www.amc-online.org

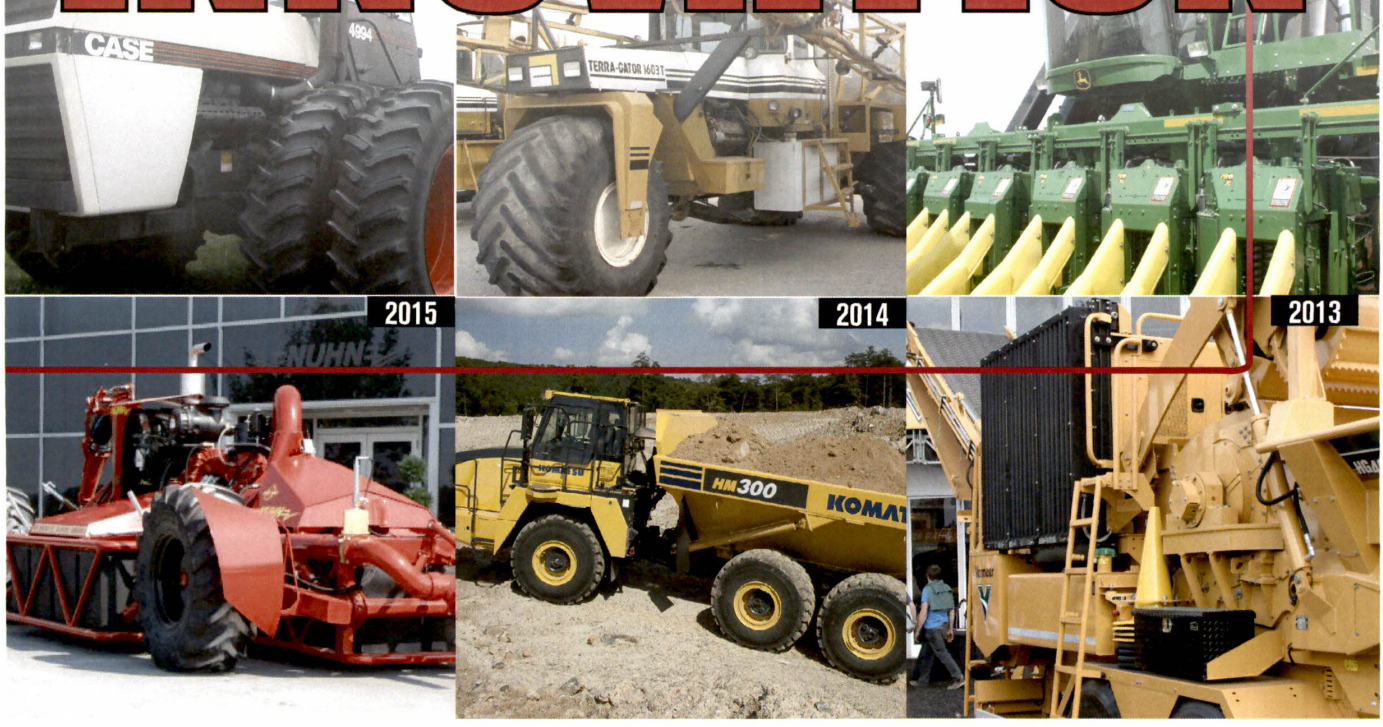
30th Annual

AMC ENGINEERING CONFERENCE

Five Sullivan Brothers Convention Center
Waterloo, Iowa

NOW STARTING ON TUESDAY!
MAY 5 TO 7, 2015

30 Years of INNOVATION



NUHN15000022415

30th Annual AMC Engineering Conference

Nick Elliott
General Chair
30th Annual AMC
DISTek Integration Inc.
Cedar Falls, IA

30 YEARS OF INNOVATION

Welcome to the 30th Annual AMC Engineering Conference, which is celebrating 30 Years of Innovation. Many of you will think back and remember this conference as the Ag Machinery Conference, but for the second year now, the committee and vendors are staying committed to expanding the scope to include the entire off-highway industry. A tremendous amount of overlap exists between the technologies used in each of these industries, as well as the many suppliers that support them. If we truly want to advance technology, we need to learn from each other. The AMC Engineering Conference provides that opportunity.

