Singapore Chapter – ACI Project Competition

The ACI Singapore Project Competition 2017 was held in Singapore on August 24, 2016, in conjunction with the 42nd Conference on Our World in Concrete and Structures 2017 (OWICS 2017). The conference theme was "Sustainable and Resilient World in Concrete." OWICS 2017 also included the Singapore Chapter – ACI (SC-ACI) Special Session, which involved the presentation of six papers.

The annual ACI Singapore Project Competition, which was launched in 2012, is open to those working on projects related to concrete construction and civil engineering practices, including automation, nanomaterials, smart building materials, analytical and computer modeling, self-consolidating concrete, green concrete and composites, bio-inspired building materials, ready mixed concrete, underground structures, and tall structures.

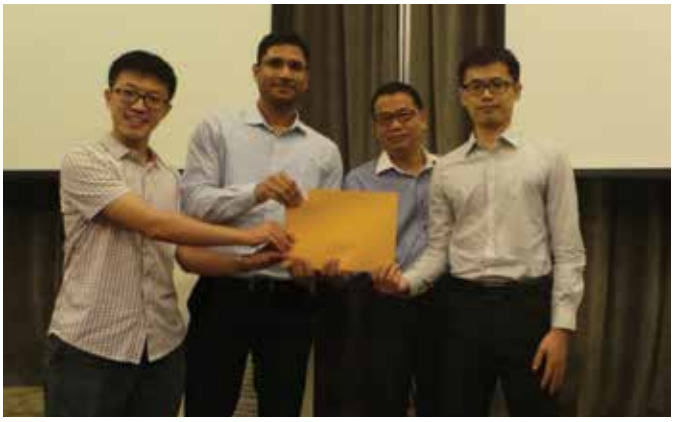
Participants submit a 10-page paper about their project. The papers are evaluated by a panel of reviewers, and shortlisted candidates are invited to present and defend their work before a panel of judges. Both panels comprise independent experts from academia and industry. Reviewers and judges for this year's competition were:

- Tam Chat Tim, Associate Professorial Fellow and professional engineer;
- ACI member Jiang Jiabiao, Specialty Concrete Manager, GCP Applied Technologies; and
- Tan Jun Yew, Senior Technical Manager, Samwoh Corporation Pte Ltd.

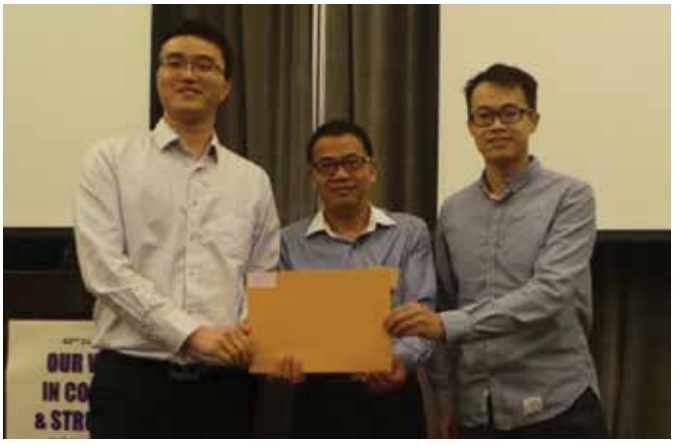
The Gold Award and S$1000 went to Qu Lubin, Ankit Sachan, Zhang Wei, Choo Yoo Sang, and Li Wei, National University of Singapore (NUS), for "In-Plane Displacement and Strain Measurement using Two-Dimensional Digital Image Correlation (2D-DIC)." In this project, a novel and inexpensive noncontact full-field measurement technique was adopted to measure the deformation and strain of concrete and steel specimens. Two-dimensional digital image correlation measurements were made using Ncorr, an open-source program running in MATLAB (a general-purpose numerical computing environment).

The Silver Award and S$700 went to Wang Yu, Li Shan, Li Wei, and Richard Liew JY, NUS, for "Experimental Investigation of the Effect of Polypropylene Fibre on High-Strength Concrete at Elevated Temperatures." This project involved an experimental study on the residual strength and elastic modulus of polypropylene fiber-reinforced and non-fiber-reinforced high-strength concrete (C60 and C90 [8700 and 13,000 psi]) after exposures to temperatures up to 900°C (1650°F).

The Bronze Award and S$500 went to Julifin and Wang Xiu, Admaterials Technologies Pte Ltd, for "Review of



Gold Award Team from the National University of Singapore, from left: Qu Lubin, Ankit Sachan, and Zhang Wei, with Lu Jin Ping, SC-ACI Immediate Past President (third from left)



Silver Award Team from the National University of Singapore, from left: Wang Yu and Li Shan, with Lu Jin Ping, SC-ACI Immediate Past President (second from left)

Bronze Award Team from Admaterials Technologies Pte Ltd, from left: Julifin with Lu Jin Ping, SC-ACI Immediate Past President

H. Celik Ozyildirim with SC-ACI Board Members, from left: Li Wei, Tao Nengfu, Logendran Doraipandian, Wong Sook Fun, Ozyildirim, Tam Chat Tim, Lu Jin Ping, and Jiang Jiabiao

Microbiologically Influenced Corrosion Resistant Concrete." Based on a review of reported laboratory and field test results, concrete made from calcium aluminate cement was found to possess good resistance to microbiologically influenced corrosion. Other types of materials available in the market were also discussed.

Two Merit Awards and S$300 each were awarded to Ng Joo En, Goh Ping Sin, and Teoh Wei Chou, Singapore Polytechnic, for "Fast Inspection of Structural Defect for Risk Assessment by Active Thermography"; and Ashokreddy Annapareddy, Lin Jie, and K.C. Gary Ong, NUS, for "Complete Recovery of Recycled Concrete Aggregates Produced using the Microwave Beneficiation Technique in combination with Carbon Sequestration."

