



**INTERNATIONAL INSTITUTE OF WELDING**

**A world of joining experience**

**ANNUAL REPORT**

**2014**

# PROFILE

## 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.

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

To promote the IIW and its Member Societies and services in various regions of the world for the common benefit of all.  
Standardisation.

## KEY FIGURES

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

57 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 over than 110,000 Diplomas since 1998 and 10,994 Diplomas in 2014.

27 Authorised National Bodies for Companies Certification (ANBCCs), which have certified almost 1,500 companies around the world up to the end of 2014. A total of 420 personnel certificates has been delivered in 2014.

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## MESSAGE FROM THE PRESIDENT

In July 2014 I had the privilege of receiving the IIW presidential chain of office from Dr. Baldev Raj. It is an honour to serve as president of this association which comprises Member Societies in 57 countries across the globe. The expanse of our organization is clear testimony to its strength, purpose and value. The IIW provides a unique platform for scientific, technological and educational development in the field of materials joining. As an organization we possess a wealth of knowledge and support a spirit of cooperation which is rarely paralleled in technical societies. Since its inception in 1948, IIW-developed Standards and Best Practice Documents represent an international stamp of scientific and technical excellence for enhancing human safety and sustainable development via safe and appropriate use of materials joining technology.



**Prof. Gary B. Marquis**  
**IIW President**  
**Finland**

Over the past two decades, the IIW has succeeded in attracting an average of more than one new IIW Member Country per year. This steady global expansion has not been without its growth pains. Many of our member societies represent well-developed and highly industrialised economies while others are newly emerging and rapidly developing. In both categories we find Member Societies with wide variation in terms of the per capita economic resources of the country. This increasing diversity of our membership means that the IIW must be increasingly sensitive to a wide variety of realities and provide different types of support and services to our Member Societies. The challenge of differing views was evident in 2013 as Member Countries could not agree on a new formula for computing membership fees and this diversity continues to require attention as we undergo a major review of rules and procedures related to IIW's education, training, qualification and certification (ETQ&C) activities.

Since the late 1990s, many of the Member Societies joining the IIW are interested in the well-respected ETQ&C programmes and the accompanying opportunities afforded to enhance skills and to encourage economic development within their country. Over the past few years, there are examples of Member Countries which initially joined the IIW primarily to participate in the IIW's ETQ&C systems, but which progressed to the

point of also contributing significantly to the IIW's Technical Working Units, and to assist in the development of international Standards and global Best Practice documents. The IIW has a clear interest in maintaining this positive growth trend and in preserving its attractiveness for its existing membership. It is obvious that the image and global impact of the IIW will be influenced either positively or negatively by changes to the IIW's ETQ&C systems.

Two of my first acts as president have been to sign the service agreements between the IIW and Institut de Soudure for hosting the IIW General Secretariat and between the IIW and Instituto de Soldadura e Qualidade (ISQ) for hosting the IIW IAB Secretariat. Both of these agreements were endorsed by the IIW General Assembly in Seoul and ensure that the professional expertise, capabilities and services provided by both organisations will be available to the IIW for the next five years. However, five years is a short period in the lifetime of an organisation like the IIW. One task of my presidential term will be to initiate discussions on the future goals, aspirations and structures of our association beyond 2019.

- In order to pursue its goal of enhancing the global quality of life via harmonisation and sharing global best practices related to materials joining, the IIW's ETQ&C system needs to be strengthened. This will include some changes to our rules, operating procedures and documents. In the longer term it may also require the IIW to undergo structural changes to its organisation to better accommodate activities which are increasingly commercial in nature.

- The IIW must continue to pursue improved governance practices. Our goals are to develop greater accountability, openness, integrity and transparency with respect to decisions and policies. The IIW Board of Directors has been reviewing its risk management financial management policies so as to ensure the long-term stability and effectiveness of our association.

- 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 will continue with respect to other 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 all Member Societies.

- The IIW should undertake a review of its technical working units. These groups have provided a superb backbone of expertise upon which our ETQ&C and standardisation activities have been built. The system has expanded to comprise a large number of Technical Commissions, Select Committees, Study Groups, Sub-Commissions and Working Groups. These may need to be updated so as to be more attractive to new industrial participants and to better enhance networking and information exchange.

- For several years the IIW has pursued a strategy of increasing the number of young people pursuing careers in welding and young professionals involved in our working units. Numerous member societies have taken bold initiatives and many of these have become assimilated as common practices. This emphasis must continue to be nurtured. At the upcoming Annual Assembly in Helsinki, for example, there will be an evening organized specifically for young professionals and students. The emphases will be fun, networking and career development.

The success of an organization like the IIW is fuelled primarily by the energy and activities of its volunteers from each of the 57 member countries. Therefore, our success as a whole is the conglomerate of the achievements of hundreds of individuals. However, several accomplishments from 2014 are especially noteworthy:

- By all accounts, the 67<sup>th</sup> Annual Assembly and International Conference in Seoul, Korea was a great success. Representatives from 46 countries were in attendance to enjoy a taste of Korean culture and hospitality. Nearly 800 people including more than 100 students and young professionals had the opportunity to enjoy friendships and discuss new technical ideas. The International Conference theme «Advanced Technology in Welding and Joining for Heavy, Automotive and Electronics Industries”, reflected the diversity of Korean technology industries.

- During the General Assembly, Cyprus was welcomed as the 57<sup>th</sup> member country as the Cyprus Welding Institute joined the IIW. This recently formed association will be mentored by our Greek Member Society to develop IIW activities in Cyprus.

- Further to a proposal of the IIW Board of Directors Working Group on Regional Activities, the 1<sup>st</sup> IIW International Congress on Welding in the Arctic took place in Vancouver. Organized by the Canadian Welding Association, the event highlighted the tremendous technical innovations and industrial developments to address issues and challenges when working in sub-zero temperatures.

- In April the 3<sup>rd</sup> IIW International Congress in India was held in Delhi. India confirmed its key status in the Asian region, gathering more than 100 papers from 13 countries. This event reinforced the long-term engagement of Indian Institute of Welding to regularly host IIW events.

- The International Congress for Young Professionals in Welding is a new initiative by the Hungarian Member Society, MAHEG. This September 2014 event combined traditional congress presentations with group case studies proposed and monitored by sponsors.

A welding competition tested both the theoretical and practical skills of students and professionals in the early stages of their careers.

- The Pan-American International Congress in October was an important stepping stone to a new series of IIW International Congresses in North-South-Central America.

The first event was organized in São Paulo, Brazil with different sessions addressing diverse technological and educational topics. Steps to hold a future even in Peru were also initiated.

- In November, the Welding Technology Institute of Australia hosted the 4<sup>th</sup> Research and Collaboration Colloquium at the University of Wollongong. The goals of such colloquia are to primarily serve as informal forums of networking and information exchange between IIW members and industrial representatives in a region.

- The IIW journal, *Welding in the World: The International Journal of Materials Joining* has now implemented an open submission process modelled after leading international scientific publications. The vast majority of submissions to the journal will still come via IIW's own technical working units, which already produce leading scientific and technical research. Open submission will provide a route for engaging new researchers in IIW activities and it will be used as a means of securing that new ground-breaking research will be published first by the IIW thus expanding our global visibility and impact.

The IIW Constitution, which has been in force for just over one year, clearly defines the Member Societies as possessing the ultimate decision making authority of the organisation. With this in mind, I wish to confirm the commitment of myself and members of the Board of Directors to listen to needs, wishes and concerns of you, our Members, as we set goals and objectives for our association.

I hope to be able to dialog with many of you at the upcoming 68<sup>th</sup> Annual Assembly and International Conference in Helsinki and at other IIW events throughout the year.



**Prof. Gary B. Marquis**

President,  
International Institute  
of Welding  
(2014-2017)  
Finland





# IIW BOARD OF DIRECTORS 2014-2015

Since the current term of office of the IIW President has expired in 2014, Prof. Gary B. Marquis (Finland) was appointed IIW President by the General Assembly. 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 IAB Chair and TMB Chair are ex-officio non-voting members of the Board of Directors.

