



INTERNATIONAL INSTITUTE OF WELDING

A world of joining experience

ANNUAL REPORT

2015

PROFILE

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MISSION

To act as the worldwide network for knowledge exchange of joining technologies to improve the global quality of life.

MAIN GOALS

To identify, create, develop and transfer best practices for sustainable development in a sustainable environment.

To identify, develop and implement the IIW Education, Training, Qualification and Certification programmes on a global basis.

To promote IIW and its Member Societies and services in various regions of the world to the mutual benefit of all.

To assist in the formulation and preparation of international standardisation documents.

KEY FIGURES

Conceived in 1947 and founded in 1948 by 13 countries, the IIW is today the largest worldwide network for welding and joining technologies.

59 Member Countries, representing experts in the various fields of welding and joining.

23 Technical Commissions and Working Units.

45 Authorised National Bodies (ANBs), which have awarded more than 120,000 qualification diplomas since 1998 with a current annual growth of over 10,000 diplomas and 11,285 awarded in 2015.

26 Authorised National Bodies for Company Certification (ANBCCs), which have certified almost 1,700 companies around the world up to the end of 2015, certifying 278 new companies in 2015. A total of 553 personnel certificates (including new certificates and renewal of certification) have been awarded in 2015.

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MESSAGE FROM THE PRESIDENT

My two years as IIW President have passed with great speed. It has been an honour to serve as president of this association which provides such a unique platform for scientific, technological and educational development. As an organisation, we possess a wealth of knowledge and support a spirit of cooperation which is rarely paralleled in international technical societies.



Prof. Gary B. Marquis
IIW President
Finland

At the beginning of my presidency, it became apparent that the IIW needed to strengthen its International Authorisation Board (IAB) programme. A strong programme, which also represents the global best practices in terms of education, training, qualification and certification, is the best means for encouraging worldwide economic development, while simultaneously enhancing public safety. This has demanded work from dozens of dedicated experts and has required changes to our rules, operating procedures and documents. This work has proceeded smoothly and efficiently and I personally thank the many individuals who have been involved. These efforts are nearing completion and have progressed in a good spirit of cooperation with the European Welding Federation.

By all accounts, the 68th Annual Assembly and International Conference in Helsinki, Finland was a great success. Representatives from 54 countries were in

attendance to enjoy the long Nordic days and a taste of Finnish hospitality. Over 800 people including many spouses had the opportunity to renew friendships, form new acquaintances and discuss technical ideas. During the Annual Assembly, the IIW General Assembly approved three new responsible member

societies, the Research Centre in Industrial Technologies in Algeria, the Association for the Development of Welding in Angola and the Cameroon Welding Association bringing our membership to 59 countries. Additionally, the National Agency of Welding Control was welcomed a second member society in Russia.

For several years the IIW has pursued a strategy of increasing the number of young people seeking careers in welding and involved in our Working Units. Numerous countries have taken welcome initiatives to assimilate young professionals and these have become common practices. During the 2015 Annual Assembly in Helsinki, the first evening for young delegates from all member countries was organised. Over 80 young professionals and students from 15 countries spent time discussing career development, networking and having fun. I was very pleased to learn that a follow

up event is planned for 2016 in Melbourne. Since its inception in 1947, IIW-developed standards and best practice documents have represented an international stamp of scientific and technical excellence for enhancing human well-being and sustainable development via safe and appropriate

"A strong programme, which also represents the global best practices in terms of education, training, qualification and certification, is the best means for encouraging worldwide economic development, while simultaneously enhancing public safety"

use of materials-joining technologies. Highlights from IIW's early years, 1947 to 1989, have been documented in a book *Joining Nations*, published in 1993 and authored by Philip Boyd, Secretary General, IIW (1966-1990). Financing for a parallel volume for the years 1990 – 2015 has been secured by donations from several Member Societies and will be released during the Annual Assembly in P.R. of China in 2017. This will enable the detailed history of IIW to be captured for posterity, thus enabling newcomers to IIW, and the global welding community at large, to appreciate and understand how individuals and member organisations have pioneered the global development of welding and welding technology to where it is today.

A very satisfying collaboration has been established with Springer-Verlag for publishing our journal, *Welding in the World: The International Journal of Materials Joining*. This has benefited both parties financially and in terms of global visibility. Discussions are continuing with respect to other IIW publishing activities and technical document management. Our goal will be to combine cost efficiency with increased worldwide exposure of the IIW and excellent technical data services to IIW volunteers and Member Societies.

Welding in the World is continuing to rise in

"Over 80 young professionals and students from 15 countries spent time discussing career development, networking and having fun"

"Our goal will be to combine cost efficiency with increased worldwide exposure of the IIW and excellent technical data services to IIW volunteers and Member Societies"

"Over 800 people including many spouses had the opportunity to renew friendships, form new acquaintances and discuss technical ideas"

prominence as the numbers of submitted articles, citations and downloads continue to grow and the Impact Factor, which is a measure reflecting the scientific importance of a journal, is also developing positively. I wish to thank those in our network who devote thousands of hours to improving this journal.

While the IIW as a whole is financially sound, political turmoil, the low cost of oil and overall slow global financial growth has placed pressure on a number of our Member Societies. The Board of Directors needs to be increasingly sensitive to the wide variety of realities of our Member Societies. To ensure that our yearly budgeting, spending policies, long-term financial plans and risk management are more systematic and help us wisely use the limited resources at our disposal, in 2015 the Board established a Finance, Audit and Risk Committee.

I hope to be able to meet many of you at the upcoming 69th Annual Assembly and International Conference in Melbourne and at other IIW events in 2016 and early 2017.

Prof. Gary B. Marquis
President,
International
Institute of
Welding
(2014-2017)
Finland

IIW BOARD OF DIRECTORS 2015-2016

Following the modification of the Constitution adopted in 2013, the IIW Board of Directors now comprises a maximum of 15 voting members including the President, Treasurer, two Vice-Presidents and twelve Directors.

The International Authorisation Board (IAB) Chair and Technical Management Board (TMB) Chair are ex-officio non-voting members of the Board of Directors.

As the terms of office of Prof. Yoshinori Hirata (Japan) and Prof. Dr-Ing. Boyoung Lee (Republic of Korea) as Directors were successfully completed, the General Assembly approved as incoming Directors Prof. Fumiyo Minami (Japan), Prof. Américo Scotti (Brazil) and Prof. Yixiong Wu (P.R. of China).

Members of the 2015-2016 Board of Directors are shown below.

IIW BOARD OF DIRECTORS 2015-2016



Prof. Gary B. Marquis
IIW President
FINLAND



Mr Douglas R. Luciani
Treasurer
CANADA



Dr Baldev Raj
Immediate Past President
INDIA



Mr Chee-Pheng Ang
Vice-President
SINGAPORE



Mrs Hülya Gedik-Sadiklar
Vice-President
TURKEY



Mr Sorin Keller
Director
SWITZERLAND



Prof. Fumiyo Minami
Director
JAPAN



Prof. Américo Scotti
Director
BRAZIL



Mr Jouko Lassila
Director
FINLAND



Mr Ernest D. Levert
Director
UNITED STATES OF AMERICA



Mr Chris Smallbone
Director
AUSTRALIA



Prof. Thomas Böllinghaus
Director
GERMANY



Prof. Yixiong Wu
Director
P.R. OF CHINA



Mr James Guild
IAB Chair
SOUTH AFRICA



Dr Luca Costa
TMB Chair
ITALY



Dr Cécile Mayer
CEO
FRANCE

THE IIW SECRETARIAT 2015

under the management of the CEO



Mrs Noëlle Fauriol
Support to Communications



Mrs Mireille Aubert
Members and
Community Support



Dr Pierre Tran
Technical Publications



Mr Andrew Davis
Standards Programme

THE IAB SECRETARIAT 2015



Mrs Rute Ferraz
IAB Chief Executive



Prof. Luisa Coutinho
IAB Consultant



Mr Italo Fernandes
Systems Manager



Mrs Olga Teixeira
Administration
and Finance Assistant

2015 TREASURER'S REPORT

The year ended in a good position with almost 39 k€ of surplus after tax. From a revenue perspective, the largest variance to budget was the additional revenue realised due to the three new members (Angola, Algeria and Cameroon) joining the IIW family. From an expenditure perspective, several accounts were better than budget. These include reduced travel due to the 2015 Annual Assembly being held in Europe which results in lower travel expenses for the CEO, the choice to have sponsors for the upcoming IIW History Book in lieu of funding by the IIW itself, capital assets that now have been fully depreciated resulting in a negligible depreciation cost in 2015 and finally close control on travel expenses by our CEO and the President. These savings are important as there are challenges receiving annual

membership dues payments from a few Member Countries. Going forward, the platform for the IIW website will need to be upgraded including some additional development to ensure it continues to be a valuable communication vehicle for all IIW members. This will be something that is reviewed by the IIW Board over the 2016 fiscal year. Finally, although the recovery of some provisions recorded in 2013 and 2014 was realised, the association had to record new bad debts in 2015 in an amount close to 10 k€ as well as approximately 8 k€ that was required to be added as irrecoverable debt. Ensuring the IIW receives its membership fees in a timely manner continues to be an important component for the long term sustainability of the IIW and its members.

BUDGET 2015 & follow-up	BUDGET 2014	REALISED 2014	BUDGET 2015*	REALISED 2015*
INCOME				
Membership fees	441,370	444,517	447,992	458,904
Fees from IIW events (A.A.+ Congress)	100,103	101,675	101,082	102,495
Others incomes	11,000	16,482	10,000	7,956
Welding in the World	20,000	20,744	22,000	27,036
Interest from bank accounts	5,000	9,395	5,000	7,816
Funding of IIW History Book (allocated)				46,000
TOTAL	577,473	592,814	586,074	650,207
EXPENDITURE				
Secretariat	438,009	437,311	450,000	463,500
Travelling and event hosting expenses	45,000	30,377	35,000	15,252
Direct costs for meetings and prizes	2,500	6,139	3,000	6,790
Office supplies and computer maintenance	25,000	9,921	2,000	293
Postage and telephone	10,000	11,022	6,500	7,705
Promotion, communication	15,000	24,223	35,000	10,407
IIW website (hosting and maintenance)	8,000	18,285	18,000	20,137
Audit fees and legal fees	10,000	12,873	13,000	16,882
Bank charges	2,000	2,918	2,000	2,099
Straight-line method of depreciation	11,880	11,880	5,000	231
Insurance	3,200	2,487	3,200	2,727
Business Tax	950	994	950	1,012
Other charges				217
Dedicated fund (IIW History Book) to be realised				45,289
TOTAL	571,539	568,431	573,650	592,541
OPERATING RESULT	5,935	24,383	12,424	57,666
BAD DEBTS INVENTORY				
Bad debts recovered				7,369
Provision for doubtful account		-11,451		-9,957
Irrecoverable debt				-7,691
TOTAL	5,935	12,932		-10,279
NET RESULT BEFORE TAX	5,935		12,424	47,387
Tax result	790	1,940	1,864	8,807
RESULT AFTER TAX	5,145	10,992	10,561	38,580

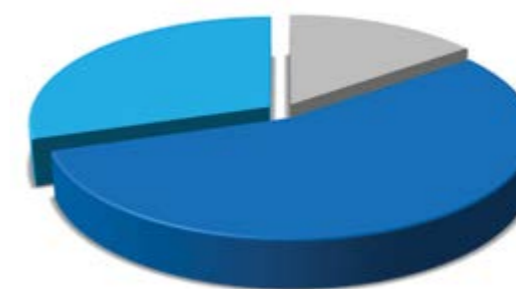
* as at 31 December

SUMMARISED BALANCE SHEET 31 DECEMBER 2015

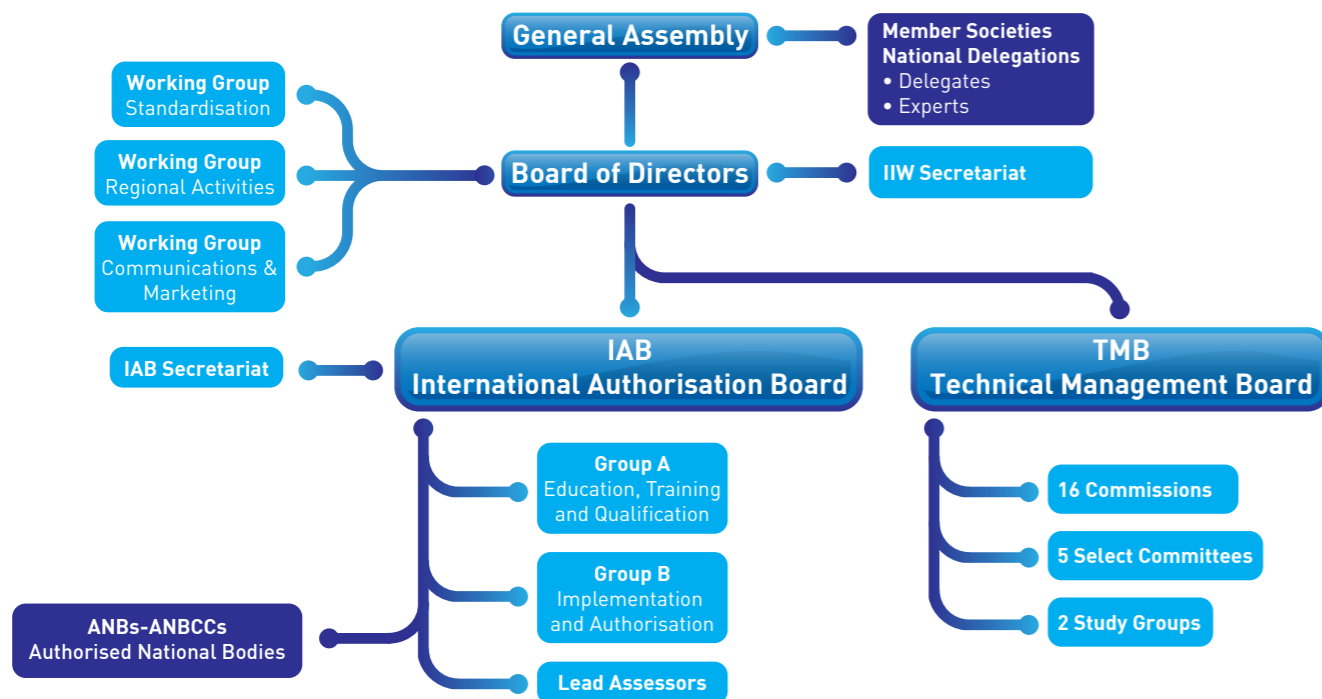
	2015 K€	2014 K€
ASSETS		
Website investments in progress	0	0
Current Assets		
Cash	276	16
Other securities	0	220
Trade receivables	73	38
Tax receivables	34	30
Deferred charges	1	10
	384	314
Fixed Assets		
Other tangible assets	0	0
TOTAL ASSETS	384	314
LIABILITIES AND EQUITY		
Creditors		
Advances and trade deposits	45	
Trade creditors	3	34
Tax and social liabilities	11	
Deferred revenues	4	
Other debts	1	
Cash shortage		
	65	34
NO CURENT LIABILITIES		
Equity Capital		
Accumulated surplus	280	269
Result of the current year	39	11
	319	280
TOTAL LIABILITIES AND EQUITY	384	314

CASH FLOW SITUATION ON 31 DECEMBER 2015 / 271,114 €

- Savings 81,017 €
- Current account 40,097 €
- 5 year deposit 150,000 €



THE IIW ORGANISATION



The IIW was founded in 1948 by the welding institutes or societies of 13 countries that considered it crucial to make more rapid scientific and technical progress possible on a global basis. A far cry from its humble beginnings, the IIW membership today comprises welding associations from 59 countries, with ever more nations continually indicating interest.

