

**SAE**  
**Foundation**<sup>SM</sup>



Ignite the  
Spark!

**2017 SAE FOUNDATION  
ANNUAL CELEBRATION**



Go Further



**"Girls need more role models."**

ALISON BAZIL *Business Manager*  
Vehicle Components and Systems Engineering



*Ford Girls' Fast Track Races give girls an opportunity for hands-on experience with science, technology, engineering, the arts and math (STEAM) through the building and racing of small wood cars.*



**"I've been encouraging girls to go into engineering since I started my career 28 years ago,"**

said Alison Bazil. "Disappointingly, the statistics haven't changed much over the decades." Only about 20 percent of all engineering school graduates are women! And women make up only 12 percent of all practicing engineers.<sup>2</sup> "Because the percentage hasn't grown, girls don't see many women to model against," she explained. When Bazil speaks to K through 12 girls, she wants to make it clear that they have career choices. "Because we're trying to grow the pipeline, we want to make sure that they realize they can be great scientists, mathematicians and engineers. These are high-paying careers that offer them independence and opportunity for growth throughout their lives." Find out more about Girls' Fast Track Races powered by Ford at [fordsteamexperience.com](http://fordsteamexperience.com).

<sup>1</sup>National Science Foundation, National Center for Science and Engineering Statistics. 2015. Special Report NSF 15-311. <http://www.nsf.gov/statistics/wmpd/>. <sup>2</sup>Solving the Equation: The Variables for Women's Success in Engineering and Computing. Washington, DC: American Association of University Women.(2015)



Support her success at [girlscouts.org](http://girlscouts.org).

# WELCOME...

Remember sitting by a campfire watching sparks drift upward and wondering why? Were you curious about how rockets got to the moon or did you make plans to invent the greatest machine ever made? This curiosity is something to be nurtured and transformed into the joy of discovery.

This joy in learning and growing is at the core of the SAE Foundation's work, and would not be possible without your support. Tonight, we commend all in the mobility industry who have forged a path for the future scientists and engineers, and generously supported SAE's A World In Motion®, Collegiate Design Series™, and awards and scholarship programs.

This evening we pay tribute to leadership, dedication and service with the presentation of awards honoring corporate citizenship and both new and accomplished leaders. Jack Roush, Founder, CEO, and Co-Owner of Roush Fenway Racing and Chairman of the Board of Roush Enterprises will receive the prestigious Industry Leadership Award recognizing his significant contributions to racing, the mobility industry and STEM education. Jack Thompson will receive the Ableson Award for dedication and service to the SAE Foundation. We will present the AVL-sponsored Gordon Millar Award to Ford Motor Company for their outstanding philanthropic support and we will celebrate the future through the Young Industry Leadership Awardees, Sandeep Makam and Dr. Srikanth Pilla.

Most importantly, we honor all of you who help make real the work of the Foundation. You may be a volunteer, a donor, a teacher, an executive, or a company that has been generous in your support. Because of you, young people are discovering the joy in learning – a true formula for success. Thank you for inspiring the future generation of doers and dreamers.

Tonight, we celebrate the natural curiosity of our young people and the moments of discovery that nurture their curiosity and spark their interest in science, technology, engineering and math. Many of these moments begin with you and we thank you for being here. Enjoy your evening!

**Mazen Hammoud**  
Chairman  
SAE Foundation

**Joyce Weishaar**  
Annual Celebration Chair

# Balance.

Through hands-on experience, guidance and mentorship Aisin understands the importance of a balanced and seasoned team.

Successful companies inspire excellence and future generations of leaders. They act responsibly and in harmony with the values of customers, suppliers, team members, and community.



Aisin stands proudly with the SAE Foundation for Science and Technology for the bridges it builds between industry and the community of young people.



**AISIN GROUP**

*For a Better Tomorrow*

**SYSTEMS SOLUTIONS • FUEL EFFICIENCY • SAFETY • COMFORT and CONVENIENCE**

# AGENDA

## Master of Ceremonies

*John McElroy, Host of Autoline.tv*

## Welcome and Introductions

## Dinner

## Presentation of Donald W. Ableson Award for Visionary Leadership

2017 Recipient

*Jack Thompson (Posthumously)*

## Presentation of Gordon Millar Award

2017 Recipient

*Ford Motor Company*

## Presentation of Young Industry Leadership Awards

2017 Recipients

*Sandeep Makam  
FCA LLC*

*Srikanth Pilla, PhD  
Clemson University*

## Presentation of SAE Foundation Industry Leadership Award

2017 Recipient

*Jack Roush  
Founder, CEO and Co-Owner of Roush Fenway Racing  
Chairman of the Board of Roush Enterprises*

Sponsored by





IGNITE  
THE SPARK!

# Committed to making a difference

Magna International is proud to sponsor the 2017 SAE Foundation Annual Celebration to honor industry leaders dedicated to supporting STEM education.

Special thanks to all of the corporations, individuals and communities for making a difference and the SAE Foundation as they continue to inspire the next generation of innovators.

**Together we can make a difference.**

# SPONSORS

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## Corporate Sponsors



Inspiring a new generation of innovation.



As a technology-driven company, BorgWarner actively invests in STEM education, igniting the spirit of innovation in students of all ages. We are proud of our long standing commitment to the SAE Foundation and their efforts to develop educational programs that lead to those truly AHA! moments.