### New elected members are:

Mr Christopher Smallbone, Mr Ernest D. Levert, Dr. Sorin Keller and Prof. Thomas Böllinghaus as Directors, Mr James Guild as IAB Chair and Dr Luca Costa as Chair of the TMB.

## RENEWAL OF THE BOARD OF DIRECTORS IN 2014



**Prof. Gary B. Marquis**  
IIW President  
FINLAND



**Mr. Douglas R. Luciani**  
Treasurer  
CANADA



**Dr. Baldev Raj**  
Immediate  
Past President



**Mr. Chee-Pheng Ang**  
Vice-President  
SINGAPORE



**Mrs. Hülya Gedik-Sadiklar**  
Vice-President  
TURKEY



**Dr. Sorin Keller**  
Director  
SWITZERLAND



**Prof. Dr.-Eng. Yoshinori Hirata**  
Director  
JAPAN



**Prof. Dr.-Eng. Boyoung Lee**  
Director  
REPUBLIC OF KOREA



**Mr Jouko Lassila**  
Director  
FINLAND



**Mr Ernest D. Levert**  
Director  
UNITED STATES



**Mr Chris Smallbone**  
Director  
AUSTRALIA



**Prof. Thomas Böllinghaus**  
Director  
GERMANY



**James Guild**  
IAB Chair  
SOUTH AFRICA



**Dr. Luca Costa**  
TMB Chair  
ITALY



**Dr. Cécile Mayer**  
CEO  
FRANCE

## THE IIW SECRETARIAT

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



**Mrs Rute Ferraz**  
IAB Chief Executive



**Prof. Luisa Coutinho**  
IAB Consultant



**Mr Italo Fernandes**  
Systems Manager



**Mrs Olga Teixeira**  
Administration  
and Finance Assistant

## 2014 TREASURER'S REPORT

The year ended in a satisfactory position with almost 11,000 € of surplus after tax.

After its outsourcing in 2013, **Welding in the World** is now financially stable. Royalties should continue to increase with the growing exposure of the Journal.

Despite the very low interest rates on IIW saving accounts, this will improve slightly and until 2017 due to our investments within five year term accounts.

Priorities over the last year in expenditures have been allocated to the IIW website and the modernization of communication vehicles. A new layout has been designed and applied to the Annual Report and to the corporate brochure. By necessity,

our ageing web platform needs an important update but also some additional development required by users. Since the amortization of the current website has been completed in 2014, the following years will see a re-allocation of the costs from maintenance of the website to the development of a new web tool.

Finally, close control on expenses was necessary this past year as there was difficulty receiving payment with some membership fees. This resulted in the recording of bad debt in the amount of 11,451 €. Ensuring the IIW receives its membership fees in a timely manner going forward will be critically important for the long term sustainability of the IIW and its members.

REPORTING 31/12/2014	BUDGET 2013	REALISED 2013	BUDGET 2014	REALISED 2014
<b>INCOME</b>				
Membership fees	437,000	433,715	441,370	444,517
Fees from IIW events (A.A.+ Congresses)	98,627	98,127	100,103	101,675
Others incomes	16,650	11,153	11,000	16,482
Welding in the World	18,470	20,368	20,000	20,744
Interest from bank accounts	8,000	8 739	5,000	9,395
<b>TOTAL</b>	<b>578,747</b>	<b>572,102</b>	<b>577,473</b>	<b>592 ,814</b>
<b>EXPENDITURE</b>				
Secretariat	433,672	433,672	438,009	437,311
Travelling expenses	37,000	31,228	45,000	30,377
Direct costs for meetings and prizes	3,000	4,550	2,500	6,139
Office supplies and Computer maintenance	27,000	21,468	25,000	9,921
Postage and telephone	10,000	6,400	10,000	11,022
Promotion, communication	18,000	14,831	15,000	24,223
IIW website hosting and maintenance*	11,000	6,462	8,000	18,285
Audit fees and legal fees	15,000	14,026	10,000	12,873
Bank charges	2,000	1,625	2,000	2,918
Straight-line method of depreciation	11,880	11,880	11,880	11,880
Insurance	3,200	2,543	3,200	2,487
Business Tax	950	972	950	994
Other charges		126		
<b>TOTAL</b>	<b>572,702</b>	<b>549,783</b>	<b>571,539</b>	<b>568,431</b>
<b>OPERATING RESULT</b>	<b>6,045</b>	<b>22,319</b>	<b>5,935</b>	<b>24,383</b>
<b>BAD DEBTS INVENTORY</b>				
Bad debts recovered				
Provision for doubtful account		3,685		11,451
Irrecoverable debt				
<b>TOTAL</b>	<b>6,045</b>	<b>3,685</b>	<b>5,935</b>	<b>12,932</b>
<b>SURPLUS</b>	<b>6,045</b>	<b>18,635</b>	<b>5,935</b>	
Tax result	1,067	2,795	790	1,940
<b>RESULT AFTER TAX</b>	<b>4,978</b>	<b>15,840</b>	<b>145</b>	<b>10,992</b>



## SUMMARISED BALANCE SHEET 31 DECEMBER 2014

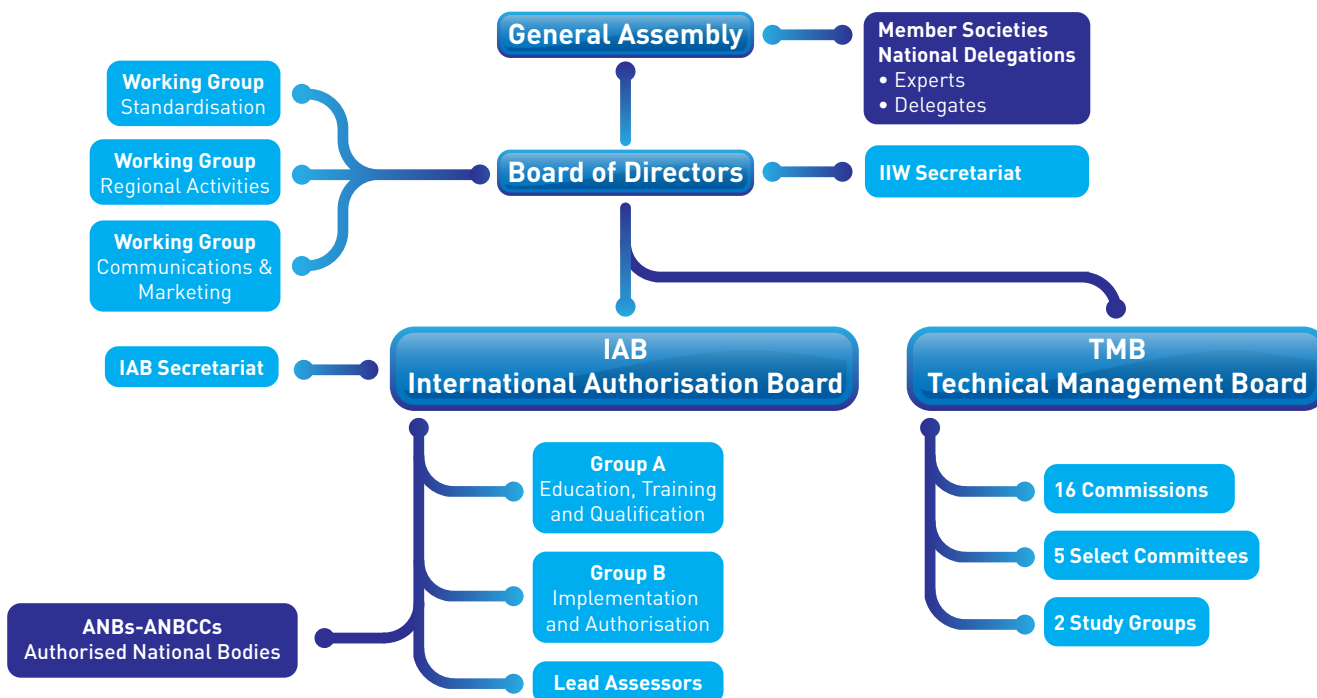
	2014 K€	2013 K€
<b>ASSETS</b>		
website invetsment	0	12
Current Assets		
Cash	16	10
Other securities	220	237
Trade receivables	38	14
Tax receivables	30	29
Deferred charges	10	7
	<b>314</b>	<b>309</b>
<b>Fixed Assets</b>		
Other tangible assets	0	0
<b>TOTAL ASSETS</b>	<b>314</b>	<b>309</b>
<b>LIABILITIES AND EQUITY</b>		
<b>Creditors</b>		
Advances and trade deposits		
Trade creditors	34	39
Tax and social liabilities		
Deferred revenues		1
Other debts		
Cash shortage		
	<b>34</b>	<b>40</b>
<b>NO CURENT LIABILITIES</b>		
Bad debts recorded	0	0
<b>Equity Capital</b>		
Accumulated surplus	269	253
Result of the current year	11	16
	<b>280</b>	<b>269</b>
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>314</b>	<b>309</b>

## CASH FLOW SITUATION ON 31 DECEMBER 2014 / 230,949 €

- Savings 70,000 €
- Current account 10,949 €
- 5 year deposit 150,000 €



# THE IIW ORGANISATION



The IIW was founded in 1948 by the welding institutes or societies of 13 countries, who 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 57 countries, with ever more nations continually indicating interest.

