

# CNERC

## NEWSLETTER DECEMBER 2016 Issue

September - December 2016

### FEATURE STORY

#### International Symposium on Advances in Steel and Composite Structures 2016

An International Symposium on “Advances in Steel and Composite Structures 2016” jointly organized by CNERC and the Hong Kong Constructional Metal Structures Association (HKCMSA), was successfully held on 6 December 2016 with a total of 146 registrants attended.

The International Symposium is also supported by the Works Branch of the Development Bureau of the Government of Hong Kong SAR, the Construction Industry Council, and Building Division, Materials Division and Structural Division of the Hong Kong Institution of Engineers.

Advances in Steel and Composite Structures are important to practicing engineers in Hong Kong due to huge demands on infrastructure construction in the Region, in particular China, in the coming decades. Steel and composite construction is very often adopted in super high-rise buildings, long span bridges and public structures due to their high structural efficiency with large strength-to-self-weight ratios as well as large flexural rigidities against instability and serviceability issues.

This International Symposium is organized as a technical platform for the following renowned researchers and engineers to disseminate their research findings on advanced construction technology of steel and composite structures with special emphases on practical applications:

**Prof. X. H. Zhou**

Academician, China Academy of Engineering,  
and President, Chongqing University

**Prof. Reidar Bjorhovde**

The Bjorhovde Group, U.S.A.

**Prof. Richard J.Y. Liew**

National University of Singapore, Singapore

**Prof. Y. J. Shi**

Tsinghua University, China

**Prof. G. Q. Li**

Tongji University, China

**Prof. Leroy Gardner**

Imperial College London, U.K.

**Prof. Brian Uy**

The University of Sydney, Australia

**Prof. K. F. Chung**

The Hong Kong Polytechnic University, Hong Kong



About 146 delegates attended the event.



Prof. K. F. Chung, Prof. X. H. Zhou, Ir C. K. Hon and Ir K. T. Leung.



The following distinguished guests and senior engineers also attended the Opening Ceremony:

<b>Ir Y. K. Cheng</b>	Institution of Structural Engineers, U.K.
<b>Ir K. T. Leung</b>	Joint Structural Division, The Hong Kong Institution of Engineers, and the Institution of Structural Engineers.
<b>Ir Joseph W. J. Chi</b>	Materials Division, The Hong Kong Institution of Engineers.
<b>Ir H. Y. Lee</b>	Hong Kong Constructional Metal Structures Association.
<b>Mr. Y. C. Leong</b>	Macau Society Metal Structures.
<b>Mr. K. C. Law</b>	Macau Society Metal Structures.
<b>Ir Richard S. M. Lee</b>	Yau Lee Construction Co. Ltd.
<b>Dr. Jackson Lau</b>	Vocational Training Council (Tsing Yi).
<b>Mr. Y. K. Pang</b>	Hong Kong Constructional Metal Structures Association, and Macau Society of Metal Structures.
<b>Prof. J. Di</b>	Steel Construction Research Centre, Chongqing University.
<b>Prof. Paul T. C. Pang</b>	Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University.
<b>Ir Eric Chan</b>	Joint Structural Division, The Hong Kong Institution of Engineers, and the Institution of Structural Engineers.
<b>Ir K. H. Mok</b>	Hip Hing Construction Co. Ltd.
<b>Mr. Matthew Lai</b>	Wo Lee Steel Co. Ltd.
<b>Dr. Andy Leung</b>	Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University.

During the Opening Ceremony, Ir C. K. Hon, Permanent Secretary for Development (Works), Development Bureau, the Government of Hong Kong SAR gave an inspirational speech to all delegates of the Symposium as the Guest of Honour. This followed by a report presented by Prof. K. F. Chung, Director of CNERC, on research and development activities of CNERC since its establishment in October 2015.

After that, Prof. X. H. Zhou and Prof. K. F. Chung signed a collaboration agreement on constructional steel research, and witnessed by Dr. Michael C. H. Yam and Prof. J. Di.