IIW MISSION

The IIW's mission is to act as the worldwide network for knowledge exchange of joining technologies to improve the global quality of life.

KEY IIW GOALS

Six key goals have been identified by the Board of Directors and allocated to specific IIW Working Units, as discussed in the following section on the IIW Business Plan.

HOW IS THE IIW FUNDED ?

The IIW is a not-for-profit organisation funded by the Member Countries which pay an annual membership fee, according to a scale designed to reflect, as equitably as possible, the dependence of each country on welding technology. Such subscriptions are modest and cover only a fraction of the cost of running the IIW Secretariat and other associated activities. Further income is derived from the sale of books and other documents and fees from the running of IIW Annual Assemblies and other events.

HOW IS THE IIW RUN?

Each Member Country is represented by a Responsible Member Society which is eligible to vote at the General Assembly. It is the General Assembly which determines the policies and strategies of the IIW, electing the IIW President and the Members of the Board of Directors who direct the affairs of the IIW. The IIW Board of Directors comprises a maximum of 15 voting Directors, from among whom are elected the Officers (President, President-Elect, two Vice-Presidents and the Treasurer). The bulk of the organisation's daily administrative work is managed by a permanent IIW General Secretariat, located in Paris (France), headed by the IIW's Chief Executive Officer.

TECHNICAL MANAGEMENT BOARD (TMB) AND COMMISSIONS: THE BACKBONE OF THE IIW

Since its inception, the IIW has established international groups of specialists (Commissions) to collectively study the scientific phenomena related to welding and allied processes, the various ways in which they could be applied more efficiently in the industrial context, and the avenues through which the information collected could be best communicated. The considerable work achieved by these Commissions, under the coordination of the Technical Management Board (TMB), is considered an invaluable source of technical information for engineers, researchers and industry the world over.

The IIW's database of technical documents presently references over 17,000 documents and is the fruit of the substantial collective contributions of the experts representing the 59 Member Countries of the IIW since its foundation in 1948.

EDUCATION AND CERTIFICATION

In 1999, the IIW launched an international programme for the qualification of personnel involved in welding operations. Under the supervision of the International Authorisation Board (IAB), this scheme allows:

- IIW Authorised National Bodies (ANBs) to deliver the Diplomas of International Welding Engineers (IWE), Technologists (IWT), Specialists (IWS), Practitioners (IWP), Inspectors (IWI) and Welders (IW), amongst others;
- IIW Authorised National Bodies for Company Certification (ANBCCs) to deliver certification according to ISO 3834 *Quality Requirements for Fusion Welding of Metallic Materials*.

The day-to-day work of the IAB is handled by the IAB Secretariat, Working Group A (Education, Training and Qualification)

and Working Group B (Implementation and Authorisation).

Effectively, holders of IWE, IWT and IWS Diplomas are considered able to be Responsible Welding Coordinators, according to the standard, ISO 14731 *Welding Coordination: Tasks and Responsibilities*. Qualifications of International Welding Inspection Personnel (IWIP) are referenced in ISO 3834.

Due to the continually increasing global use of the ISO 14731 and ISO 3834 standards, numerous countries are taking advantage of the IIW's globally harmonised international programmes.

OUTPUT OF THE IIW

On the occasion of each meeting, documents are submitted for discussion by the IIW's Technical Working Units. Subsequently, these documents may be recommended for publication, in the IIW's scientific journal, *Welding in the World: The International Journal of Materials Joining*. Papers are peer-reviewed by an international group of experts under the guidance of an Editorial Board prior to publication. Apart from *Welding in the World*, the IIW also publishes:

- standards and technical reports developed in association with ISO;
- position statements, guidelines and best practice statements;
- welding-related technical references, books and e-books;
- conference and congress proceedings;
- multilingual dictionaries and thesaurus including up to 20 languages.

All of these documents may be consulted and/or downloaded from the IIW website, www.iiwelding.org.

ANNUAL ASSEMBLIES

Since the birth of the IIW in 1948, Annual Assemblies have been held on the invitation of a Member Country. During this period, a General Assembly is held and three days are dedicated to simultaneous sessions of the Technical Commissions and other Working Units.

An International Conference on a pre-determined theme is also organised on this occasion over a two-day period.

As a rule, more than 40 countries are represented at the Annual Assemblies by about 450 delegates and experts, in addition to approximately 200 accompanying persons. Attendance at meetings of the IIW Working Units is restricted to those appointed by their National Delegations, whereas any interested persons may register for the IIW International Conference. The average attendances for the years 2010 to 2015 reached 800 persons.

INTERNATIONAL CONGRESSES

In order to implement its global strategies, the IIW holds International Congresses around the world with a view to realising the following objectives, the:

- exposure of industry delegates of the host countries to the IIW's work;
- identification of the needs of the surrounding nations in the region and the launch of programmes under the aegis of the IIW;
- involvement of other international organisations such as UNIDO, IAEA and EU in the Congresses;
- presentation of papers by authors from neighbouring developing countries;
- establishment of regional Commissions of the IIW which could then provide input to the main IIW Commissions.

These very successful International Congresses are growing in popularity and are multiplying annually.

BENEFITS FOR IIW MEMBERS

IIW Members benefit tremendously from the collective knowledge of the IIW in various areas, specifically:

- appropriate welding technology;
- education, training, qualification and certification;
- health and safety of welding personnel.



IIW BUSINESS PLAN

MISSION: To act as the worldwide network for knowledge exchange of joining technologies to improve the global quality of life.

In July 2005, the IIW Board of Directors agreed to review and update the IIW Business Plan, Strategic Plans and Operational Plans of all IIW Administrative and Working Units and the Secretariat.

In order to reflect the constant evolution of the IIW and the establishment of new Working Units, the Business Plan

is renewed and updated annually for a 5-year period. All IIW Technical and Administrative Working Units are involved in the future planning and implementation process.

For the current 2013-2017 edition, a process of involvement and consultation with all participants in the IIW was followed for the development, finalisation and execution of all appropriate plans. This edition features a unified Strategic Plan, presented at the Technical Mana-

gement Board level, and applicable to every Technical Working Unit. The Working Units are specifically defined by their individual Terms of Reference.

Based on the IIW's Mission, Goals and SWOT analysis of the needs and benefits required by stakeholders, the following approach has resulted.

The IIW Board of Directors has developed a Strategic Plan with six Goals, delegated respectively to the:

- Technical Management Board (TMB)

- International Authorisation Board (IAB)
- Working Group-Regional Activities (WG-RA)
- Working Group-Communications and Marketing (WG-COM&MARK)
- Working Group-Standardisation (WG-STAND)
- IIW Secretariat.

Therefore, each Goal in the Board of Directors' Strategic Plan becomes the Goal of each of the above-mentioned Units. Each Unit has four Objectives to be realised in order to achieve its respective Goal, with each Objective being attainable via various well-defined strateg-

ies. These strategies are presented in a plan-on-a-page format.

Since the Technical Working Units (Commissions, Select Committees and Study Groups) also report to the TMB, each Working Unit has the same Goal and four Key Objectives as the TMB. However, each Unit may have different strategies to achieve each of these Objectives. Each Study Group and Select Committee has its own unique Goal, Objectives and Strategies, but linked back to the TMB's Strategic Plan. Where feasible, it may have been convenient to adopt the same Goal and Objectives as the TMB.

As a special case, Commission XIV (Education and Training) has had its Strategic Plan dovetailed in with that of the IAB. Commission XIV provides the link between all the other Working Units and the IAB.

Each IIW Unit has thus created a Strategic Plan-on-a-Page. This includes the Unit's Goal, the four Objectives to achieve that Goal and the strategies that are in place to realise each Objective. Based on the Unit's Strategic Plan-on-a-Page, an operational action plan has been drawn up to illustrate how the unit will realise its Objectives.



BENEFITS OF THE IIW BUSINESS PLAN

- To continually clarify the thoughts and intentions of all IIW participants as a roadmap for the efforts to create a successful IIW.
- To assist a non-IIW person in understanding why the IIW exists, what is expected from it, how it will realise its expectations and the potential role for such a person in the IIW. Such people could include, amongst others:
 - a new or potential participant in the IIW Administrative and Working Units
 - a prospective or new member country
 - Government and Aid Agency representatives
- To improve the image of both welding and the IIW by showing people that the IIW is a progressive, modern, pro-active, dynamic organisation, worthy of support and involvement.
- To determine future IIW resources.

IIW Strategic Plan 2013-2017

GOAL	Identify, create, develop and transfer best practices for sustainable development in a sustainable environment	Identify, develop and implement the IIW Education, Training, Qualification and Certification programmes on a global basis	Promote IIW and its Member Countries in all regions of the world to the mutual benefit of all	Assist in the implementation of IIW's output	Assist in the formulation and preparation of international standardisation documents	Provide quality services to IIW, IIW Member Societies and other organisations
Delegated Unit	TECHNICAL MANAGEMENT BOARD (TMB)	INTERNATIONAL AUTHORISATION BOARD (IAB)	WORKING GROUP REGIONAL ACTIVITIES (WG-RA)	WG COMMUNICATIONS & MARKETING (WG-COM&MARK)	WORKING GROUP STANDARDISATION (WG-STAND)	IIW SECRETARIAT
Objective A	Initiate and develop world's best practices	Provide the administrative, secretarial, marketing and promotion duties for the IIW ETQ&C programmes	Promote the holding of IIW supported events throughout the regions of the world	Analyse and promote publication of outcomes of the Administrative and Working Units	Continue developing, in collaboration with ISO/TC44, globally relevant international standards and technical specifications where existing standards in the field of welding do not meet market needs	Grow and maintain a financially sound organisation that provides the required resources
Objective B	Organise the exchange of scientific and technical information and provide an environment to encourage and sustain the transfer of knowledge	Identify and develop the IIW Education, Training and Qualification and Certification programmes	Introduce the IIW Weld-Care programme for take-up by developing countries	Monitor and improve the IIW electronic communications tools	Develop management guides and technical reports that promote the use of international welding standards in both industrially developed and industrially developing countries	Establish and implement the membership policy
Objective C	Oversee IIW standardisation activities	Implement and authorise the IIW Education, Training, Qualification and Certification programmes	Promote and market IIW in different regions of the world	Provide a state-of-the art marketing and communications network	Find solutions that overcome conflicts between national and/or regional standards so that globally-relevant standards can be produced	Produce and market IIW products and services
Objective D	Encourage and support a safe, healthy and environmentally friendly world	Initiate, develop and create harmonised teaching methods, for education and training	Harmonise IIW efforts with other organisations' efforts in each region	Initiate and develop marketing tools	Retain ISO Council confidence in the ability of the IIW to act as an international standardisation body	Provide optimum administrative services



Dr Luca Costa
TMB Chair
ITALY

GOAL: To identify, create, develop and transfer best practices for sustainable development in a sustainable environment

SCIENTIFIC EXCHANGE AND TRANSFER OF KNOWLEDGE

With the vision of improving the global quality of life through optimum use and innovation of welding and allied technologies, IIW scientific and technical activities are based on the work of more than 20 Working Units (Commissions, Select Committees and Study Groups). They serve as global centres of information exchange in their respective disciplines and the participants, experts and professionals from industry, research institutes and the world's leading universities, all unite under the IIW flag. International participation is increasing year-by-year in parallel with the growth in IIW membership. More than 100 IIW Working Unit meetings and events take place every year, about half in association with the Annual Assembly and the remainder in intermediate sessions, including regional International Conferences, Congresses, Colloquia and Symposia. During meetings and events, presentations and discussions revolve around technical innovations, scientific progress and strategic or standardisation issues related to the working programmes of each unit. Knowledge is shared and transferred and, of equal importance, strong international networks are formed.

GLOBAL BEST PRACTICES

Many units pursue ambitious programmes to develop IIW Best Practice documents, IIW Recommendations and Guidelines and to publish papers in the IIW *Welding in the World* journal. This output is the result of the collaborative work among experts representing scientific and technical disciplines from every corner of the world.

These documents are in great demand with industry where the IIW logo is known to be a symbol of quality and scientific and engineering excellence. They also serve as a key starting point for new international standards and fields of research. The work done within IIW becomes part of the universally recognised knowledge bank of welding and allied technologies, including preheat calculation methods, calibration blocks for NDT, recommendations of fatigue, testing methods for creep assessment of materials, and many more.

STANDARDISATION

The IIW is a standardising body approved by the International Organization for Standardization (ISO) to develop standards in the field of welding and related processes, with about a third of the Working Units involved in standardisation activities. In many cases, draft standards are submitted to Working Unit experts for comment or discussion. Other units have specialist groups/sub-units working closely with ISO to develop and draft new standards. Common areas of activity are classification of welding consumables, resistance and friction stir welding, non-destructive evaluation of welds, terminology, health and safety.

HEALTH, SAFETY AND ENVIRONMENT

One specialised IIW Working Unit provides regular best practice documents on the direct and imminent effects of materials joining and related activities on workers' health and safety and their impact on the environment. This is a unique forum for the exchange

The Technical Management Board (TMB) supports and coordinates the activities of the IIW's 23 Technical Working Units and is pursuing four main objectives to:

- initiate and develop global best practices;
- organise the exchange of scientific and technical information and provide an environment to encourage and sustain the transfer of knowledge;
- oversee IIW standardisation activities;
- encourage and support a safe, healthy and environmentally friendly world.

of information from areas of expertise ranging from welding engineering and chemistry to industrial hygiene and medicine. Other Working Units, of course, continuously contribute to these same objectives through their work by, for example, decreasing the failure rates of welded joints through improved design, fabrication, weld inspection and assessment, and by reducing the use of raw materials and energy through more efficient fabrication processes.

