

Shanghai 2017: Report on the 70th IIW Annual Assembly and International Conference

FAST FACTS

1,212 Total attendees: 708 Chinese & 504 International
880 Participants in IIW WU meetings: 398 Chinese & 482 International
332 International Conference delegates
303 Chinese student attendees
138 Young Professionals: 91 Chinese & 47 International
106 Papers recommended for publication in *Welding in the World*100 Volunteers from 2 Shanghai universities
73 Teams in IIW-CWS-CWA 'Arc Cup' competition
43 Countries represented
6 International standardisation recommendations from IIW WUs

een participation by large numbers of local engineers, researchers and students epitomised the 70th International Institute of Welding (IIW) Annual Assembly and International Conference and was the foundation of its success in terms of both numbers of attendees and opportunities for technology diffusion.

The events were held in Shanghai, Peoples' Republic of China, 25-30 June 2017, well organised and hosted by the Chinese Welding Society (CWS).

The venue, the Shanghai International Convention Center, was located in the Pudong district overlooking the busy Huangpu River and surrounded by a futuristic skyline which included the 632 m Shanghai Tower and the distinctive Oriental Pearl TV Tower – impressing both the assembly attendees and their accompanying persons.

With a population of over 24 million, Shanghai is regarded as the 'showpiece' of the booming economy of mainland China – a fitting environment for this gathering of international experts in all aspects of welding technology and innovation - from automation to micro-joining.

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73 teams from Russia, India, China, South Africa, Kazakhstan, Slovakia, Mongolia, Ukraine, Vietnam, Cameroon, Nigeria and Spain competed in the 2017 Arc Cup

The 2017 Arc Cup International Welding Competition, this year co-hosted by IIW, CWS and the China Welding Association and held in parallel with the IIW Annual Assembly, reinforced the link with industry and skills development which are central tenets for IIW. Presentations related to the Arc Cup were made during the Closing Ceremony.

Technical visits also contributed to visitors' better understanding of China's significant technology achievements, showcasing the Shanghai Jiao Tong University, Commercial Aircraft Corporation of China Ltd, Maglev Train and Shanghai Electric Nuclear Power Equipment Co., Ltd. A small exhibition also provided supporting technical and other information. "The industry sponsors were very proud to make contributions for such a grand event, making new acquaintances and exploring potential cooperation"*

The busy schedule for the week included the IIW General Assembly, Opening and Closing Ceremonies, and board meetings including the Board of Directors, Technical Management Board (TMB) and International Authorisation Board (IAB) for education, training, qualification and certification. Meetings of IIW Working Units (WUs) took place each day until the commencement of the International Conference on the Thursday, and there were numerous social, networking and satellite events.

IIW General Assembly



The annual general meeting of the IIW, known as the General Assembly (GA), was conducted on Sunday 25 June and attended by 42 IIW Member Countries.

Reports on the activities of the IIW and its Secretariat, including the migration of internal communications to Office 365 by the end of 2017



and a new corporate website, and the 2016 Annual Report were received and ratified. The financial figures were presented and the budget and membership discussed and approved, with agreement reached on fees for the coming year. Presentations made to outgoing Directors: Prof. Gary Marquis (Finland) – President, Mr Douglas Luciani (Canada) – Treasurer, Mr Chee Pheng Ang (Singapore) – Vice-President, Mr Chris Smallbone (Australia), Prof. Thomas Böllinghaus (Germany), Mr Sorin Keller (Switzerland), Mr Ernest Levert (USA), Mr James Guild (South Africa) – IAB Chair and Dr Luca Costa (Italy) – TMB Chair, highlighted their important contributions during their terms of office.

Mr Douglas Luciani was elected as the President of IIW 2017-2020, with Dr Luca Costa taking up the role of Treasurer and Prof. Thomas Böllinghaus becoming a Vice-President.

Three new three-year positions on the Board of Directors were then ratified: Mr Peter Klamo (Slovakia), Mr Edin Djarman (Indonesia) and Dr Michail Karpenko (New Zealand). Mr Stephan Egerland (Austria) was appointed Chair of the TMB, and Mr Christian Ahrens (Germany) Chair of the IAB, with both taking positions as Directors on the Board 2017-2020.

The meeting thanked the following people for their service on the TMB at the completion of their terms of office: A. Prof. Tuba Karahan (Turkey), Dr Gerhard Posch (Austria), Prof. Fumiyoshi Minami (Japan), Prof. Americo Scotti (Brazil) and Mr Stephan Egerland who is taking up the position of Chair of the TMB.



Prof. Gary Marquis, IIW President 2014-2017 (right) with Mr Douglas Luciani, incoming IIW President, and IIW CEO Dr Cécile Mayer

The meeting then welcomed new members to the TMB. Representatives from WU Chairs, Prof. Norman Zhou (Canada), Ms Teresa Melfi (USA) and Mr Carl Peters (USA), and Board of Directors appointed members A. Prof. Zuheir Barsoum (Sweden) and Prof. Hee-Seok Chang (Republic of Korea).