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 OBJECTIVES

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

IIW's Education, Training, Qualification and Certification Programmes on a global basis.

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

To assist in the formulation and preparation of International Standardisation documents.

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

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

## HOW IS THE IIW FUNDED ?

The IIW is a non-profit organisation funded by the Member Societies which pay an annual membership fee, according

to a scale designed to reflect, as equitably as possible, the dependence of one particular country on welding technology. Such subscriptions are modest and cover only a fraction of the cost of running the IIW General Secretariat and other associated activities. Further income is derived from the sale of books and other documents and via fees which are collected from each Annual Assembly participant.

## HOW IS THE IIW RUN?

Each Member Country is represented by a Responsible Member Society which possesses a 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 12 voting Directors, from among whom are elected the Officers (President, President-Elect, 3 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.

## 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:

- The 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.
- The Authorised National Bodies for company Certification (ANBCCs) to deliver the certification ISO 3834 "Quality requirements for fusion welding of metallic materials."

The IAB's day-to-day work is handled by the IAB Secretariat and Working Group A (Education, Training and Qualification) and Group B (Implementation and Authorization).

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, "Quality requirements for fusion welding of metallic materials."

Due to the continually increasing, global

use of ISO 14731 and ISO 3834 Standards, numerous countries are taking advantage of the IIW's International Programmes.

## OUTPUTS 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 prior to publication in this forum. Apart from *Welding in the World*, the IIW also publishes:

- Guidelines;
- Best Practice Documents;
- Conference articles;
- ISO Standards (the IIW is an official International Standardisation Body in the fields of welding and joining);
- Books;
- Multilingual Collections of Terms.

All of these documents may be consulted and/or downloaded from the IIW website, [www.iiwelding.org](http://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, 3 days are dedicated to simultaneous sessions of the Technical Commissions and other Working Units. An International Conference on a pre-determined theme is also organized 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 accompa-

nying 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 2014 reached 800 persons.

## INTERNATIONAL CONGRESSES

In order to implement its strategies, the IIW holds International Congresses with a view to realizing the following objectives:

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

These very successful 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.

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

Since its inception, the IIW 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 the world over.

The IIW's database of technical documents presently references almost 15,000 documents and is the fruit of the substantial collective contributions of the experts representing the 57 Member Countries of the IIW since its foundation in 1948.



# IIW BUSINESS PLAN

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 Technical and Administrative Working Units and the IIW General 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.

Feedback from the Chairs of Working Units in January 2006 included constructive comments about the previous IIW Business Plan and its implementation. In particular, it was felt that the previous Business Plan had been drawn up by the IIW Board of Directors and not communicated effectively to the Working Units for implementation. It was recommended that all IIW Technical and Administrative

Working Units henceforth be involved in the future planning and implementation process.

For the current 2013-2017 edition, a process of involvement and consultation with all IIW Units was followed for the development, finalisation and execution of all appropriate plans. This edition features a unified Strategic Plan, presented at the Technical Management Board level, applicable to every Technical Working Unit. The Working Units are specifi-

<b>GOAL</b>	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 systems on a global basis	Promote IIW and its member countries in all regions of the world to the mutual benefit of all
<b>Delegated Unit</b>	TECHNICAL MANAGEMENT BOARD (TMB)	INTERNATIONAL AUTHORISATION BOARD (IAB)	WORKING GROUP REGIONAL ACTIVITIES (WG-RA)
<b>Objective A</b>	Initiate and develop global best practices	Provide the administrative, secretarial, marketing and promotion duties for the IIW systems	Promote the holding of IIW supported events throughout the regions of the world
<b>Objective B</b>	Organise the exchange of scientific and technical information and provide an environment to encourage and sustain the transfer of knowledge	Develop the Education, Training and Qualification system	Introduce the IIW Weld-Care programme for take-up by developing countries
<b>Objective C</b>	Oversee IIW standardisation activities	Develop the IIW Certification Systems, Implement the IIW E&T&Q&C systems and authorise IIW ANBs / ANBCCs	Promote and market IIW in different regions of the world
<b>Objective D</b>	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 organisation's efforts in each region

cally defined by their individual Terms of Reference.

Based on the IIW's Mission, Goals, SWOT analysis, 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 & Marketing (WG-COM&MARK)
- Working Group - Standardisation (WG-STAND)
- IIW General 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 strategies. 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 realize 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

Assist in the Implementation of the IIW's outcomes	Assist in the formulation and preparation of International Standardisation documents	Provide quality services to IIW, IIW Member Societies and other organisations
WG COMMUNICATIONS & MARKETING (WG-COM&MARK)	WORKING GROUP STANDARDISATION (WG-STAND)	IIW SECRETARIAT
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
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
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
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



## SCIENTIFIC AND TECHNICAL ACTIVITIES TECHNICAL MANAGEMENT BOARD (TMB)

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

### SCIENTIFIC EXCHANGE AND TRANSFER OF KNOWLEDGE

All IIW Working Units serve as global centres of information exchange in their respective disciplines. Each unit unites experts and professionals from industry, research institutes and the world's leading universities.

About 100 IIW Working Unit events take place every year, about half in association with the Annual Assembly and the remainder in intermediate sessions.

During these meetings, presentations and discussions revolve around technical innovations, scientific progress and strategic or standardisation issues, related to the working programmes. Knowledge is 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 IIW Guidelines. These documents are in great demand to industries who understand the IIW logo to be a symbol of quality and scientific and engineering excellence. They also serve as a key starting point for new international standards and new research fields.

The results of this work are now a part of the common knowledge in the field of welding, such as carbon equivalent, preheat calculation methods, calibration blocks for NDT, recommendations of fatigue, testing methods for creep assessment of materials, and many more.

### STANDARDISATION

The IIW acts and is recognized as an ISO standardisation body, 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, health and safety.

### HEALTH, SAFETY AND ENVIRONMENT

One specialized IIW Working Unit provides regular reports on the direct and imminent effects of materials joining on workers' health and safety and its impact on the environment. This is the unique forum for the exchange of information with expertise coming from different areas, such as welding engineering, chemistry, medicine. However, all Units continuously contribute to the realization of this objective via their work, notably, by decreasing the failure rates of welded joints through better weld inspection and assessment, and by reducing the use of raw materials and energy by more efficient fabrication processes.

### SIGNIFICANT HIGHLIGHTS FROM 2014

#### 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.

IIW has a specific programme for this: in year 2014 a first international conference

for young professionals and welding was held, with a wide participation; during the annual assemblies the number of young students has been increasing significantly in the last years, with a significant numbers of contributions to the activities of Working Units.

#### IIW Publications

The IIW flagship journal, **Welding in the World: The International Journal of Materials Joining**, is where the results of the most significant contribution get recognition through publication and are made available to the scientific and industrial world.

Papers are selected, presented and discussed at the meetings of the IIW Working Units, and after reaching consensus among the members, enter the peer review process for the publication on the journal. This process assures as in a in-depth quality assessment of papers. Consistently the journal has continued to grow in terms of quality, amount of papers published per issue and, mostly, in recognition and circulation.