Signing of a collaboration agreement on constructional steel research 1st row from left: Dr. Michael Yam, Prof. K. F. Chung, Prof. X. H. Zhou, and Prof. J. Di.

2nd from left: Mr. Y. K. Pang; Ir K. T. Leung, Ir C. K. Hon, Ir Y. K. Cheng, and Ir Joseph Mak.



Ir C. K. Hon delivered his Opening Speech.



Prof. K. F. Chung reported on research and development activities of the CNERC.



Dr. Michael Yam, Prof. K. F. Chung, Prof. X. H. Zhou, Ir Prof. Joseph Mak, Prof. J. Di and Dr. T. M. Chan.





Prof. X. H. Zhou, Academician, China Academy of Engineering, and President, Chongqing University gave a presentation titled "Research and prospect of steel tubed concrete structures".



Prof. Reidar Bjorhovde, The Bjorhovde Group, gave a presentation on "Recent developments for constructional steel".



Prof. Richard J. Y. Liew, National University of Singapore, gave a presentation on "High strength steel and concrete for composite construction".



Prof. Y. J. Shi, Tsinghua University, gave a presentation on "Recent progress on developing a specification for high strength steel structures".



Prof. G. Q. Li, Tongji University, gave a presentation on "The strength of connections with welds or highstrength bolts for high strength structural steel".



Prof. Leroy Gardner, Imperial College London, gave a presentation on "Design of steel beam-column under combined compression and bending".



Prof. Brian Uy, The University of Sydney, gave a presentation on "Advances in steel and composite structures in Australia".



Prof. K. F. Chung, The Hong Kong Polytechnic University, gave a presentation on "Effective use of high strength structural steel in building construction".



Mr. Y. K. Pang, Mr. Y. C. Leong, Dr. Michael Yam, Prof. G. Q. Li, Ir C. K. Hon, Ir Joseph Mak, and Dr. H. C. Ho.



Dr. T. M. Chan, Dr. H. C. Ho, Dr. Paul Lam, Prof. Paul Pang, Prof. K. F. Chung, Prof. Reidar Bjorhovde, Prof. Richard Liew, Prof. Leroy Gardner, Prof. Brian Uy, Prof. G. Q. Li, Prof. Y. J. Shi, and Ir H. Y. Lee.



Prof. Brian Uy, Prof. K. F. Chung, Ir T. K. Leung, Prof. Leroy Gardner, Prof. X. H. Zhou, Prof. Richard Liew, and Prof. Y. J. Shi.



Dr. T. M. Chan, Dr. Michael Yam, Prof. Brian Uy, Prof. Sebastião Andrade, Prof. André Tenchini, Prof. Luis Costa Neves, Prof. Pedro Vellasco, Prof. Luciano Lima, Prof. Leroy Gardner, Prof. Reidar Bjorhovde, Prof. Richard Liew, Prof. K. F. Chung.

# NEWS

## Visit to Beijing, China

CNERC and HKCMSA paid an official visit to Beijing from 8th to 9th September 2016, and visited a number of National Associations, Research Institutions and Universities. During the two-day visit, CNERC visited the following:

- **China Metallurgical Construction Research Institute (CMCRI)**  
*Prof. Q. R. Yue, Prof. Y. Liu, Prof. Z. D. Ma, and Prof. Y. H. Wu*
- **Chinese National Engineering Research Centre for Steel Construction (CNERC Beijing)**  
*Prof. Z. X. Hou, Dr. Y. Zheng, and Dr. C. Gong*
- **China Iron and Steel Association**  
*Prof. J. D. Chi*
- **Tsinghua University**  
*Prof. Y. J. Shi*
- **University of Science and Technology Beijing**  
*Prof. J. T. Han*
- **Beijing University of Civil Engineering and Architecture**  
*Prof. A. L. Zhang*

The two-day visit was a success that CNERC discussed various areas of collaboration with CNERC Beijing, and three major areas of engineering research collaboration had been identified. Also, CNERC visited a number of research institutions and universities, and introduce the missions and major research work of CNERC. During various discussions, CNERC learned about difficulties of producing high-quality steel materials, and gained valuable advices on engineering research and application of structural steel. This helped developments of current research and development projects, and set direction for future research and development activities of CNERC.