Welding and NDT collaboration

IIW President Marquis (right) and Sajeesh Kumar Babu representing ICNDT signing a MOU between the two organisations

IIW Members gathered for the GA also witnessed the historic signing of a Memorandum of Understanding (MOU) between IIW and the International Committee for Non-Destructive Testing (ICNDT) represented by Ir. Sajeesh Kumar Babu. The MOU will generate greater cooperation between the two organisations which have a common interest in weld quality conformance. In particular this could contribute significantly to the work of IIW Commission V Non-destructive Testing and Quality Assurance of Welded Products.

Official Opening



he Opening Ceremony was held on the Sunday evening, with Prof. Xiaoyan Li, Secretary-General of the Organising Committee, as Master of Ceremonies. The scene was set with a Chinese classical ink dance entitled 'Love, Welding and Cutting', a fitting message before the commencement of the official business of the evening.

After welcoming the audience, Prof. Li invited IIW President Prof. Gary Marquis (Finland) to the stage to add his words of welcome and to officially open the Annual Assembly. Prof. Qiang Chen, Chair of the Organising Committee and President of the CWS, then delivered the welcome message from the society before inviting IIW CEO Dr Cécile Mayer to join him for the presentation of the 2017 IIW Awards.

History of IIW - 'Linking People, Joining Nations'



Official launch of the book Linking People, Joining Nations: The Impact of the International Institute of Welding (IIW) since 1990

Before moving to the awards presentation, Dr Mayer invited Mr Chris Smallbone (Australia), Chair of the IIW Task Group preparing a history of IIW 1990-2015 titled 'Linking people, joining nations', to the stage. He outlined the project, sponsored by a number of IIW Member Societies, and invited Prof. Yixiong Wu, Executive Chair of the Annual Assembly Organising Committee, and IIW President Marquis to officially unveil the book on stage. The electronic version of the publication will be made available free-of-charge throughout the IIW community.

After the presentation of awards (detailed later in this report) the audience moved to the Welcome Reception in the Grand Ballroom to sample a range of Chinese delicacies, catch up with old acquaintances and build some new friendships.

Working Unit Outcomes

The Annual Assembly is the most important forum for face-to-face meetings of the IIW Technical WUs, which include 17 Commissions (C), three Select Committees and two Study Groups looking at all aspects of welding technology and the industry sectors it serves. An excellent attendance by 435 international experts was augmented by an additional 380 Chinese representatives, predominantly from the many universities delivering graduate training and postgraduate research in China.

A further 141 Chinese students attended WU meetings and the International Conference, benefiting immensely from the technical papers

presented and discussed, and contact with this world-leading group of professionals.

A number of resolutions resulted from the WU meetings and were passed to the Board of Directors and TMB including the nomination of new Chairs and Vice-Chairs and creation of new sub-groups (see Table 1).

A total of 110 papers were recommended for publication in *Welding in the World* while two recommendations for publication as an IIW booklet were made by C-VIII Health, Safety and Environment. One of these booklet proposals was for a compilation of all the excellent IIW Best Practice Guides widely used in industry in this subject area. IIW is a standardising body approved by the International Organization for Standardization (ISO) to develop standards in the field of welding and related processes. Currently nine WUs are progressing 50 projects in the area of international standardisation, in liaison with the IIW Working Group Standardisation (WG-STAND) and the ISO Coordination Committee.

WG-STAND encourages WUs to created sub-groups dedicated to specific standardisation projects, bringing together technical experts and those with experience in standardisation at national and international levels to facilitate global harmonisation in standards for the benefit of industry.

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Commission I	Additive Manufacturing, Surfacing and Thermal Cutting
	Mr Doug Kautz (USA) was elected as Chair.
Commission V	Non-destructive Testing and Quality Assurance of Welded Products
	Establishment of a Sub-Commission:
	C-V-C Review of the Proposal for IIW to Own the V3 Ultrasonic Calibration Block Design.
Commission VI	Terminology
	Dr H. Glenn Ziegenfuss (USA) was re-elected for a third and final term as Chair.
	Mr Jerome Dietsch (France) was elected as Vice-Chair, and Chair of Working Group 1 -
	IIW Thesaurus.
Commission VII	Micro-joining and Nano-joining
	Prof. Dr Akio Hirose (Japan) was elected as Chair.
	Prof. Dr Zhiyong Gu (USA) was elected as Vice-Chair.
	Establishment of the following Sub-Commissions and Chairs:
	C-VII-A Joining with nanomaterials, Chair: Dr Susann Hausner (Germany), Vice-Chair:
	Prof. Dr Zhiyong Gu (USA).
	C-VII-B Laser micro- and nano-joining, Chair: Prof. Dr Tomokazu Sano (Japan), Vice-Chair:
	Dr Lei Liu (China).
	C-VII-C Emerging micro- and nano-joining processing technologies, Chair: Prof. Dr Jolanta
	Janczak-Rusch (Switzerland).
Commission XVI	Polymer Joining and Adhesive Technology
	Prof. Dr David Grewell (USA) was elected as Chair.
	Dr Philip Bates (Canada) was elected as Vice-Chair.
Commission XVII	Brazing, Soldering and Diffusion Bonding
	Dr Warren Miglietti (USA) was re-elected as Chair for one additional year.
	Establishment of a Sub-Commission:
	C-XVII-D Standardisation, Chair: Dr Warren Miglietti.