YOUNG PROFESSIONALS

Graduate students and young professionals also make outstanding contributions and the participation of these future leaders in IIW activities is increasingly promoted and encouraged. An effective Young Professionals programme was launched in 2013 and includes targeted international conferences, colloquia on research cooperation, and specific support for the participation of young people during the various IIW events, such as the 2015 Annual Assembly in Helsinki. The number of young students and professionals engaged in IIW activities has been increasing in the last years, with a significant numbers of technical contributions to the activities of Working Units.

COMPOSITION OF THE TECHNICAL MANAGEMENT BOARD FOR 2015-2016

Appointed by the Board of Directors

Dr Luca Costa (Italy), Chair
Mr Stephan Egerland (Austria)
Prof. Patricio Mendez (Canada)
Prof. Vladimir Ponomarov (Brazil)
Dr Michail Karpenko (New Zealand)
Asst Prof. Dr Tuba Karahan (Turkey)

Prof. John C. Lippold
(United States of America)

Elected Representatives of the Working Units

Prof. Veli Kujanpää (Finland)
Dr Gerhard Posch (Austria)
Prof. Fumiyoshi Minami (Japan)
Prof. Américo Scotti (Brazil)
Prof. Dr-Ing. Michael Rethmeier
(Germany)
Mr Mathias Lundin (Sweden)

IIW PUBLICATIONS

IIW technical output is made available through a variety of media for use in academic and research environments, by industry and end users, and by IIW Member Societies for the support of local industry and workforce and economic development.

Short abstracts of all technical publications are included in the IIW Technical Database, which is freely accessible on the IIW website www.iiwelding.org. IIW's virtual library constitutes a unique online resource dedicated to welding and related information.

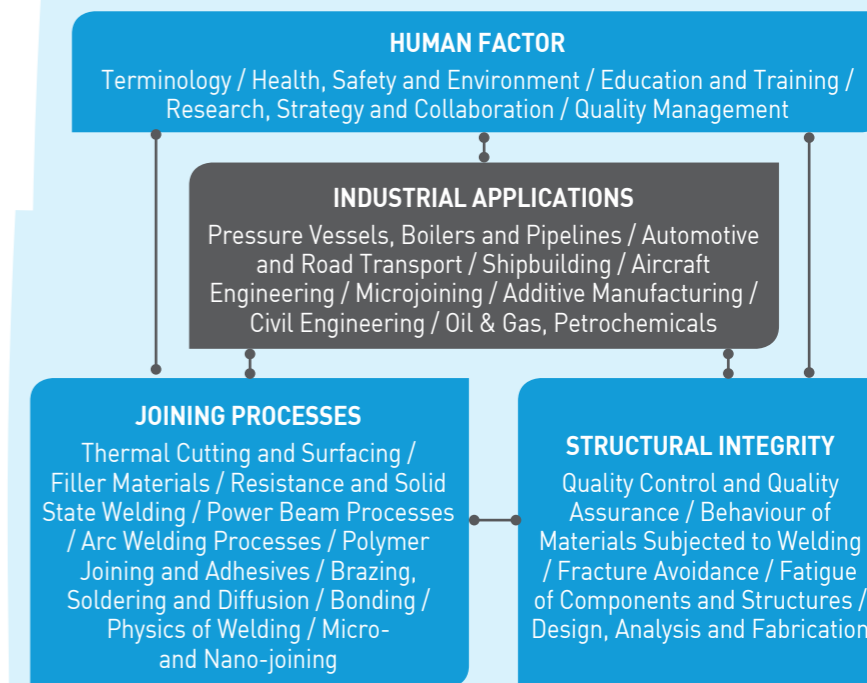
The IIW flagship journal *Welding in the World* publishes the results of the most significant Working Unit contributions to our knowledge of welding and joining, making them available to the scientific and industrial world. The report from the Editorial Board on page 35 gives more details of the success of the journal. IIW is also engaged in creating a vision for future years based on sustainable fabrication, optimising the positive impact from welding and allied technologies, and supporting industries and consumers to improve the quality of life for people around the world. The IIW White Paper, first published in 2012 and periodically updated, supports this vision and focuses on IIW best practices as progressive tools for both developed and emerging nations.

TECHNICAL WORKING UNITS

TRANSFERRING KNOWLEDGE TO INDUSTRY

In order to develop world-leading products, industries must be able to access knowledge and integrate expertise in the many fields of materials joining. Focus areas of the 23 Technical Working Units can be divided generally into Processes, Structural Integrity and Industrial Applications, and Human Factors.

One of the tremendous strengths of the IIW is the opportunity for seamless cooperation between the different focus groups, drawing together a broad spectrum of relevant experts to focus on current challenges and issues in industry and to develop technical outputs to proactively support these needs.



The IIW's Technical Working Units operate as 'think tanks' and engines for technical progress for scientists, engineering and other specialist personnel involved in the research, development and application of materials joining technologies. This strong network of experts features engineers and academics from major universities and research institutes worldwide, as well as top R&D personnel and executives from leading global companies. Within the IIW framework, the world's finest minds exchange their know-how and experience, as they discuss and present about the latest technical innovations and pioneering advances. The best papers presented during the working sessions are published in the IIW's flagship peer-reviewed journal, *Welding in the World*, registered in the prestigious Thomson Reuters Science Citation Index Expanded™. These specialists also collaborate to develop Recommendations, Guidelines, Best Practices and ISO

Standards, to improve the global quality of life through optimum use of welding and allied technologies. Under the guidance and coordination of the TMB, the Technical Working Units examine all key aspects of materials joining that are of prime relevance to industry. The extensive work programmes address all significant on-going issues and current 'hot topics' to ensure the efficient transfer of knowledge and solutions to industry. Apart from current developments in the various joining processes, the diverse focus areas include fitness-for-service, health and safety, metallurgy, weldability, inspection, NDT, design, repair and life extension, fracture mechanics, quality control and standardisation. Industrial sectors which benefit directly from IIW's knowledge transfer include shipbuilding, air and rail transportation, construction and infrastructure, wind/nuclear energy, oil and gas, automotive, steel production, consumables, mechanical engineering and process equipment, among others.



KEY TO IAWQI WORKING UNITS

COMMISSION:

A Commission covers a technical field seen as being central to the IAWQI, with the goal of identifying, creating, developing and transferring global best practices for sustainable development in a sustainable environment. The work of a Commission is a long-term or continuous activity and operates without any time limit. The creation of a Commission is subject to the approval of the IAWQI General Assembly.

SUB-COMMISSION:

A Sub-Commission operates within the scope and structure of a Commission, specialising in one or more segments of the technical field delegated to the Commission. The establishment and operational lifetime of a Sub-Commission are within the purview of the Commission and subject to the endorsement of the TMB.

COMMISSION WORKING GROUP:

A Commission Working Group operates within the scope and structure of a Commission and is assigned the task of identifying, creating, developing and/or transferring a specific global Best Practice document, Guideline or Standard. A Working Group is not a permanent entity. The establishment and operational lifetime of a Working Group fall under the authority of the Commission subject to the endorsement of the TMB.

SELECT COMMITTEE:

A Select Committee is dedicated to identifying, creating, developing and transferring global best practices relevant to a specific industrial sector identified as vital to the IAWQI. The work of a Select Committee is a long-term or continuous

activity and operates without any time limit and implies coordination with other Working Units. The creation of a Select Committee is subject to the approval of the IAWQI General Assembly.

STUDY GROUP:

A Study Group deals with one particular scientific, strategic, or political aspect of a technical field identified as significant to the IAWQI. The work of a Study Group is a long-term or continuous activity and operates without any time limit. The creation of a Study Group is subject to the approval of the IAWQI General Assembly.

Pictured above: Joint Intermediate Meeting of C-IV Power Beam Processes, C-XII Arc Welding Processes and Production Systems, and SG-212 The Physics of Welding held in 2015 in Wels, Austria.



Chair: Prof. Veli Kujanpää
Finland

COMMISSION I: ADDITIVE MANUFACTURING, SURFACING AND THERMAL CUTTING

Sub-Commissions and Working Groups:

C-I-C / Surfacing
C-I-E / Thermal Cutting and Related Processes
C-I-F / Additive Manufacturing

Commission I focuses on thermal processes such as additive manufacturing (AM), surfacing, thermal cutting and allied processes, especially with respect to a better scientific understanding and the practical applications of these processes. Scientific and technical contributions by Commission members include modelling, mechanical properties of end-products, production planning and quality assurance, for both on-line and off-line processing. In addition, improvements in the

relevant equipment are continuously being reviewed and monitored. Recently, a major emphasis has been on the newest developments in AM and laser cutting. AM covers a very broad set of processes and material types and is rapidly becoming an industrial process in need of documented research and properties development. The work on AM will be made in very close cooperation with other Working Units interested in the subject.



Chair: Dr Gerhard Posch
Austria

COMMISSION II: ARC WELDING AND FILLER METALS

Vice-Chair: Prof. Arun Kumar Bhaduri (India)

Sub-Commissions and Working Groups:

C-II-A: Metallurgy of Weld Metal
Chair: Dr Thomas Kannengiesser (Germany)
C-II-C: Testing and Measurement of Weld Metals
Chair: Dr Zhuyao Zhang (United Kingdom)
C-II-E: Standardisation and Classification of Weld Filler Metals
Chair: Mr David Fink (United States of America)

Commission II identifies, develops and transfers scientific and technical information, possibly leading to international standards or best practices, with respect to arc welding and filler metals. Its principal areas of focus include the metallurgy of weld metal (e.g. hydrogen in weld metal, chemical reactions, constitution of weld metal and weld metal cracking), as well as the testing and measurement of welds (e.g. ferrite in high-alloyed weld metal, corrosion testing and testing of weld metal for hot cracking and micro-fissuring). It is also involved in standardisation of welding consumables, including the coordination of the evaluation of ISO standards which are under systematic review, assuming responsibility for appropriate testing standards and conducting round-robin tests as may be required in support of the general work programme. These activities have greatly contributed to the understanding, acceptance, classification and adequate use of welding consumables.



Chair: Dr -Ing.
Jorge dos Santos
Germany

COMMISSION III: RESISTANCE WELDING, SOLID STATE WELDING AND ALLIED JOINING PROCESSES

Sub-Commissions and Working Groups:

C-III-A: Resistance Welding and Allied Processes
Chair: Dr Jerry Gould (United States of America)
C-III-A-WGA2: Monitoring and Control
Chair: Dr-Ing. Miro Uran (Slovenia)
C-III-B: Friction-based Processes
Chair: Prof. Dr-Ing. Jorge dos Santos (Germany)
C-III-B-WGB1: Friction Stir Welding Standardisation
Chair: Dr Axel Meyer (Germany)
C-III-B-WGB4: Friction Stir Spot Welding Standardisation
Co-Chairs: Prof. Dr-Ing. Jorge dos Santos (Germany)
and Mr Marc Petersen (United States of America)
C-III-WGS: Standardisation
Chair: Dr Kin-ichi Matsuyama (United States of America)

Commission III provides a unique forum for open discussion, where highly-competent international experts exchange scientific and technical information and transfer knowledge about resistance welding, solid state welding and allied joining processes. In recent years, topics have included joining of dissimilar thin sheet materials,

joining in automotive industries, computer simulation of joining processes and friction stir welding, including both modelling and weldability. The Working Unit also assists in the formulation and preparation of new international standards, with a view to encouraging and supporting a safe, healthy and environment-friendly world.



Chair: Dr Herbert Staufer
Austria

COMMISSION IV: POWER BEAM PROCESSES

Sub-Commissions and Working Groups:

C-IV-A: Laser Welding Processes

Chair: Prof. Seiji Katayama (Japan)

C-IV-B: Electron Beam Processes

Chair: Mr Ernest D. Levert (United States of America)

C-IV-C: Laser Hybrid Arc Welding

Chair: Dr-Ing. Claus Thomy (Germany)

Commission IV operates like a 'think tank' for scientists, engineering and technical personnel who are involved in the research, development and application of power beam processing technologies including laser, laser-hybrid and electron beam welding processes. These processes are in a continuous state of rapid development and advancement as new technologies and innovations offer a nearly unlimited array of welding, joining and processing opportunities.

Technical and scientific presentations by Commission members give attention to new processes, process modelling, mechanical properties of end-products and environmental health and safety. The Commission is especially active in the study of the application of power beam processes to novel and otherwise difficult-to-weld materials like high-strength steels, specialty stainless steels, light alloys, dissimilar materials and coated products.



Chair: Dr Eric Sjerne
Canada

COMMISSION V: NON-DESTRUCTIVE TESTING AND QUALITY ASSURANCE OF WELDED PRODUCTS

Sub-Commissions and Working Groups:

C-V-A: Radiographic-Based Weld Inspection Techniques

Chair: Prof. Dr rer. nat. Uwe Ewert (Germany)

C-V-C: Ultrasonic-Based Weld Inspection Techniques

Chair: Mr Daniel Chauveau (France)

C-V-C-b: Phased Array Calibration Block Standardisation

Chair: Mr Daniel Chauveau (France)

C-V-C-c: Long Range Guided Wave Standardisation

Chair: Dr Francesco Bresciani (Italy)

C-V-E: Weld Inspection Based on Electric, Magnetic and Optical Techniques

Chair: Dr rer. nat. habil. Marc Kreutzbruck (Germany)

C-V-E-a: MMM Technique

Chair: Dr Anatoly Dubov (Russian Federation)

C-V-E-b: Transfer of GOST Standard R 52330-2005 to ISO 24497

Chair: Dr rer. nat. habil. Marc Kreutzbruck (Germany)

C-V-F: NDT Reliability Including Simulation of NDT Techniques

Chair: Mr Pierre Calmon (France)

C-V-F-a: Best Practices for the Use of Simulation for POD Curves for UT Weld Inspection

Chair: Mr Pierre Calmon (France)

Commission V has the challenging task of monitoring, reviewing and contributing to all international standardisation activities related to non-destructive testing (NDT) and evaluation of welded structures. The Commission has specialist groups devoted to the fields of: radiographic weld inspection; ultrasonic weld inspection; electric, magnetic and optical weld inspection; and NDT reliability including simulation. Recent successes of the Commission include: major contributions to ISO standards

dealing with metal magnetic memory, major contributions to simulation of NDT technique as applied to probability of detection studies, beginning the process of guided wave ultrasonic testing standardisation and completion of the IIW Phased Array Handbook. The Commission also seeks to impact and develop training and qualification programmes for NDT personnel.