Each year the committee works to keep content fresh to bring the highest value to everyone including the vendors, guest speakers, continuing education trainers, and of course our loyal attendees. One of the changes we made this year was the addition of QR codes on all badges. No more collecting of business cards and hoping they make it back to the office with you. Now you can simply scan the badge of contacts you make at the conference with any smart phone and be able to digitally capture contact information.... it's your electronic business card!

Another change this year is the show dates. By moving the conference to Tuesday through Thursday, we are making the conference and continuing education sessions more accessible for those people that aren't local...no more Sunday travel!

We have a fantastic conference for you this year. The fun gets started on Tuesday night with a tour of the new John Deere Museum and the TechWorks building. This is a great opportunity to network with vendors and attendees afterwards with appetizers, dinner, and drinks. A shuttle will be provided from the Ramada Hotel to the Museum and back. If you are not registered, please do so right away or contact one of the committee members.

Continuing education sessions line up the most current technologies to get those credits, while learning about the latest and greatest in the areas of Spring Materials, Model Based Software Development, Cellular Technology, Cloud Services, and two great workshops, an AGILE Team Workshop and a Mobile Application Development workshop.

We have many great technical presentations this year. Topics range from data networks and emission controls to the ever popular discussion on drones and machine safety. The grand finale is one you won't want to miss. Closing the conference on Thursday will be students from area junior high and high schools demonstrating their building, programming, and teamwork skills with their FIRST Robotics demonstrations. If robotics is not your thing, you will also be able to take in a track on new products or big data.

Do not skip breakfast or lunch, since we have great speakers lined up for both. At breakfast you will hear from local users actually utilizing the technology we put so much into developing. Jeff Reints and Nick Hermanson are both excited to share their stories from the farm. At lunch time, we are fortunate to have two great lunch keynotes. On Wednesday we'll hear from Charlie O'Brien, Senior Vice President and Head of Ag Services at AEM and Thursday we have Award Winning Journalist and Best Selling Author, Russ Banham. Be sure to catch both presentations!

In between sessions and speakers, be sure to visit the exhibit floor in the Five Sullivan Brothers Convention Center, which will be filled with industry suppliers displaying their latest products and technologies for the off-highway industry. In addition, you'll get an opportunity to view displays of engines, antique equipment, and some of the latest technology available in production. An evening social on Wednesday provides an additional opportunity to network with exhibitors.

See you in Waterloo, Iowa on May 5th through 7th!

Nick Elliott
General Chair,
AMC Engineering Conference

30TH ANNIVERSARY AMC ENGINEERING CONFERENCE

GETTING THERE

Driving and Directions

The conference is easily accessible and located at the intersections of Highways 63, 20, 218, and Interstate 380. Directions can be found at www.ramadawaterloo.com

The Ramada Hotel and Convention Center is located at West 4th and Commercial Street at:

205 W. Fourth St.
Waterloo, IA 50701

Hotel Accommodations

Please call the Ramada Hotel & Convention Center at (319) 233-7560 for room reservations.

You must state you are attending the AMC to obtain the AMC discounted conference rate of $75.95 (Single/King); $85.95 (Double) + tax. $10 per additional person. The room rate includes breakfast.

Please have your hotel confirmation number when checking in. Visit www.ramadawaterloo.com for more information.

Registration

The conference registration deadline is May 1, 2015. Late registration is available at the conference for an additional $10. However, availability of meals cannot be guaranteed for these late registrations. **You may also register online at** www.amc-online.org

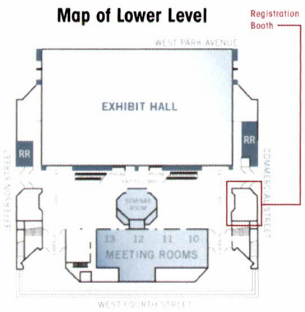
The AMC registration desk is located on the exhibit floor East corner entrance, below the skywalk. All conference attendees must check in at the registration desk (open at 7:30 a.m. each day) to obtain their AMC name badge.

Proceeds from the conference are used to help fund the operations of the ASABE Iowa Section, ASABE Quad City Section, and the SAE Mississippi Valley Section.

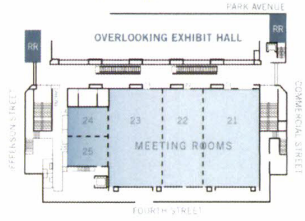
Committees

A number of committees from SAE, ASABE, etc., find it convenient to meet at AMC. If your committee would like to be among them, please contact Mike Thomas at ThomasMichaelR@JohnDeere.com.