Joining forces

While actively pursuing research and technology development in their own areas of specialisation, many IIW WUs also held joint meetings during the assembly to optimise access to a broad range of knowledge and bring together new ideas in overlapping topics and current issues.

The newly formed C-VII Micro- and Nano-Joining, formerly a Select Committee of long standing chaired by Dr Norman Zhou (USA), held a joint meeting with C-XVII which focuses on brazing, soldering and diffusion bonding.

Dr Warren Miglietti, Chair of C-XVII, noted that 'the purpose of having the joint meeting is to encourage the exchange of scientific and technical information, which is a core objective of the IIW, as well as provide for the transfer of knowledge related to these nano-technologies and techniques'.

As micro- and nano-joining often involves the use of brazing and/or soldering technologies, and the filler metals themselves often contain features such as nano-wires, nano-crystals, and nano-fibres, it makes sense that there will be synergy between the two Commissions. Nano-technology is growing at a quantum pace, and the Chairs of both WUs agreed that the first meeting was very successful with 11 presentations and over 69 people in attendance.

C-I Additive Manufacturing, Surfacing and Thermal Cutting and C-V Non-Destructive Testing and Quality Assurance of Welded Products held a joint session titled 'Additive Manufacturing and NDT: Some Challenges and Opportunities' in Shanghai to support the strategic direction of IIW. This seminar had a series of presentations that were designed to stimulate discussion in quality assurance of additively manufactured components with the goal of continuing future collaboration.

The outcomes of this session were identification of areas for collaboration and choosing Dr Anna Paradowska (Australia) from C-V to be the liaison to C-I in this important area. It was also discussed that C-I and C-V will try to organise a joint session in 2018 with other interested Commissions on fracture mechanics for additive manufacturing parts with the goal of helping to establish NDT requirements for mission-critical components.



Standing room only in the joint WU meeting exploring the latest technologies in arc, laser and hybrid welding and additive manufacturing

C-XII Arc Welding Processes and Production Systems also held a joint meeting with C-I Additive Manufacturing, Surfacing and Thermal Cutting, C-IV Power Beam Processes and SG-212 Physics of Welding. Many of the recent hybrid joining and additive manufacturing processes are multidisciplinary. The joint meeting offered an opportunity for support and interchange of ideas from several WUs to assist the understanding and development of these hybrid technologies.

There were 27 international presentations during the day; around half were directly concerned with additive manufacture by laser and wire-arc processes while the remainder provided complementary information on process diagnostics, monitoring, numerical modelling and applications. The presentations were of a high standard and several were recommended for publication by IIW in *Welding in The World*.

Prof. John Norrish (Australia), Vice-Chair of C-XII, commented that 'this form of joint meeting provides an essential bridge between the works of the individual WUs within the busy programme of the Annual Assembly'.

Hybrid joining of metals and polymers was a topic of common interest pursued at the joint meeting of C-XVI Polymer Joining and Adhesive Technology and C-III Resistance Welding, Solid State Welding and Allied Joining Processes. Mainly in the automotive and aircraft industries, lightweight construction leads to a material mix of fibre-reinforced plastics and metal. In recent years, there have been many developments in the area of joining hybrid materials. The joint meeting between the polymer- and metaloriented Commissions was well attended by around 60 people and there were six significant scientific papers dealing with friction riveting processes and adhesive technology.

There was also a joint meeting of C- X Structural Performances of Welded Joints, C-XIII Fatigue of Welded Components and Structures and C-XV Design, Analysis and Fabrication of Welded Structures to share the latest developments in structural integrity which affects infrastructure and construction worldwide.

International Conference

reen Welding Technologies for Effective and Reliable Manufacturing was the theme for the well organised International Conference held 29-30 June, attended by close to 300 people. After the opening address by Prof. Dr Zhiling Tian, Chair of the International Conference Committee and a welcome from IIW President Marguis, the commemorative Portevin Lecture was presented by Prof. Dr Qiao Guan from the Beijing Aeronautical Manufacturing Technology Research Institute (BAMTRI China) on the topic 'Additive welding/joining manufacturing based on technologies'.