Chair: Dr H. Glenn Ziegenfuss
United States of America

COMMISSION VI: TERMINOLOGY

Vice-Chair: Ms Sheila Thomas
(United Kingdom)

Sub-Commissions and Working Groups:

WG-1 IIW Thesaurus

Chair: Ms Sheila Thomas (United Kingdom)

Commission VI is responsible for the development, collection and maintenance of welding terminology using modern computer database software, with capability for multiple languages. Terminology is obtained from existing international, regional and national standards in order to avoid duplication of work, and is made available in print or electronic media.

The Commission completed its work on three parts of ISO/TR 25901 *Welding and Allied Processes – Vocabulary* which were published in the first quarter of 2016 as Route I drafts. Working Group 1 continued updating the IIW Thesaurus to ensure that standardised terminology and keywords in the latest subject areas are included.



Chair: M.D. Ph.D. Wolfgang Zschiesche
Germany

COMMISSION VIII: HEALTH, SAFETY AND ENVIRONMENT

Vice-Chair: Mr John Petkovsek (United States of America)

Health, safety and environment are considered key issues for the international welding community and why Commission VIII has been operating since the foundation of IIW in 1948 with a mandate to:

- act as interdisciplinary network for the exchange of knowledge in the field of health and safety in welding;
- regularly review the general trends in the exposure to physical and chemical agents which may affect health and safety in welding;
- share information on national laws, rules and regulations related to health, safety and environment in welding;
- develop best practices for the management of health, safety and environment in welding.

The Commission is mainly devoted to the study of the phenomena occurring during welding

which may potentially affect the health and safety of welders and the environment, as well as to the development of technical guidance for the correct management of the fabrication process. To reach this ambitious goal, members have a wide range of expertise, including medicine, epidemiology, chemistry, welding science and technology. Consequently, the Commission also acts as an international forum for exchange of high level knowledge with the support of members coming from all the areas of the world, including Europe, the Americas, Africa, Asia and Australia.

The Commission's activities include standardisation, production of Best Practices and IIW statements on specific matters (e.g. IIW Statement on Lung Cancer and Arc Welding of Steels), as well as the review of international research and national regulations on the respective issues.



**Chair: Prof.
Madeleine Du Toit**
Australia

The focus of Commission IX encompasses the various types of behaviour of metals when subjected to welding and the resulting influence on the integrity of welded joints and components during service. Strategically, weldability and the service integrity of joined components are regarded as interactions of the material with the introduced loading and the specific design.

The scientific and technological work in Commission IX is focused on metallic materials, i.e. is based on the metallurgy of welded joints, covering their microstructure, properties and performance. Special emphasis is given to the occurrence and avoidance of imperfections, damage

and failures during welding production and manufacturing, as well as during service of welded joints and components. These particularly include hot and cold cracking, high and low temperature, as well as aqueous and gaseous corrosion of welds, creep and fatigue.

The Working Unit has four Sub-Commissions, focussing on the various steel types, CRAs and on non-ferrous metals, all having a respective working programme. Due to the large variety of metals and their interactions with the design and welding processes, the Commission collaborates with all other Commissions oriented towards welding processes or structural design.

COMMISSION IX: BEHAVIOUR OF METALS SUBJECTED TO WELDING

Vice-Chair: Prof. Hee-Jin Kim (R.O. Korea)

Sub-Commissions and Working Groups:

C-IX-C: Creep and Heat-resistant Welds

Chair: Prof. Dr-Ing. Peter Mayr (Germany)

C-IX-H: Weldability of Stainless Steels, Nickel-based Alloys and Heat-resisting Steels

Co-Chairs: Dr Elin Marianne Westin (Austria) and Dr María-Asunción Valiente Bermejo (Spain)

C-IX-L: Low Alloyed Steel Welds

Co-Chairs: Assoc. Prof. Dipl.-Ing. Dr techn Norbert Enzinger (Austria) and Prof. Toshihiko Koseki (Japan)

C-IX-NF: Weldability of Non-ferrous Materials

Chair: Prof. Dr-Ing. Jorge dos Santos (Germany)

Vice-Chair: Dr Carl E Cross (United States of America)

C-IX-WG1 Mathematical Modelling of Weld Phenomena

Chair: Prof. Christoph Sommitsch (Austria)

COMMISSION X: STRUCTURAL PERFORMANCES OF WELDED JOINTS - FRACTURE AVOIDANCE

Sub-Commissions and Working Groups:

C-X-A: Welding Residual Stresses in Thick Steel Structures

Chair: Prof. Jeong-Ung Park (R.O. Korea)

Commission X aims to establish a practical procedure for assessing the strength and integrity of welded structures through design as well as in service with known or assumed flaws. Attention is paid to the role and influence of welding residual stresses, strength mismatch between base and weld metals, and heterogeneity in toughness of welds.

Recent activity has focused on the development of a practical guideline for Fitness-for-Service (FFS) assessment for welded components

containing a flaw and damage, which includes stress/strain-based assessment, constraint analysis and toughness testing procedure for welds. With further development of FFS for welds, Commission X faces the challenge of advanced design of transport vehicles and infrastructure such as energy plants, pipelines, bridges and buildings constructed with high performance steels and high welding technologies.



**Chair: Prof. Dr-Eng.
Fumiyoshi Minami**
Japan



Chair: Dr Teresa Melfi
United States of America

COMMISSION XI: PRESSURE VESSELS, BOILERS AND PIPELINES

Sub-Commissions and Working Groups:

C-XI-A: Correlation of Toughness Data

Chair: Prof. Dr Sonja Felber (Austria)

C-XI-E: Transmission Pipelines

Chair: Eur. Ing. EWE Christoph Gerritsen (Belgium)

C-XI-H: Performance of Welds for Hydrogen Service

Chair: Prof. Dr Bilal Dogan (United States of America)

Commission XI and its Sub-Commissions deal with any aspects of pressure vessels and pipelines that can be impacted by welding throughout their life cycle. Commission XI brings together a unique mix of regulators, fabricators, researchers, owners, material suppliers

and contractors. This group often collaborates with other IIW Technical Commissions to apply their work toward the design, fabrication, life prediction and failure prevention of components, vessels and pipelines.



**Chair: Prof. Dr-Eng.
Yoshinori Hirata**
Japan

COMMISSION XII: ARC WELDING PROCESSES AND PRODUCTION SYSTEMS

Vice-Chair: Prof. John Norrish (Australia)

Sub-Commissions and Working Groups:

C-XII-A: Sensors and Control

Chair: Dr Zengxi Pan (Australia)

C-XII-B: Arc Welding Processes

Chair: Mr Stephan Egerland (Austria)

Commission XII focuses on arc welding processes and production systems for promoting better practical applications in various industrial fields. Scientific and technical contributions by Commission members emphasise sensors and process control, advanced arc welding process and underwater welding, production systems and applications, as well

C-XII-C: Production Systems and Applications
Chair: Mr Satoru Asai (Japan)

C-XII-D Underwater Engineering

Chair: Prof. Ian Richardson (The Netherlands)

C-XII-E: Quality and Safety in Welding

Chair: Prof. Dr Chuansong Wu (P.R. of China)

as quality control and safety of arc processes. Together with Study Group-212, the Commission works to establish more reliable welding and joining technologies with higher productivities through a deep understanding of the physical phenomena governing the arc welding processes.



Chair: Prof. Kenneth A. MacDonald
Norway

COMMISSION XIII: FATIGUE OF WELDED COMPONENTS AND STRUCTURES

Vice-Chair: Prof. Zuheir Barsoum (Sweden)

Sub-Commissions and Working Groups:

C-XIII-WG1: Fatigue Testing and Evaluation of Data for Design

Chair: Dr Guy Parmentier (France)

C-XIII-WG2: Techniques for Improving the Fatigue Strength of Welded Components and Structures

Chair: Assoc. Prof. Dr Zuheir Barsoum (Sweden)

C-XIII-WG3: Stress Analysis

Chair: Prof. Dr-Ing. Wolfgang Fricke (Germany)

C-XIII-WG4: Effects of Weld Imperfections on Fatigue Strength

Chair: Mr Bertil Jonsson (Sweden)

C-XIII-WG5: Life Extension of Welded Structures by Repair, Retrofitting and Structural Monitoring

Chair: Prof. Dr-Ing. Takeshi Mori (Japan)

C-XIII-WG6: Residual Stress Effects in Fatigue

Chair: Dr Thomas Nitschke-Pagel (Germany)

JWG XIII-XV: Fatigue Design Rules

Chair: Prof. Dr-Ing. Adolf Hobbacher (Germany)

Technical presentations and discussions in Commission XIII focus on new scientific results and the application of innovative technologies to avoid fatigue failures in welded structures. The Working Unit is currently developing several new science-based guidelines that can be applied to challenging design and life extension cases, e.g. IIW Guideline for the Assessment of Weld Root Fatigue and Retrofitting Engineering for Fatigue-Damaged Steel Bridge Structures. Together with SC-QUAL, the Commission is developing IIW Guidelines on Weld Quality in Relationship to Fatigue Strength. A guideline for post-weld fatigue strength improvement of welded structures in high-

strength steel and for implementing high frequency mechanical impact treatment as a means of improving the fatigue strength of demanding welded components and structures is also being developed.

The experts that contribute to Commission XIII have developed a strong network, combining the interests of leading global companies and major international universities and research institutes. Industries which benefit from Commission XIII publications include shipbuilding, air and rail transportation, bridges and infrastructure, offshore, automotive, mechanical engineering and process equipment.



Chair: Mr Christopher Smallbone
Australia

COMMISSION XIV: EDUCATION AND TRAINING

Commission XIV links closely with the IIW IAB and all Member Societies, and actively examines ways to address the shortage of competent welding personnel worldwide. This is seen as a keystone in the development of a country's National Welding Capability (NWC) and the improvement of global quality of life. The Commission is playing the lead role in the ETQ&C aspects of the Working Group Regional Activities project 'Establishing a National Welding Capability'.

Member Countries are invited to submit their training resources to be shared amongst all IIW ANBs and consequently, to all Member Country IIW ATBs. This will advance the promotion of standardisation and also avoid duplication, as well as assist new IIW ANBs and developing countries in particular.

There are some universal challenges involving teaching methods, instructors and students and two Working Groups have been established to examine the range of new tools and methodologies that are available to educators. Workshops are held to discuss and demonstrate modern training techniques such as digital training, welding simulation, virtual welding and live weld monitoring and to assess their value for welder training and education. At the same time, this Working Unit has also prioritised the enhancement of the image of welding as a career, and the promotion of welding as a career, and shares media and resources from IIW Members to this end. These approaches are geared to become key strategies, to be included in the Best Practices section of the Commission's Strategic Plan.



Chair: Mr Robert E. Shaw
United States of America

COMMISSION XV: DESIGN, ANALYSIS AND FABRICATION OF WELDED STRUCTURES

Sub-Commissions and Working Groups:

C-XV-A: Analysis

Chair: Prof. Kyong Ho Chang (R.O. Korea)

C-XV-B: Design

Chair: Mr Douglas Hawkes (Australia)

C-XV-C: Fabrication

Co-Chairs: Dr Stefano Botta (Italy) and Prof. Dr-Eng. Masahito Mochizuki (Japan)

C-XV-D: Planar Structures

Chair: Dr Koji Azuma (Japan)

C-XV-E: Tubular Structures

Chair: Prof. Dr-Ing. Thomas Umenhofer (Germany)

C-XV-F: Economy

Chair: Prof. Dr Karoly Jarmai (Hungary)

JWG XIII-XV: Fatigue Design Rules

Chair: Prof. Dr-Ing. Adolf Hobbacher (Germany)

Commission XV comprises experts from several disciplines related to the design, analysis and fabrication of welded structures, including buildings, bridges, offshore structures and equipment, built of structural steel, stainless steel, and aluminium. The Commission is organised into six Sub-Commissions: Analysis, Design, Fabrication, Planar Structures (buildings and bridges), Tubular Structures (both onshore and offshore), and Economy, forming a matrix to facilitate exchange between specific technical topics and their applications in welded structures. In addition, there is a key effort to facilitate the exchange of information and possible harmonisation regarding the national standards used for welded structures. Recent Commission activities have focused on design guidelines for welded structures subjected to seismic, impact or blast loads, weld design and the welding of high-strength structural steels, advanced welding processes in the fabrication of structural

steel, fabrication quality requirements including the influence of flaws, welding residual stresses and distortion measurement, weld joint preparation standards, structural repair guidelines, and optimisation and economy factors in design and fabrication. The Commission has cooperated closely with industry groups in preparing design guidelines for welded joints in tubular structures subjected to both static loading and fatigue, with responsibility for two ISO standards on these topics.

The Commission works closely with Commission XIII regarding fatigue effects upon welded structures, with a Joint Working Group publishing a revision of the popular *IIW Recommendations for Fatigue Design of Welded Joints and Components* in early 2016. It also cooperates with the other IIW working groups when their areas of activity have direct influence upon fabrication or performance of welded structures.



Chair: Prof. Dr-Ing. Volker Schöppner
Germany

COMMISSION XVI: POLYMER JOINING AND ADHESIVE TECHNOLOGY

Vice-Chair: Prof. David Grewell (United States of America)

Commission XVI is a Working Unit which focuses on the areas of polymer joining and adhesive technology. Both of these fields are dedicated to series production which necessitates high automation levels. It provides an interesting forum for high level discussions among the world's leading scientists, who represent the

very small scientific communities involved in these spheres of materials joining. Developments over the past years have increased the importance of polymer joining and adhesive technology with modern hybrid materials and fibre-reinforced plastics.



Chair: Dr Warren Miglietti
United States of America

COMMISSION XVII: BRAZING, SOLDERING AND DIFFUSION BONDING

Vice-Chair: Dr Hua Ping Xiong (P.R. of China)

Sub-Commissions and Working Groups:

C-XVII-A: Brazing

Chair: Dipl.-Ing. Lukas Wojarski (Germany)

Vice-Chair: Dipl.-Ing. Felix Moeller (Germany)

C-XVII-B: Diffusion Bonding

Chair: Prof. Dr Simon Jahn (Germany)

Vice-Chair: Prof. Teresa Vieira (Portugal)

C-XVII-C: Soldering

Chair: Dr Erika Hodulova (Slovakia)

Vice-Chair: Dr Hong Li (P.R. of China)

Commission XVII is a relatively new Working Unit formed during 2009. It comprises experts and delegates from several disciplines related to the metallurgical and mechanical property characterisation of brazed, soldered or diffusion bonded materials/components/joints. In addition, new filler materials are discussed and evaluated.

