C3	Meeting Room 10/11	Meeting Room 6/7	Meeting Room 12/13
	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.
	Planned by Small Engine Technology Conference Technical Committee / Small Engine Technology Conference General Committee The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org

TECHNICAL SESSIONS

TUESDAY, NOVEMBER 15 - AFTERNOON
Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	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 Fioravanti, 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.	An Investigation on Transmission Loss for Scooter Muffler by CAE Numerical Method **(2016-32-0041/20168041)** Chao-Kai LI, Jia-Siou Wu, Yuh-Yih Wu, National Taipei University of Technology	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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TECHNICAL SESSIONS

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.	Design Parameters for Small Engines Based on Market Research **(2016-32-0090/20168090)** Vikram Mittal, United States Military Academy	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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TECHNICAL SESSIONS

WEDNESDAY, NOVEMBER 16 - AFTERNOON
Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Ballroom C1/C2/C3	Meeting Room 12/13	Meeting Room 6/7	Meeting Room 10/11
	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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TECHNICAL SESSIONS

WEDNESDAY, NOVEMBER 16 - AFTERNOON
Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM			
	Ballroom C1/C2/C3	Meeting Room 6/7	Meeting Room 10/11	Meeting Room 12/13
	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	Experimental Investigation of Low Viscosity Multi-Grade Engine Oils in 4-Stroke Engine Powered Motor Cycles on Chassis Dynamometer **(2016-32-0018/20168018)** Mrinmoy Kalita, Murugesu Muralidharan, Masilamani Sithananthan, Muthan Subramanian, Yogesh Kumar Sharma, Bhuvenesh Tyagi, Sarita Garg, Ajay Kumar Sehgal, Shankara Sri Venkata Ramakumar, Ramadoss Suresh, Indian Oil Corp Ltd
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

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 Kaieda, 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
	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org	The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00568, and also individually. To purchase visit collections.sae.org

TECHNICAL SESSIONS

THURSDAY, NOVEMBER 17 - MORNING
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.	

THURSDAY, NOVEMBER 17 - MORNING
Technical and Business Sessions

TIME	SESSION TITLE, DESCRIPTION, AND ROOM
	Ballroom C1/C2/C3
	SETC Closing Ceremony (SETCCL) 12:30 p.m. - 1:30 p.m.

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The 23rd Small Engine Technology Conference

Call for Papers

Society of Automotive Engineers of Japan, Inc.

Patronage of FISITA

VENUE : JAKARTA CONVENTION CENTER
PERIOD : November 15 to 17, 2017


JAKARTA CONVENTION CENTER

DUE DATES
Abstracts due : January 31, 2017
Draft manuscripts due : April 14, 2017
Final manuscripts due : July 31, 2017

FOREWORD

JSAE, Society of Automotive Engineers of Japan, Inc., is pleased to announce that the 23rd Small Engine Technology Conference (SETC2017) will be held in Jakarta, Indonesia from November 15 to 17, 2017.

The conference is jointly organized by JSAE and SAE International with the support of Society of Automotive Engineers Indonesia (IATO) and Japan Land Engine Manufacturers Association (LEMA). We kindly ask prospective researchers and engineers in a diversified field of technologies and products with power source to submit electronic abstracts.

The conference offers up-to-date and new information in the development of technologies concerned in an exchange of participants from the globe. The events include technical visits, keynote speech, plenary session, exhibition and poster sessions besides ceremonial events of opening and awards & closing. Lunch & coffee-break for networking, welcome reception and banquet will be served as well.


Central District of Greater Jakarta City

MAIN SUBJECT AREAS

- **Product Categories** focused in this conference are:

  Vehicles with power source such as ATV, Motorcycles, Scooters, Personal Mobility, Marine, Snowmobiles, Recreational Vehicles, Utility Vehicles, Power Assist Devices, Power Assist Bicycles and Unmanned Vehicles.
  *Automobiles, Large Vessels, Large Aircraft, Locomotives and Spaceships are inapplicable.