The IIW Portevin Lecture was presented by Prof. Dr Qiao Guan of BAMTRI China

Over the two days of the conference, 260 presentations were made in six parallel sessions, with 60 technical posters on display. Some 50 papers were delivered by international experts involved in IIW, including keynote and invited presentations. Most of the 200 Chinese presenters were from universities or research institutions, demonstrating the high level of activity in welding research across China.

"The event gave participants from research and university easier access to IIW, and they found out about IIW and how it works. Most of them have shown great interest in participating in future IIW events. They feel that participation in such academic exchanges will give them inspiration in their own fields."

The range of topics covered was very wide and mainly directed at improving quality, efficiency and productivity, which would ultimately benefit industry. Of particular interest were the papers on automation of welding, additive manufacturing and high-strength materials which accounted for nearly half of the presentations and were generally of high quality.

International Forum on Green Material and Processing Technology

apitalising on the presence of may international experts in China for the IIW Annual Assembly, an International Forum on 'Green Material and Processing Technology for Circular Economy' was held two days prior to the assembly, on 23-24 June, in Beijing.

The forum, sponsored by the Beijing Natural Science Foundation and hosted by the Beijing University of Technology, was presented as a pre-Assembly seminar by IIW C-VIII Health, Safety and Environment. Four themes were presented at the forum: 'new green welding materials', 'health and safety in welding and allied processes', 'advanced

Other Meetings

welding technology', and 'advanced remanufacturing technology'.

A total of 80 experts, researchers and students from eight countries attended the forum, with invited lectures delivered by 19 renowned experts including members of C-VIII. Delegates attended from the steel, petroleum, and welding consumables industries as well as mechanical engineering and related sectors. The forum achieved its aim to create an open atmosphere to exchange and discuss the latest achievements and development trends for green materials and processing technologies in a modern open economy.



The Working Group for Regional Activities was well attended by over 50 delegates from around the world

eetings of the IIW International Authorisation Board (IAB), IAB Groups A (Education, Training and Qualification) and B (Implementation, Authorisation and Certification), IAB Members took place during the Annual Assembly Week. Representative of the Asia, Africa, and Australasia region on the IAB Board is now Mr Sean Blake (South Africa),

Two new Applicant Authorised National Bodies (ANBs) were approved, the Welding Institute of Malaysia and the HWC-German Technology Centre Vietnam. Work continued on the development of a business model for harmonised practical examinations for IIW International Welding Inspection Personnel, as well as a marketing plan for supporting IAB members in the promotion of the IIW Qualification and Certification Systems.

A valuable workshop on conformity assessment, the requirements for bodies certifying products, processes and services, and the benefits and disadvantages of accreditation, was held during the IAB Members Meeting.

The **Technical Management Board (TMB)** oversees the activities of the technical WUs and the Editorial Committee for the IIW flagship publication *Welding in the World*.

Mr Stephan Egerland, the incoming TMB Chair, commented that 'this year, the IIW TMB's mission was supported by a Task Group 'IIW 2020', focused

on simplification and clarification of the current structure by reviewing the terms of reference of each working unit and their status'.

The **Board of Directors** met twice within the week to further the strategic planning for the IIW, and meetings of the Working and Task Groups set up by the Board also took place.

The Working Group Regional Activities and Liaison with Developing Countries (WG-RA) reviewed the various objectives within its business plan, and the take-up of projects such as assisting countries to build National Welding Capability (NWC). A review of events held in the regions, such as IIW International Congresses, Research and Collaboration Colloquia and IIW supported events demonstrated excellent diffusion of IIW services and knowledge around the world.

The focus on the **Working Group Communication and Marketing** was on current projects such as a series of corporate brochures, an electronic version of the IIW micrograph series and a proposed corporate website, as well as the on-going success of the *Welding in the World* publication. The **Working Group Governance** also met to further its various projects to continually improve the accountability and transparency of the various decision-making bodies making up IIW. On the retirement of Mr Chris Smallbone (Australia) outgoing President Prof. Gary Marquis (Finland) was appointed as Chair of this important group.

Young Professionals Activities

IIW recognises the importance of involving and empowering young professionals, the future leaders in welding research and industry, in the activities of the Institute.

A Board of Directors Task Group Young Leaders (TG-YL) meets regularly and works with the Chairs of IIW technical WUs and the Study Group Welding Research Strategy and Collaboration to establish pathways for feedback, evaluation, mentoring and career development of this upcoming generation.

Chairmanship of the TG-YL passed from Mr Chee Pheng Ang (Singapore) to Mr Ernest Levert (USA) during the Shanghai meetings - both passionate supporters of this important work.