Map of Lower Level



Map of Upper Level



For visitor information, check out the City of Waterloo Convention and Visitor's Bureau website: www.travelwaterloo.com

A special thanks to AEM, ASABE, Diesel Progress, OEM Off-Highway and SAE International for helping to promote this year's AMC Engineering Conference.

NUHN15000022416

Continuing Education Seminars - Tuesday, May 5

Each seminar provides attendees four professional development hours of credit.

MORNING SESSIONS 8:00 AM - 12:00 PM

I. Compression Spring Materials and Design for Agricultural Applications
Presented by: Mark Hayes, Spring Expert

Abstract: Compression springs may be manufactured by hot coiling, cold coiling of soft steel or cold coiling of spring hard raw materials.
For all three process routes carbon steel, SiCr steel, stainless steels and others may be used. A rationale for selecting each material will be discussed. It is not enough to select the right spring material, it is also important to utilize the right post-coiling spring manufacturing processes. The reason for always heat treating will be discussed, and the advantages accruing from use of shot peening and prestressing will be described. With the right material in place and an awareness of the available spring manufacturing processes, a compression spring design methodology will be described.

II. Model Based Software Development
Presented by: William Griffin, DISTek Integration, Inc.

Abstract: Application of model-based techniques to the design of embedded control systems is a very effective and well accepted way to improve product quality, while reducing design time and cost. During this seminar you will see how model-based techniques were applied to the design of a 3 phase brushless motor controller. You will learn:

- The concept of a model-based development process
- How to use modeling, simulation, and optimization to develop a control algorithm
- How to validate the control algorithm on hardware using rapid controls prototyping
- How to produce production quality C code from the control algorithm model

AFTERNOON SESSIONS 1:00 PM - 5:00 PM

12:00 - 1:00 PM **Lunch provided**

I. Cellular Connectivity
Presented by: Mark Peterson, Johnson Company

Abstracts:

Part I: Cellular Connectivity - NimbeLink
Cellular connectivity. Simple, fast, easy. Skywire module and other various gateway and cellular devices on the market, explaining the difference between chips, modules, and gateways. Topics covered will be 2G / 3G / 4G and the associated costs of hardware and cellular service, agency approval / certification aspects that need to be considered for any design.

Part II: Cloud Services - Exosite
Options and ways to make the investment in the cloud pay off. How to bundle things different ways to get a return on investment and provide services that are either cost bundled or are a recurring model. Too many customers don't understand the options out on the market and costs associated and how they can integrate to make new features for their own customer base, warranty issues, asset protection concepts, etc. We will discuss how to make the Cloud Work / Business Model Case Studies.

II. Agile Team Workshop
Presented by: Kent McDonald, Knowledge Bridge Partners

Abstract: Agile software development methods have introduced principles, values and practices that provide excellent guidance for ways to increase the success of projects. To truly realize the potential for success, teams need to understand the principles and values, and under what conditions the practices are the most effective.

This interactive workshop will introduce participants to some of the key ideas they will need to effectively utilize agile approaches in their own environment.To do that, we will explore the following topics:

- Agile values and principles
- Iterative and flow approaches
- Roles and responsibilities
- Adopting agile in your environment

III. "Hello World" to "Real World" in Four Hours: Mobile App Development Workshop
Presented by: Dr. Dharmendra Saraswat, Associate Professor and Extension Engineer in the Biological and Agricultural Engineering Department - University of Arkansas Division of Agriculture

Abstract: Computing capacity and number of mobile phone users is increasing by leaps and bounds. Surveys point out to increasing reliance of farmers on smartphones for accessing useful information. Therefore, mobile app development skills for job seekers or a working vocabulary for managers to plan and monitor projects involving mobile apps is becoming critical This four hours workshop will introduce participants to mobile app development using freely available Google's Android OS. The participants will learn to develop simple Android apps using various Android UI elements.

- No prior programming experience is needed.
- A laptop and Gmail account is required of all the participants.
- Instructions would be provided to setup your own laptop prior to bringing to the workshop.
- The workshop is open to only 25 participants.
- The registration will close once the limit for participant's numbers has reached or one week before the delivery of the workshop, what ever comes first.

