



# ICSC 2018

5 to 7 September 2018, Hong Kong

## International Conference on Engineering Research and Practice for Steel Construction 2018

### The Conference

This International Conference on Engineering Research and Practice for Steel Construction (ICSC2018) is the first International Conference organized by the Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch) at the Hong Kong Polytechnic University (PolyU), hereby referred to as the CNERC. This three-day international conference will be held in Hong Kong from 5<sup>th</sup> to 7<sup>th</sup> September 2018.

This Conference aims to provide a technical platform for effective exchange on modern steel construction technology among researchers as well as engineers. A number of world renowned researchers and engineers will be invited to present their recent research work and construction projects in the Conference. It will definitely be a valuable networking opportunity among conference delegates.

### The CNERC

Establishment of the CNERC at PolyU was approved by the State Ministry of Science and Technology, People's Republic of China on 12<sup>th</sup> October 2015. Through applied engineering research on steel construction, the CNERC aims to enhance socio-economic development through technological advancement in sustainable infrastructure development.

The CNERC receives strong support from the Development Bureau of the Government of Hong Kong SAR, and also from the Construction Industry Council. The CNERC is dedicated to promote technological development and internationalization of both the Hong Kong Construction Industry and the Chinese Steel Construction Industry. It is actively engaged with international exchange in research and development of steel construction.

### Conference Topics

- Steel structures
- Steel-concrete composite structures
- Tubular structures
- Cold-formed steel structures
- Connections
- Material properties
- Modern steel materials and structural applications
- Analysis and design
- Computational modelling and analysis
- Design development and codification
- Earthquake engineering
- Fire engineering
- Dynamic responses of building and bridge structures
- Sustainable development
- Durability, and long term performance
- Life cycle performance
- Construction engineering
- Iconic structures
- Application of advanced technology in construction

### Language

English is the official language to be used for presentations and publications. There will be no translation into other languages.

### Who Should Attend

This Conference will be of interest to members of the international research community and construction industry, those who work closely in steel construction, and those who are interested in innovation and technological advancement.

### Important Dates

|                                    |   |
|------------------------------------|---|
| Deadline for Abstract Submission   | 31 <sup>st</sup> January 2018                     |
| Acceptance of Abstracts            | 15 <sup>th</sup> March 2018                       |
| Deadline for Full Paper Submission | 30 <sup>th</sup> April 2018                       |
| Acceptance of Full Papers          | 15 <sup>th</sup> June 2018                        |
| Conference                         | 5 <sup>th</sup> to 7 <sup>th</sup> September 2018 |



The following guests had attended the Opening Ceremony held on 5 September 2018:

- Ir C. K. HON, JP                      Permanent Secretary for Development (Works),  
Development Bureau of the Government of Hong Kong SAR, China
- Mr. K. K. CHAN                      Construction Industry Council
- Ir Y. K. CHENG                      Institution of Structural Engineers, U. K.
- Prof. William LAM                    Hong Kong Polytechnic University
- Ir C. C. CHAN                        Construction Industry Council
- Ir Terence LAM                        Civil Engineering and Development Department
- Ir Humphrey HO                      Buildings Department
- Ir Albert CHENG                      Construction Industry Council
- Ir Alex KWAN                         Hong Kong Airport Authority
- Ir Thomas HUI                        Development Bureau (Works)
- Ir C. K. CHAN                        The Hong Kong Institution of Engineers
- Ir Ben LEUNG                         The Hong Kong Institution of Engineers
- Mr. Y. K. PANG                        Hong Kong Constructional Metal Structures Association
- Dr. Paul LAM                         City University of Hong Kong
- Dr. Michael LEUNG                    Hong Kong Polytechnic University
- Mr. S. K. POON                        China State Construction International Holdings Limited
- Mr. Eric KWONG                      AluHouse Company Limited
- Mr. C. H. WU                         CCM – Changzhou Changhong Mould Limited
- Dr. Jeffrey LAM                        Nano and Advanced Materials Institute Limited
- Mr. Matthew LAI                      Wo Lee Steel Co., Ltd.
- Mr. Patrick YAN                      Yau Sang Galvanizing (Hot-Dip) Co., Ltd.