An enthusiastic crowd of future leaders, presenters and IIW officials at the Shanghai IIW Young Professionals event on the Tuesday evening

Two events were organised for young professionals during the Shanghai Annual Assembly. These were attended by excellent numbers of both Chinese and visiting young researchers and facilitated networking and new friendships and collaborations. The Icebreaker on Sunday, opened by IIW President Prof. Gary Marquis, introduced the IIW Young Leaders programmed and encouraged the participants to

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meet IIW the personnel present and to talk to others from around the world.

The second event on the Tuesday included presentations by a number of younger people on their involvement in major projects in China, and further cemented the networking relationships being built.

Recognition of People

The Shanghai Annual Assembly provided the opportunity for IIW to publicly thank the many people who volunteer their time, expertise and knowledge to further the work of the institute, not only in technical fields but also in the areas of education, training, qualification and certification, regional activities and the promotion of IIW services around the world.

Service awards pay tribute to the distinguished voluntary service and leadership of the Chairs of IIW WUs through their terms of office. This year special acknowledgement was given to three people who completed their terms of office during this Annual Assembly.



Prof. Veli Kujanpää (Finland)
C-I Additive Manufacturing,
Surfacing and Thermal Cutting (2008-2017).

Prof. Norman Zhou (USA) >

SC-Research Developments in Micro- and Nano-Joining Technologies (2011-2017).





< Prof. Dr-Ing. Michael Rethmeier (Germany)

Select Committee Automotive and Road Transport (2008-2017).

Feedback to the TG-YP from the Shanghai assembly was very positive and IIW will continue to foster the involvement of young professionals and support career-oriented programmes and events, such as the 7th IIW Welding Research and Collaboration Colloquium being held at TWI in the UK in September this year.

Recognition awards, comprising lapel pins and certificates, are made for contributions at IIW Annual Assemblies over 10, 20, 30, and 40 years.



This year **Mr Pentti Kopiloff** (Finland) was recognised for 30 years' service as the Finnish Delegate to C-V Non-destructive Testing and Quality Assurance of Welded Products. He is pictured (above right) receiving his award from IIW President Prof. Gary Marquis.

Three people were acknowledged for 20 years attendance, **Prof. Dr Uwe Ewert** (Germany), **Prof. Fumiyoshi Minami** (Japan) and **Prof. Dr-Ing. Dietrich Rehfeldt** (Germany).

In addition, **Prof. Zuheir Barsoum** (Sweden), **Mr Norman Cooper** (UK), **Mr Gian Luigi Cosso** (Italy), **Eur. Ing. Chris Eady** (UK), **Dr-Ing. Stefano Morra** (Italy) and **Prof. Dr Zhiling Tian** (China) received awards recognising their contributions over 10 years.

2017 IIW Awards



2017 IIW Award winners From left: Prof. Yoshinori Hirata (Japan), Mr Parimal Biswas (India), Prof. Suck-Joo Na (Republic of Korea), Prof. Heidi Cramer (for Dr Dominique Thierry (France), Prof. Sindo Kou (USA), Mr Mathias Lundin (Sweden), Prof. Dr Qiao Guan (China), Ms Teresa Melfi (USA), Dr Eeva Mikkola (Finland), Dr Tyler Borchers (USA)

The IIW Awards, presented during the Opening Ceremony, recognise those people who have made significant contributions to the global welding and joining industry and the IIW, and pay tribute to the extraordinary achievements of the eminent individuals in whose honour many of the IIW Awards were named

Awards for career achievements and exceptional contributions to the IIW

FELLOW OF IIW

This honours individuals who have made distinguished contributions to welding science and technology, and promoted and sustained the professional stature of the field.

Dr Luca Costa, Chair of the IIW TMB presented the certificates to three new IIW Fellows.

Prof. Guan (pictured left) is a Senior Research Fellow at BAMTRI China. In 1994 he was elected a member of the Chinese Academy of Engineering in recognition of his contributions to the advancement of science, technology and engineering applications. He served as President of the CWS 1990-1995 and was Vice-President of IIW 1992-1995. Guan has been researching advanced welding technologies and welded structures for the aerospace industry for many years, solving many critical welding distortion issues. He was instrumental in the establishment of the National Key Laboratory of Science and Technology on Power Beam Processes at BAMTRI in 1993 as well as the China Friction Welding Center in 2002. Recipient of the Royal Society Fellowship UK in 1987, Guan also received the IIW Arata Prize in 1999, the TWI Brooker Medal in 2005 and in 2010 the Ukraine State Medal of Merits and Achievements





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Prof. Suck-Joo Na (Republic of Korea)



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Professor Emeritus at the Mechanical Engineering Department of KAIST, Prof. Suck-Joo Na (pictured left) was President of the Korean Welding and Joining Society 2007-2008 and President of the Asian Welding Federation in 2013. He became a Fellow of the American Welding Society in 2005 and was appointed as Fellow of the Korean Academy of Science and Technology in 2008. Na served on the IIW TMB 2010-2012. International recognition of his work includes the Charles H. Jennings Memorial Award from AWS, Excellent Cooperative Research Award from LG Group, the IIW Arata Award, and a Professorship supported by Tekes - the Finnish Funding Agency for Technology and Innovation. Recently Na was awarded the Humboldt Research Award from the Alexander von Humboldt foundation of Germany. He has published more than 500 papers, including 166 original papers in international scientific journals, is regularly solicited as a plenary speaker and delivered the 2014 Houdremont Lecture in Seoul, South Korea.