Two Commendation Awards and S$150 each were awarded to Sean Yusri McKinney, Truong Loi, and Lance Yeo Wen Wei, Temasek Polytechnic, for "Utilization of Fly Ash, Aluminium and Nanosilica in Lightweight Building Materials"; and Lim Zhi Ying, Stella Wang, Pheh Chyi, and Tang Yi Ting, Singapore Polytechnic for "Development of Phase Changing Materials for Energy Management of Buildings."

The Best Presenter Award and S$400 went to Li Shan, NUS, who presented his project on experimental investigation of the effect of polypropylene fiber on high-strength concrete at elevated temperatures.

"In view of the overwhelming participating entries in the SC-ACI Project Competition 2017, two more awards, namely the Commendation Awards, have been added to the prize list. This made for a total of eight awards that were given away by SC-ACI," said Wong Sook Fun, SC-ACI President and the Coordinator of the ACI Singapore Project Competition since 2012.

SC-ACI sponsored the Best Paper Award at OWICS 2017, which went to Yusuke Aoki, Takashi Sugawara, and Tomoki Yokoo for their paper on "Method for Measuring the Penetration Depth of Chloride Ions into Hardened Concrete using Iron Powder." This paper was presented by Aoki at the OWICS 2017 conference.

Following the project competition and OWICS 2017, the chapter hosted an evening talk on August 25, 2017, by H. Celik Ozyildirim on "Self-Consolidating, Low-Permeability, Low-Cracking Concretes and Innovative Reinforcement for Improved Durability of Structures." He is a Principal Research Scientist with the Virginia Transportation Research Center in Charlottesville, VA. He was invited as an ACI Ambassador to OWICS 2017.

Ozyildirim gave a presentation on concrete as a durable material, attested to by the historic structures left from the Roman era. His talk also covered the topics of consolidation, self-consolidating concrete, low-permeability concrete, low-cracking concrete, fiber-reinforced concrete, as well as corrosion-resistant and corrosion-free reinforcement. Examples from field applications were also presented. More than 100 participants attended the presentation.

San Diego Chapter – ACI Hosts Technical Seminar

The San Diego Chapter – ACI kicked off the New Year with the hot topic of "Modulus of Elasticity in Concrete 101: A Concrete Supplier's Perspective" at a meeting on January 9, 2018. This event had over 80 attendees. Willy Regis, with CalPortland, gave an overview of the modulus of elasticity (MOE) in concrete and then provided details on what MOE represents, how to test it, how to meet MOE requirements, and how MOE affects construction and concrete production. After the seminar, attendees had a better understanding of this property and its specification. Attendees also earned 0.20 CEUs.

University of Balamand Student Chapter – ACI Trip to Mseilha Dam

On November 25, 2017, the University of Balamand Student Chapter – ACI organized its first field trip to Mseilha Dam. The project is in Batroun, Lebanon, on the Nahr El Jouz River. A large group of students from the civil engineering department made the trip, accompanied by Nariman Khalil, Chapter Advisor.

The group was welcomed by Michel Saliba, Project Manager, LIBANCONSULT AGM, who gave the students a full tour of the construction site, including walks through evacuator and discharge tunnels and views of deep spillways.

Willy Regis of CalPortland discussed MOE at a San Diego Chapter – ACI meeting

University of Balamand Student Chapter – ACI members during a field trip to Mseilha Dam, Batroun, Lebanon

Members of the UNFV Student Chapter – ACI

The students had the opportunity to see behind-the-scenes preparation procedures, followed by an up-close observation of how dam construction is taking place, and an overview of the safety measures taken by on-site workers and supervisors.

Mseilha Dam is financed by the Lebanese Ministry of Energy and Water and is one of few dam initiatives in the country. The project is a joint venture with French company Trac de Belle, and is now in its third operating year. Despite a yearlong delay in 2013, which was the intended launching year of the project, the dam is expected to be complete in August 2018.

When complete, the 35 m (115 ft) tall dam will create a reservoir with 6 million m^3 (2.4 million yd^3) capacity. The students were exposed to a wide array of dam construction elements, all with extensive commentary and explanation. They looked at discharge and evacuator tunnels, valve chambers and shafts, and clay core construction. They also had a close look at the spillway walls to be covered in shotcrete, in addition to learning the essentials of a well-structured dam, such as how to contain water and keep it from slipping under the dam, and how to maintain the clay core using surrounding upstream and downstream filters and riprap.

The trip was both compelling and informative and will be repeated by another group of students next spring semester.

Concrete Technology Seminar Hosted by Universidad Nacional Federico Villarreal

A seminar on "Technology of Cements, Additions, Additives, and Fibers for Concrete" was held on December 12, 2017, organized by the Universidad Nacional Federico Villarreal (UNFV) Student Chapter – ACI in Lima, Peru.

Presentations were made by local concrete professionals from companies specializing in topics related to new technologies being applied in Peru and around the world.

Last year was a very exciting and interesting time for the students at UNFV. The university received the 2017 ACI Excellent University Award for student activities. UNFV students participated in the ACI Egg Protection Device Competition in Anaheim, CA, as well as several regional conventions and competitions in the cities of Cusco and Lima.

The student chapter also volunteered in the local community after an El Niño weather system caused river flooding. The waters overflowed into villages and destroyed many homes. With the help of another organization, El Colegio de Ingenieros del Peru, UNFV helped rebuild houses and placed a temporary wall to prevent more damage until the local government could help. The students also held a fundraiser for children in need during Christmas by preparing a hot cocoa called "chocolatada."