## CNERC Beijing and CNERC – Meeting for Engineering Research Collaboration

On 8th September 2016, Prof. K. F. Chung, Mr. Y. K. Pang and Dr. H. C. Ho visited CMCRI and CNERC Beijing. Prof. Q. R. Yue and Prof. Y. Liu gave a warm reception to the delegates of CNERC.

Prof. Q. R. Yue and Prof. Y. Liu congratulated establishment of CNERC, and hoped that CNERC would strive to perform its missions in conducting engineering research on structural steel in line with national policies on research and development of the Chinese Steel Construction Industry. Prof. K. F. Chung reported recent developments of CNERC together with key research projects conducted in the past six months. After that, CNERC had a meeting on technical collaborations with Prof. Z. X. Hou, Chief Engineer, Dr. Y. Zheng, Assistant Director, and Dr. C. Gong, Senior Engineer, all of CNERC.

The Technical Meeting was chaired by Prof. Z. X. Hou and Prof. K. F. Chung, and the following three key areas of collaboration were identified:

1. To compile a Technical Design on “Equivalent Chinese steel materials to overseas specifications”.
2. To introduce a quality certification scheme for steel fabricators.
3. To provide training and qualification for welders.



Prof. K.F. Chung presenting a souvenir to Prof. Q.R. Yue.



Prof. K.F. Chung presenting a souvenir to Prof. Y. Liu.



Meeting with Prof. Y. J. Shi and Prof. Y. W. Wu.



Prof. K.F. Chung presenting a souvenir to Ir Prof. Z. X. Hou.



## Visit the China Iron and Steel Industry Association (CISA)

On 9th September 2016, Prof. K. F. Chung, Mr. Y. K. Pang and Dr. H. C. Ho visited Prof. J. D. Chi, Vice President of CISA, and discussed various matters on steel production. Prof. Chung gave a brief report on latest developments of CNERC and its major research projects in the past six months. He also discussed a number of quality issues on adoption of Chinese steel materials in overseas construction projects with Prof. Chi. Prof. Chung expressed concern on poor quality of some Chinese steel materials, and in some projects, an acceptance rate of quality assurance tests of Chinese structural steelwork on site at merely 85 to 90% was encountered.

Prof. Chi pointed out that the Chinese steel industry has already mastered high quality production technology of structural steel, and even for high strength high performance steel materials. However, in the past decade, the Chinese steel industry was going through a rough development stage as many steel mills strived for maximizing production levels at the expenses of sufficient smelting time, and this had adverse effects on quality of some steel materials.



Prof. K. F. Chung meeting Prof. J. D. Chi, CISA.



Prof. K. F. Chung presenting a souvenir to Prof. J. D. Chi.



A sample of "Certification of Metallurgical Products – Gold Award".

Every year, CISA compiled a Year Book on "Certified Quality Metallurgical Products". In the Year Book of 2015, a total of 179 certified products were listed, of which, 169 were awarded "Gold Awards" while 10 were awarded "Excellent Quality Awards". Hence, CISA proposed CNERC to make reference to the quality certification scheme of "Gold Awards", and apply it to the "Certification Scheme on Quality Steel Fabricators", or even adopt the scheme as the standard of Chinese steel supply for construction projects in Hong Kong.