  Machines with power source such as Snow Removal Equipment, Portable Power Generators, Agricultural Equipment, Garden Equipment, Hand Tools and Powered Exoskeleton.
  Technologies applicable for the products above are to be presented in this conference.

- **Technological Areas** focused in this conference are:

  Combustion Engines such as 4 stroke Engines, 2 stroke Engines, SI Engines, Diesel Engines, HCCI Engines, Unconventional Engines and Competition Engines.

  New Energy Sources such as Hybrid Drives, Electric Drives, Fuel Cells and Solar Cells.

  Components such as Chassis, Suspensions, Brakes, Transmissions, Drivetrains, Electrical Systems, Electronic Systems, Fuel Supply Systems and Wheels & Tires.

  Development Technologies such as Numerical Simulations, Measurements and Production Technologies.

  Fuels, Lubricants, and Tribology such as Alternative Fuels, Fuel Reformations, Additives, Friction Loss and Wear.

  Vehicle Technologies such as Dynamics, Handling, Drivability, Safety Technology & Functional Safety and Human Factors & Ergonomics.

  Environmental Impacts such as Noise, Vibration, Emissions, Aftertreatment and Life Cycle & Recyclability.

  Materials such as Composites, Metal Alloys, Heat & Surface Treatment, New Material and Material Processing.

1. **Language**: English. No simultaneous translation will be provided

2. **Submission of Abstracts**
   We kindly ask prospective researchers and engineers in a diversified field of technologies and products with power source to submit electronic abstracts of 300 to 500 words on-line via SETC website (URL: http://www.setc-jsae.com/) linked to JSAE Paper Entry System. You will receive an automatic reply upon the submission.
   The abstract should include:
   • Tentative paper title
   • Author (and co-authors) with full name, affiliation, mailing address, e-mail address, telephone and fax numbers.
   Each abstract should clearly state:
   • The main issues and conclusions
   • The process by which the conclusions were reached
   • The significance of the work to progress of the relevant engineering area.
   Abstract to be received on-line from December 2016.

3. **Papers/Presentations**
   The papers should be written and presented at the conference, which should be applications oriented. No paper will be accepted without a presentation.
   • The papers should be prepared in hard metric (SI) units.
   • Material of a purely descriptive nature or containing commercialism should be omitted.
   • Final manuscripts should make a contribution to the state-of-the-art technology or present a comprehensive review, be of high technical quality with conclusions supported by technical data.
   • A presenting author when his/her final manuscript accepted, is asked to make on-line advanced registration via SETC website linked to the registration system and also to bring his/her own PC for presentation to the venue.
   • Your technical paper could be selected for SAE Journal.

4. **Exhibition and Poster Session**
   OEMs, suppliers and academia will be given an opportunity to exhibit products and technical information during the conference at the venue. Poster session in conjunction with technical session will be also provided to graduate & undergraduate university students, and their researchers.

5. **Advertisements and Sponsorship**
   Advertisement banner and preliminary & final program will be offered.
   Also, the conference sponsorship program will be planned. Information will be available at the SETC website late 2016.

REPUBLIC OF INDONESIA

REPUBLIC OF INDONESIA AT GLANCE

Indonesia is a country in Southeast Asia. Located between the Indian and Pacific Ocean, it is the largest archipelagic state in the world, consisting of more than 18,000 islands. Moreover, Indonesia possesses the 2nd longest coastlines in the world, measuring of 54,716 km. The major islands are Java, Sumatra, Borneo (Kalimantan), Papua and Celebes (Sulawesi). With an estimated population of more than 256 million people, Indonesia is the world's fourth most populous country as well as the most populous Muslim majority country.

GREATER JAKARTA CITY

Jakarta is the capital city of the Republic of Indonesia which serves as the center of government, as well as the epicenter for finance, business and trade. As the biggest city in Indonesia, Jakarta acts as the main hub for international air connections in the archipelago. The city has many deluxe hotels that offer first class services in rooms, function halls and superb cuisine, whether for individuals or for large delegations. In addition, Jakarta is also famous for offering one of the best shopping venues in South East Asia with numerous modern shopping centers for your consumer needs.