The Commission currently solicits contributions to fulfil its work programme which includes ceramic-to-ceramic and ceramic-to-metal brazing, wide-gap brazing, brazing and diffusion bonding in microsystems, brazing of intermetallics, repair brazing, laser brazing,

brazing of Al and Ti-based alloys, surface brazing, NDT of brazed and diffusion-bonded joints, applications of vacuum-brazed and diffusion-bonded joints, development of new brazing filler metals, testing methods of brazed and diffusion-bonded joints (i.e. tensile, shear, stress rupture, bending, corrosion and erosion, etc.), low temperature brazing, weld/brazing (for example MIG brazing in use in the automotive industry), and diamond and superabrasive joining. An updated work programme for soldering and diffusion-bonding is being developed.

SC-AIR: SELECT COMMITTEE - PERMANENT JOINTS IN NEW MATERIALS AND COATINGS FOR AIRCRAFT ENGINEERING

Co-Chair: Prof. Dr-Eng. Bo Young Lee (R.O. Korea)

Global industry demands and developments have necessitated the re-activation of Select Committee: Permanent Joints in New Materials and Coatings for Aircraft Engineering, SC-AIR, dormant for the past few years. The primary objective of the Working Unit as it begins collaboration will be to define its working programme and structure. The task will include broad-ranging discussions on joining technologies used in the manufacture of new aircraft and during aircraft repair, and to

define joining research needs of the aviation and aerospace industries where the IAW's expertise and international networking capabilities can be utilized. Topics to be discussed include solid state welding, power beam processes, the behaviour of materials subjected to welding, new welding filler materials for aircraft structures and/or engine components, nondestructive testing of aircraft joints and adhesive-based repair joints.



Chair: Prof. Dr Shuili Gong
P.R. of China



Chair: Prof. Dr-Ing. Michael Rethmeier
Germany

SC-AUTO: SELECT COMMITTEE-AUTOMOTIVE AND ROAD TRANSPORT

Members of Select Committee - Automotive and Road Transport (SC-AUTO) present on and discuss new scientific results and the application of new technologies and materials concerning joining in the automotive industry, including heavy trucks. It seeks to examine how joining methods can improve product properties and fabrication conditions in order to improve vehicle safety, while reducing the negative impact of vehicles on the environment and, at the same time, decreasing vehicle assembly costs.

The main aim is to give a comprehensive

overview of the activities of IAW Commissions in materials joining in the automotive industry. Therefore, the documents discussed include most of the joining processes (e.g. resistance spot welding, GMAW, laser beam welding, stud welding, adhesive bonding, etc.) and a large variety of materials (e.g. AHSS, aluminium, magnesium, CRP, etc.).

The experts who contribute to SC-AUTO have developed a strong international network, combining the interests of leading global automotive companies and suppliers, major international universities and research institutes.



Chair: Prof. Norman Zhou
Canada

SC-MICRO: SELECT COMMITTEE-RESEARCH DEVELOPMENTS IN MICRO- AND NANO-JOINING TECHNOLOGIES

Vice-Chair: Prof. Akio Hirose (Japan)

The Select Committee was established in 2010-2011 to address the rapidly expanding research developments in the fields of micro- and nano-joining technologies. This SC provides a unique international forum for exchange of know-how, discussion of research results, case studies and implementation in industry of micro- and nano-joining techniques.

Its objectives are to:

- exchange latest progress in microjoining and nanojoining research, especially on materials and process issues;

- review general trends in microjoining, especially, nanojoining research for integration and assembly of micro-/nano-scale devices and systems;

- promote the awareness of recent developments in nano-/micro-joining research and applications in IAW where new industries such as MEMS, Medical implants, nanoscale devices and systems, etc. may not be well known.



Chair: Mr Robert E. Shaw
United States of America

SC-QUAL: SELECT COMMITTEE-QUALITY MANAGEMENT IN WELDING AND ALLIED PROCESSES

Vice-Chair: Mr Mathias Lundin (Sweden)

SC-QUAL maintains the goal to identify, create, develop and transfer global best practices in the field of quality management for welding and allied processes. SC-QUAL focuses on quality management systems and the requirements for personnel and companies involved in welding and allied processes. It also develops guidelines on the implementation of quality standards, for example, ISO 3834 *Quality requirements for fusion welding of metallic materials*.

At present, SC-QUAL members are:

- updating the document *Improving the quality and effectiveness of welding by utilising the standard ISO 3834* (SC-QUAL-145r4-10);
- updating collected information which gives

a global overview of quality management systems used in different fields of applications (SC-QUAL-138r8-12);

- preparing recommendations for auditor requirements involved with the certification of companies;
- preparing comparative studies of criteria for fabricator company audits;
- preparing a paper on risk assessment in the fabrication industries.

SC-QUAL looks to undertake new tasks that will exchange knowledge between technical experts, quality managers and production personnel using welding and allied processes. Thus, this Select Committee acts as an interdisciplinary body for the IIW.



Chair: Mr Harold Sadler
United States of America

SC-SHIP: SELECT COMMITTEE-SHIPBUILDING

The Select Committee-Shipbuilding (SC-SHIP) has a long history of developing a successful network between welding experts and shipyards. The primary focus of SC-SHIP is to help shipbuilders enhance quality, operations and productivity. This is accomplished by increasing interaction among shipbuilders, welding research engineers, technical universities, specialists from welding supply companies and

automated systems organisations. The unique challenges of shipbuilding are acknowledged and embraced.

SC-SHIP also seeks to recognize and support the human element essential to proper implementation of welding technologies and advanced production systems, considering such areas as modern management, production organisation and human resources.



Chair: Prof. Dr-Eng. Américo Scotti
Brazil

SG-RES: STUDY GROUP-WELDING RESEARCH, STRATEGY AND COLLABORATION

IIW SG-RES aims to promote welding-related research and in particular to foster collaboration between international researchers.

The Study Group reviews the latest trends in welding technology and new methodologies and techniques for research, discusses strategies (e.g. funding, identification of major projects) for establishing international research groups, and collects critical feedback on how topics of industrial interest and national support for welding research are progressing. The Study Group is open to delegates from all the Member Countries of IIW and SG-RES

members report on the issues above as they relate to their own countries. Any potential for research collaboration is identified and progressed subsequent to the meetings.

The chair and nominated technical committee organise an annual international Colloquium on Welding Research and Collaboration in different regions of the world. In 2015, the 5th such colloquium was held in Germany (pictured above), with a 6th planned for India in 2016. The Colloquia are a forum for presentation of the latest welding research trends and a vehicle for collaborative research promotion.



Chair: Prof. Dr-Eng. Manabu Tanaka
Japan

SG-212: STUDY GROUP-THE PHYSICS OF WELDING

Vice-Chair: Prof. Ian Richardson (the Netherlands)

The aim of Study Group-The Physics of Welding (SG-212) is to collect, discuss and provide science-based solutions for the mechanisms of arc and fusion welding, in order to control and improve weld quality and productivity. The Working Unit achieves this by focusing on the profound understand-

ing of the welding arc, metal transfer and the weld pool via experimentation and modelling, understanding of boundary phenomena between the electrode, arc plasma and the weld pool and the exchange of information and development of useful simulation software for digital manufacturing.

EDUCATION, TRAINING, QUALIFICATION AND CERTIFICATION

GOAL: To identify, develop and implement the IIW Education, Training, Qualification and Certification programmes on a global basis



Mr James Guild
Chair of IIW IAB
South Africa

INTERNATIONAL AUTHORISATION BOARD (IAB)

The IAB works continuously towards the following aims:

- The development of harmonised education, training and qualification programmes to provide the welding industry with qualified and skilled personnel at all levels.
- The development of a harmonised international scheme for company quality certification according to ISO 3834 and certification of welding personnel with coordination responsibilities.
- The promotion of the interests of the international welding community via its members worldwide.

AUTHORISED NATIONAL BODIES (ANBs) / AUTHORISED NATIONAL BODIES FOR COMPANY CERTIFICATION (ANBCCs)

The ANB network was stable in 2015, with one country, the Republic of Kazakhstan, getting full authorisation as an ANBCC and ANB including the Personnel Certification Scheme (PCS). The IAB Board Working Group, responsible for the development of IAB strategy, further developed the existing documentation with several new proposals mainly focused on cooperative activities among ANBs and ANBCCs.

In 2015, the network of IAB Members, ANBs and ANBCCs comprised 46 countries, 45 ANBs among which 13 included the certification of personnel, 26 ANBCCs, three countries with ANB Applicant status and one applicant for ANBCC status.

Almost 10,400 diplomas of qualification were awarded worldwide during 2015, with more than 200 new certified personnel and 278 new companies certified according to ISO 3834.

MOST SIGNIFICANT ACTIVITIES DURING 2015

The international Education, Training, Qualification and Certification programmes have been growing since 2010 and have become self-sustainable. In 2015 the focus was towards strengthening and consolidating these programmes.

To achieve this goal, IAB Group A (Education, Training and Qualification) and IAB Group B (Implementation, Authorisation and Certification) continued their activities to update and/or revise existing guidelines and rules and develop new ones to address potential markets worldwide.

Other key 2015 activities included the:

- review of the IIW IAB rules and operating procedures related to the activities of the ANBs and ANBCCs;
- issue of the Part I of the Pressure Equipment In-Service Inspection Guideline;
- review of the Welding Inspection Personnel Guideline.



Chair: Ing. Henk J.M. Bodt
The Netherlands

IAB GROUP A: EDUCATION, TRAINING AND QUALIFICATION

Working Groups:

- WGA-2a: Existing Engineer / Technologist / Specialist / Practitioner Guidelines. Chair: Dipl.-Ing. Christian Ahrens (Germany)
- WGA-3a: Welder Curriculum. Chair: Mr Lars Johanssen (Sweden)
- WGA-3b: Inspection Personnel Guideline. Chair: Dr Luca Costa (Italy)
- WGA-4a: Company and Personnel Certification System. Chair: Dr Stefano Morra (Italy)
- WGA-5a: In-Service Inspection Guideline. Chair: Ing. Henk J. M. Bodt (The Netherlands)
- WGA-6a: Distance Learning Activities. Chair: Mr Frank Moll (Germany)
- WGA-7a: Welding Structure Designer Guideline. Chair: Mr Chris Smallbone (Australia)
- WGA-9a: Mechanized, Orbital and Robot Welding. Chair: Mr Reijo Pettinen (Finland)
- WGA-11a: Harmonised Examination. Chair: Mr Italo José Fernandes (Portugal)



DURING 2015, THE ACTIVITIES OF IAB GROUP A INCLUDED:

- issue of revision 1 of Part 1 of the *Pressure Equipment Guideline for In-Service Inspection* (IIW/IAB-358);
- review of the *International Welding Inspection Personnel (IWIP) Guideline* (IIW/IAB-041);
- development of Learning Outcomes for the *Guideline for Personnel with Qualification for Welding Coordination: Engineer, Technologist, Specialist, Practitioner* (IIW/IAB-254);
- schedule for the implementation of harmonised examinations;
- implementation of internal examinations;
- validation process for harmonised examination questions;
- status of harmonised database of examination question and fixed examinations;
- liaison with ISO/TC 44 SC 10: *Welding Procedures* and SC11: *Welder and Welding Coordination*.



Chair: Dr Stefano Morra
Italy

IAB GROUP B: IMPLEMENTATION AND AUTHORISATION

Working Groups:

- WGB-1: Rules and Operating Procedures
Chair: Mr Christian Ahrens (Germany)
- WGB-5: Access Conditions Comparison and Assistance to Applicant ANBs
Chair: Ing. Henk J.M. Bodt (The Netherlands)
- WGB-6: Company and Personnel Certification System, Chair: Dr Stefano Morra (Italy)

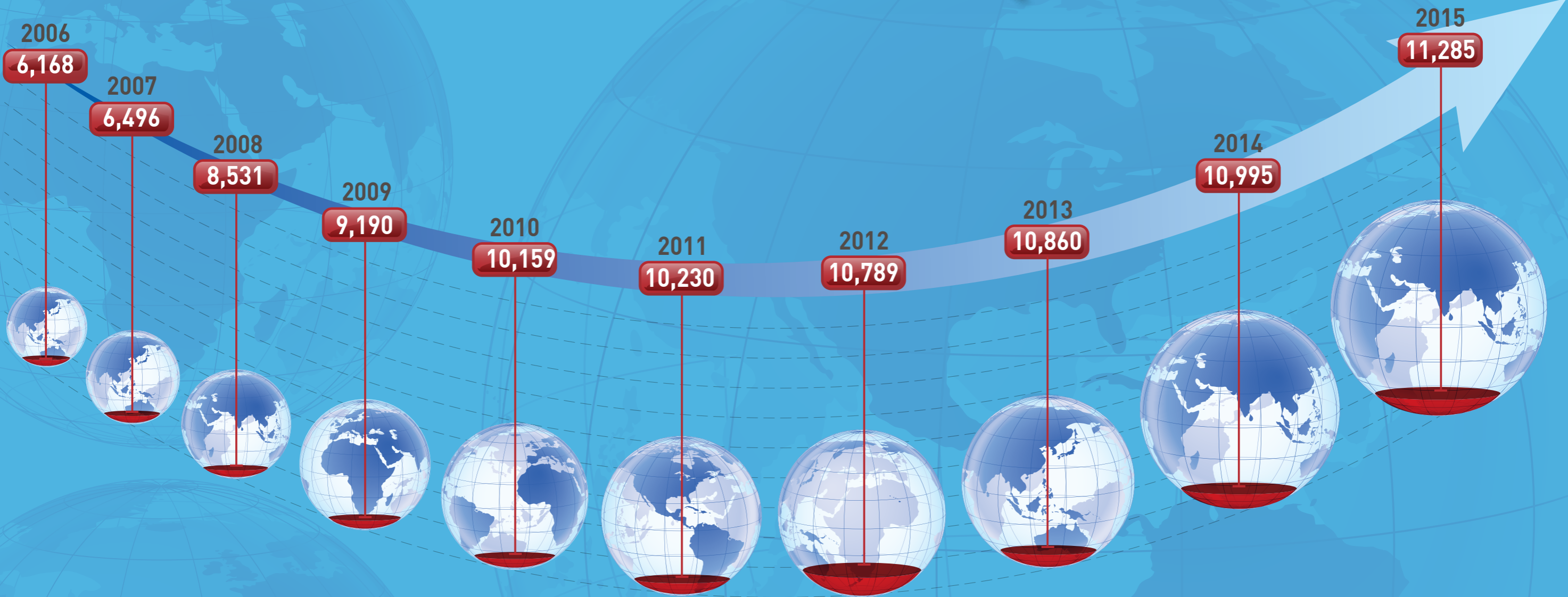
IAB Group B is responsible for the implementation of the *IIW Guidelines for Education, Examination and Qualification of Welding Personnel*, ranging from welder to welding engineer. Group B appoints Authorised National Bodies (ANBs) in participating countries, to ensure that the standards of education, examinations and qualification are maintained, and that IIW-qualified personnel will have achieved a common minimum level of knowledge, irrespective of the country in which they have been qualified. The approval of ANBs is achieved through an assessment mechanism which includes site audits performed by an assessment team. The period of approval is five years, with an interim assessment after two years.