The following prominent researchers and engineers had presented in the Keynote Lectures during the Conference:

- Prof. David A. Nethercot, Imperial College London, United Kingdom
- Prof. Yozo Fujino, Yokohama National University, Japan
- Prof. Sritawat Kitipornchai, University of Queensland, Australia
- Prof. Ahmed Elghazouli, Imperial College London, United Kingdom
- Prof. Richard Liew, National University of Singapore, Singapore
- Prof. G. Q. Li, Tongji University, China
- Prof. L. H. Han, Tsinghua University, China
- Prof. S. P. Chiew, Singapore Institute of Technology, Singapore
- Prof. Richard Stroetmann, Technische Universität Dresden, Germany
- Dr. Robin Sham, AECOM, Hong Kong

# Programme on Day 1

| 5 September (Wednesday)<br>DAY 1   |   |
|--|---|
| 8:00am   | <b>Registration</b> Ballroom Foyer, Level 7<br>Ballrooms I & II, Level 7  |
| <b>Opening Ceremony</b><br>9:00am  | <p><b>Welcome Address</b><br/>Professor Kwok-Fai CHUNG<br/><i>Chairman, Conference Organising Committee</i><br/><i>Director, Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch)</i></p> <p><b>Opening Address</b><br/>Ir Chi-Keung HON, GBS, JP<br/><i>Permanent Secretary for Development (Works), Development Bureau, the Government of the HKSAR</i></p> |
| <b>Keynote Lectures chaired by Professor Sritawat KITIPORNCHAI</b> Ballrooms I & II, Level 7 |   |
| <b>Keynote Lecture 1</b><br>9:30am   | <b>Understanding and designing to resist progressive collapse of steel frame buildings</b><br>Professor David A. NETHERCOT<br><i>Imperial College London, United Kingdom</i>  |
| <b>Keynote Lecture 2</b><br>10:00am  | <b>Technological developments of steel bridges and their structural monitoring in Japan – a review</b><br>Professor Yozo FUJINO<br><i>Yokohama National University, Japan</i>   |
| 10:30am  | <b>Coffee Break</b> Ballroom Foyer, Level 7   |
| <b>Keynote Lectures chaired by Professor Ahmed Y. ELGHAZOULI</b> Ballrooms I & II, Level 7   |   |
| <b>Keynote Lecture 3</b><br>11:00am  | <b>Design of high strength steel reinforced concrete columns</b><br>Professor Sing-Ping CHIEW<br><i>Singapore Institute of Technology, Singapore</i>  |
| <b>Keynote Lecture 4</b><br>11:30pm  | <b>Fire safety of large space steel buildings</b><br>Professor Guo-Qiang LI<br><i>Tongji University, China</i>  |
| 12:00pm  | <b>Lunch</b> Star Room, Level 42<br>Sponsored by AluHouse   |
|  | <b>Parallel Session 1A</b><br>Ballrooms I & II, Level 7   |
|  | <b>Parallel Session 1B</b><br>Shanghai Room I, Level 8  |
| 1:30pm   | <p style="text-align: center;"><u><b>Special Session</b></u><br/><b>Effective Use of High Strength Steel on Construction I</b><br/>Professor Kwok-Fai CHUNG<br/><i>The Hong Kong Polytechnic University, Hong Kong</i></p>  |
|  | <p style="text-align: center;"><u><b>Special Session</b></u><br/><b>Concrete Materials &amp; Structures</b><br/>Dr. Johnny HO<br/><i>The University of Queensland, Australia</i></p>  |
| 3:00pm   | <b>Coffee Break</b> Ballroom Foyer, Level 7   |
|  | <b>Parallel Session 2A</b><br>Ballrooms I & II, Level 7   |
|  | <b>Parallel Session 2B</b><br>Shanghai Room I, Level 8  |
| 3:30pm   | <p style="text-align: center;"><u><b>Special Session</b></u><br/><b>Effective Use of High Strength Steel on Construction II</b><br/>Dr. Tak-Ming CHAN<br/><i>The Hong Kong Polytechnic University, Hong Kong</i></p>  |
| 5:00pm   | <p style="text-align: center;"><u><b>Special Session</b></u><br/><b>Concrete-filled High Strength Steel Structures</b><br/>Dr. May SU<br/><i>The University of Manchester, United Kingdom</i></p>   |