[borgwarner.com](http://borgwarner.com)

 **BorgWarner**

# MENTOR SPONSORS

The following companies have expressed their commitment to nurturing emerging engineers by agreeing to be Mentor Sponsors. Mentor Sponsors provide an opportunity for university students to attend this evening and to network among industry executives. Mentor Sponsors share their tables with five college students who aspire toward careers in engineering.



a leader in intuitive motion control



## 5 THINGS TO KNOW ABOUT NEXTEER



**DEPTH & BREADTH OF PRODUCTS**  
Steering and Driveline Systems for small cars to heavy duty trucks around the globe



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Agility, responsiveness, quality and value



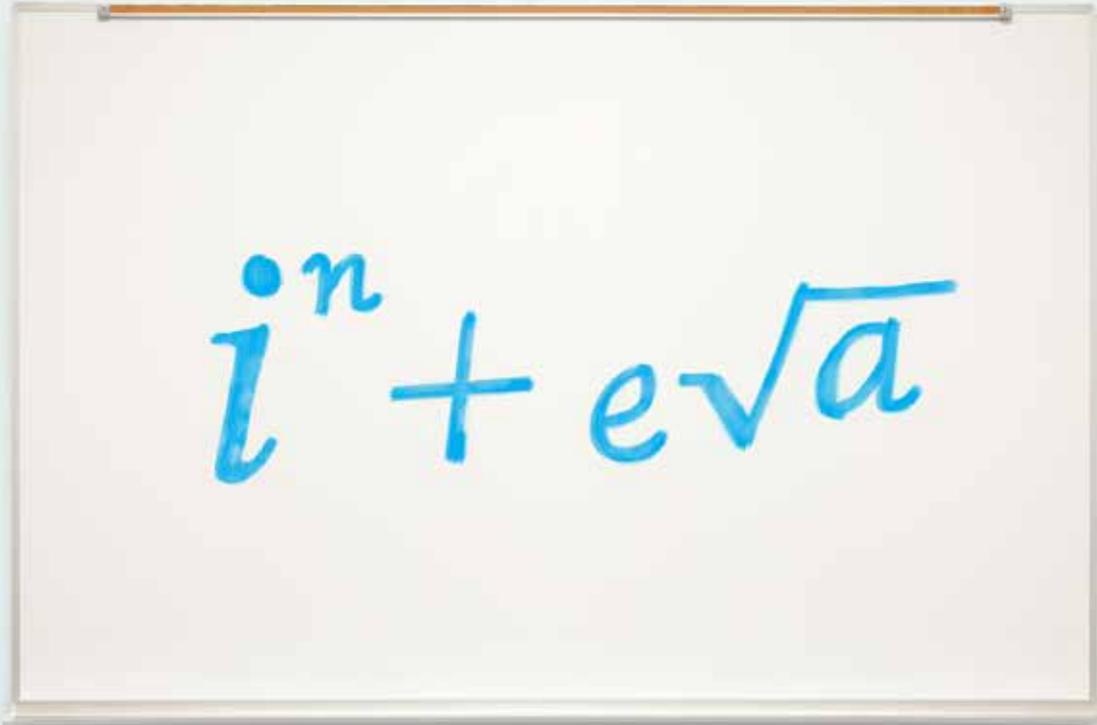
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*The feel of the interior, the sun shining through the sunroof, the excitement that arises when the door closes and the drive begins... these are the moments that make all of us at Inteva proud of what we do. There's nothing better than using science, technology, math and engineering fundamentals to create cool driving experiences. We're honored to support the SAE Foundation and help recognize Jack Roush. Thank you for advancing STEM education and getting our future innovators into the pipeline.*



248.655.8886 [intevaproducts.com](http://intevaproducts.com)



# THE DONALD W. ABLESON AWARD FOR VISIONARY LEADERSHIP

- Recipient must have more than 20 years of service to the mobility community, representing industry, academia or government and must have made notable contributions serving in a leadership capacity.
- Recipient must have served on the SAE Foundation Board or the SAE Foundation Canada Board of Directors for more than three years or be a leader who has made significant contributions toward improving science, technology, engineering and math (STEM) education.
- Recipient must have led at least one initiative that resulted in noteworthy advancements of the SAE Foundation's mission.

## **Past Recipients Include:**

- 2016 Cuneyt L. Oge, PWC's PRTM Management Consulting (retired)
- 2015 Mark A. Johnson, General Motors Corporation
- 2014 Joseph B. Anderson Jr., TAG Holdings LLC
- 2013 Neil A. Schilke, Schilke Systems Engineering, LLC
- 2012 Joseph M. Colucci, Automotive Fuels Consulting (retired)
- 2011 Rodica Baranescu PhD, Navistar International Corp. (retired)
- 2010 Daniel M. Hancock, DMH Consulting (retired)
- 2008 Arnold W. Siegel, Accident Reconstruction Associates (retired)
- 2007 Neil De Koker, Original Equipment Suppliers Association
- 2006 William T. Birge, Honeywell (retired)
- 2005 Fred Nader, AutoTech Technology Development, Inc.
- 2004 Raymond A. Morris, SAE International (retired)
- 2004 William G. Agnew, General Motors Corporation (retired)



# Anything's possible through education.

Delphi is proud to support the SAE Foundation as it inspires the next generation of STEM professionals.

Bringing others together through education, you are helping to create a world that's filled with unlimited possibilities.

[delphi.com](http://delphi.com)



**DELPHI**  
Foundation

# 2017 RECIPIENT OF THE DONALD W. ABLESON AWARD FOR VISIONARY LEADERSHIP



## Jack E. Thompson

This year's Donald W. Ableson Award for Visionary Leadership is being presented posthumously to Jack E. Thompson. Dr. Thompson served as SAE President in 2003, and dedicated eight years of service as a member of the SAE Foundation Board of Trustees.

Dr. Thompson began his career as a mechanical engineer for Chrysler in 1964. During his 39-year tenure at Chrysler, he held several prestigious positions including Director of the Chrysler Technology Center, Director of Computer Aided Engineering and Concept Development, and Executive Engineer for Large Car Platform. He led a team responsible for the advanced design of the first Chrysler Minivan and many K-Car derivative models. Dr. Thompson retired from Chrysler in 2003.

Throughout his career, Dr. Thompson was dedicated to emerging engineering methods and tools that improve engineering capabilities and efficiency. He was committed to making sure the mobility industry was supplied with outstanding engineers that were experts in the very latest technologies.

During his tenure, the SAE Foundation pursued a successful capital campaign that raised over \$26 million in support of the A World in Motion Programs. Dr. Thompson was always encouraging the Foundation Board to support new AWIM challenges as he recognized the need for these programs, and the need for young people to experience them.

Dr. Thompson continued to be a staunch supporter of the Foundation and its endeavors after retiring from the Board in 2008. His legacy continues in the spirit of today's Foundation to support emerging technologies in SAE's educational programs for budding scientists and engineers.



## CAREERS AT MAHLE. GO YOUR PATH WITH US.



We like it when our employees have goals. What goals are you reaching for? Are you prepared to grow with the challenges ahead of you? Challenge yourself at MAHLE.