This is well demonstrated by the increase of the "impact factor" the critical measure of the scientific and technological quality of a journal, which is reaching good levels and is expected to grow even more what originally forecasted.

However IIW is also active in the production of books and booklets devoted to specific matters, where readers can find a comprehensive collection of highly significant scientific content.

**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 organize the exchange of scientific and technical information and provide an environment to encourage and sustain the transfer of knowledge
- To initiate and develop global best practices
- To oversee all technical aspects of IIW standardization activities
- To encourage and support a safe, healthy and environment-friendly world

### COMPOSITION OF THE TECHNICAL MANAGEMENT BOARD FOR 2014-2015

#### Appointed by the Board of Directors

Dr. Luca Costa (Italy), Chair

Dr. Zheng Sun (Singapore)

Dr. Solomon Edebiri (Nigeria)

Prof. Vladimir Ponomarov (Brazil)

Dr. Michail Karpenko (New Zealand)

Asst. Prof. Dr. Tuba Karahan (Turkey)

Prof. John C. Lippold (United States)

#### 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)

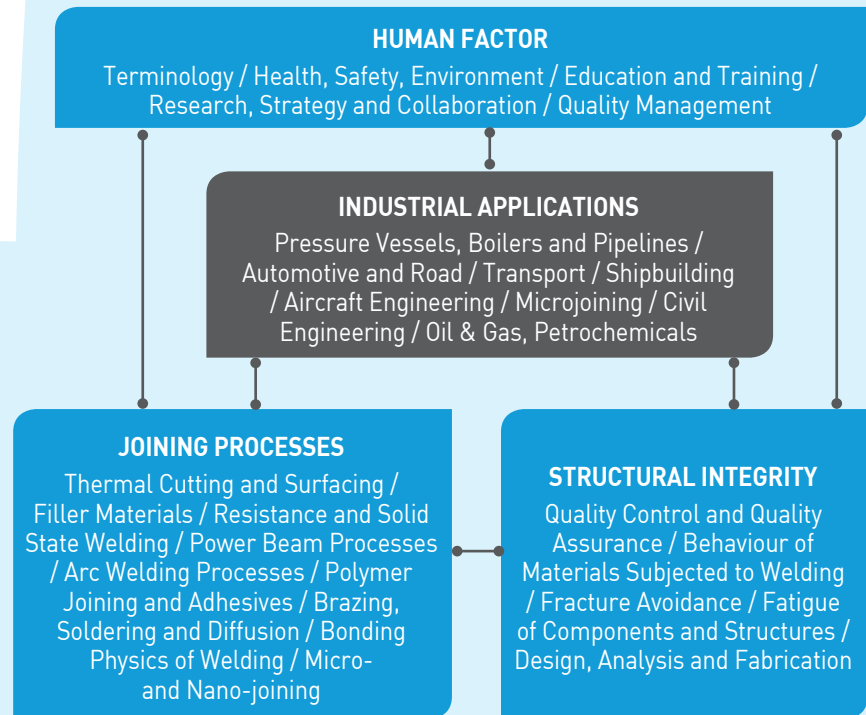
Mr Mathias Lundin (Sweden)

# TECHNICAL WORKING UNITS

## TRANSFERRING KNOWLEDGE TO INDUSTRY

In order to develop world-leading products, industries must be able to integrate expertise in many fields of materials joining. Focus areas of the 23 Technical Working Units can generally be divided into Processes, Human Factors, Structural Integrity or Industrial Applications. One of the tremendous strengths of the IIW is the seamless cooperation between Units with different focus areas.

**The TMB is actively driving an initiative to improve communication and collaboration between the respective Working Units.**



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®.

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 IIW WORKING UNITS

### COMMISSION:

A Commission covers a technical field identified as central to the IIW, 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 IIW General Assembly.

### SUB-COMMISSION:

A Sub-Commission operates within the scope and structure of a Commission, specializing 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 Commission 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 IIW. The work of a Select

Committee is a long-term or continuous activity and operates without any time limit and implies co-ordination with other Working Units. The creation of a Select Committee is subject to the approval of the IIW 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 IIW. 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 IIW General Assembly.



**Chair: Prof. Veli Kujanpää**  
Finland

### COMMISSION I: THERMAL CUTTING AND SURFACING

Sub-Commissions and Working Groups:

C-I-C: Thermal Spraying

C-I-E: Thermal Cutting and Related Processes

Commission I is the oldest commission in IIW. The Commission focuses on thermal cutting and allied processes (e.g. thermal spraying) especially with respect to a better scientific understanding and practical applications of these processes. Scientific and technical contributions by Commission members give attention to process modelling, mechanical

properties of the end-products and production planning. In addition, thermal cutting and thermal spraying equipment are continuously being reviewed and monitored. Recently the main emphasis has been on laser cutting, especially in relation to the newest developments in fibre laser cutting and remote laser cutting.





**Chair: Dr. Gerhard Posch**  
Austria

## COMMISSION II: ARC WELDING AND FILLER METALS

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)

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 standardization 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)

C-III-A-WGA1: Testing of Welds

Chair: Mr André Galtier (France)

C-III-A-WGA2: Monitoring and Control

Chair: Dr.-Ing. Miro Uran (Slovenia)

C-III-WGS: Standardisation

Chair: Dr. Kin-ichi Matsuyama (United States)

C-III-B: Friction-based Processes

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

C-III-B-WGB2: Mechanical Properties Database

Chair: Dr. Antonio da Silva (Spain)

C-III-B-WGB3: Modelling for FSW

Chair: Dr. Laurent d'Alvise (Belgium)

C-III-B-WGB4: Standardisation on Friction-based Spot Welding Processes

Co-Chairs: Prof. Dr.-Ing. Jorge dos Santos (Germany) and Mr Marc Petersen (United States)

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)

C-IV-C: Laser Hybrid Arc Welding

Chair: Dr. Herbert Staufer (Austria)

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 Sjerve**  
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-A-a: Working Party to Industrial Radiology

Chair: Mr. Uwe Zscherpel (Germany)

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

Chair: Mr. Daniel Chauveau (France)

C-V-C-b: Working Party to Phased Array Calibration Block Standardisation

Chair: Mr. Daniel Chauveau (France)

C-V-C-c: Working Party to 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: Working Party to MMM-Technique round robin trials

Chair: Dr. Anatoly Dubov (Russian Federation)

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

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: Working party to write the best practices document 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 standardization 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 standardization 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

### 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.



**Acting Chair: MD PhD**  
**Wolfgang Zschiesche**  
Germany

### COMMISSION VIII: HEALTH, SAFETY AND ENVIRONMENT

**Vice-Chair: Mr John Petkovsek** (United States)

Health, Safety and Environment are considered key issues for the international welding community; hence the reason why Commission VIII was created since the foundation of IIW in 1948 and particularly relevant:

- To act as interdisciplinary network for the exchange of knowledge in the field of Health and Safety in welding.
- To regularly review the general trends in the exposure to physical and chemical agents which may affect Health and Safety in welding.
- To share information on national laws, rules and regulations related to Health, Safety and Environment in welding
- To 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 standardization, production of Best Practices and IIW statements on specific matters (e.g. IIW Statement on Lung Cancer and Arc Welding in 2011), 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 metals behaviour 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, damages

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

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

Chair: Dr. María-Asunción Valiente Bermejo (Spain)

C-IX-L: Low Alloyed Steel Welds

Chair: Assoc. Prof. Dipl.-Ing. Dr. techn Norbert Enzinger (Austria)

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

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

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

C-IX-WG1 Mathematical Modelling of Weld Phenomena

Chair: Prof. Christoph Sommitsch (Austria)



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

## COMMISSION X: STRUCTURAL PERFORMANCES OF WELDED JOINTS - FRACTURE AVOIDANCE

Sub-Commissions and Working Groups:

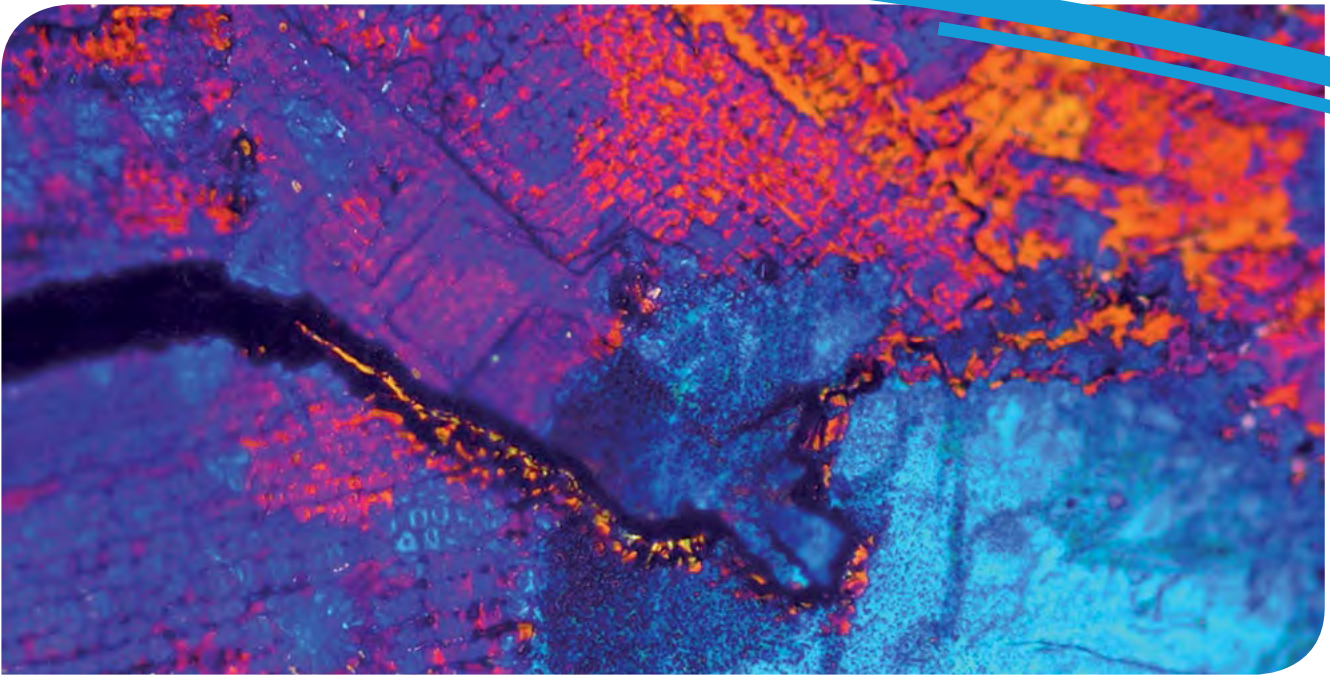
C-X-A: Welding residual stresses in thick steel structures

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 in design as well as in service with known or assumed flaws, where 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 infrastructures such as energy plants, pipelines, bridges and buildings constructed with high performance steels and high welding technologies.



**Chair: Dr. Teresa Melfi**  
United States

## 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)

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

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 emphasize 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.



**Acting 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.



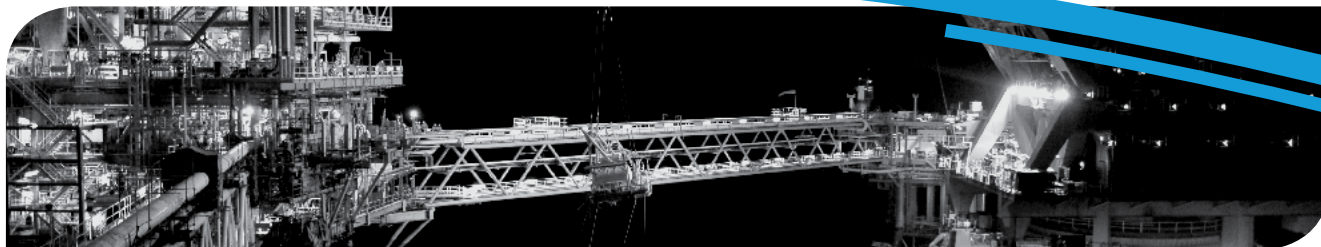
**Chair: Mr Christopher  
Smallbone**  
Australia

## COMMISSION XIV: EDUCATION AND TRAINING

Commission XIV very actively examines ways to improve the shortage of welding personnel worldwide. There are some universal issues involving qualified instructors and qualified students. At the same time, this Working Unit has also prioritized the enhancement of the image of welding.

Member Countries are invited to submit their training resources to be shared amongst

all ANBs and consequently, to all Member Country ATBs. This will advance the promotion of standardisation and also avoid duplication, as well as assist new ANBs and developing countries in particular. This approach is geared to become a key strategy, to be included in the Best Practices section of the Commission's Strategic Plan.



**Chair: Mr Robert E. Shaw**  
**United States**

## 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

Co-Chairs: Dr. Koji Azuma (Japan) and Dr. Krishna Verma (United States)

C-XV-E: Tubular Structures

Chair: Mr Xiao-Ling Zhao (Australia)

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 organized 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 optimization 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 and frequent joint meetings to facilitate the exchange of such information. 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)**

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

## 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. Teresa Vieira (Portugal)

Vice-Chair : Dr. Simon Jahn (Germany)

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 characterization 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 e.g., 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.



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

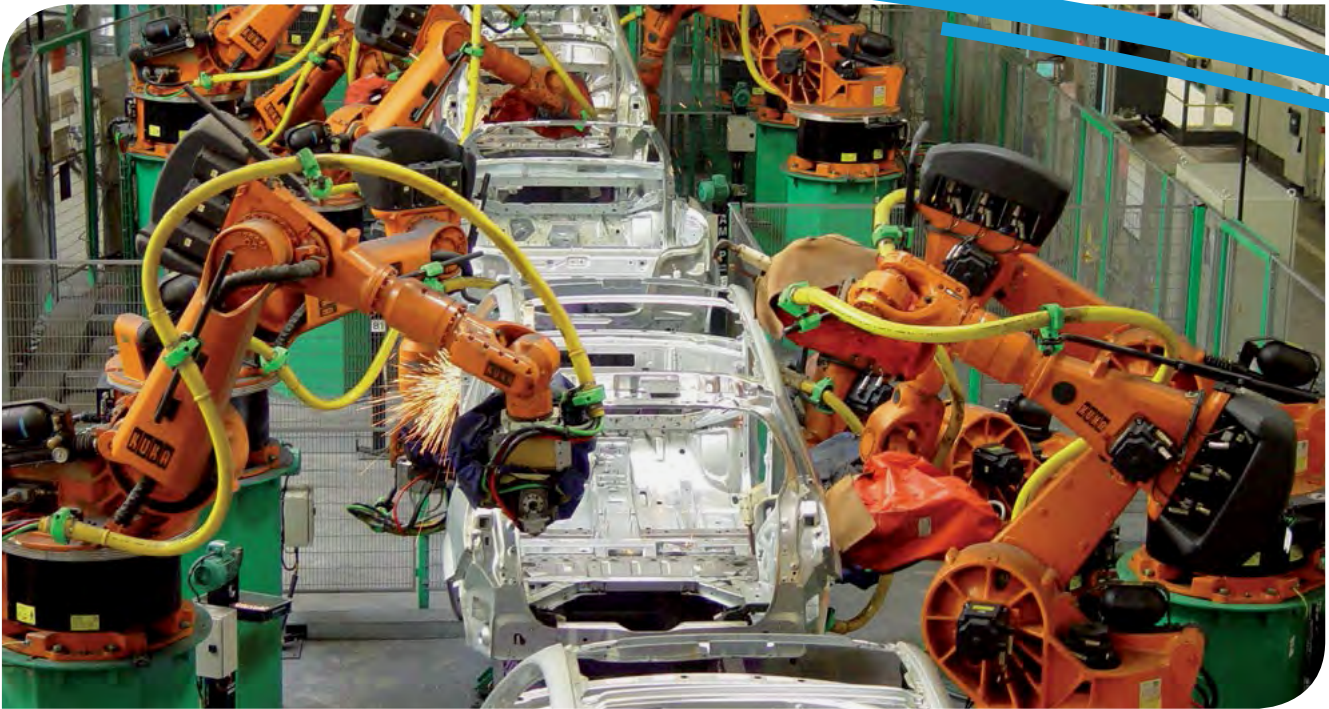
## SC-AIR: SELECT COMMITTEE - PERMANENT JOINTS IN NEW MATERIALS AND COATINGS FOR AIRCRAFT ENGINEERING

**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 IIW'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.





### SC-AUTO: SELECT COMMITTEE-AUTOMOTIVE AND ROAD TRANSPORT



**Chair: Prof. Dr.-Ing.  
Michael Rethmeier**  
Germany

Members of Select Committee - Automotive and Road Transport (SC-AUTO) present and discuss on 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, decrease vehicle assembly costs.