# Programme on Day 2

| 6 September (Thursday)<br>DAY 2                          |   |  |  |
|--|---|--|--|
| 8:30am   | Registration  |  | Ballroom Foyer, Level 7  |
| Keynote Lectures chaired by Professor Richard J. Y. LIEW |   |  | Ballrooms I & II, Level 7  |
| Keynote Lecture 5<br>9:00am                              | <b>Behaviour and design of concrete-filled stainless steel tubular columns</b><br>Professor Lin-Hai HAN<br><i>Tsinghua University, China</i>  |  |  |
| Keynote Lecture 6<br>9:30am                              | <b>Inelastic seismic demands in steel framed structures</b><br>Professor Ahmed Y. ELGHAZOULI<br><i>Imperial College London, United Kingdom</i>  |  |  |
| Keynote Lecture 7<br>10:00am                             | <b>Mechanical properties and a new design approach for welded joints at high strength steels</b><br>Professor Richard M. STROETMANN<br><i>Technische Universität Dresden, Germany</i> |  |  |
| 10:30am  | Coffee Break  |  | Ballroom Foyer, Level 7  |
|  | Parallel Session 3A<br>Ballrooms I & II, Level 7  | Parallel Session 3B<br>Ballroom III, Level 7   | Parallel Session 3C<br>Shanghai Room I, Level 8  |
| 11:00am  | <b>Analysis &amp; Design I</b><br>Professor Tommy CHAN<br><i>The Queensland University of Technology, Australia</i>   | <b>Cold-formed Steel Construction I</b><br>Professor Sing-Ping CHIEW<br><i>Singapore Institute of Technology, Singapore</i>  | <b>Steel Structures</b><br>Dr. Paul H. F. LAM<br><i>The City University of Hong Kong, Hong Kong</i>              |
| 12:00pm  | Lunch   |  | The Place, Lobby Level   |
|  | Parallel Session 4A<br>Ballrooms I & II, Level 7  | Parallel Session 4B<br>Ballroom III, Level 7   | Reserved   |
| 1:30pm   | <b>Special Session</b><br><b>Bimetallic Steel Structures</b><br>Dr. Hui-Yong BAN<br><i>Tsinghua University, China</i>   | <b>Special Session</b><br><b>Steel &amp; Composite Structures I</b><br>Professor Su-Mei ZHANG<br><i>Harbin Institute of Technology, China</i>                              |  |
| 3:00pm   | Coffee Break  |  | Ballroom Foyer, Level 7  |
|  | Parallel Session 5A<br>Ballrooms I & II, Level 7  | Parallel Session 5B<br>Ballroom III, Level 7   | Parallel Session 5C<br>Shanghai Room I, Level 8  |
| 3:30pm<br><br>5:00pm                                     | <b>Special Session</b><br><b>Cold-formed Steel Structures</b><br>Professor Ben YOUNG<br><i>The University of Hong Kong, Hong Kong</i>   | <b>Special Session</b><br><b>New Process &amp; Forming Effects on Cold-formed Steel Members</b><br>Professor Fei HAN<br><i>North China University of Technology, China</i> | <b>Composite Structures</b><br>Professor Tommy CHAN<br><i>The Queensland University of Technology, Australia</i> |
| 7:00 – 10:00pm   | <b>Conference Dinner</b><br>Sponsored by China Construction Steel Structure Corp. Ltd.  |  | Star Room, Level 42  |

# Programme on Day 3

| 7 September (Friday)<br>DAY 3                     |  |  |  |
|---|--|--|--|
| 8:30am  | Registration   |  | Ballroom Foyer, Level 7  |
| Keynote Lectures chaired by Professor Yozo FUJINO |  |  | Ballrooms I & II, Level 7  |
| Keynote Lecture 8<br>9:00am                       | FRP composites in steel structures<br>Professor Sritawat KITIPORNCHAI<br><i>The University of Queensland, Australia</i>  |  |  |
| Keynote Lecture 9<br>9:30am                       | A seismic resilient and scour tolerant long river crossing<br>Dr. S. H. Robin SHAM<br><i>AECOM, Hong Kong</i>  |  |  |
| Keynote Lecture 10<br>10:00am                     | Prefabricated prefinished volumetric construction of high-rise buildings<br>Professor Richard J. Y. LIEW<br><i>National University of Singapore, Singapore</i> |  |  |
| 10:30am   | Coffee Break   |  | Ballroom Foyer, Level 7  |
|   | Parallel Session 6A<br>Ballrooms I & II, Level 7   | Parallel Session 6B<br>Ballroom III, Level 7   | Parallel Session 6C<br>Shanghai Room I, Level 8  |
| 11:00am   | Analysis & Design II<br>Professor Chun-Man CHAN<br><i>The Hong Kong University of Science and Technology, Hong Kong</i>  | Cold-formed Steel Construction II<br>Dr. Tak-Ming CHAN<br><i>The Hong Kong Polytechnic University, Hong Kong</i>           | Connections & Fire Engineering<br>Dr. Fa-Cheng WANG<br><i>Tsinghua University, China</i>   |
| 12:00pm   | Lunch  |  | Alibi, Level 5   |
|   | Parallel Session 7A<br>Ballrooms I & II, Level 7   | Parallel Session 7B<br>Ballroom III, Level 7   | Parallel Session 7C<br>Shanghai Room I, Level 8  |
| 1:30pm  | <u>Special Session</u><br>Steel Metallurgy<br>Dr. Ming-Xin HUANG<br><i>The University of Hong Kong, Hong Kong</i>  | <u>Special Session</u><br>High Strength Steel & Composite Structures<br>Dr. Yan-Bo WANG<br><i>Tongji University, China</i> | <u>Special Session</u><br>Seismic Protection to Steel Structures<br>Dr. Xu-Chuan LIN<br><i>Institute of Engineering Mechanics, China</i> |
| 3:00pm  | Coffee Break   |  | Ballroom Foyer, Level 7  |
|   | Parallel Session 8A<br>Ballrooms I & II, Level 7   | Parallel Session 8B<br>Ballroom III, Level 7   | Reserved   |
| 3:30pm<br>5:00pm                                  | <u>Special Session</u><br>Concrete-filled Steel Tubular Structures<br>Dr. Wei LI<br><i>Tsinghua University, China</i>  | <u>Special Session</u><br>Steel & Composite Structures II<br>Dr. Zhen-Yu HUANG<br><i>Shenzhen University, China</i>        |  |