As a leading global development partner for the automotive and engine industry, MAHLE provides technologically innovative solutions to well-known customers. At MAHLE, we give you the perfect start to your career.

Whether you are interested in Research and Development, Production, Technical Sales, Procurement or Controlling – we offer you the ability to be part of a strong project team and challenge yourself with various international projects. We also have an array of other career-boosting opportunities. Find yourself shaping the face of our company by working with one of our teams in Human Resources or Marketing. Support the technological infrastructure of our business by joining our Information Technology group. Whatever your path, all of our opportunities offer you exciting assignments, personalized career development, support and attractive benefits. Go your path – with MAHLE.

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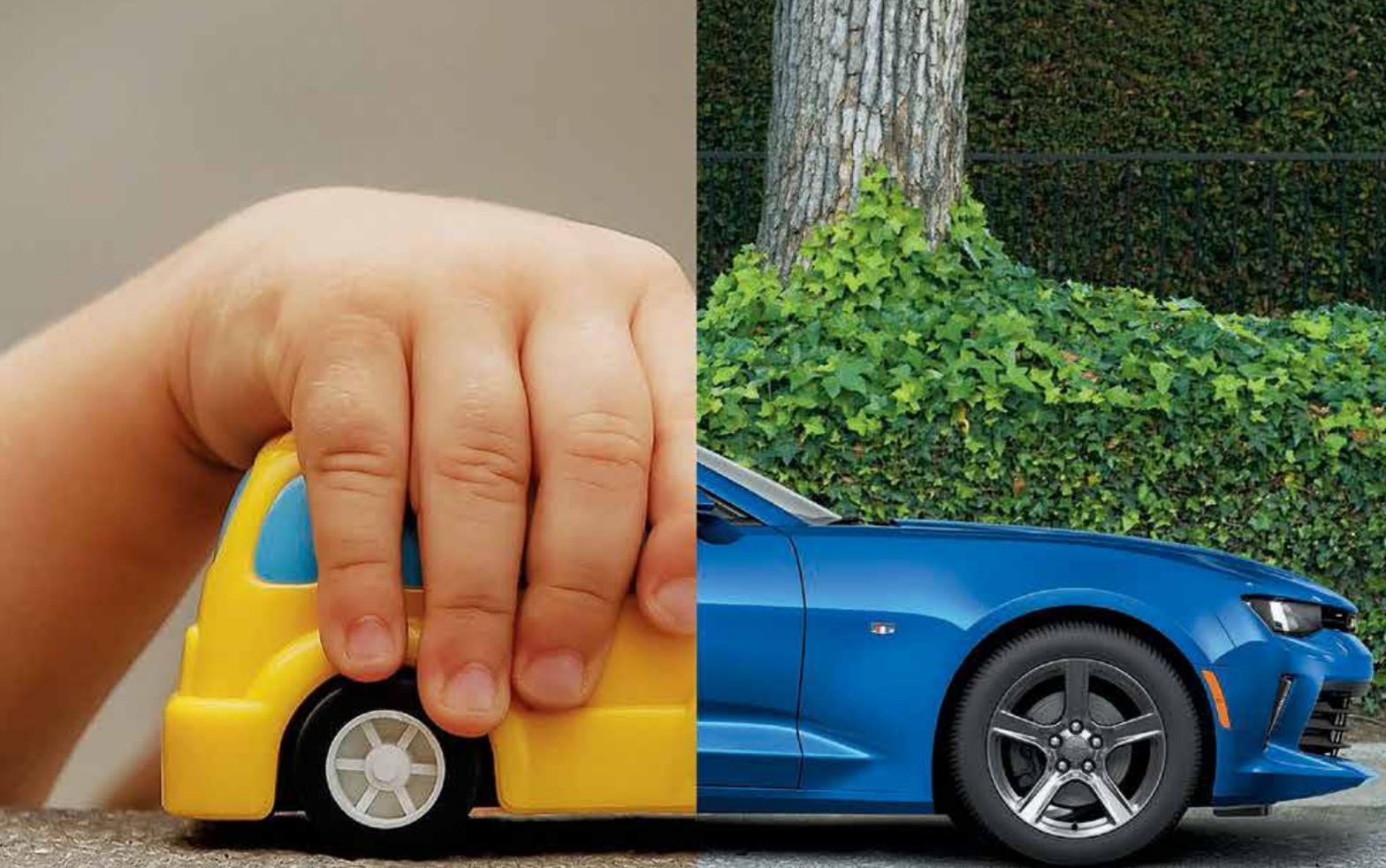


# Thanks for inspiring the next generation of innovators.

SAE's award-winning student programs cultivate a deep curiosity about science, technology, engineering and math.

Thank you, SAE Foundation, for motivating these future world changers.

[www.avl.com](http://www.avl.com)



**STEM TAKES KIDS FROM PLAYING WITH CARS, TO BUILDING THEM.**

General Motors proudly supports the SAE Foundation. Our future innovators are never too young to benefit from the Science, Technology, Engineering and Math educational programs you're developing.

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**GENERAL MOTORS**

# THE GORDON MILLAR AWARD

Sponsored by:



The Gordon Millar Award provides special recognition of the individual or organization that best demonstrates continuous philanthropic support of the SAE Foundation's mission to encourage and increase student participation and achievement in science, technology, engineering, and mathematics. The award is funded by AVL.

## Past Recipients:

- 2016 John Deere
- 2015 Kia Motors Manufacturing Georgia
- 2014 Toyota USA Foundation
- 2013 GM Foundation
- 2012 Dan and Vicky Hancock
- 2011 Arne and Steffi Siegel



## Ford Motor Company



**Jim Holland**  
Ford Motor Company

Ford Motor company is the 2017 Gordon Millar Award Recipient. This award recognizes and celebrates an individual or organization that provides continuous philanthropic support to the SAE Foundation's mission to encourage and increase

student's participation in STEM education. This award is funded by AVL. Vice President of Vehicle Component and Systems Engineering, Jim Holland, will accept the award on behalf of Ford Motor Company.

"This is a great honor," said Holland. "Our goal at Ford Motor Company – as it relates to education-related-initiatives – is to make an impact on local communities and the people they serve."