## Visit University of Science and Technology Beijing

Prof. K. F. Chung also met Prof. J. T. Han of University of Science and Technology Beijing during the visit. Prof. K. F. Chung also exchanged views on quality of Chinese steel products with Prof. Han who shared common views with those of CISA. Prof. Chung also brought up issues on smelting time during steel production, and effects of welding on high strength steel materials. Prof. Han comments on various smelting methods, and their effects onto mechanical properties of high strength steel materials. He agreed that wide application of QT and TMCP steel materials in building construction remained to be major challenges as well as development opportunities of the Chinese Iron and Steel industry in the coming decades.

## Visit Beijing University of Civil Engineering and Architecture

Prof. K. F. Chung also visited Prof. A. L. Zhang, President of Beijing University of Civil Engineering and Architecture, and conducted academic, research and technological exchanges with Prof. Zhang. Moreover, Prof. Chung introduced establishment, missions and research projects of CNERC to Prof. Zhang. Prof. Zhang appreciated the work of CNERC, and he explained various academic and research achievements of the Beijing University of Civil Engineering and Architecture in recent years. Both Prof. Chung and Prof. Zhang agreed to further explore technical collaboration in the future.

# NEWS

## A visit by State Ministry of Science and Technology, PRC

On 25th September 2016, Dr. LI Meng, Vice Minister of the Ministry of Science and Technology of the People's Republic of China (MOST), visited the Hong Kong Polytechnic University, in particular, the two Chinese National Engineering Research Centres (Hong Kong Branches) [CNERC], and the two Partner State Key Laboratories (PSKLs).

The MOST officials and the delegation team consisted of:

<b>LI Meng</b>	<b>Vice Minister</b>
<b>YE Dongbai</b>	<b>Inspector,</b> <i>Office of Hong Kong, Macau and Taiwan Affairs</i>
<b>XU Liang</b>	<b>Director General,</b> <i>Department of Innovation and Development</i>
<b>XIE Min</b>	<b>Inspector,</b> <i>Office of Major S&amp;T Projects</i>
<b>SUN Hong</b>	<b>Director,</b> <i>China Science and Technology Exchange Center</i>
<b>LE Jia</b>	<b>Deputy Director General,</b> <i>Department of Innovation and Development</i>
<b>XIAO Wei</b>	<b>Deputy Investigator,</b> <i>Division of Secretariat, General Office</i>
<b>XU Hongbin</b>	<b>Director General,</b> <i>Division of Taiwan, Hong Kong and Macau, China Science and Technology Exchange Center</i>

Liaison Office of the Central People's Government in HKSAR

<b>LIU Zhiming</b>	<b>Deputy Inspector,</b> <i>Department of Education and Technology</i>
<b>ZHANG Wei</b>	<b>Deputy Investigator,</b> <i>Department of Education and Technology</i>
<b>WANG Bo</b>	<b>Director,</b> <i>Department of Education and Technology</i>