ACCESS

If you fly to Jakarta using international airline, you will arrive in Terminal 2 or 3 of Jakarta Soekarno-Hatta International Airport. The airport is located on Cengkareng, a district northwest of the city. The distance from the airport to the venue at Jakarta Convention Center is about one to two hours depending on traffic condition. There are several ways that you can get from the airport to Jakarta. The easiest and most convenient is taking a taxi. You'll see plenty of taxi drivers as soon as you leave the arrival terminal.

INFORMATION ON THE WEB:

INDONESIAN TRAVEL GUIDE:
http://www.indonesia.travel/

JAKARTA TRAVEL GUIDE:
http://www.indonesia-tourism.com/jakarta/

VENUE – JAKARTA CONVENTION CENTER:
http://www.jcc.co.id

SETC2017 SECRETARIAT
Society of Automotive Engineers of Japan, Inc. E-mail: setc2017@jsae.or.jp
Website: http://www.setc-jsae.com/

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WHAT CAN YOU DO?

- Organize an SAE Event
- Speak at an Event
- Be a Technical Paper Author
- Be a Manuscript Reviewer

HOW DO YOU BENEFIT?

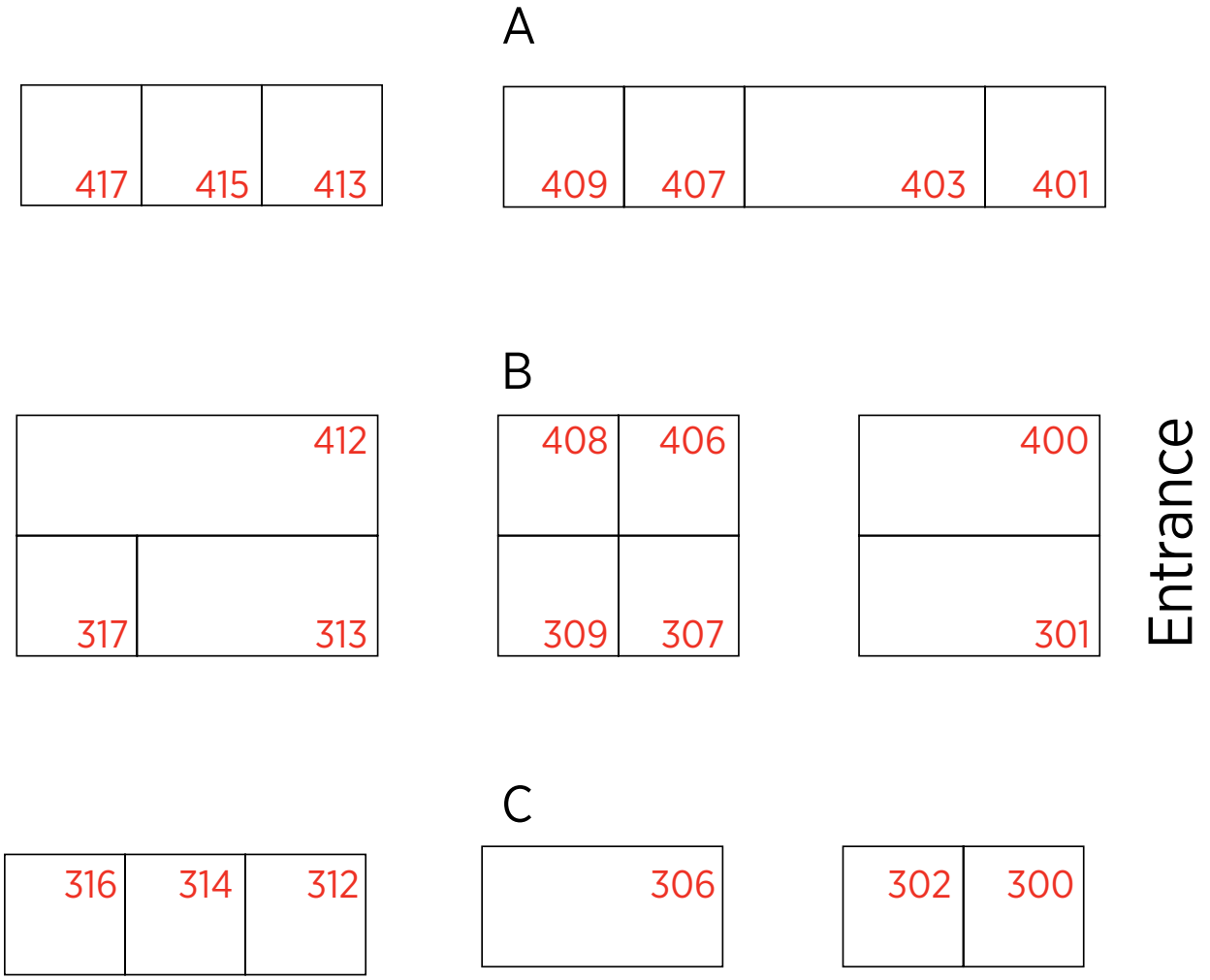
- Be a channel for discussion and influence the advancements in your industry
- Become a leading member of the technical community by contributing to industry's body of technical knowledge
- Connect with other subject matter experts to expand business and career opportunities
- Expand your influence and demonstrate your subject matter expertise to colleagues and industry groundbreakers from around the world
- Paper authors, get published by your professional society and share successes and challenges with peers and industry
- Nurture your skills and experience by connecting and communicating with colleagues and influencers