"Ford Motor Company TV commercials always end with the tagline, GO FURTHER. I believe that applies as much to their vehicles as it does to their philosophy about STEM education," said Don Manvel, Chairman, AVL Americas.

The seventh awardee, Ford Motor Company has been committed to supporting SAE's education programs including A World In Motion® and the Collegiate Design Series™. They help communities prepare the future scientists, inventors, public servants, and entrepreneurs to realize their ability to make the world a better place.



# What's Next?

CELEBRATING the **DREAMERS**,  
the **VISIONARIES**, the **FUTURE**

When you need to do something better, faster, stronger or lighter, we can help. At Dow, we specialize in material science solutions for your toughest automotive challenges.

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Give us a call and we'll get right to work. We're looking forward to the future of the automotive industry.

**Hang on.**



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# 2017 RECIPIENT OF THE YOUNG INDUSTRY LEADERSHIP AWARD

The Young Industry Leadership Award recognizes professionals with less than 12 years of industry experience, who have significant accomplishments and potential for leadership growth.

## Past Recipients:

- 2016 Jamal Madni, (The Boeing Company) and Shahjada Pahlovy, PhD (Dynax Corporation)
- 2015 Maria Cristina Herrera, PhD (Caterpillar Inc.) and Scott Curran, PhD (Oak Ridge National Laboratory)
- 2014 Yanping Xia, PhD (Delphi Automotive Thermal Systems) and Sridhar Raveendran (Caterpillar Electronics)
- 2013 Adam Timmons, PhD (Chrysler Group LLC) and Kaustav Sinha, PhD (The Dow Chemical Company)
- 2012 Shady El Safty (General Motors) and Kumar Prasad Telikepalli (Eaton Corporation)
- 2011 Stacy Martin (General Motors) and Jennifer C. Wheeler (AVL Powertrain Engineering, Inc.)



## Srikanth Pilla, PhD

Clemson University

Dr. Srikanth Pilla is an assistant professor of automotive engineering at Clemson University, and holds a joint appointment in the department of materials science and engineering. Dr. Pilla is a rare breed of academicians.

His insight to nurture and lead the next generation of engineering talent is unique as he teaches students to be thoughtful, creative and intuitive.

An exceptional and gifted young scientist, Dr. Pilla earned his doctorate in mechanical engineering from the University of Wisconsin-Milwaukee with postdoctoral training from Stanford University. Prior to joining Clemson University faculty, Pilla worked as an Assistant Scientist at the University of Wisconsin-Madison. Dr. Pilla's research interests are in the fundamentals and applications of sustainable and lightweight functional materials and manufacturing.

His discoveries and innovations have been published in a wide variety of journals, peer-reviewed publications, technical presentations, extended abstracts, and scientific articles. Dr. Pilla currently serves as an Associate Editor of SAE International Journal of Materials and Manufacturing and on the boards of Journal of Renewable Materials, SPE Injection Molding and Bioplastics Divisions.

Along with his outstanding academic and professional achievements, Dr. Pilla holds a patent for designing a new anti-drooling system that eliminates drooling in a refill pack of a cleaning device. He is also currently working on the development a fully thermoplastics lightweight composite door assembly, and an innovative self-lubricating bearing.

Dr. Pilla's deep commitment to STEM education continues beyond the classroom and lab. He consistently strives to motivate the next generation through several outreach programs within his department at Clemson. Currently, Dr. Pilla is creating a custom-built network of universities, technical colleges and high schools providing a road map of STEM education and outreach activities.