The main aim is to give a comprehensive

overview of the activities of IIW 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, tud 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.

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



**Chair: Prof. Norman Zhou**  
Canada

The Select Committee - MICRO (SC-MICRO) was recently established (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.



**Chair: Mr Robert E. Shaw**  
United States

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

**Vice-Chair: Mr Mathias Lundin (Sweden)**

SC-QUAL focuses on quality management and the requirements for personnel involved in welding and allied processes. It also develops guidelines on the implementation of standards, as for example, ISO 3834 "Quality requirements for fusion welding of metallic materials." At present, SC-QUAL members discuss the minimum requirements for welding qualification test examiners and the requirements for welding coordinators. SC-QUAL has also collected information which gives a global overview of quality management systems used in different fields of applications. In collaboration with Commission XIII, the experts of SC-QUAL are currently working on the link between the quality imperfections of

ISO 5817 and the fatigue strength of a weld or welded structure, to give guidance to the designers as well as to NDT personnel for evaluation. The Working Unit also cooperates with Commission VIII on health, safety and environment issues, with the aim of developing arguments for management personnel of companies in order to improve the awareness of the advantages of implementing health and safety policies.

SC-QUAL is always interested in undertaking new tasks which will improve the exchange of knowledge between technical experts, quality managers and production personnel by using welding and allied processes. Thus, SC-QUAL acts as an interdisciplinary body for the IIW.



**Chair: Mr Harold Sadler**  
United States

## 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**

The principal aim of Study Group-Research (SG-RES) is to analyse the development of welding research around the world. This is carried out by presentations from the countries involved, usually two per year, and a round table discussion where participants offer contributions related to the development of welding research in their respective countries (topics addressed, funding, major projects, etc.). In this way, critical feedback is collected regarding how topics of industrial interest and

support for research in welding and allied techniques are progressing in the participants' countries. These round tables facilitate the exchange of ideas and discussions on strategy development. SG-RES also supports events for researchers to discuss their work, including new topics and the most recent results, methods and best practice solutions like the Welding Schools which have been organized since 2011.



**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 unders-

tanding 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

**To identify, develop and implement the IIW's Education, Training, Qualification and Certification systems on a global basis.**



**Mr James Guild**  
Chair of IAB  
South Africa

## INTERNATIONAL AUTHORISATION BOARD (IAB):

The IAB works continuously towards the following aims:

- The development of harmonised education, training and qualification systems to provide the welding industry with qualified and skilled personnel at all levels.
- The development of a harmonised international scheme for Quality Companies 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 COMPANIES CERTIFICATION (ANBCCS):

The ANB network stabilized in 2014, with two countries applying also for ANBCC, being New Zealand Fully Authorized.

The IAB Board Working Group, working on the development of IAB strategy, further developed the already existing document with several new proposals mainly focused on cooperation activities among ANBs and ANBCCs.

In 2014, the network of IAB Members, ANBs and ANBCCs comprised 46 countries, 45 ANBs among which 11 with Certification of Personnel, 27 ANBCCs, 3 with Applicant Status for ANB and 3 for ANBCC.

Almost 11,000 diplomas were awarded worldwide during 2014, with more than 150 new certificates issued for Personnel and more than 200 new Companies certified, according to ISO 3834.

## MOST SIGNIFICANT ACTIVITIES DURING 2014:

Since 2010, the International Education, Training, Qualification and Certification Systems have been growing and have become self-sustainable and in 2014, the focus was towards strengthening and consolidating these systems.

To achieve this goal, IAB Group A (Education, Training and Qualification) and IAB Group B (Implementation, Authorisation and Certification) continued their activities of updating and/or revising existing guidelines and rules and developing of new ones which address potential markets.

### Other key 2014 activities included:

- The review and issue of the IIW/IAB rules and operating procedures related to the ANBs and ANBCCS activities.
- The issue of the revised guidelines for Personnel with Qualification for Welding Coordination and International Welder Part I.
- The review and issue of ANBCC Assessment of Manufacturers of Welded Products.
- The inclusion of Health and Safety subject in all guidelines.



**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)
- WG A#4a: Companies and Personnel Certification System. Chair : Dr. Stefano Morra
- WGA#5A: In-Service Inspection Guideline. Chair: Henk Bodt
- 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 2014, THE ACTIVITIES OF IAB GROUP A INCLUDED:

- Issue of revision 2 of guideline for Personnel with Qualification for Welding Coordination : Engineer, Technologist, Specialist, Practitioner (IIW/IAB 252)
- Issue of revision 5 of International Welder Part I Guideline (IIW/IAB 089)
- Issue of revision 3 of guideline ANBCC Assessment of Manufacturers of Welded Products (IIW/IAB 340)
- Discussion of the IWIP Guideline IAB-041
- Discussion of In-Service Inspection Guideline
- Schedule for the Implementation of Harmonised Examination
- Implementation of International Exams
- Validation Process for Harmonised Examination Questions
- Status of Harmonised Database Question and Fixed Exams



**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: Companies 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 5 years, with an interim assessment after 2 years. In addition to its involvement in personnel

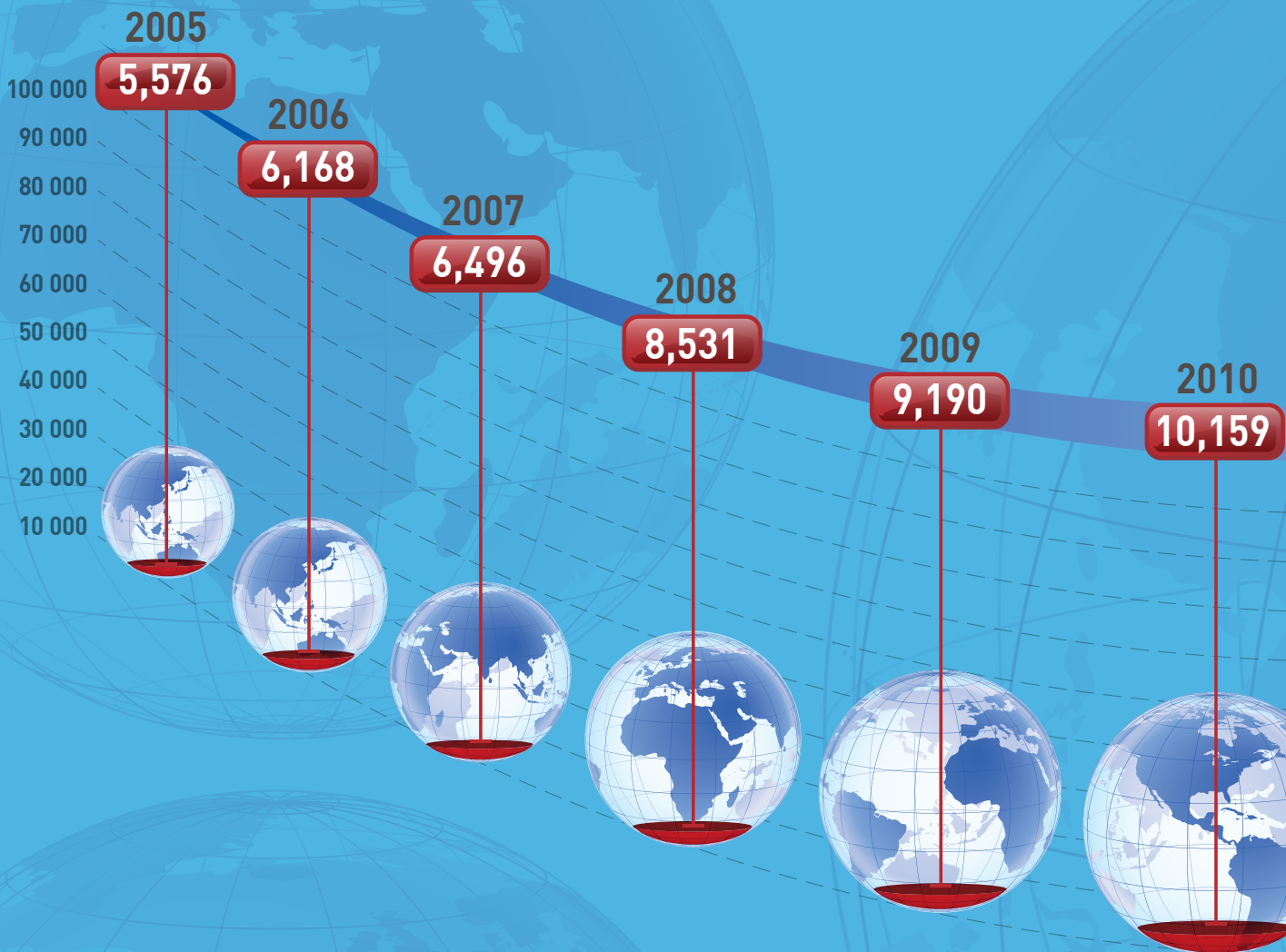
qualifications, Group B is also responsible for implementation and authorisation of the IIW certification system for personnel and companies, whereby manufacturers are certified in recognition of their application of the ISO 3834 welding quality standard. The IAB system for company certification requires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