GET INVOLVED. VOLUNTEER AND BE PART OF AN EVENT.

Contact Colette Wright here at the event or colette.wright@sae.org

P151769

EXHIBITOR FLOORPLAN



EXHIBITOR LIST

Company Name	Booth Number
Accurate Technologies Inc	401
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ECO-PowerDrive-2	415
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EXHIBITOR PROFILES

Exhibitor Directory text is published as submitted by exhibiting companies.

A

Accurate Technologies Inc
47199 Cartier Dr
Wixom, MI 48393
United States

www.accuratetechnologies.com
BOOTH #401

Accurate Technologies offers a wide range of high performance EMX data acquisition modules at a competitive cost per channel. Add VISION Software to enable the data analysis or collect features. Visit ATI to learn how to ensure that your system is properly anti-aliased. Compare ATI competitive cost per channel solutions.

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United States

www.engines.honda.com
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AVL
47603 Halyard Dr
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United States

www.avl.com
BOOTH #307

AVL is the world's largest independent company for development, simulation and testing of powertrains (hybrid, combustion engines, transmission, electric drive, batteries and software) for passenger cars, trucks and large engines. The company offers combined solutions of powertrain engineering, simulation software, and testing and instrumentation systems.

C

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347 Cherry Hinton Road
Cambridge CB1 8DH
United Kingdom

www.cambustion.com
BOOTH #302

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Continental Automotive
201 Enterprise Dr
Newport News, VA 23603
United States

www.continental-corporation.com
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Continental's Synerject business unit develops and produces intelligent engine and vehicle technologies for performance and light motorcycles, scooters, ATVs, side by sides, snowmobiles, personal watercraft, recreational boats, and lawn & garden equipment. Our innovative solutions improve the excitement factor, efficiency, and environmental footprint of our customers' end products.

E

ECO-PowerDrive-2
Graz University of Technology
Inffeldgasse 25b
Graz 8010
Austria

ecopowerdrive.at
BOOTH #415

In the Research Consortium ECO-PowerDrive-2 scientists from Austria develop methods for the reduction of emission and fuel consumption of small powertrains under real world operating conditions. The international research consortium, led by Graz University of Technology, consists of 8 international company partners and 4 scientific partners and is focused on propulsion units for two-wheeler, small passenger cars as well as hand-held working and garden tools.