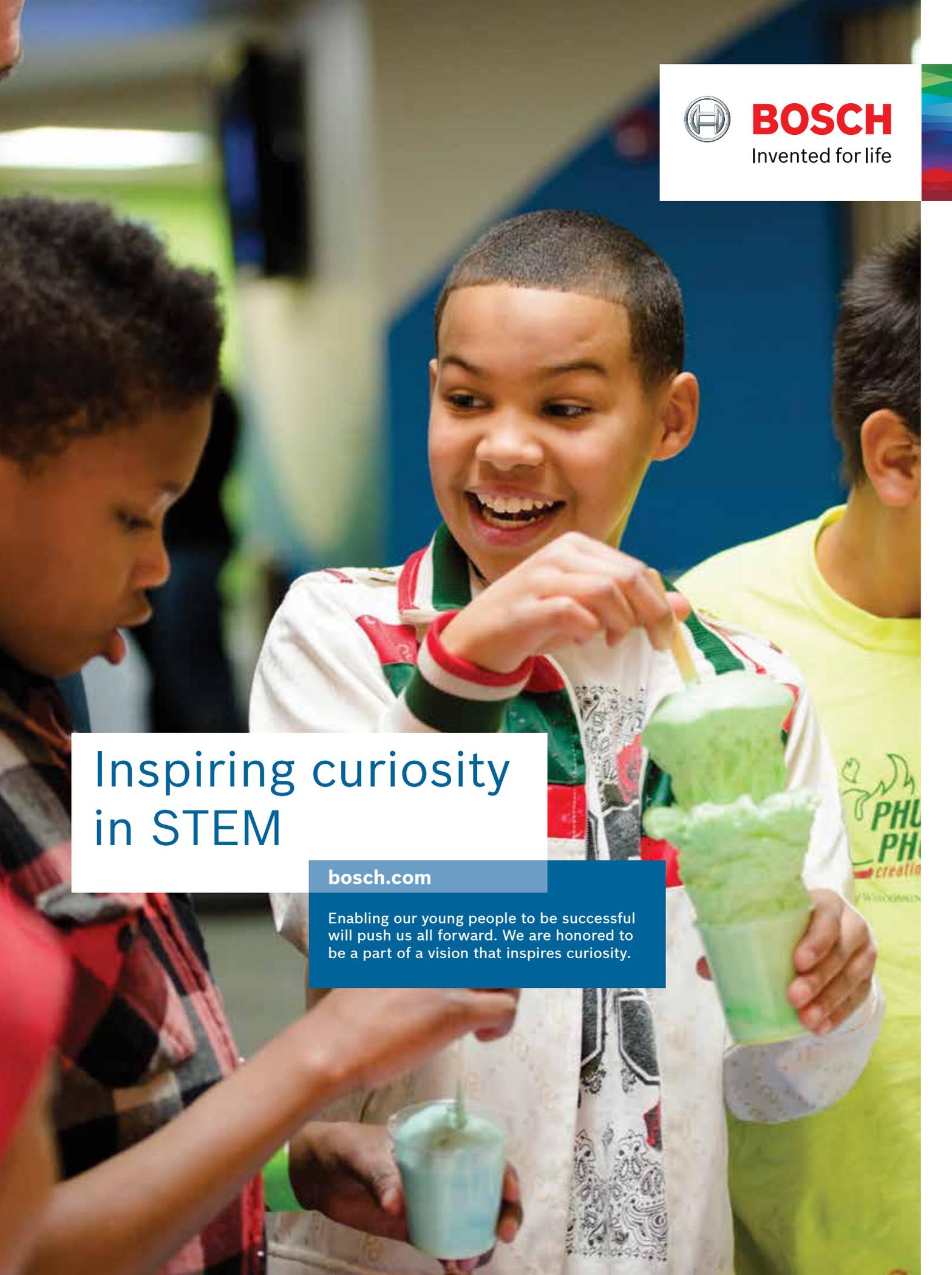


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Invented for life

# Inspiring curiosity in STEM

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Enabling our young people to be successful will push us all forward. We are honored to be a part of a vision that inspires curiosity.



# 2017 RECIPIENT OF THE YOUNG INDUSTRY LEADERSHIP AWARD



## Sandeep Makam

FCA US LLC

Sandeep Makam is a Group Leader at FCA US LLC, having joined the Company in 2010. He leads a team of cross-functional engineers who work at FCA US headquarters in Auburn Hills, Michigan. Makam's team does powertrain and vehicle-system

modeling, with a focus on all-electric and hybrid-electric propulsion systems.

His previous assignment, which ended in April of this year, was with FCA Latin America, where he was responsible for establishing, training and developing the Powertrain CAE team in Recife, Pernambuco, Brazil. Prior to that, he was a Technical Specialist in Energy Management/Transmissions/

Driveline at FCA US, leading the development of a modeling framework to manage conflicting energy demands in the vehicle, improving powertrain system efficiency and creating a tool for complex control systems development. Since 2012, Makam has also served as a Reliability Statistics instructor for FCA engineers.

In his seven years of auto-industry experience, Makam has authored seven peer-reviewed publications, holds one U.S. patent and has a DFSS Green Belt certification. He was a recipient of the 2015 SAE/DiscoverE New Faces of Engineering Award, and the 2012 & 2013 Chrysler Innovation Awards.

Makam received his M.S. degree in Mechanical Engineering from The Ohio State University in 2010 and received his Bachelor's degree in Mechanical Engineering from the Indian Institute of Technology in 2008.

## Because STEM education is important - *and fun!*



As the challenges facing the auto industry become increasingly complex, automakers and suppliers alike will turn to today's youth to discover new ways to make our vehicles lighter, safer, smarter and more fuel efficient. We salute these aspiring engineers and technical experts and all those who support them.

**Continental Structural Plastics congratulates this year's honoree Jack Roush, Founder, CEO and Co-Owner of Roush Fenway Racing and Chairman of the Board of Roush Enterprises. Thank you for inspiring the next generation of innovators.**



[www.csplastics.com](http://www.csplastics.com)



A Teijin Group Company



# *Educating a child. Inspiring a community.*

The SAE Foundation is dedicated to inspiring the next generation of innovators through a comprehensive continuum of STEM education programs. We are proud to participate in tonight's Annual Celebration to support its efforts and pay tribute to the career accomplishments and philanthropic spirit of the men and women who inspire the next generation of innovators.

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**pwc**

# INDUSTRY LEADERSHIP AWARD

The Industry Leadership Award recognizes individuals who have made meaningful contributions to the mobility industry. Nominees must have achieved the following:

- a significant level of success in their STEM careers
- demonstrated innovation and risk taking
- established a new direction or developed a position which challenged their industry
- made contributions outside of their industry, exemplified through community education, philanthropic or government activities

## Past Award Recipients

- 2016 Mark Fields, President and Chief Executive Officer, Ford Motor Company
- 2015 Sergio Marchionne, Fiat Chrysler Automobiles
- 2014 Osamu “Simon” Nagata, Toyota Motor Engineering & Manufacturing North America
- 2013 Mary T. Barra, General Motors Corporation
- 2012 Edsel B. Ford, II, Ford Motor Company
- 2011 John Krafcik, Hyundai Motor America
- 2011 Peter Marks, Chairman, President and CEO, Robert Bosch LLC
- 2010 Rodney O’Neal, Delphi
- 2009 Jim Press, Chrysler LLC
- 2008 Alan Mulally, Ford Motor Company
- 2007 Carlos Ghosn, Nissan Motor Co., Ltd.
- 2006 Robert A. Lutz, General Motors Corporation
- 2005 Dr. Shoichiro Toyoda, Toyota Motor Corporation
- 2004 J.T. Battenberg, III, Delphi Corporation
- 2003 Gary L. Cowger, General Motors Corporation
- 2002 Heinz C. Prechter, ASC Incorporated (posthumous award)
- 2001 Shamel T. Rushwin, Ford Motor Company
- 2000 Donald E. Hackworth, General Motors Corporation
- 1999 James J. Padilla, Ford Motor Company
- 1998 Dennis K. Pawley, Chrysler Corporation
- 1997 G. Richard Wagoner, Jr., General Motors Corporation

*A curious mind never rests.*



Roush salutes our founder,  
**Jack Roush,**  
for his lifelong  
commitment to  
learning.

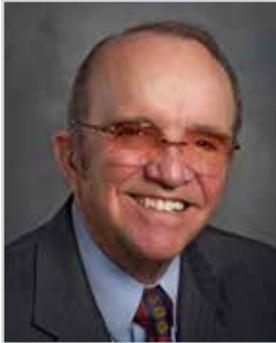


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# 2017 RECIPIENT OF THE INDUSTRY LEADERSHIP AWARD



## Jack Roush

Founder, CEO, and Co-Owner of Roush Fenway Racing  
Chairman of the Board of Roush Enterprises

For over 40 years, Jack Roush has been committed to winning on and off the track. He began his career with Ford Motor Company after graduating with a degree in math and a minor in physics from Berea College in 1964. While at Ford, he was drawn to their extensive motorsports activities and he began his successful racing career.