Prof. Veli Kujanpää (Finland)

As Prof. Kujanpää was not able to attend, Mr Jouko Lassila head of Finnish Welding Society accepted the award on his behalf.

Prof. Kujanpää is a team member in Advanced Manufacturing Technologies at the VTT Technology Development Centre Ltd in Lappeenranta, Finland. He received his DSc (Tech) in 1984 from the University of Oulu was a professor of laser technology Lappeenranta University at of Technology, Finland between 1998 and 2011.Veli has 40 years of experience in welding technology, 32 of which focused on laser processing. In recent years, he has also worked in additive manufacturing technologies. He leads the laser forum group of the Finnish Welding Society and is a member of the Board of the European Laser Institute. He is currently Chair of IIW C-I Additive Manufacturing, Surfacing and Thermal Cutting and the Finnish Delegate to C- IV Power Beam Processes. In 1984 he received an AWS McKay-Helm Award for a paper published in the Welding Journal.

IIW REGIONAL ACTIVITIES AWARD

The IIW Regional Activities Award is conferred on an outstanding individual who, through involvement in the IIW, an IIW Member Society or outside of the IIW, has made a significant contribution to improving the global quality of life through optimum use and innovation of welding and joining technologies in their region or internationally.

The award is sponsored by the Welding Technology Institute of Australia and was presented by Prof. John Norrish, head of the Australian Delegation.

Mr Parimal Biswas (India)



Honorary Secretary-General of the Indian Institute of Welding since 2003, Mr Parimal Biswas (pictured left) has made significant contributions over 30 years to the substantial growth of his institute and the promotion of training programmes for all levels of welding personnel. He successfully raised professionalism in the functioning of the institute and is the recipient of the 2015 Best Association Leadership Award from the India Association Congress. A Mechanical Engineer from Calcutta University, Biswas has tirelessly championed IIW benefits and activities in India and its region. These have included the establishment of the IIW-India ANB in 2007 and ANB for Company Certification in 2012, the holding of IIW regional events, attendance of IIW-India representatives at IIW events outside India, and the promotion of a 'Welding for Nation Building' initiative for India. Biswas continues to

participate in many IIW WUs, including IAB Members, IAB Working Groups A and B, C-XIV, and WG-RA amongst others.

Awards for outstanding technical achievements

ARATA AWARD

Sponsored by the Japanese Delegation, the Yoshiaki Arata Award celebrates an individual whose research in welding science and technology has made a significant contribution to the industry. Prof. Shuiji Aihara, President of Japan Institute of Welding, presented the award.

Prof. Sindo Kou (USA)



Prof. Sindo Kou (pictured left) completed his PhD in Materials Science and Engineering from Massachusetts Institute of Technology in 1978. After working for General Motors and the Carnegie Mellon University, he joined the Department of Materials Science and Engineering at the University of Wisconsin-Madison in 1983 to become Professor in 1985 and Department Chair 2000-2004.

In addition to teaching welding metallurgy, joining of materials and transport phenomena in materials processing, he has authored two textbooks: Welding Metallurgy and Transport Phenomena and Materials. His research accomplishments have focused on the understanding and control of cracking, segregation and transport phenomena during solidification in welding, casting and crystal growth. Kou has received numerous honours and awards from the American Welding Society including the Honorary Membership Award in 2016, Comfort A. Adams Lecture Award in 2012, Fellow in 2002, James F. Lincoln Gold Medal in 2016, and the William Spraragen Award in both 2016 and 2007.

EVGENY PATON PRIZE

Sponsored by the National Welding Committee of the Ukraine and the E.O. Paton Electric Welding Institute, this prize is awarded to an individual who has made a significant contribution to science and technology through a lifetime dedication to 'Applied Research and Development in the Field of Advanced Technologies, Materials and Equipment for Welding and Allied Processes'.

The award was presented by Dr Volodymyr Korzhyk representing the E.O. Paton Institute.