In addition to its involvement in personnel qualifications, Group B is also responsible for implementation and authorisation of the IIW certification system for personnel and companies, whereby manufacturers are certified in recognition of their application of the ISO 3834 welding quality standard. The IAB system for company certification requires the approval of the Authorised National Bodies for Company Certification (ANBCCs), granted after site audits by an assessment team, as for the ANBs.

The main activity undertaken during 2015 was the review of the main Rules and Operational Procedures that support the harmonised implementation of the IIW Qualification and Certification programmes.

DIPLOMAS AWARDED IN 2015

■ IIW QUALIFICATION DIPLOMAS AWARDED WORLDWIDE EACH YEAR



IIW ANBs AND APPLICANT ANBs



COMMUNICATIONS AND MARKETING

GOAL: To assist in the implementation of IIW's output

Prof. Madeleine Du Toit
Chair of WG-COM&MARK
Australia

WORKING GROUP COMMUNICATIONS AND MARKETING AIMS TO:

- promote IIW and its Member Societies and services and to increase awareness of IIW and its activities in various regions around the world;
- promote technology transfer in the field of welding and joining by means of IIW's internal and external communication mechanisms;
- advise the Board on communications and marketing policy to support the members of IIW and improve the global image of welding;
- devise and implement IIW's marketing and communications strategy;
- attract new target groups to IIW, including young professionals, students, experts and new member societies;
- ensure that professional quality standards are maintained by promoting the IIW brand and setting the language quality policy of the organisation;
- increase awareness of and attract support for the IIW Young Leaders programme.

The year 2015 saw an ongoing focus on promoting the corporate identity and image of IIW through the continued introduction of the updated corporate design in all IIW publications. The new IIW corporate brochure is nearing completion and thematic sheets on IIW Values and IIW Working Units have been published. During 2015 IIW made significant progress in ensuring a long-term partnership with a single printing and marketing house for all IIW publications, with the first book published under this agreement appearing in 2015.

Improving the appeal of IIW to the younger generation and encouraging the participation of young people in the activities of the organisation remained a strong priority during 2015. Various mechanisms were identified to promote the participation of promising young leaders in IIW and to facilitate their growth and development as young welding professionals. A very successful event for young professionals within IIW was organised during the Annual Assembly in Helsinki and a similar event will be held in Melbourne in 2016. A dedicated forum for

young professionals within the official IIW framework has been created and an IIW social media group established for young professionals to promote collaboration and networking has proven to be very popular.

The focus of Working Group Communications and Marketing will remain on improving the image of welding and the corporate identity of IIW, and promoting the participation of the younger generation in the activities of IIW.

GOAL: To assist in the formulation and preparation of international standardisation documents

Mr Mathias Lundin
Chair of WG-STAND
Sweden

Working Group-Standardisation (WG-STAND)

IIW has been involved in standardisation almost from its conception. Initially, its activities centred on NDT and welding consumables. Its scope has since widened significantly and, while continuing to be involved in these areas, it now embraces standards and technical reports for resistance welding, friction stir welding, classification of defects in welds, ferrite measurement, creep and fatigue testing, as well as health and safety. WG-STAND was established to liaise with the International Organization for Standardization (ISO) and to provide the administrative function within IIW for processing of standardisation documents and their submission to ISO. A key aspect is cooperation with ISO on allocation of new work items and monitoring progress of the work items assigned to IIW.

The main objectives of WG-STAND are the:

- development of globally relevant international standards and technical reports, where existing standards in the field of welding do not meet market needs;
- identification of solutions to overcome conflicts between national and/or regional standards so that globally relevant ones can be produced;
- retention of ISO Council confidence in the ability of IIW to act as an independent standardisation body.

Members of WG-STAND are appointed by the Member Societies for their knowledge and experience in standards development. The Working Group is composed of representatives from IIW Working Units having responsibility for standardisation projects and representatives from ISO member countries which are active in welding standardisation. An ISO/IIW Coordination Committee was formed between ISO/TC44 and IIW to manage the work programme; and assist in ensuring that the relevant expertise is available to develop standards. Since 2007, the European standards welding committee, CEN/TC121, is a full member of the committee. The membership ensures cooperation between the three

bodies in the allocation of work to avoid duplication.

IIW is only involved in standardisation where it has the technical strength to support international standardisation activities. IIW retains a pre-emptive position in welding technology which has enabled the scope of its standardisation activities to increase in recent times. It is providing input into new areas and the number of Working Units involved in standardisation projects is continually increasing. To date, there are 31 published Route II projects and nine active revisions, new projects and systematic reviews, including one on Terminology from Commission VI.

WG-STAND is currently involved in over 40 standardisation projects including systematic reviews in nine Commissions.

Three revisions to existing ISO standards were published during 2015:

- ISO 10447:2015 *Resistance welding – Testing of welds – Peel and chisel testing of resistance spot and projection welds*
- ISO 14323:2015 *Destructive testing of welds – Specimen dimensions and procedure for impact tensile shear test and cross-tension testing of resistance spot and embossed projection welds*
- ISO 14373:2015 *Resistance welding – Procedure for spot welding of uncoated and coated low carbon steels*

A further three revisions to ISO standards emanating from Commission III Resistance Welding, Solid State Welding and Allied Joining Processes were published in the first quarter of 2016.

The first standard for a calibration block for Phased Array Ultrasonic Testing (PAUT) is expected to be published in 2016 as well as a standard for long range inspection of above ground pipelines and plant piping from Commission V NDT and Quality Assurance of Welded Products.

Three parts of ISO/TR 25901 *Welding and allied processes – Vocabulary* were published in the first quarter of 2016 as Route I drafts developed in Commission VI Terminology.



REGIONAL ACTIVITIES AND LIAISON WITH DEVELOPING COUNTRIES

GOAL: To promote the IIW and its Member Countries in all regions of the world for the mutual benefit of all



Mr Christopher Smallbone
Chair of WG-RA
Australia

WORKING GROUP REGIONAL ACTIVITIES (WG-RA)

The WG-RA continues to provide a very successful forum for the discussion, promotion and delivery of the raft of IIW services and activities to the regions of the world. Through its Strategic Plan and WeldCare programme, WG-RA representatives of Member Societies from around the world play an important role in the IIW's Project *To Improve the Global Quality of Life by the Optimum Use of Welding Technology*.

In cooperation with other IIW Working Units, the WG-RA actively develops a global programme of IIW events and promotes and markets IIW services and membership. The WG-RA also supports the introduction of IIW education, training, qualification and certification programmes in developing nations, and fosters regional cooperation and networking through International Congresses and workshops. Well-attended WG-RA meetings were held in Paris in February 2015, and during the Annual Assembly in Helsinki, Finland, in July 2015.

IIW INTERNATIONAL CONGRESSES AND COLLOQUIA

International Congresses, coordinated and promoted through the WG-RA, have continued to be excellent catalysts for people from industry, government, education and training to work together in a particular region, to establish cooperative networks of both Technology and Educational Support Centres. Resolutions taken at the end of each IIW Congress provide forward planning for practical outcomes for the benefit of the respective region. The WG-RA actively follows up progress on such

resolutions and encourages on-going work in the particular region.

In 2015 the WG-RA supported very successful International Congress in Romania in June, the 3rd IIW Southeast European Welding Congress on the topic 'Welding and Joining Technologies for a sustainable Development and Environment'. With 200 participants from 23 countries the Congress contributed to the agenda of the active South-East European Network for Welding Technology Transfer which was established under the support of the WG-RA in 2003. A Workshop on Pipeline Construction and a joint meeting with the IIW Sub-commission XI-E Transmission Pipelines contributed significantly to the knowledge bank and cooperation in this oil-rich region.

A workshop on developing National Welding Capability (NWC) delivered by Chris Smallbone was also well attended by government, industry and other regional organisation representatives. The key objective was for each country to analyse and evaluate their current situation, identify future challenges and draw up and implement actions plans to strengthen their own National Welding Capability.

In cooperation with the Study Group for Welding Research, Strategy and Collaboration (SG-RES), WG-RA also fosters the holding of Welding Research and Collaboration Colloquia in the different regions. In 2015, the 5th such colloquium was held in Germany, with a 6th planned for India in 2016. These colloquia also contribute to National Welding Capability by helping to build the research capability in a region, facilitating international collaboration and providing a forum for younger researchers to showcase their work and establish networks for future research activities.

IIW ASSOCIATED EVENTS

By supporting events of relevance around the world, the IIW has the opportunity to not only foster welding-related technology exchange, but to also have a presence in a wide range of regions, with the potential for expansion of IIW membership and the take-up of IIW programmes. In 2015, six events were supported, in Denmark, Brazil, Germany, Austria, Hungary and the USA.

IIW WELDCARE PROGRAMME FOR TAKE-UP BY DEVELOPING COUNTRIES

The WeldCare programme continues to be a flagship for the promotion of IIW activities, membership and benefits in the various regions of the world, particularly in developing countries. Communications continued with Bangladesh, Sri Lanka, Algeria, Colombia, Bolivia and Myanmar. The benefits of national and regional Technology Support Centre and Education Support Centre Networks continue to be promoted through the programme and activities such as the IIW International Congresses have great potential to reach non-IIW Member countries and relevant governments and other organisations in a region.

WG-RA also holds workshops for IIW members on subjects such as Technology Diffusion and Governance, as well as the major initiative to establish a National Welding Capability.

ESTABLISHING A NATIONAL WELDING CAPABILITY

This initiative of WG-RA utilises the principles of the IIW White Paper and promotes the following building blocks as essential to the development and welfare of a country:

- education, training, skills and career paths

- qualification and certification of personnel and companies
- research and development
- technology transfer
- national and international networks
- cultures

Through the delivery of workshops on the topic, such as in Romania this year, this initiative is now being taken up in particular in South Eastern Europe and India, where it is seen to be an excellent vehicle for the improvement of quality of life in those regions. The workshops focus on the building blocks above, as well as the practicalities of raising funding, improving the image of welding, and developing national and international networks. Input from Commission XIV, SG-RES and many other IIW Working Units is supporting this promising initiative.

REGIONAL ACTIVITIES AWARDS

The 2015 IIW Regional Activities Award was jointly awarded to Dr-Eng. Marin Beloev and Assoc. Prof. Dr Petar Darjanov of Bulgaria for their contributions to the success of the South-East European Network for Welding Technology Transfer.

FUTURE TEAMWORK

The WG-RA provides a forum for all IIW Member Societies to discuss and develop strategies to promote welding and IIW programmes around the world for the benefit of the people in these regions. Joint projects and meetings with other IIW Working Units demonstrate a great team spirit and excellent cross-fertilisation of ideas.

FUTURE EVENTS			
YEAR	LOCATION	DATE	THEME
2016	Halle (Saale), GERMANY	20-21 April	10th International Conference on Beam Technologies
	Hyderabad, INDIA	22-24 April	6th IIW Welding Research and Collaboration Colloquium
	Halle (Saale), GERMANY	11-12 May	4th European Conference Join-Trans 2016
	Gijón, SPAIN	17-19 May	3rd International Welding Congress & 21st Conference on Materials Joining
	Aachen, GERMANY	7-9 June	LÖT Conference: 11th Conference on Brazing, High Temperature Brazing and Diffusion Bonding
	Beijing, P.R. CHINA	17-22 June	4th Beijing 'Arc Cup' International Welding Competition & Technology Exchange
	Paris, FRANCE	13-15 September	ESOPE 2016 'Construction and life of pressure equipment: the challenges of globalization'
2017*	Metz, FRANCE	17-19 May	1st IIW International Congress in Western Europe 'Welding, Additive Manufacturing and Association Non-destructive Testing'
	Chennai, INDIA	7-9 December	5th IIW International Congress

* Associated Events programme for 2017 available on the IIW website

WELDING IN THE WORLD

THE INTERNATIONAL JOURNAL OF MATERIALS JOINING

EDITORIAL BOARD OF WELDING IN THE WORLD



The Editorial Board serves to advise the Editors on all matters associated with the *Welding in the World* Journal.

SELECTION AND TERM OF OFFICE

Members of the Editorial Board are selected by the Editors. Members, reflecting a balanced representation of the IIW's diverse areas of scientific interest, serve a 3-year term which is subject to renewal for a total maximum period of nine years. It is anticipated that members of the Editorial Board are selected from the core body of Principal Reviewers. The Editorial Board is composed of not less than 12 and not more than 20 members. Ex-officio members include the Chair of the Technical Management Board (TMB), the Chair of the Working Group-Communications and Marketing (WG-COM&MARK) and the IIW CEO.

DUTIES AND RESPONSIBILITIES

The major duties and responsibilities of the Members of the Editorial Board are the following:

- compulsory service as Principal Reviewers (all Members, with the exception of Ex-officio Members);
- attendance of the annual meeting (as a minimum) of the Editorial Board during the IIW Annual Assembly;
- provision of advice to the Editors on matters regarding the peer review system, journal publication standards and all other topics associated with the publication of *Welding in the World*;
- establishment of close communication links with the WG-COM&MARK as the leading international journal for materials joining.