Significant new growth in the IAB system has come from outside Europe (where both the education and certification systems were first developed), mainly in the Asian region. Interest in the IAB system is global and it is now rapidly becoming truly international.



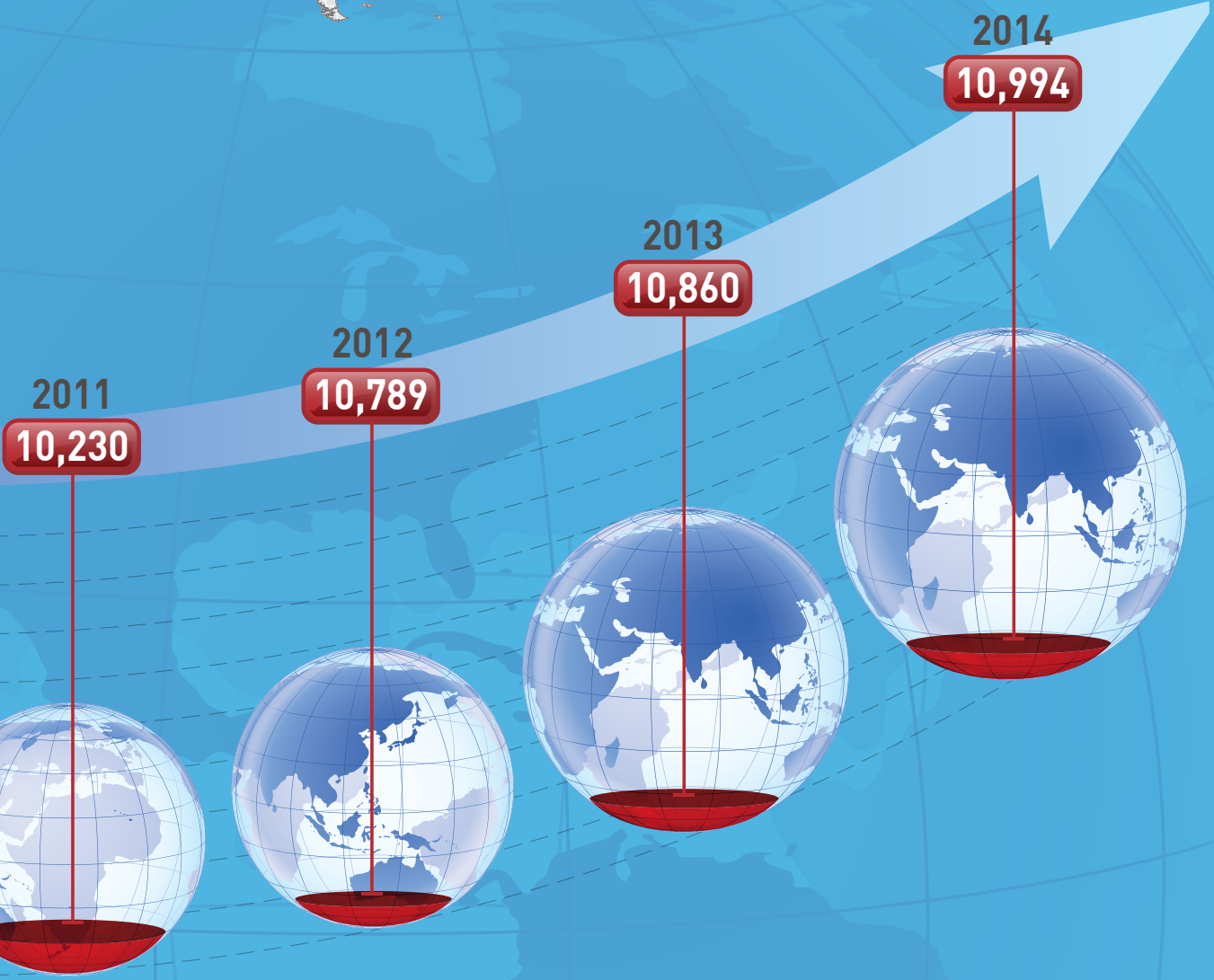
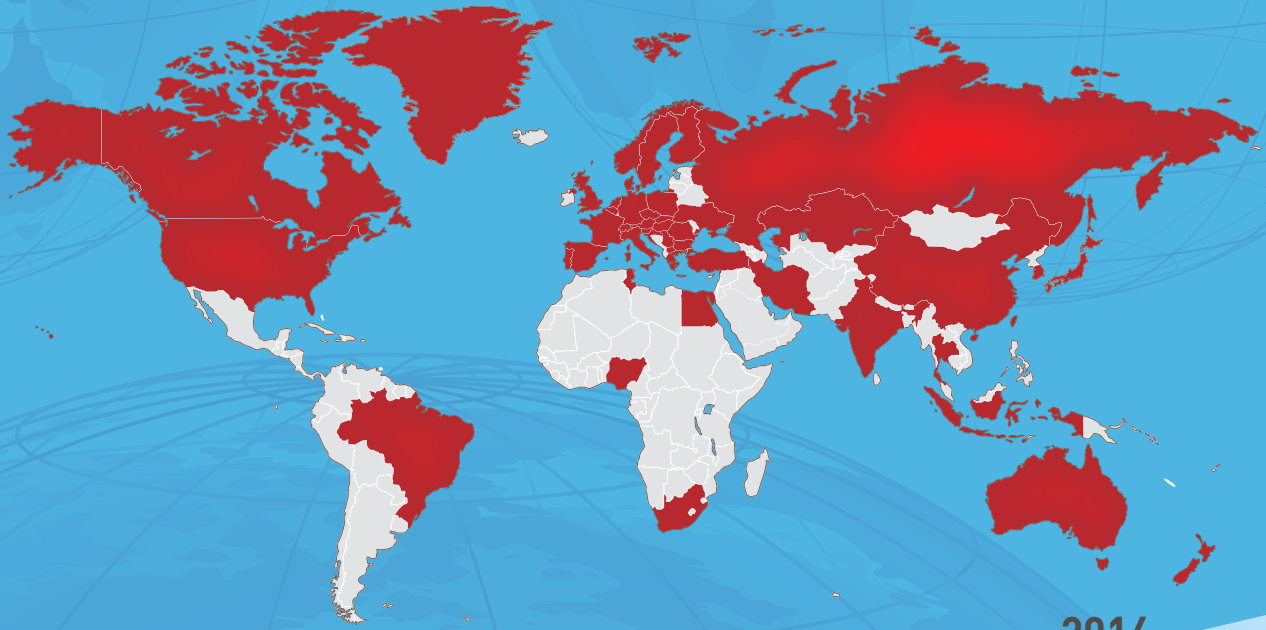
# DIPLOMAS SOLD AND AWARDED IN 2014

 ANNUAL INCREASE



IN 2014N SOME 10,994 DIPLOMAS WERE AWARDED AROUND THE WORLD.