Prof. Yoshinori Hirata (Japan)



Graduating from the Osaka University School of Engineering Welding Department in 1974, Prof. Yoshinori Hirata (pictured left) has concentrated on research and education in the physics of welding, one of the fundamental disciplines in the science and technology of welding and joining. His dedication to the understanding of welding phenomena associated with the gas shielded arc welding process has resulted in world-leading improvements in welding quality and productivity. His pioneering research on arc plasma, metal transfer and weld pool phenomena has significantly impacted the development of practical arc welding processes. made Hirata has distinguished contributions to IIW activities as Chair of IIW SG-212 Physics of Welding 2006-2011, as a TMB member 2008-2011 and as a member of the Board of Directors 2013-2015. As the Chair of IIW C-XII Arc Welding Processes and Production Systems since 2011 he has led the evolution of welding process resulting in reliability and productivity improvements.

HALIL KAYA GEDIK AWARD

This award recognises a scientist or engineer who has made outstanding contributions to the advancement of welding science and technology in one of three categories.

The award is sponsored by the Turkish Delegation and was presented by Mrs Hülya Gedik-Sadiklar, Chair of the Board of Gedik Holding, and President of GEV - Gedik Education and Social Benefits Foundation

Ms Teresa Melfi (USA)



Teresa Melfi (pictured left) is an engineer, a researcher and a mentor. As a Technical Fellow with The Lincoln Electric Company, she supports the global welding community through involvement in standards bodies, joint industry and academic projects, peer review, and technical seminars.

She holds numerous patents related to weldment fabrication, weld metal alloys, slag systems, welding procedures, test methods, and packaging. Teresa is a member of ASME BPV Section IX and Section III, and a USA technical adviser to ISO groups on welding consumables and welding qualifications. She is the Chair of IIW C-XI- Pressure Vessels, Boilers and Pipelines, the AWS A5 Committee on Filler Metals and several of its subcommittees.

2016 WELDING IN THE WORLD BEST PAPER AWARD

This award is presented for the best industrial, research or academic paper published in the IIW's journal, *Welding in the World* the preceding year. The award was presented by Prof. Thomas Böllinghaus, one of the three Editors of the journal.

Prof. Heidi Cramer, Branch Manager of GSI SLV Munich, received the award on behalf of the authors, Dr Dominique Thierry, Dr Flavien Vucko, Dr Gerald Luckeneder, Mr Bastien Weber, Mr Laurence Dosdat, Mr Thomas Bschorr and Dr-Ing. Klemens Rother and their paper: 'Fatigue Behavior for Spot Welded Joints in Air and Under Corrosive Environments Part I: Materials, Specimen and Test Results in Air'.

The main author, **Dr Dominique Thierry (France)**, obtained his PhD in corrosion science from the Pierre and Marie Curie University in Paris France in 1988. He has been assistant professor at the Royal Institute of Technology, Stockholm, Sweden since 1993. He is author or co-author of more than 200 scientific papers in peer reviewed journals and several book chapters.

He has been working for several years as the technical director of the Swedish Corrosion Institute in Stockholm, Sweden, Thierry is now managing director of the French Corrosion Institute in Brest, France where he coordinates some 45 employees in different fields of corrosion and corrosion protection

HENRY GRANJON PRIZE

The prize, sponsored by the Institut de Soudure (the French Welding Institute), is awarded to young welding professionals for outstanding research papers into welding and related technologies. Dr Prabu Manoharan, representing the French Welding Institute, this year presented prizes in two categories. engineer. Shortly after, Alcoa split into two separate corporate entities. He remained with the newly created company, Arconic, where he is currently the senior welding engineer continuing his welding research on non-ferrous alloys

Dr Eeva Mikkola (Finland)

Dr Tyler Borchers (USA)



His paper, which won the prize in Category B – Materials Behaviour and Weldability, was titled: 'Exacerbated Stress Corrosion Cracking in Arc Welds of High-Strength Aluminum Alloys'.

Dr Tyler Borchers (pictured left) sparked his welding interest at the Ohio State University, where he earned a Bachelor's Degree in Welding Engineering. He worked for the US Army's Aberdeen Test Center, where he honed his skills in welding design. Next, at General Electric - Energy, he worked with landbased gas-turbine engines, in-sourcing welding processes. He then moved to Edison Welding Institute, where he gained valuable experience with computational weld modelling. Concurrently, Borchers was continuing his education at the Ohio State University, earning his Master's and Doctorate degrees in Welding Engineering, where his graduate research concentrated on 7xxx series aluminium and the plethora of associated weldability concerns. He moved on to work for Alcoa as the senior welding



Her paper, which won the prize in Category C – Design and Structural Integrity, was titled: 'Allowable Stresses in High-Frequency Mechanical Impact (HFMI)-Treated Joints Subjected to Variable Amplitude Loading'.