ElectroJet Inc.
7717 Lochlin Dr
Brighton, MI 48116
United States

www.electrojet.org
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United States

www.etas.com
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H

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3-15-1 Senzui
Asaka-Shi Saitama Pref 351
Japan

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EXHIBITOR PROFILES

I

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12247 W Fairview Ave
Milwaukee, WI 53226
United States

www.intelligentcomposites.com
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Hartford, CT 06106
United States

www.permatex.com
BOOTH #316

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K

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Novi, MI 48377
United States

www.kistler.com
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L

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https://www.lubrizol.com/MCEO/SETC-2016/
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M

MAHLE Industries Inc
2700 Daley Dr
Troy, MI 48083
United States

www.mahle.com
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MAHLE is a leading international development partner and supplier to the automotive industry. With its products for combustion engines and their peripherals as well as solutions for electric vehicles, the group addresses all the crucial issues related to the powertrain and air conditioning technology—from engine systems and components to filtration to thermal management. In 2015, the group generated sales of approximately EUR 11.5 billion with around 76,000 employees and is represented in 34 countries with over 170 production locations.

Michigan Technological UniversityKeweenaw Research Center
1400 Townsend Dr
Houghton, MI 49931
United States
BOOTH #407

The Michigan Tech Keweenaw Research Center is the host site for the Annual SAE Clean Snowmobile Challenge. Personnel will be on site to discuss how you can get involved in this Collegiate Design Series Competition as a judge or sponsor.

P

Sponsor

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Germany

www.pruefrex.com
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R

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United States

www.bosch.us
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EXHIBITOR PROFILES

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Winona, MN 55987
United States

www.rtpcompany.com
BOOTH #413

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West Lafayette, IN 47906
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www.swiftfuels.com
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Synerject
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Newport News, VA 23603
United States

www.synerject.com
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S

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United States

www.schraderinternational.com
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W

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Saginaw, MI 48604
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AD INDEX

SAE INTERNATIONAL EVENTS

2016

SAE 2016 On-Board Diagnostics Symposium
September 13-15, 2016
Indianapolis, Indiana, USA

SAE 2016 Convergence
September 19-21, 2016
Novi, Michigan, USA

SAE 2016 Heavy-Duty Diesel Emissions Control Symposium
September 20-21, 2016
Gothenburg, Sweden

Aerospace Standards Summit 2016
September 20-21, 2016
Arlington, Virginia, USA

SAE 2016 North American International Powertrain Conference
September 21-23, 2016
Chicago, Illinois, USA

SAE 2016 New Energy Vehicle Forum
September 21-22, 2016
Shanghai, China

SAE-TONGJI 2016 Driving Technology of Intelligent Vehicle Symposium
September 22, 2016
Shanghai, China

SAE 2016 Brake Colloquium & Exhibition - 34th Annual
September 25-28, 2016
Scottsdale, Arizona, USA

SAE 2016 Aerospace Systems and Technology Conference
September 27-29, 2016
Hartford, Connecticut, USA

SAE 2016 Commercial Vehicle Engineering Congress
October 4-6, 2016
Rosemont, Illinois, USA

SAE 2016 Aerospace Manufacturing and Automated Fastening Conference & Exhibition
October 4-6, 2016
Bremen, Germany

SAE 2016 Transmission and Driveline Technologies Symposium
October 17-19, 2016
Ypsilanti, Michigan, USA

SAE 2016 All-Wheel Drive Symposium
October 17-19, 2016
Ypsilanti, Michigan, USA

SAE 2016 Thermal Management Systems Symposium
October 18-20, 2016
Mesa, Arizona, USA

SAE 2016 International Powertrain, Fuels & Lubricants Meeting
October 24-26, 2016
Baltimore, Maryland, USA

SAE 2016 Range Extenders for Electric Vehicles Symposium
November 2-3, 2016
Knoxville, Tennessee, USA

SAE 2016 Augmented and Virtual Reality (AR/VR) Technologies Symposium
November 14-16, 2016
Philadelphia, Pennsylvania, USA

SAE/JSAE 2016 Small Engine Technology Conference & Exhibition
November 15-17, 2016
Charleston, South Carolina, USA

SAE 2016 From ADAS to Automated Driving
November 29-December 1, 2016
Munich, Germany