We reserve the right to change or cancel classes in the event of insufficient registration.

Please see www.amc-online.org for session updates after publication.

Opening Ceremonies
Tuesday, May 5

Pre-registration is required by April 28, 2015
Sign up at www.amc-online.org under the Attendee Registration button.

Walk-ins accepted for self-guided museum tour and Tech Works event but no guarantee of an evening meal. Cost is $30 per person.

John Deere Tractor & Engine Museum

500 Westfield Avenue
Waterloo, IA 50701

Option 1:

- **3:30-4:45 PM** - Guided tour
- Maximum of 20 attendees (first come, first serve)
- **4:45-6 PM** - Free time in museum

Option 2:

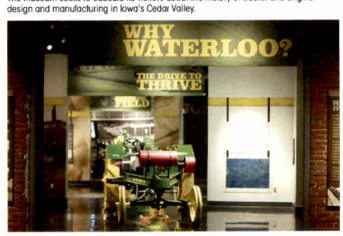
- **3:30-6 PM** - Self-guided tours in museum (attendees come and go as schedule permits)
- No quantity restrictions

Cedar Valley Tech Works **(directly next door to the museum)**
5:30-6:30 PM - Social & hors d'oeuvre
6:30 PM - Dinner, Keynote Speaker, and walking tour of Tech Works

About Cedar Valley Tech Works
The TechWorks Campus is a 30-acre advanced manufacturing and biotechnology research, development and education center, and business and manufacturing cluster. The campus' Tech I building includes industrial manufacturing space, tech shop and incubator. It is also the location of the University of Northern Iowa's Metal Casting Center which features the ExOne 3D printer, the largest of its kind in North America. Tech II, also known as the Green@TechWorks, is designed to LEED standards and will utilize a mix of renewable energy systems. Land parcels are also available for development.

Dinner Keynote Speaker, Jillian Beaty, is an award-winning Agricultural Education instructor from the Oregon School District in Oregon, Wisconsin.

Below, a photo of the John Deere Tractor & Engine Museum in Waterloo, Iowa. The museum seeks to educate its visitors about the history of tractor and engine design and manufacturing in Iowa's Cedar Valley.



30th Annual AMC Committee

Chairman:
Nick Elliott, DISTek Integration Inc.

Treasurer, Opening Ceremonies:
Scott Cronbaugh, John Deere

Secretary:
Ashley Wilder, DISTek Integration Inc.

Technical Sessions:
Eric Cullen, Cummins Central Power
Wyatt Hall, Danfoss
Andy Jennett, John Deere
Jeremiah Johnson, John Deere
Brian Balvin, Diedrichs & Associates Inc.
Eric Fredrickson, John Deere
Kurt Stuebs, Shank Power
Dan Zenor, C.E. Niehoff
Scott Clark, John Deere

Hotel & Conference Operations:
Mike Thomas, John Deere

Exhibit Hall:
Jim Evans, John Deere

Registration, Webmaster & Exhibitor Relations:
Todd Lincoln, Cummins Central Power

Keynote Speakers, Opening Ceremonies:
Jacob Bolson, John Deere

Machinery Exhibits:
Brad Meyer, Diedrichs & Associates Inc.

Continuing Education Sessions:
Shom Bandopadhaya, Belcan
John Brown, Myers Spring

Publicity:
Chad Elmore, *Diesel Progress*

Booklet, Directory:
Michelle EauClaire-Kopier, *OEM Off-Highway*

DAY 1

WEDNESDAY, MAY 6 | TECHNICAL SESSIONS | WEDNESDAY, MAY 6

Scan the QR code to see the most current technical session information

SUPPLIER EXHIBITS & EQUIPMENT DISPLAYS
Exhibit Floors open from 7:30 AM to 5:00 PM
Continental Breakfast (7:30-9:00 AM) on Exhibit Floor