Innovation and Technology Commission

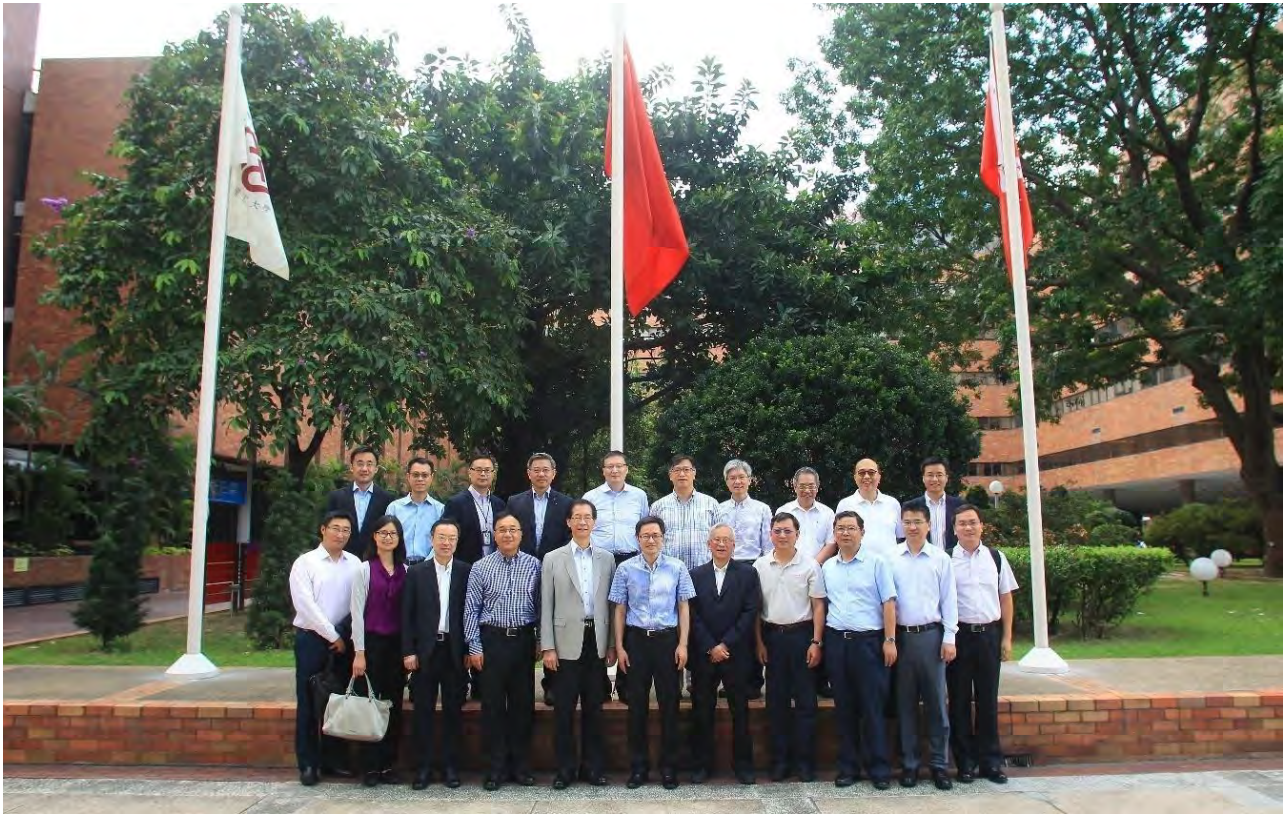
<b>Frederick CHENG</b>	<b>Senior Manager</b> <i>Policy and Development</i>
<b>Urania CHAN</b>	<b>Assistant Manager</b> <i>Policy and Development</i>

Professor Timothy TONG, President, and Professor Philip CHAN, Deputy President and Provost, received the MOST delegation, and introduced latest developments in technological innovation of the University. Moreover, the MOST delegation visited a number of facilities and laboratories in the Campus of the University. Professor K.F. CHUNG, Director of CNERC for Steel Construction (Hong Kong Branch), was invited to report to Dr. Li latest development and research activities of the CNERC.

The PolyU's delegation team consisted of:

<b>Timothy TONG</b>	President
<b>Philip CHAN</b>	Deputy President and Provost
<b>H. C. MAN</b>	Dean, Faculty of Engineering
<b>K. K. LEE</b>	Department of Electrical Engineering
<b>K. C. CHAN</b>	Head, Department of Industrial and Systems Engineering
<b>William LAM</b>	Head, Department of Civil and Environmental Engineering
<b>Michael YU</b>	Deputy Director, State Key Laboratory of Chirosciences
<b>Y. Q. NI</b>	Director of CNERC for Rail Transit Electrification and Automation Engineering Technology (Hong Kong Branch)
<b>K. F. CHUNG</b>	Director of CNERC for Steel Construction (Hong Kong Branch)
<b>Virginia CHENG</b>	Head, Research Office
<b>Iris TANG</b>	Chinese Mainland Affairs Office





The MOST officials and the PolyU delegates.