Special Sessions:

- **Effective Use of High Strength Steel on Construction I**  
Professor Kwok-Fai CHUNG, *The Hong Kong Polytechnic University, Hong Kong*
- **Steel & Composite Structures I**  
Professor Su-Mei ZHANG, *Harbin Institute of Technology, China*
- **Cold-formed Steel Structures**  
Professor Ben YOUNG, *The University of Hong Kong, Hong Kong*
- **New Process & Forming Effects on Cold-formed Steel Members**  
Professor Fei HAN, *North China University of Technology, China*
- **Concrete Materials & Structures**  
Dr. Johnny HO, *The University of Queensland, Australia*
- **Steel Metallurgy**  
Dr. Ming-Xin HUANG, *The University of Hong Kong, Hong Kong*
- **Effective Use of High Strength Steel on Construction II**  
Dr. Tak-Ming CHAN, *The Hong Kong Polytechnic University, Hong Kong*
- **Concrete-filled Steel Tubular Structures**  
Dr. Wei LI, *Tsinghua University, China*
- **Seismic Protection to Steel Structures**  
Dr. Xu-Chuan LIN, *Institute of Engineering Mechanics, China*
- **Steel & Composite Structures II**  
Dr. Zhen-Yu HUANG, *Shenzhen University, China*
- **Bimetallic Steel Structures**  
Dr. Hui-Yong BAN, *Tsinghua University, China*
- **High Strength Steel & Composite Structures**  
Dr. Yan-Bo WANG, *Tongji University, China*
- **Concrete-filled High Strength Steel Structures**  
Dr. May SU, *The University of Manchester, United Kingdom*

# Conference Organising Committee



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Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch),  
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# International Scientific Committee



|                         |                                      |                |
|-------------------------|--------------------------------------|----------------|
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| Prof. Y. Y. Chen        | Tongji University                    | China          |
| Prof. S. P. Chiew       | Singapore Institute of Technology    | Singapore      |
| Prof. Y. S. Choo        | National University of Singapore     | Singapore      |
| Dr. G. Couchman         | The Steel Construction Institute     | United Kingdom |
| Prof. D. Dubina         | Polytechnic University of Timisoara  | Romania        |
| Prof. M. Dundu          | University of Johannesburg           | South Africa   |
| Prof. A. Y. Elghazouli  | Imperial College London              | United Kingdom |
| Prof. Y. Fujino         | Yokohama National University         | Japan          |
| Prof. L. Gardner        | Imperial College London              | United Kingdom |
| Prof. L. H. Han         | Tsinghua University                  | China          |
| Prof. H. Hao            | Curtin University                    | Australia      |
| Prof. S. Herion         | Karlsruher Institut für Technologie  | Germany        |
| Dr. J. C. M. Ho         | University of Queensland             | Australia      |
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| Prof. H. H. Lau         | Curtin University                    | Malaysia       |
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| Prof. G. Q. Li          | Tongji University                    | China          |
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| Prof. M. Mahendran      | Queensland University of Technology  | Australia      |
| Prof. F. Mazzolarni     | University of Naples Federico II     | Italy          |
| Prof. E. Mirambell      | University Politècnica de Catalunya  | Spain          |
| Ir Hussain Naeem        | ARUP                                 | Hong Kong      |
| Prof. D. A. Nethercot   | Imperial College London              | United Kingdom |
| Prof. G. Ranzi          | University of Sydney                 | Australia      |



|                          |  |                |
|--------------------------|--|----------------|
| Dr. S. H. R. Sham        | AECOM                                    | Hong Kong      |
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| Prof. Richard Stroetmann | Technische Universität Dresden           | Germany        |
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| Prof. L. H. Teh          | University of Wollongong                 | Australia      |
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