7:30 a.m. REGISTRATION | Coffee and refreshments available in session rooms

8:00 a.m. MORNING SPEAKER on the show floor: **Jeff Reints, Shell Rock, IA**

AM Sessions (9-11 AM)	SESSION I Data Networks	SESSION II Vehicle Traction	SESSION III Emissions Control
9:00	**ISO 11783: A Prescription for Accuracy** Beth Hallett, DISTek Integration	**Camoplast and High Performance Farming** Jim Willey, Camoplast Solideal	**Engine to Aftertreatment Electronic Interactions** Catherine Aviiz Radi & Vaibhav Lawand, Cummins Emissions System
9:30	Topic TBA Presenter TBA, **LPH Telematics**	Part 1: **Galileo Wheel Pneutrac** Avishay Novoplanski, Alon Hayka, & Doug Peak, Galileo Wheel and Mitas Tires	**Proper DEF Handling in Off-Highway Environments** Luke Van Wyk, ThunderCreek Tanks
10:00	Part 1: **Machine to Machine (M2M) and the Internet of Things (IoT) Applications** Van Dixit, NimbeLink	5 MINUTE BREAK Part 2: **Galileo Wheel Pneutrac** Avishay Novoplanski, Alon Hayka, & Doug Peak, Galileo Wheel and Mitas Tires	**Diesel Emission Control Solutions** Gary Robb, Airflow Catalyst Systems
10:30	5 MINUTE BREAK Part 2: **Machine to Machine (M2M) and the Internet of Things (IoT) Applications** Van Dixit, NimbeLink	**Motion Resistance on a Corn Silage Pile** Jody Roades, John Deere	**Fuel Injection That Matches the Engine** Charlie Bright, Great Plains Diesel Technologies

Noon LUNCH & KEYNOTE SPEAKER: **Charlie O'Brien, Senior Vice President and Head of Ag Services at AEM**
Ag Equipment - Yesterday, today, and tomorrow

PM Sessions (2:30-4 PM)	SESSION I Materials	SESSION II Hydraulics	SESSION III Drivelines
2:30	**Polymer Wear Components vs. Traditional Metallic Solutions** Joe Snyder, igus inc.	**Title TBD** Scott Frost, Air-Way Manufacturing	**The Beet Harvester Story** Simon Grimminger, Kessler Axles
3:00	**Plastic Injection Molding** Laura Parr, Bemis Mfg. Co.	**Effective Feed-Forward Control of Electro-Hydraulic Systems** Christian Daley, Danfoss	**Driveline Dampers** Joachim Lindner, ZF
3:30	**Surface Engineering in Agricultural Applications** Brandon Rose, Fisher Barton Group	**Achieving Improved Efficiency with Compact Hydraulic Controls** David Ruxton, HydraForce	**Friction Reduction In Engines** Jeff Weber, Schaeffler Group USA
4:00	**Laser Enhancing Technologies - Ductile Iron Castings** Casey Placek, Kondex Corp.	**New Products to Address Manufacturing Challenges** Mark DeBruine, Poclain Hydraulics	**From Power Source to Power Applied** Ben Ravenscroft, GKN Land Systems

DAY 2

THURSDAY, MAY 7 | TECHNICAL SESSIONS | THURSDAY, MAY 7

SUPPLIER EXHIBITS & EQUIPMENT DISPLAYS
Exhibit Floor open from 7:30 AM to 5:00 PM
Continental Breakfast (7:30-9:00 AM) on Exhibit Floor

Scan the QR code to see the most current technical session information

7:30 a.m. REGISTRATION | Coffee and refreshments available in session rooms

8:00 a.m. MORNING SPEAKER on the show floor: **Nick Hermanson, Woodland Farms, Story City, IA**

AM Sessions (9-11 AM)	SESSION I Manufacturing, Prototyping & Design	SESSION II Drones and Robotics	SESSION III Machine Control & Safety
9:00	**Additive Manufacturing for Tooling, Jigs & Fixtures** Joe Turner, Advanced Technology Systems	**Aerial Field Surveillance** Tristan Novak, Labee Crop Consulting	Part 1: **Functional Safety Requirements for Mobile Machines** Eric Ringholm, Hydac
9:30	Topic in progress Speaker TBA, **UNI Metal Casting Center Rapid Casting Technologies**	**Aerial Imagery of Crops: Picking the Right Zoom Level** Bob Recker, Cedar Valley Innovation	5 MINUTE BREAK Part 2: **Controllers and Sensors for Safety Compliance & Diagnostics** Eric Ringholm, Hydac
10:00	Part 1 - Setup: **Optimizing System Performance Using Flow Simulation** Eric Weber, Alignex	**A Between-row Workhorse for Corn** Kent Cavender-Bares, Rowbot	Part 1: **CAN J1939 Throttle Controls** Norbert Mendlicki, MCS
10:30	5 MINUTE BREAK Part 2 - Scenarios & Results: **Optimizing System Performance Using Flow Simulation** Eric Weber, Alignex	**Precision-Guided Solutions for Commercial Mowing & Spraying** Steve Booher, Smart-Cut Mowing Systems	5 MINUTE BREAK Part 2: **Governor Electronic Control Systems** Norbert Mendlicki, MCS