Combining his racing career with education, Mr. Roush earned a Master's Degree in Scientific Mathematics from Eastern Michigan University in 1970, and taught mathematics, physics, and automobile repair at Monroe Community College in Michigan.

As his racing endeavors took off, he not only participated as a driver, but built engines for race teams in other sports, and in 1976 formed Jack Roush Performance Engineering. His success on the track coupled with his reputation as a top-notch performance engineer was an equation for success. Eventually moving away from racing, Mr. Roush concentrated on building engines for other teams until 1984, when he returned to the sport with the Sports Car Club of America (SCCA), and the International Motor Sports Association (IMSA).

After four years of major successes with the SCCA and IMSA, Mr. Roush partnered with driver Mark Martin in 1988 and launched his first Monster Energy NASCAR Cup Series team, claiming their first victory at the North Carolina Motor Speedway. In 2007, Roush Racing and Fenway Sports Group announced the formation of Roush Fenway Racing, an unprecedented relationship that brought together two championship organizations with a distinguished track record of success in their respective businesses and sports.

Mr. Roush's accomplishments in the marketplace have paralleled his extremely successful motorsports career. He formed Roush Industries in Livonia, Michigan, and celebrated its 40th anniversary in 2016. Expanding across the globe, Roush Industries provides engineering,

testing, prototyping and manufacturing services to the transportation, defense, theme park and aerospace industries.

The Roush family of companies now includes Roush Performance, developer and manufacturer of performance vehicles and aftermarket automotive products and Roush CleanTech, developer and manufacturer of propane fuel systems for the fleet vehicle market.



# THE TOTAL STEM SOLUTION

Bringing students, teachers and industry together for a more innovative future

## 1 K-3 PRIMARY

Five hands-on science and literature units that introduce the earliest of learners to science, technology, engineering and math (STEM) concepts.



## 2 ELEMENTARY 4-6

Uses more analytical skills to work through the Engineering Design Experience.



## 3 MIDDLE SCHOOL 6-8

Capitalizes on acquired problem-solving skills and further illustrates the real-world application of age-appropriate math and science concepts.



# 4

## COLLEGE

SAE Collegiate Design Series™ (CDS) is an interdisciplinary real-world learning experience that prepares both graduate and undergraduate students for the workforce.



# 5

## PROFESSIONAL SUPPORT

Many industry professionals return to volunteer with the programs they credit for their success.



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DENSO is a proud supporter of the SAE Foundation and STEM Education. Our people love learning and tinkering with technology.

That's why we invest time and resources to support students in reaching their dreams.

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# WHY STEM MATTERS

Compared to other countries around the world, according to the World Economic Forum, the United States ranks:

**28<sup>th</sup>**

IN EDUCATIONAL  
SYSTEM QUALITY.

**38<sup>th</sup>**

IN PRIMARY  
EDUCATION QUALITY.

**47<sup>th</sup>**

IN MATH AND SCIENCE  
EDUCATION QUALITY.

**26%**

ONLY 26% OF AMERICAN  
HIGH SCHOOL SENIORS ARE  
CONSIDERED PROFICIENT IN MATH.



**78%**

78% OF AMERICAN HIGH SCHOOL  
GRADUATES DO NOT MEET THE  
STANDARD LEVELS FOR AT LEAST ONE  
ENTRY-LEVEL STEM COLLEGE COURSE.



THERE ARE NEARLY  
**3.7 MILLION**  
UNFILLED U.S. JOBS  
IN STEM FIELDS.

# TRUE INNOVATORS DRIVE POSITIVE CHANGE.

Nissan is proud to support the  
SAE Foundation 2017 Annual Celebration.

Thank you for helping today's students  
become tomorrow's designers, engineers,  
problem solvers and leaders.

**Nissan. Innovation that excites.**



# A WORLD IN MOTION

## Primary School Challenges

The unique feature of this program is the use of portions of a problem-solving process employed by engineers working in teams. The “Engineering Design Experience” for Primary students consists of: Set Goals, Build Knowledge, Design, Build and Test and Present.

These activities for students in grades K-3 were developed through generous support from Nissan, North America.

### Making Music

In the newest Making Music Challenge, students explore sound and vibrations. Students learn how the human eardrum works and explore concepts such as pitch and longitudinal and transverse waves. They collect information through hands-on lessons and engineer a musical instrument according to specific criteria.

### Rolling Things

Launching cars from ramps, students investigate the effects different ramp heights and car weights have on distance traveled, measuring and recording data gathered through variable testing.

### Pinball Designers

Students design a homemade pinball game and explore the behavior of the different components, such as the pinball, ball traps, and bumpers.

### Engineering Inspired By Nature

Students investigate methods of seed dispersal in nature and then use that knowledge to create paper helicopters and parachutes.

### Straw Rockets

Students create a straw rocket that flies the farthest and highest through optimizing their own design.

## Elementary School Challenges

### Skimmer Challenge

Students construct paper sailboats and test the effects of different sail shapes, sizes and construction methods to meet specific performance criteria. Friction, forces, the effect of surface area and design are some of the physical phenomena students encounter in this challenge.

### JetToy Challenge

Students make balloon-powered toy cars that meet specific criteria: distance traveled, weight carried, accurate performance and speed. Jet propulsion, friction, air resistance and design are the core scientific concepts students explore in this challenge.

### Gravity Cruiser Challenge

Students focus on understanding the relationships between the “sweep” of a lever arm, the number of winds a string makes around an axle and the distance the gravity cruiser travels. Students also investigate how the diameter of the wheels and axles, and the amount of weight placed on the level, affect the gravity cruiser’s speed and distance. This challenge introduces a rich activity in critical thinking, and students learn how to use the experimental method to test hypotheses and solve a tricky engineering problem. This curriculum was developed through generous support from the GM Foundation.