SAE 2016 Vehicle Electrification and Connected Vehicle Technology Forum
November 30-December 1, 2016
Shanghai, China

2016 Defense Maintenance and Logistics Exhibition
December 5-8, 2016
Albuquerque, New Mexico, USA

2016 DOD Maintenance Symposium
December 5-8, 2016
Albuquerque, New Mexico, USA

2017

SAE 2017 SAE Connect2Car at CES
January 5, 2017
Las Vegas, NV

Symposium on International Automotive Technology 2017
January 18-21, 2017
Pune, India

SAE 2017 Light Duty Emissions Control Symposium
January 23-24, 2017
Washington, District of Columbia, USA

SAE 2017 Government/Industry Meeting
January 25-27, 2017
Washington, District of Columbia, USA

SAE 2017 Hybrid and Electric Vehicle Technologies Symposium
February 7-9, 2017
San Diego-Mission Valley, California, USA

SAE 2017 On-Board Diagnostics Symposium - Europe
February 27-March 1, 2017
Torino, Italy

SAE 2017 Additive Manufacturing Symposium
March 14-15, 2017
Knoxville, Tennessee, USA

SAE 2017 High Efficiency IC Engine Symposium
April 2-3, 2017
Detroit, Michigan, USA

WCX17: SAE World Congress Experience
April 4-6, 2017
Detroit, Michigan, USA

SAE Convergence ®
June 4-7, 2017
San Jose, California, USA

SAE 2017 Noise and Vibration Conference and Exhibition
June 12-15, 2017
Grand Rapids, Michigan, USA

SAE 2017 North American International Powertrain Conference
September 13-15, 2017
Chicago, Illinois, USA

SAE 2017 Commercial Vehicle Engineering Congress
September 18-20, 2017
Rosemont, Illinois, USA

SAE Brake Colloquium & Exhibition - 35th Annual
September 24-27, 2017
Orlando, Florida, USA

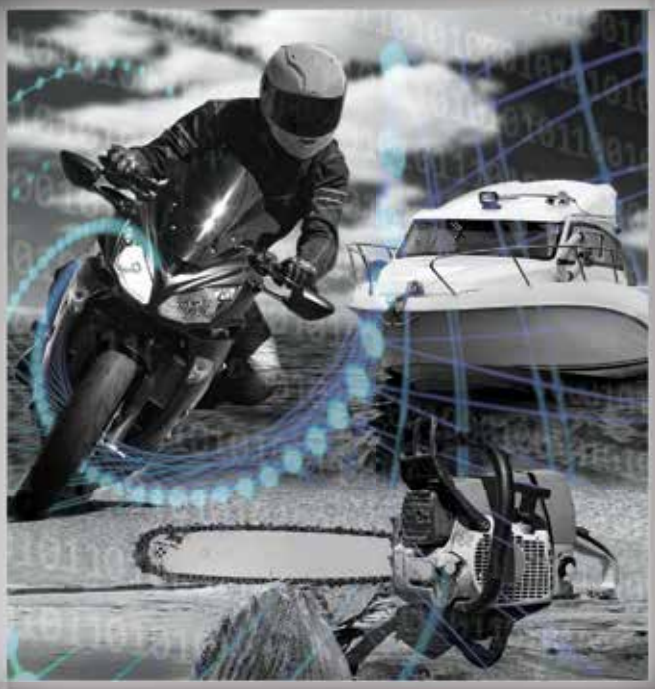
SAE 2017 On-Board Diagnostics Symposium
September 26-28, 2017
Garden Grove (Anaheim), California, USA

SAE 2017 AeroTech Conference & Exhibition
September 26-28, 2017
Fort Worth, Texas, USA

SAE 2017 Thermal Management Systems Symposium
October 10-12, 2017
Plymouth, Michigan, USA

SAE 2017 International Powertrains, Fuels & Lubricants Meeting
October 15-19, 2017
Beijing, China

For an updated listing of events, dates and locations, please refer to http://www.sae.org/events/



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- Power Tools
- Recreational Vehicles

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