Prof. Chung took this opportunity to thank the MOST for its endorsement to establishment of Hong Kong Branch at the Hong Kong Polytechnic University. Prof. Chung elaborated potential positioning of the Hong Kong Construction Industry in creating synergy with the China Steel Construction Industry, in particular, in facilitating export of Chinese structural steelwork to overseas projects. Prof. Chung presented a copy of the first publication of the Hong Kong Branch, "Effective Design and Construction to Structural Eurocodes" to Dr. Li.

CNERC will be committed to promote effective design and construction using Chinese steel materials and structural members in Hong Kong and Macau, and major cities in the Region. Dr. Li re-iterated strong supports of the MOST to innovation and technology developments in Hong Kong, and he looked forwards to receive progress reports on developments of CNERC.

# NEWS

## A visit by Innovation and Technology Commission

On 26th October 2016, ITC officials visited the research-oriented units of the Hong Kong Polytechnic University, in particular, two Partner State Key Laboratories (PSKLs), two Chinese National Engineering Research Centres (Hong Kong Branches) [CNERC], and the Aviation Services Research Centre. The ITC officials were:

<b>Ms. Annie Choi</b>	ITC Commissioner
<b>Ms. Zorina Wan</b>	Assistant Commissioner (Policy and Development)
<b>Mr. Carlton Man</b>	Manager (Policy and Development)



ITC officials visited the Structural Engineering Research Laboratory to appreciate experimental works of CNERC.

Prof. Timothy Tong, President, Prof. Philip Chan, Deputy President and Provost, and Prof. Alexander Wai, Vice President (Research Development) received ITC officials, and introduced latest developments in technological innovation of the University. Moreover, ITC officials visited a number of laboratories and facilities of the University. Prof. K. F. Chung was invited to report to ITC officials latest development and research activities of the CNERC for Steel Construction (Hong Kong Branch). He also guided ITC officials to visit the Structural Engineering Research Laboratory of the University.

The PolyU representatives were:

<b>Prof. Timothy Tong</b>	President
<b>Prof. Philip Chan</b>	Deputy President and Provost
<b>Prof. Alexander Wai</b>	Vice President (Research Development)
<b>Prof. K. Y. Wong</b>	Associate Vice President (Research Support), and Director of Partner State Key Laboratory of Chirosciences
<b>Dr. Sandy To</b>	Associate Director of Partner State Key Laboratory of Ultraprecision Machining Technology
<b>Prof. K. F. Chung</b>	Director of Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch)
<b>Prof. Y. Q. Ni</b>	Director of Chinese National Rail Transit Electrification and Automation Engineering Technology Research Centre (Hong Kong Branch)
<b>Prof. Mark Hayman</b>	Chief Executive Officer of Aviation Services Research Center
<b>Dr. Terence Lau</b>	Director of Innovation & Technology Development
<b>Dr. Virginia Cheng</b>	Head of Research Office

Prof. K. F. Chung took this opportunity to thank ITC for its funding to support establishment of CNERC for Steel Construction (Hong Kong Branch) at the Hong Kong Polytechnic University. Prof. Chung elaborated potential positioning of the Hong Kong Construction Industry in creating synergy with the China Steel Construction Industry, in particular, to facilitate export of Chinese structural steelwork to overseas projects.

Moreover, CNERC was committed to promote effective design and construction using Chinese steel materials and structural members in Hong Kong and Macau, and major cities in the Region. Key features of the following two publications were also elaborated to ITC officials:



Dr. T.M. Chan, Dr. Michael Yam, Prof. Alexander Wai, Prof. K.F. Chung, Ms. Annie Choi, Ms. Zorina Wan, Mr. Carlton Man, Dr. Virginia Cheng, Dr. Terence Lau, and Dr. H.C. Ho.

- *Selection of Equivalent Steel Materials to European Steel Materials Specifications, March 2015, and*
- *Effective Design and Construction to Structural Eurocodes: EN 1993-1-1 Design of Steel Structures, June 2015.*



# NEWS

## CNERC International Advisory Committee Meeting, Hong Kong SAR

CNERC held its first International Advisory Committee Meeting on 7th December 2016 at the Cordis Hotel, Kowloon, Hong Kong during the Eighth International Conference on Steel and Aluminum Structures.