## Middle School Challenges

### Fuel Cell Challenge

Student teams design a toy car that uses a PEM (Proton Exchange Membrane) fuel cell to power the electric motor. Elements of electrical currents, “Green Design” and transformations of energy are explored as the teams develop their project. This curriculum was developed through generous support from the GM Foundation.

### Motorized Toy Car Challenge

Students develop new designs for electric gear-driven toys. To meet a specific set of design requirements, students must write proposals, draw sketches and work with models to develop a plan. Force and friction, simple machines, levers and gears, torque and design are core concepts covered.

### Glider Challenge

Students explore the relationship between force and motion and the effects of weight and lift on a glider. The glider activity culminates in a book-signing event where each design team presents its prototype, and the class presents its manuscript to Mobility Press “representatives” and members of the local community. Students learn the importance of understanding consumer demands and the relationships between data analysis and variable manipulations.

**awim.sae.org**



**At Honda, we do more than build cars.**

We fuel dreams.

The joy of creating is grounded in Honda's commitment to imagination, curiosity and innovative ideas. When visionaries are freed from what's always been done to think about what's never been done before, the sky's the limit.

**Honda is a proud supporter of the SAE Foundation.**

**HONDA**  
The Power of Dreams

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# COLLEGIATE DESIGN SERIES PROGRAMS

The Collegiate Design Series™ (CDS) has set the standard for exceptional design competitions where engineering students obtain hands-on experience in the design, manufacture and testing of real vehicles. These college-level competitions have enhanced the educational experience of engineering students around the world and inspired the next generation of young talent.

These competitions include:

- **Formula SAE®:** The premier event for aspiring automotive engineers in which teams of college students design, build, and race mini-Formula-style race cars in either IC or electric class.
- **Aero Design®:** Teams of college students build and fly gas-powered aircraft models. The object of this competition is to design and build a model

aircraft that can take off and land while carrying the predicted maximum cargo.

- **SAE Baja™:** These regional competitions pit student-designed off-road vehicles against one another, over rough terrain, and through water.
- **Supermileage®:** This competition provides students with the opportunity to set world fuel economy records while earning practical experience in design and fabrication. Some student-designed vehicles have delivered in excess of 2,000 m.p.g.
- **Clean Snowmobile Challenge®:** This competition provides students with the opportunity to design and build snowmobiles that perform at the same level as stock snowmobiles, but are “cleaner” and quieter.



# ADVANCING THE SOLUTION

## Pushing for Excellence

SAE International and the SAE Foundation recognize the efforts of mobility industry professionals, STEM educators and both undergraduate and graduate students who have excelled in their areas with a robust Awards & Scholarships program.

### SAE Medal of Honor

Established in 1986, this award recognizes and honors a living SAE member for unique and significant contributions to SAE which strengthen or add to SAE's ability to further its purpose. These contributions are time-tested and be a major factor in SAE's success. SAE Past Presidents are eligible for this award, with their contributions initiated and proven after their term of office.

### A4A/SAE NDT "Better Way" Award

The A4A/SAE NDT Better Way award is sponsored by Airlines for America (A4A) and SAE International. The "Better Way" award recognizes a government-industry team that has developed and applied a technology, technique, process, or policy that advances inspection or test of civil/commercial aircraft structure, aircraft components, or aircraft systems.

### SAE/Arnold W. Siegel Humanitarian Award

Established in 2014 and made possible by a gift from Arnold and Stephanie Siegel, this award recognizes those whose mobility industry contributions have made a lasting benefit to humanity. The award honors individuals, teams or organizations who have made a significant, positive, multi-generational impact on the world such as, but not limited to: mobility safety or the environment, creating a safer healthier world.

### SAE/Magnus Hendrickson Innovation Award

This award honors renowned inventor and businessman Magnus Hendrickson, who founded Hendrickson Motor Truck Company in 1913, by recognizing individuals or teams whose efforts in commercial vehicle dynamics represent true innovation and have created significant, lasting change in the commercial vehicle industry.

### Other Awards Include:

Ableson Award for Visionary Leadership  
Arch T. Colwell Cooperative Engineering Medal  
Arch T. Colwell Merit Award  
Arnold W. Siegel International Transportation Safety Award  
Award for Research on Automotive Lubricants  
Barry D. McNutt Award for Excellence in Automotive Policy Analysis  
Bill Agnew Award for Outstanding AWIM Volunteers  
Charles M. Manly Memorial Medal  
Clarence L. (Kelly) Johnson Aerospace Vehicle Design and Development Award  
Cliff Garrett Turbomachinery Engineering Award  
Daniel Guggenheim Medal  
Distinguished Section Member Award honoring Noble R. Patterson  
Distinguished Younger Member Award honoring Edward N. Cole  
Edward N. Cole Award for Automotive Engineering Innovation  
Elmer A. Sperry Award  
Environmental Excellence in Transportation Award  
Excellence in Engineering Education - Triple "E" Award  
Forest R. McFarland Award  
Franklin W. Kolk Air Transportation Progress Award  
Franz F. Pischinger Powertrain Innovation Award  
Gary Dickinson Award for Teaching Excellence  
Harry L. Horning Memorial Award  
Henry Ford II Distinguished Award for Excellence in Automotive Engineering  
Henry O. Fuchs Student Award  
International Leadership Citation  
J. Cordell Breed Award for Women Leaders