EDITORS

- Prof. John C. Lippold (United States of America)
- Prof. Dr-Eng. Thomas Böllinghaus (Germany)
- Prof. Ian M. Richardson (The Netherlands)

CURRENT MEMBERS OF THE EDITORIAL BOARD OF WELDING IN THE WORLD

- Dr Arun Kumar Bhaduri (India)
- Prof. John Norrish (Australia)
- Dr Carl E. Cross (United States of America)
- Prof. Madeleine du Toit (Australia)
- Prof. Dr-Eng. Yoshinori Hirata (Japan)
- Prof. Dr Zhiling Tian (P.R. of China)
- Prof. Gary B. Marquis (Finland)
- Prof. Dr-Ing. Peter Mayr (Germany)
- Prof. Dr-Ing. Cetin Morris Sonsino (Germany)
- Dr Luca Costa (Italy)
- Dr rer. nat Dr-Ing. E.h. Gerd Dobmann (Germany)

WELDING IN THE WORLD



Chair: Prof. John C. Lippold
United States of America



Prof. Ian M. Richardson
The Netherlands



Prof. Dr-Ing Thomas Böllinghaus
Germany

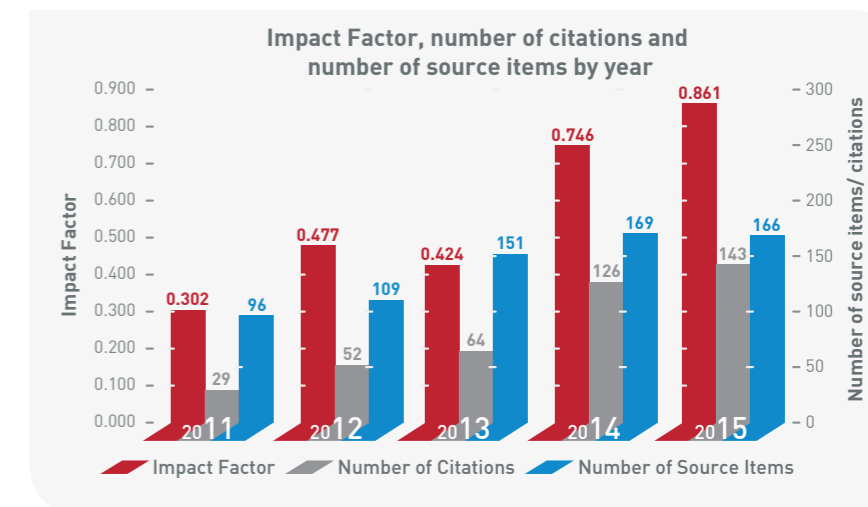
Editors

In 2015, *Welding in the World* published six issues that included 90 papers, representing over 900 pages of fundamental and applied research associated with materials joining.

Of the 2015 papers, 35% addressed metallurgy and materials, 35% welding processes, and 20% structural integrity, fracture and fatigue.

Open submission to *Welding in the World* was introduced in 2014 and allows manuscripts to be submitted directly to the journal without prior screening and recommendation by the IIW Working Units. Papers submitted in this manner are first screened by the Editors and then forwarded to the appropriate Working Unit chair (or delegate). If the Working Unit chair finds the paper acceptable, it is then put into the peer review system. A total of 172 papers were submitted via open submission in 2015 and 30 of these were forwarded into the peer review system. This represents a six-fold increase in the number of open submission papers relative to 2014.

The Impact Factor (IF), which is calculated based on the number of citations of *Welding in the World* papers, continues to be an important measure of a journal's quality and reputation, i.e. the scientific visibility of the journal.



The IF is determined over a two or five year period. When the journal was first included in the Science Citation Index (SCI) in 2011, the IF was 0.302. At the end of 2015 it stood at 0.861 and *Welding in the World* was ranked 37 of 73 journals in Metallurgy and Metallurgical Engineering worldwide. Most journals entering the SCI need several years to establish a representative IF and the goal of the Editors is to achieve an IF in the range from 1.0 to 1.5 by the end of 2017. Interest in the journal continues to be high as indicated by the accompanying chart showing the growth in IF, and

the numbers of citations and source items (articles) to the end of 2015. There were over 43,250 downloads of *Welding in the World* papers in 2015, as compared to 37,657 in 2014. The editors are grateful to all who contribute to the quality of the journal including authors, Working Unit chairs, principal reviewers and members of the review panel, the IIW General Secretariat, and members of the Editorial Board. The combined contributions of this group have helped the journal achieve great success and widespread recognition.



THE ANNUAL ASSEMBLY OF THE INTERNATIONAL INSTITUTE OF WELDING (IIW) HELSINKI – 2015

Surrounded by sea on three sides and known as the ‘Pearl of the Baltic Sea’ Helsinki, the capital of Finland, warmly welcomed 885 people from countries around the world to the 68th Annual Assembly and International Conference of the International Institute of Welding (IIW) from 28 June to 3 July 2015.

The event, the third IIW Annual Assembly to be held in Finland, was organised by the Welding Society of Finland (WSF) which has been a member of IIW since 1949. Up to 96 Finnish delegates attended the event - an outstanding opportunity to meet with, contribute to, and learn from, the international welding community.

The near-record number of assembly and conference attendees came from 54 different countries, with the largest contingents from Germany, Japan, and the Republic of Korea which hosted the 2014 assembly. The IIW's recent focus on Young Professionals was rewarded by the attendance and participation of over 80 ‘future leaders’ of the global welding sector.

Special meetings and events during the assembly included an Additive Manufacturing Workshop, Seminar on Structural Health Monitoring and a Workshop on Establishing a National Welding Capability. Such events, often jointly organised by a number of IIW Commissions, highlight the innovation and cross pollination of ideas and knowledge which are a hallmark of IIW and invaluable to the welding community worldwide.



Participants in the Young Professionals Group which has been established by IIW to provide a thought-provoking networking and learning forum for the upcoming leaders of the welding community, and to encourage their participation in IIW Annual Assemblies and Working Unit activities.



Dr Emmanuel Gyasi from Ghana, applicant member country (left) and Dr Paul Kah from Cameroon, incoming member country (right) with IIW CEO Dr Cécile Mayer

The membership of IIW was boosted to an impressive 59 countries during the General Assembly held on Sunday 28 June, when applications from Algeria, Angola and Cameroon were approved. The expansion of IIW services and support in Africa, such as the introduction of the IIW Qualification and Certification programmes, can deliver significant positive outcomes for such developing nations.

Countries can be represented in IIW by more than one Member Society if they wish, and the National Agency of Welding Control (NAKS) was accepted by the assembly as a second Member Society of Russia.

The week's activities were officially launched at the Opening Ceremony held in the the iconic Finlandia Hall.

Mr Ismo Meuronen, Chair of the Local Organising Committee and President of the WSF welcomed everyone to Helsinki and praised the work of the event organisers, technical advisers and the event secretariat. Mr Göran Mönefors, Managing Director of the Nordic branch for event sponsors voestalpine Böhler Welding, then added his welcome and wishes for a successful assembly.

The 68th IIW Annual Assembly was then officially opened by Prof. Gary Marquis, IIW President and Dean of the Aalto University School of Engineering, Finland. He was joined on stage by Dr Cécile Mayer, IIW Chief Executive Officer, for the presentation of the IIW Annual Awards. Each year the IIW pays tribute to those who have given distinguished service or have demonstrated excellence in their

field. The Awards Ceremony honours those who have made significant contributions to welding and joining technology, either by their recent outstanding technical achievements, or by singular career achievements and exceptional contributions to the IIW, to industry, to education or to regional and/or international quality of life.

2015 IIW AWARD WINNERS



2015 IIW award winners, from left: Dr Philipp Schempp, Assoc. Prof. Petar Darjanov, Prof. Einar Halmøy, Dr-Ing. André Hälsig, Prof. Luisa Coutinho, Dr Elin Marianne Westin, Dr Glenn Ziegenfuss, Prof. Jan Pilarczyk, Prof. Dr Stephen Liu, Dr-Eng. Marin Beloev

THE HENRY GRANJON PRIZE

The Henry Granjon prizes were presented by Dr Abdelkrim Chehaibou, General Manager of the Institut de Soudure (French Welding Institute) which sponsors the awards.

Category A – ‘Joining and Fabrication Technology’

Category C – ‘Design and Structural Integrity’



The Category A prize was awarded to **Dr-Ing. André Hälsig (Germany)** (above left) for his paper Energy balance of welding processes.



The Category C prize was awarded to **Dr Philipp Schempp (Germany)** (above centre) for his paper Understanding grain refinement in aluminium welding.

THE HENRY GRANJON PRIZE (Continued)

**Category B –
'Materials Behaviour and Weldability'**

The prize was awarded to **Dr Eun-Joon Chun (Japan)** for his paper *Development of transverse-Varestraint test procedure with laser beam welding and evaluation of solidification cracking susceptibility in type 316FR stainless steel welds*.

Category D – 'Human Related Subjects'

The prize was awarded to **Dr Yukang Liu (USA)** for his paper *Toward intelligent welding robots: virtualized welding based learning of human welder behaviours*.

Unfortunately Dr Eun-Joon Chun and Dr Yukang Liu were unable to attend the ceremony to receive their awards, nevertheless IIW extended its congratulations to them.

**WELDING IN THE WORLD
BEST PAPER AWARD**

The *Welding in the World* Best Paper Award, sponsored by the IIW, was presented by Prof. John C. Lippold, Chair of the *Welding in the World* Board of Editors, to **Dr Elin Marianne Westin (Austria)** for her paper *Element distribution in lean duplex stainless steel welds*.



From left: Dr Elin Marianne Westin, Prof. John Lippold, and Dr Cécile Mayer (IIW CEO)

YOSHIAKI ARATA AWARD

The Yoshiaki Arata Award, sponsored by the Japanese Delegation, was presented by Prof. Dr-Eng. Yoshinori Hirata, Head of the Japanese Delegation, to **Prof. Dr Emeritus Einar Halmøy (Norway)**.



From left: Prof. Yoshinori Hirata and Prof. Einar Halmøy

ARTHUR SMITH AWARD

The Arthur Smith Award, sponsored by the United Kingdom Delegation, was presented by the Head of the UK Delegation, Mr Norman Cooper, to **Prof. Luisa Coutinho (Portugal)**.



From left: Mr Norman Cooper and Prof. Luisa Coutinho

THOMAS MEDAL

The Thomas Medal, sponsored by the American Welding Society (AWS), was presented by Mr David J. Landon, President of the AWS, to **Dr H. Glenn Ziegenfuss (USA)**



From left: Mr David Landon and Dr Glenn Ziegenfuss

WALTER EDSTRÖM MEDAL

The Walter Edström Medal, sponsored by the Swedish Delegation, was presented by Mr Lars Johansson, Head of the Swedish Delegation, to **Prof. Dr-In. Jan Pawel Pilarczyk (Poland)**.



From left: Mr Lars Johansson and Prof. Jan Pilarczyk

HALIL KAYA GEDIK AWARD

Sponsored by the Turkish Delegation, the Halil Kaya Gedik Award was presented by Mrs Hülya Gedik-Sadiklar, Chair of the Board of Gedik Holding and President of GEV - Gedik Education and Social Benefits Foundation, to **Prof. Dr Stephen Liu (USA)**.



From left: Mrs Hülya Gedik-Sadiklar and Prof. Dr Stephen Liu

IIW REGIONAL ACTIVITIES AWARD

Sponsored by the Australian Delegation in recognition of Mr Chris Smallbone's 40 years of contributions to IIW regional activities, the Regional Activities Award was presented by Mr John Burnett, head of the Australian Delegation jointly to **Dr-Eng. Marin Georgiev Beloev** and **Assoc. Prof. Dr Petar Ivanov Darjanov (Bulgaria)**.



From left: Assoc. Prof. Dr Petar Darjanov, Mr John Burnett and Dr-Eng. Marin Beloev

SERVICE RECOGNITION AWARDS

A Service Recognition Award was presented by Dr Luca Costa, Chair of the Technical Management Board, to **Mr Robert Shaw** in appreciation of his outstanding voluntary service as Chair of Commission XV Design, Analysis and Fabrication of Welded Structures for nine years.



Dr Luca Costa (left), Chair of the Technical Management Board, presented Mr Robert Shaw (USA) with a Chair Service Recognition award



IIW President Prof Marquis (right) and CEO Dr Mayer (left) presented a token of recognition to Prof Hirata (centre) on completing his term on the IIW Board of Directors

ATTENDANCE RECOGNITION CERTIFICATES

Attendance Recognition certificates and commemorative lapel pins were presented during the various Working Unit meetings to honour those who have contributed significantly to the work of IIW. **Prof. Luisa Coutinho (Portugal)** was recognised for having attended 30 IIW Annual Assemblies, **Prof. Veli Kujanpää (Finland)** and **Prof. Ing. Jaroslav Koukal (Czech Republic)** for 20 Annual Assemblies while a total of 10 people were recognised for having attended 10 IIW Annual Assemblies.



A 10-year Attendance Recognition pin was presented to Mrs Viera Whalen (Slovakia) by IIW President Prof. Gary Marquis



Mr Andrew Davis (lower photo) and Prof. Dongguang Park (upper photo) were presented Attendance Recognition awards for 10 years of attendance and involvement in standardisation activities in the IIW by Prof. Marquis



From left: Dr Luca Costa (TMB Chair) with the 2015 IIW Fellows Prof. Dr-Ing. Cetin Morris Sonsino, Prof. Chitoshi Miki, Dr Thomas Siewert, Prof. Dr Takashi Miyata and Prof. Pingsha Dong and Prof. Gary Marquis (IIW President).

2015 FELLOW AWARDS

The IIW President Prof. Gary Marquis announced the recipients of the 2015 Fellow Awards:

- Prof. Dr-Ing. Cetin Morris Sonsino
- Prof. Chitoshi Miki
- Dr Thomas Siewert
- Prof. Dr Takashi Miyata
- Prof. Pingsha Dong



INTERNATIONAL CONFERENCE

The IIW International Conference on 'High Strength Materials – Challenges and Applications' was held on the Thursday and Friday after the conclusion of the Annual Assembly, capitalising on the presence of so many world experts in Helsinki, and making their knowledge and vision for the future of the welding industry accessible to delegates who attended from local organisations and industry and from around the world.

The Conference was opened with the distinguished Portevin Lecture delivered by eminent scientist Prof. David Porter from Oulu University, Finland, on the theme 'Weldable high strength steels – Challenges and engineering applications'. More than 100 papers from 26 countries were presented during the sessions which focussed on challenges and solutions covering all aspects of joining, processing and design performance of high strength materials, highlighting their successful applications in industrial and commercial products.

FUTURE ANNUAL ASSEMBLIES

Mr John Burnett, President and Mr Geoff Crittenden, Chief Executive Officer, of the Welding Technology Institute of Australia (WTIA), represented the organising committee for the 69th IIW Annual Assembly and International Conference at the Gala Banquet. They accepted the IIW flag from Mr Jouko Lassila, Executive Director and Mr Juha Kauppila, Training and Qualification Manager of the WSF and invited all members of the IIW family to join them 'Down Under' in July 2016.