The following professors from many parts of the world attended the International Advisory Committee Meeting:

<b>Prof. Reidar Bjorhovde</b>	The Bjorhovde Group, U.S.A.
<b>Prof. Leroy Gardner</b>	Imperial College London, U.K.
<b>Prof. L. H. Han</b>	Tsinghua University, China.
<b>Prof. Dennis Lam</b>	The University of Bradford, U.K.
<b>Prof. Nelson Lam</b>	University of Melbourne, Australia.
<b>Prof. Richard Liew</b>	National University of Singapore, Singapore.
<b>Prof. Kim Rasmussen</b>	The University of Sydney, Australia.
<b>Prof. Lip Teh</b>	University of Wollongong, Australia.
<b>Dr. May Su</b>	Shenzhen University, China.
<b>Prof. Brian Uy</b>	The University of Sydney, Australia.
<b>Prof. Pedro Vellasco</b>	Universidade do Estado do Rio de Janeiro, Brazil.
<b>Prof. Li Wei</b>	Tsinghua University, China.

CNERC Office-bearers

<b>Prof. K. F. Chung</b>	Director (Chairman)
<b>Dr. Michael Yam</b>	Deputy Director and Secretary General
<b>Dr. T. M. Chan</b>	Deputy Secretary General
<b>Dr. H. C. Ho</b>	Deputy Secretary General
<b>Ms. Catherine Ng</b>	Executive Officer (Secretary)

Prof. K. F. Chung welcomed all International Advisory Committee members and introduced the background, development, key personnel and research projects. Prof. Chung highlighted the objectives of CNERC as follows:

- To launch Hong Kong as the International Engineering Design Centre for Infrastructure to the world, and to promote export of professional services of the Hong Kong Construction Industry to overseas.
- To launch China as the International Engineering Construction Centre for Infrastructure to the world, and to promote export of Chinese Steel Construction Industry, in particular, Chinese steel materials and structural steelwork.

Members of the International Advisory Committee exchanged valuable experiences on their research and development work on structural steelwork construction, and shared updates and trends of steelwork industry in their countries. Comparative findings and superlative insights were given by the members on projection of structural steelwork construction across the globe. During the discussion, the members proactively contributed ideas on

- (i) research areas,
- (ii) design codes and recommendations,
- (iii) education and training, and
- (iv) other relevant developments in structural steelwork.



Members of the International Advisory Committee shared experience on promoting structural steelwork construction in their countries.



Prof. K. F. Chung introduced the research and development work of the CNERC to members of the International Advisory Committee.

## NEWS

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### Meeting with Development Bureau of The Government of Hong Kong SAR

On 21st December 2016, the Hong Kong Branch met Ir C. K. Hon, Permanent Secretary for Development (Works), and Dr. Raymond Cheung, Chief Assistant Secretary (Works), Development Bureau of the Government of Hong Kong SAR at the Central Government Offices, Tamar. It should be noted that Ir Hon is Chairman of Advisory Committee of CNERC.

The Development Bureau was very interested to explore possibility of improving productivity of the local construction industry through wide application of steel structures. It was fully aware of abundant supply of quality structural steelwork in the Pearl River Delta Region. Structural steelwork, as a pre-fabrication construction, is believed to be able to reduce workforce demand for construction, when compared with conventional reinforced concrete construction. Hence, CNERC will provide a comprehensive plan to promote development of a steel construction industry in Hong Kong, to supplement the conventional reinforced concrete construction industry. Possible synergy to the construction industry in both Hong Kong and China will also be identified.

## Upcoming Event

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For details of the CNERC's upcoming events, check out our website at:  
<https://www.polyu.edu.hk/cnerc-steel/news-events-upcoming.html>

## Contact Us

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