James M. Crawford Technical Standards Board  
 Outstanding Achievement Award  
 L. Ray Buckendale Lecture  
 Lloyd L. Withrow Distinguished Speaker Award  
 Lloyd Reuss Award for Teaching Excellence  
 Marvin Whitlock Award  
 Max Bentele Award for Engine Technology Innovation  
 Myers Award for Outstanding Student Paper  
 Honeywell Outstanding Collegiate Branch Award  
 Ralph K. Hillquist NVH Lifetime Achievement Award  
 Ralph H. Isbrandt Automotive Safety Engineering Award  
 Ralph R. Teetor Educational Award  
 Rodica Baranescu Award for Technical & Leadership  
 Excellence  
 Rumbaugh Outstanding Student Leader Award  
 Russell S. Springer Award  
 SAE Aerospace Engineering Leadership Award  
 SAE Delco Electronics Intelligent Transportation Systems  
 Award  
 SAE Emeritus Recognition  
 SAE Engineering Meetings Board Outstanding Oral  
 Presentation Award  
 SAE Faculty Advisor Award  
 SAE Fellow Grade  
 SAE Foundation Industry Leadership Award  
 SAE Foundation's Young Industry Leadership Award  
 SAE Heinz C. Prechter Award for Automotive Excellence  
 SAE John Johnson Award for Outstanding Research in  
 Diesel Engines  
 SAE John Melvin Award for Motorsport Safety  
 SAE Sid Olsen Engineering Executive of the Year Award  
 SAE/AEM Outstanding Young Engineer Award  
 SAE/AISI Sydney H. Melbourne Award for Excellence in  
 the Advancement of Automotive Sheet Steel  
 SAE/InterRegs Standards and Regulations Award  
 SAE/Timken-Howard Simpson Automotive Transmission  
 and Driveline Innovation Award  
 Steven M. Atkins Ability and Achievement in Science,  
 Engineering, and Technology (AASET) Award  
 Subir Chowdhury Medal of Quality Leadership  
 Thomas H. Speller Award  
 Vincent Bendix Automotive Electronics Engineering Award  
 William Littlewood Memorial Lecture  
 William R. "Bill" Adam Formula SAE Vehicle Development  
 Grant  
 Wright Brothers Medal

## Scholarships

**Last year, SAE awarded \$85,000 in scholarships to aspiring engineers.**

BMW/SAE Engineering Scholarship  
 Ford/SAE Foundation Scholarship Fund  
 Dan and Vicky Hancock Scholarship for Mechanical  
 Engineering Excellence  
 Edward D. Hendrickson/SAE Engineering Scholarship  
 Donald and Barbara Mozley Scholarship  
 Tau Beta Pi/SAE Engineering Scholarship  
 TMC/SAE Donald D Dawson Technical Scholarship  
 Fred M Young Sr/SAE Engineering Scholarship  
 Ralph K. Hillquist Honorary SAE Scholarship  
 SAE/David Hermance Hybrid Technologies Scholarship  
 SAE Long Term Member Sponsored Scholarship  
 Yanmar/SAE Scholarship



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Beginning in 2006, Kia made one of the biggest single foreign investments in the history of Georgia by establishing a state-of-the-art production facility in West Point. Since then, we, along with our suppliers, have helped create more than 15,000 jobs and produced more than 2 million vehicles.

With an annual capacity of more than 360,000 vehicles, KMMG is home to the Sorento CUV and Optima midsize sedan, two of the brand's top selling models in the United States. This advanced manufacturing facility represents a \$1.1 billion investment on a 2,200 acre site, operating 24 hours a day. More than 90 percent of the vehicles assembled in West Point are destined for dealerships across America, which accounts for more than 40 percent of all Kia sales in the U.S.

KMMG's goal is to be the best and most innovative automotive company in the world driven by the belief that Customer Satisfaction is Rooted in Quality. This is made possible by a team of individuals each identified as the best of the best.

## 2017 SAE FOUNDATION ANNUAL CELEBRATION COMMITTEE

The following leaders in the mobility industry have been strong stewards in promoting and supporting STEM education through their commitment to and planning of this evening's celebration.

### Event Chair

**Joyce Weishaar**  
SAE Foundation Board of Trustees  
AVL North America, Inc.

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SAE Foundation

**Mazen Hammoud**  
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**Adam F. Zemke**  
Michigan House of Representatives

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<b>Supplier Elite</b>	\$20,000	10	VIP+GEN	Full	Recognition in all printed materials, electronic visuals, special thank you from podium, recognition on website and social media
<b>Reception (2)</b>	\$15,000	10	VIP+GEN	Full	Special recognition in all print materials w/logo, visual screens & script + reception signage
<b>Platinum</b>	\$10,000	10	VIP+GEN	Full	Recognition in all printed materials, electronic visuals, website and social media
<b>Mentor (5)</b>	\$10,000	5	VIP+GEN	Full	Recognition in all printed materials, special seating with five students
<b>Gold</b>	\$8,500	5	VIP+GEN	Half	Recognition in program, website and social media
<b>Valet (1)</b>	\$8,000	4	VIP+GEN	Half	Opportunity to place promotional materials in vehicles, recognition in program
<b>Silver</b>	\$7,500	2	VIP+GEN	Quarter	Recognition in program, website
<b>Bronze</b>	\$2,500	0		List	Recognition in program
<b>Corporate Table</b>	\$3,500	10	GEN	List	Recognition in program
<b>Ticket</b>	\$350	1	GEN		

## REGISTRATION FORM

Company Name: .....

Company Address: .....

Contact Name: .....

Contact Email: ..... Contact Phone: .....

Level of Support: .....

Register online: **saefoundation.org/celebration**

Fax this form to: +1.724.776.0890

Mail this form to: **SAE Foundation**  
**400 Commonwealth Drive, Warrendale, PA 15096**

# TOGETHER WE MOVE MOBILITY FORWARD

Collaboration. Despite today's highly competitive world, it's still how problems are solved, challenges overcome, and advances are made.

Since 1905, SAE International, a professional society, has been providing the platform for that collaboration among those who want to advance mobility.

In fact, the sharing of knowledge to solve common problems was the impetus of SAE's earliest standardization efforts—efforts that benefit all of industry by setting expectations for quality, safety, and efficiency and allow for focus on innovation.

Yet, while today's mobility challenges are very different from those of yesterday's, automotive, aerospace, and commercial vehicle engineers continue to look to SAE International to connect with each other and the technical resources needed to advance themselves, their companies, and industry.

SAE International is the authority on vehicle engineering—developing more vehicle technical standards than any other organization, offering the largest library of vehicle engineering content, and bringing together the largest global network of engineers in the world.

**How are the various mobility sectors solving for their toughest engineering challenges? Learn from them at [alwaysinmotion.sae.org](http://alwaysinmotion.sae.org)**

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**foundation.sae.org**

## **SAE INTERNATIONAL**

The SAE Foundation inspires curiosity in STEM education. The Foundation strives to encourage and increase student participation and achievement in science, technology, engineering and math (STEM).

A recognized leader for innovative programs, the SAE Foundation serves to help today's students become tomorrow's scientists and engineers.

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