Future IIW Annual Assemblies will be held as follows:

- 2016: Melbourne (Australia), 10-15 July
- 2017: Shanghai (P.R. of China), 25-30 June
- 2018: Istanbul, Turkey
- 2019: Bratislava, Slovakia



From the left: Mr Geoff Crittenden and Mr John Burnett, CEO and President of WTIA (Australia), received the IIW flag from Mr Juha Kauppila and Mr Jouko Lassila, ANB Chief Executive and Executive Director of WSF (Finland)

IIW MEMBER COUNTRIES

IIW WORKING UNITS

In keeping with tradition, the Annual Assembly provided the opportunity for the Commissions, Select Committees, Study Groups and other units to meet separately or jointly over the 5-day period.

In 2015 a total of 144 decisions were adopted by the various IIW Working Units, with 110 documents recommended for publication in the IIW's peer-reviewed journal, *Welding in the World*.

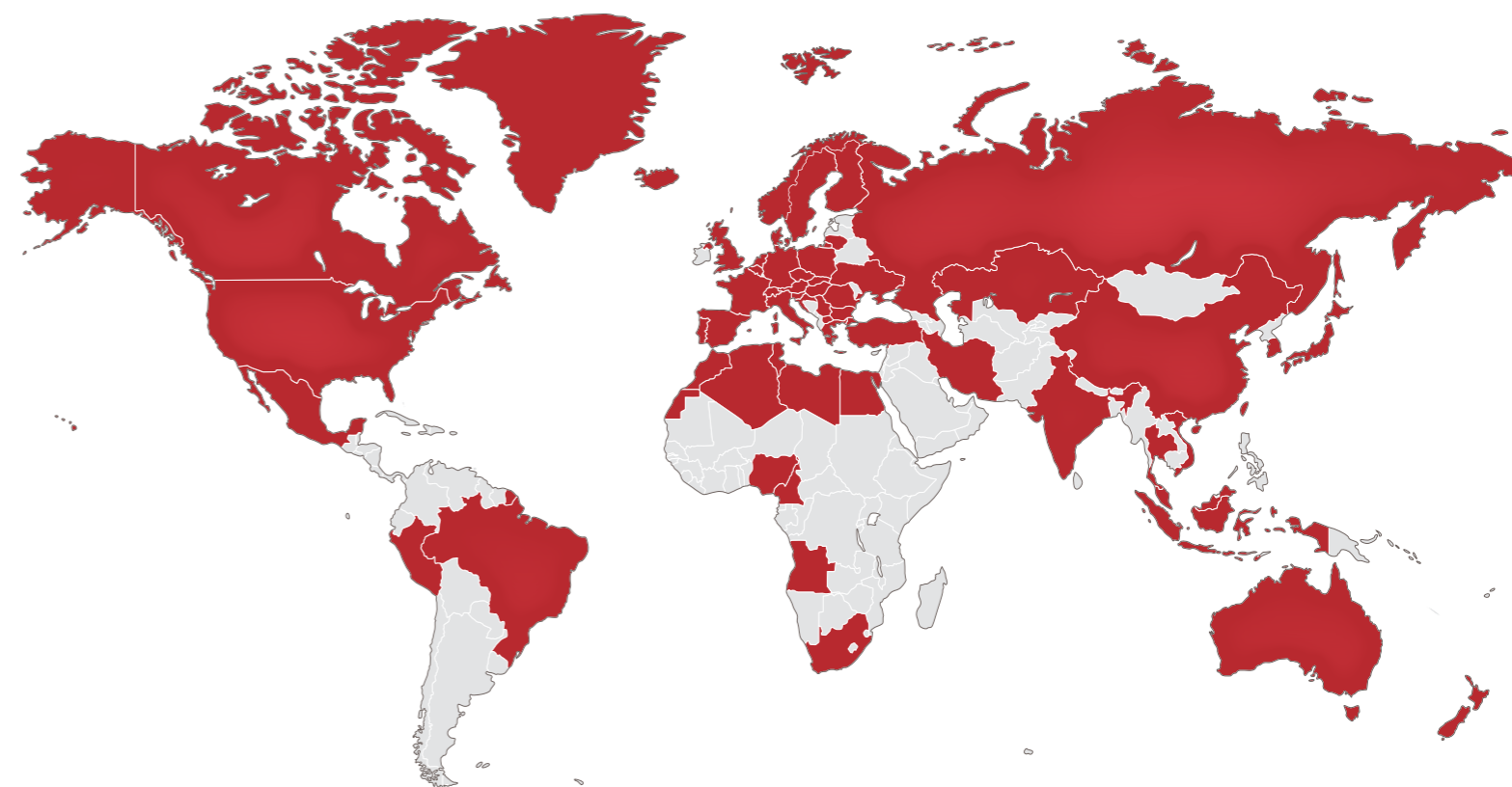
ELECTION/APPOINTMENT OF CHAIRS OF IIW WORKING UNITS	
Commission II	<i>Arc Welding and Filler Metals</i> Dr Gerhard Posch (Austria) was elected for a second term as Chair
Commission V	<i>Non-destructive Testing and Quality Assurance of Welded Products</i> Dr Eric Sjerve (Canada) was elected for a second term as Chair
Commission VIII	<i>Health, Safety and Environment</i> Dr Med. Wolfgang Zschiesche (Germany) was elected as Chair
Commission IX	<i>Behaviour of Materials Subjected to Welding</i> Dr Hee Jin Kim (R.O. Korea) was elected as Vice-Chair
Commission X	<i>Structural Performances of Welded Joints – Fracture Avoidance</i> Prof. Dr-Eng. Fumiyoshi Minami (Japan) was elected for a second term as Chair
Commission XIII	<i>Fatigue of Welded Components and Structures</i> Prof. Kenneth A. MacDonald (Norway) was elected as Chair
Commission XV	<i>Design, Analysis and Fabrication of Welded Structures</i> Dr Stefano Botta (Italy) was elected as Chair
Commission XVI	<i>Polymer Joining and Adhesive Technology</i> Prof. Dr-Ing. Volker Schöppner (Germany) was re-elected as Chair Assoc. Prof. David Grewell (USA) was re-elected as Vice-Chair
Study Group 212	<i>The Physics of Welding</i> Prof. Manabu Tanaka (Japan) was elected for a second term as Chair
SG-RES Study Group	<i>Welding Research Strategy and Collaboration</i> Prof. Américo Scotti (Brazil) was elected for a second term as Chair



The intermediate meeting of Commission X Structural performance of welded joints – Fracture avoidance was held at the Fraunhofer Institute for Mechanics of Materials (IWM) in February 2015 and chaired by Prof. Dr-Eng. Fumiyoshi Minami

■ IIW MEMBER COUNTRIES

■ PROSPECTIVE MEMBER COUNTRIES



- ALGERIA - ANGOLA - AUSTRALIA - AUSTRIA - BELGIUM - BRAZIL - BULGARIA - CAMEROON - CANADA - CROATIA - CZECH REPUBLIC -
- CYPRUS - DENMARK - EGYPT - FINLAND - FRANCE - GERMANY - GREECE - HUNGARY - INDIA - INDONESIA - IRAN - ISRAEL - ITALY
- JAPAN - LIBYA - LITHUANIA - MALAYSIA - MEXICO - MOROCCO - NEW ZEALAND - NIGERIA - NORWAY - PAKISTAN - P.R. OF CHINA -
- PERÚ - POLAND - PORTUGAL - REPUBLIC OF KAZAKHSTAN - REPUBLIC OF KOREA - REPUBLIC OF MACEDONIA - ROMANIA
- RUSSIAN FEDERATION - SERBIA - SINGAPORE - SLOVAKIA - SLOVENIA - SOUTH AFRICA - SPAIN - SWEDEN - SWITZERLAND
- THAILAND - THE NETHERLANDS - TUNISIA - TURKEY - UKRAINE - UNITED KINGDOM - UNITED STATES OF AMERICA - VIETNAM

IIW MEMBER SOCIETIES, ANBs, ANBCCs

Country	Member: Main Member Society / ANB: Authorised National Body / ANBCC: Authorised National Body for Company Certification	
ALGERIA	Member	Research Center in Industrial Technologies (CRTI)
ANGOLA	Member-Applicant ANB	Association for the Development of Welding in Angola (ADSA)
AUSTRALIA	Member-ANB/ANBCC	Welding Technology Institute of Australia (WTIA)
AUSTRIA	Member-ANB /ANBCC	Schweisstechnische Zentralanstalt (SZA)
BELGIUM	Member-ANB	Institut Belge de la Soudure/Belgisch Instituut voor Lastechniek (IBS/BIL)
BRAZIL	Member-ANB	Associação Brasileira de Soldagem (ABS)
BULGARIA	Member-ANB	Bulgarian Welding Society – Bulgarian Center for Qualification in Welding (BCQW)
CAMEROON	Member	Cameroon Welding Association
CANADA	Member-ANB /ANBCC	Canadian Council of the IIW - Canadian Welding Bureau (CWB)
CROATIA	Member-ANB/ANBCC	Croatian Welding Society (CWS)
CYPRUS	Member	Cyprus Welding Institute
CZECH REPUBLIC	Member-ANB /ANBCC	Czech Welding Society ANB (CWS-ANB)
DENMARK	Member-ANB	Danish Welding Society-FORCE Certification A/S
EGYPT	Member	Central Metallurgical Research & Development Institute (CMRDI)
FINLAND	Member-ANB	Suomen Hitsaustekniillinen Yhdistys (SHY)/The Welding Society of Finland (WSF)
FRANCE	Member-ANB /ANBCC	Institut de Soudure (IS) - Association Française du Soudage (AFS)
GERMANY	Member-ANB/ANBCC	Deutscher Verband für Schweißen und verwandte Verfahren (DVS)-DVS Zert e.V.
GREECE	Member-ANB	Welding Greek Institute (WGI)
HUNGARY	Member-ANB/ANBCC	Hungarian Welding Society (MAHEG)-Magyar Hegesztéstechnikai és Anyagvizsgáló Egyesülés (MhtE)
INDIA	Member-ANB /ANBCC	The Indian Institute of Welding
INDONESIA	Member-ANB	Indonesian Welding Society (IWS) - Indonesian Welding Society ANB Committee
IRAN	Member-ANB /ANBCC	Iranian Welding Research & Engineering Center (IWREC)
ISRAEL	Member	The Israeli National Welding Committee (INWC)
ITALY	Member-ANB /ANBCC	Istituto Italiano della Saldatura (IIS) - IIS CERT Srl
JAPAN	Member-ANB	Japan Institute of Welding - Japan Welding Engineering Society (JWES)
LIBYA	Member	Advanced Occupational Center for Welding Technologies
LITHUANIA	Member	Lithuanian Welders Association
MALAYSIA	Member	Welding Institute (MALAYSIA) Bhd
MEXICO	Member	Corporación Mexicana de Investigación en Materiales (COMIMSA)
MOROCCO	Member	Association Marocaine du Soudage et des Appareils à Pression (AMS-AP)

NEW ZEALAND	Member-ANB /ANBCC	Heavy Engineering Research Association (HERA) - Heavy Engineering Research Association (HERA)-ANB
NIGERIA	Member-ANB	Nigerian Institute of Welding
NORWAY	Member-ANB	Norwegian Welding Association/Norsk Sveiseteknisk Forbund (NSF)
PAKISTAN	Member	The Pakistan Welding Institute
P.R. of CHINA	Member-ANB /ANBCC	Chinese Welding Society - Chinese Welding Training & Qualification Committee (CANB)/CANBCC
PERÚ	Member	Pontificia Universidad Católica del Perú
POLAND	Member-ANB /ANBCC	Instytut Spawalnictwa
PORTUGAL	Member-ANB	Instituto de Soldadura e Qualidade (ISQ)
REPUBLIC OF KAZAKHSTAN	Member-ANB /ANBCC	Karaganda State Technical University - Kazakhstan Welding Association (KAZWELD)
REPUBLIC OF KOREA	Member-ANB	The Korean Welding and Joining Society (KWJS)
REPUBLIC OF MACEDONIA	Member /Applicant ANB	Association for the Development and Advancement of Welding (SEETEQ ANB)
ROMANIA	Member-ANB/ANBCC	ISIM - ASR CertPers/ISIM Cert
RUSSIAN FEDERATION	Member-ANB /ANBCC	Russian Welding Society - Research Training Centre "Testing and Diagnostics" (RTC)/Prometey-Cert (CJSC)
SERBIA	Member-ANB/ANBCC	Zavod Za Zavarivanje a.d.-DUZS Cert Pers/ZAVOD-CERT
SINGAPORE	Member-ANB	Singapore Welding Society (SWS)
SLOVAKIA	Member-ANB/ANBCC	Vyskumny Ustav Zvaracsky (VUZ) - VUZ PI SR/CERTIWELD VUZ-PI
SLOVENIA	Member-ANB /ANBCC	Slovensko Drustvo Za Varilno Tehniko (SVDT)
SOUTH AFRICA	Member-ANB /ANBCC	Southern African Institute of Welding
SPAIN	Member-ANB /ANBCC	Asociación Española de Soldadura y Tecnologías de Unión (CESOL)
SWEDEN	Member-ANB	Svetskommissionen/Swedish Welding Commission (SWC)
SWITZERLAND	Member-ANB	Schweizerischer Verein für Schweißtechnik (SVS)/ Association Suisse pour la Technique du Soudage
THAILAND	Member-ANB	Welding Institute of Thailand (WIT)
THE NETHERLANDS	Member-ANB /ANBCC	Nederlands Instituut Voor Lastechniek (NIL)
TUNISIA	Member Applicant ANB	Centre Technique des Industries Mécaniques et Electriques (CETIME)
TURKEY	Member-ANB /ANBCC	Gedik Education and Social Benefits Foundation (GEV)/ Turkish Welding Technologies Academy (TKTA)
UKRAINE	Member-ANB/ANBCC	E.O. Paton Electric Welding Institute - The Paton Welding Institute Training and Qualification Center/Paton Cert
UNITED KINGDOM	Member-ANB /ANBCC	UK Section of the IIW-TWI Certification Ltd.
UNITED STATES OF AMERICA	Member-ANBCC	American Welding Society (AWS) - United States of America Authorised National Body for Company Certification (USA ANBCC)
VIETNAM	Member	Vietnam-German Technology Transfer and Training Center (HWC)

LINKING PEOPLE, JOINING NATIONS

MISSION:

To act as the worldwide network for knowledge exchange of joining technologies to improve the global quality of life.

GOALS:

To identify, create, develop and transfer best practices for sustainable development in a sustainable environment.

To identify, develop and implement the IIW Education, Training, Qualification and Certification programmes on a global basis.

To promote IIW and its Member Countries in all regions of the world to the mutual benefit of all.

To assist in the implementation of the IIW's output.

To assist in the formulation and preparation of international standardisation documents.

To provide quality services to IIW, IIW Member Societies and other organisations.



INTERNATIONAL INSTITUTE OF WELDING

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