Dr Eeva Mikkola (pictured left) graduated from Aalto University in 2011 as a Master of Science in Technology in Mechanical Engineering. She then continued with doctoral studies and received her degree of Doctor of Science in Technology in the field of applied mechanics in 2016. Her doctoral dissertation titled 'A study on effectiveness limitations of high-frequency mechanical impact' dealt with residual stress based post-weld improvement. The work investigated the obtainable fatigue improvement in welded and HFMI-treated steel joints under service load conditions. The work showed that HFMI-treatment could be beneficial even for high peak stresses close to material yield strength. Based on these results, an increase of allowable stress limits for fatigue design was proposed.

Mikkola has now contributed to six journal, two conference and four IIW publications on the topic of

fatigue of welded steel structures. Currently, she works as a Research Scientist at the VTT Technical Research Centre of Finland.

THOMAS MEDAL

The Thomas Medal, sponsored by the American Welding Society, rewards an individual who has been involved in IIW/ISO international standards activities and can deliver a lecture on the incorporation of global studies into the standardisation for welding technology. Mr John Bray, President of AWS made the presentation of the award.

Mr Mathias Lundin (Sweden)

Mr Mathias Lundin, an International Welding Engineer, has been the Chief Executive Officer of the Swedish Welding Commission since 2007 and Chair of the Board of the publishing house Svetsen Förlags AB since 2015. His areas of interest include standardisation in the field of welding and allied processes, welding coordination, quality assurance, qualification of personnel, design of welded structures, health and safety, and education in the fields of welding, materials processing and design. Lundin has been active in IIW welding standardisation activities since the mid-1990s. He has served as Chair of the IIW Working Group Standardisation since 2012 and as Vice-Chair of IIW Select Committee Quality Management in Welding and Allied Processes since 2010. For over 15 years, Lundin has been Swedish delegate to IIW C-VI Terminology. Previously, he served as Secretary to both ISO and CEN technical committees on welding and allied processes, ISO/TC 44/SC 3 and CEN/TC 121/WG 3 Welding Consumables.



Mathias Lundin (left) receiving the Thomas Medal from AWS President Mr John Bray

Closure and Conclusions



IIW President Marquis (right) accepting a commemorative painting from Prof. Yixiong Wu, Executive Chair of the Annual Assembly Organising Committee

The official closing of the Annual Assembly took place on the Wednesday night, with the organisers meeting the not-inconsiderable challenge of feeding around 1,500 people at one time by delivering an excellent array of multi-course Chinese food.

Master of Ceremonies, Prof. Dr Zhiling Tian, Chair of the International Conference Committee, first introduced the Jiangzhou Drum Beating performers to give all the attendees a rousing call to order.

The welcome was given by Prof. Qiang Chen, Chair of the Organising Committee and President of the CWS, followed by an honorary presentation to Prof. Jiluan Pan a founding father of welding in China who had trained and instructed many of the professionals in the audience while a Professor at Tsinghua University.



Incoming IIW President Douglas Luciani (Canada, right) welcomed to the office by Prof. Gary Marquis

IIW President Prof. Gary Marquis addressed the closing of the Annual Assembly, thanking all the participants and praising the organisers and staff of the convention centre for their excellent work. Presentations of appreciation were exchanged between IIW and CWS before the official chain of office was passed to the incoming IIW President 2017-2020 Mr Douglas Luciani.



2017 Arc Cup International Welding Competition winners with Dr Zhenying Liu (right) and Prof. Gary Marquis (left)

Special mention was made of the success of the 2017 Arc Cup International Welding Competition which was held in parallel with the IIW Annual Assembly and a commemorative plate presented to

Dr Zhenying Liu, Secretary-General of the Organising Committee in acknowledgement of the excellent organisation of the event.

The Fifth International Welding Skills Competition was divided into six projects: Shield Metal Arc Welding, Gas Metal Arc Welding, Gas Tungsten Arc Welding, Oxygen Fuel Gas Welding, Finishedproduct Welding and Non-regulated Projects. Two of the competition winners, Mr Assylbek Chonekbayev from Kazakhstan and Mr Mou Shichao from China came to the stage and were congratulated on their excellent performance!

As is tradition, the ceremonial handing over of the flag to the following year's Annual Assembly and International Conference organisers marked the closing of the Shanghai events, and issued an invitation to attend the next.



Congratulations China, and see you all in Bali, Indonesia in 15-20 July 2018!

Mr Edin Djarman, President of the Indonesian Welding Society, gave a presentation encouraging all to attend the 71st IIW Annual Assembly and International Conference to be held at the Nusa Dua Convention Center, in Bali, Indonesia, 15 - 20 July 2018.

*Thanks to Mrs Caiyan Huang, Secretary of the Chinese Welding Society for her assistance in gathering testimonials from local participants.



Delegates enjoyed the Chinese cultural evening and river cruise on Monday night

For further information, or high resolution image files, please contact:

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