Noon LUNCH & KEYNOTE SPEAKER: **Journalist and Author, Russ Banham**
How Social-Mobile-Analytics Keeps Upping the Ante in All Industries, All Operations, All Functions

PM Sessions (2:30-4 PM)	SESSION I Big Data & Cloud Computing	SESSION II New Products	SESSION III FIRST Robotics & STEM
2:30	**Knowledge Based Solutions** Ramanathan Sugumaran, Deere & Co.	**Evolution of Manure Equipment** Ben Puck, Puck Custom Enterprises	FIRST Robotics Teams to display their projects! Teams include: **Denver Cybots @Cybots5975**
3:00	**From Data to Insights: Use of Machine Data to Solve Business Issues** Stephen Leese, Deere & Co. Machine Knowledge Center	**Nuhn Lagoon Crawler - A Remote Controlled Amphibious Agitator for Waste Lagoons** Ian Nuhn, Nuhn Industries	
3:30	**Digitalization - the Next Level of Corn & Soybean Production** Jeremy Leifker, Deere & Co.	**SomatXR Data Acquisition System for Rugged Testing** Mike Hoyer, HBM Inc.	
4:00	Topic TBA **Brian Likosar, RedHat**	**M2M Controls and Data Acquisition** Johnathan Irwin, Rowe Electronics	

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AMC ENGINEERING CONFERENCE REGISTRATION NOW AVAILABLE ONLINE!

www.amc-online.org

The conference fee includes breakfast and lunch on Wednesday and Thursday (breakfast is on the exhibit floor) as well as admission to all technical sessions, morning keynotes and exhibits.

Full refund of registration fees is provided for cancellations up to May 2, 2015.
To cancel, call Todd Lincoln at (515) 564-1549.

For room reservations, contact the Ramada Hotel & Convention Center at (319) 233-7560.
Ask for AMC rates ($75.95 for a Single/King); $85.95 (Double) + tax. The room rate includes breakfast.

Check out the SOLD OUT Exhibitor Floor!

ACTech North America, Inc.
Advanced Technology Group - Bemis Mfg.
Advanced Technology Systems
Air-Way Manufacturing Company
Alcoa Fastening Systems
API Heat Transfer
Apple Rubber Products
ASABE
Brand Preference Development Co.
Bucher Hydraulics, Inc.
Clancey Design Distributor
Clarkson Company
Craft Pattern & Mold
CSM Products, Inc.
DEWESoft
Diedrichs & Associates Inc.
Diesel Progress
DISTek Integration, Inc.
DMK Inc.
Duraflex, Inc.
ETAS Inc.
Faster Inc
Fisher Barton
FTI Flow Technology, Inc.
Fuller Industries, LLC
GM Nameplate
Greater Cedar Valley Alliance & Chamber
HBM Test and Measurement
Horton, Inc.
Humtown Products
Igus
Instrumentation Resources
Kondex Corporation
KZValve
Leading Edge Hydraulics
LINAK U.S. Inc.
LINDAR
Metalex
Myers Spring
OEM Off Highway magazine
Osmundson Mfg. Co.
PanJit Touch Screens
Peer Bearing Company
Proto Manufacturing
SAE International
Schaeffler Group USA
Sealeze
Shank Power Products Co., Inc.
Stabilus
Sypris Technologies
The Fredericks Company
Thomas Magnete USA
TurollaOCG
VOSS Automotive
Webtec
WIKA
ZF Friedrichshafen AG

SEE YOU AT NEXT YEAR'S 31st Annual AMC ENGINEERING CONFERENCE May 3 - 5, 2016

A special thanks to AEM, ASABE, Diesel Progress, OEM Off-Highway and SAE International for helping to promote this year's AMC Engineering Conference.

NUHN15000022419