# IIW CUMULATED DIPLOMAS AWARDED





# COMMUNICATIONS AND MARKETING

## To assist in the implementation of IIW's outcomes.



**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 organization.
- Increase awareness and attract support for the IIW Young Leaders programme.

The year 2014 saw an ongoing focus on promoting the corporate identity and image of IIW through the introduction of an updated corporate design for all IIW publications.

This design reflects a professional and modern corporate image and forms the basis of the new design for the IIW corporate brochure. The layout for new product sheet inserts for the brochure, with details specific to the respective Technical Working Unit sub-groups (Human Factors, Design and Structural Integrity and Processes), IIW publications, the activities of the International Authorization Board and the proposed IIW Foundation, have been approved and the new inserts will be introduced during the Annual Assembly in Helsinki.

IIW has made significant progress in ensuring a long-term partnership with a single printing and marketing house for all IIW publications.

Improving the appeal of IIW to the younger generation and encouraging the participation of young people in the various activities of the organization remained a priority during 2014.

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 dedicated event for young professionals within IIW was organized during the Annual Assembly in Seoul and a similar event will be held in Helsinki.

Further actions being implemented

include the introduction of sponsorship and mentorship programmes and IIW support for events organized by Member Societies.

A dedicated forum for young people within the official IIW framework has been created and innovative ways of communicating with the younger generation are being pursued. As part of this initiative, an IIW social media group for young professionals was established to promote collaboration and networking amongst young welding professionals.

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.



**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 Organisation for Standardisation (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.
- The identification of solutions to overcome conflicts between national and/or regional standards so that globally relevant ones can be produced.
- The 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 program; 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 or regional 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 9 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 9 Commissions and one Working Group. Two ISO Technical Reports were published during 2014:**

- ISO/TR 13392:2014 (Ed. 1)  
Health and safety in welding and allied processes - Arc welding fume components
- ISO/TR 18786:2014 (Ed. 1)  
Health and safety in welding - Guidelines for risk assessment of welding fabrication activities

Three revisions to ISO standards have already been published in 2015 by Commission III-Resistance welding, with a further 4 by the end of the year. The first standard for a calibration block for Phased Array Ultrasonic Testing (PAUT) is expected in 2015/6 from Commission V-NDT and quality assurance of welded products.



# REGIONAL ACTIVITIES AND LIAISON WITH DEVELOPING COUNTRIES

**To promote the IAW and its Member Countries in all regions of the world for the common 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 IAW 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 IAW's Project "To Improve the Global Quality of Life by the Optimum Use of Welding Technology."

In co-operation with other IAW Working Units, the WG-RA actively develops a global programme of IAW events and promotes and markets IAW services and membership. The WG-RA also supports the introduction of IAW education, training, qualification and certification programmes in developing nations, and fosters regional co-operation and networking through International Congresses and workshops. Well-attended WG-RA meetings were held in Paris in February 2014, and during the Annual Assembly in Seoul, South Korea, in July 2014.

## IAW INTERNATIONAL CONGRESSES

International Congresses, co-ordinated 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 co-operative networks of both Technology and Educational Support Centres. Resolutions taken at the end of each IAW 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.

The WG-RA also supported very successful International Congresses in India (New Delhi), Nigeria (Lagos), Brazil (São Paulo) and Canada (Vancouver) in 2014. The South East European region will host an IAW Congress and Workshops on "Pipelines", and "Establishing a National Welding Capability" in June 2015 in Timisoara, Romania.

## IAW ASSOCIATED EVENTS

- Join Trans Conference 2014
- 4<sup>th</sup> International Workshop on Cracking Phenomena in Welds
- Nordic Welding Conference
- 1<sup>st</sup> Young Welding Professionals International Conference YPIC 2014
- 4<sup>th</sup> IAW Research and Collaboration Colloquium in Wollongong, Australia

By supporting events of such relevance around the world, the IAW 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 IAW membership and the take-up of IAW programmes.

## IAW WELDCARE PROGRAMME FOR TAKE-UP BY DEVELOPING COUNTRIES

The WeldCare Programme continues to be a flagship for the promotion of IAW 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".

### ESTABLISHING A NATIONAL WELDING CAPABILITY

A new initiative by WG-RA involves using the IIW White Paper to promote a project on establishing a "National Welding Capability". A paper entitled "The IIW White Paper – Its Significance to Establishing a National Welding Capability" is publically available. Workshops on this subject were held for IIW Members in April 2014 in New Delhi, India and in November in Wollongong, Australia, and will be held in Romania in June, 2015.

Commission XIV is promoting the Education, Training, Qualification & Certification aspect of this project. The IIW Technical

Commissions are excellent forums for the technology transfer aspects of this project. IIW Study Group - Research (SG-Res) is an excellent forum with its research and collaboration colloquiums for the aspects related to Research and Development.

### IIW REGIONAL ACTIVITIES AWARD

Dr Dorin Dehelean was the inaugural winner of the 2014 IIW Regional Activities Award for his outstanding work in the South East European region. The Award was presented to him at the IIW Annual Assembly in South Korea in July 2014. This Award is sponsored by IIW Member Welding Technology Institute of Australia (WTIA) in recognition of Chris Smallbone's 40-years of service to IIW.

### 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 INTERNATIONAL CONGRESSES

YEAR	LOCATION	DATE	THEME
2015	Timisoara, ROMANIA	3-5 June	Welding Technologies for a sustainable development
2017	Chennai, INDIA	7-9 Dec.	5 <sup>th</sup> IIW International Congress in India
	Metz, FRANCE	TBA	First IIW Congress in Western Europe

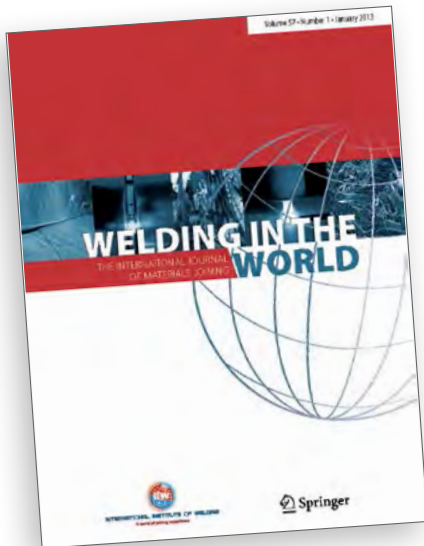
## FUTURE IIW ASSOCIATED EVENTS IN 2015

YEAR	LOCATION	DATE	THEME
2015	Helsingør, DENMARK	26-29 April	International Conference on Joining Materials - JOM 18
	Rio de Janeiro, BRAZIL	27-29 May	ISTS15
	Nürnberg GERMANY	16 Sept.	Welding Trainer Conference 2015
	Seggau, AUSTRIA	27-30 Sept.	11 <sup>th</sup> Int. Seminar Numerical Analysis of Weldability
	Budapest, HUNGARY	7-9 October	2 <sup>nd</sup> YPIC (Young Professionals International Conference)
	Munich, GERMANY	TBA	5 <sup>th</sup> IIW Welding Research and Collaboration Colloquium
	Chicago, USA	10-11 Nov.	3 <sup>rd</sup> International Conference on Electron Beam Welding

# WELDING IN THE WORLD

THE INTERNATIONAL JOURNAL OF MATERIALS JOINING

## WiW-EdBOARD: EDITORIAL BOARD OF WELDING IN THE WORLD



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

### 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)
- 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)
- 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



Ian M. Richardson  
the Netherlands



Prof. Dr.-Ing Thomas Böllinghaus  
Germany

## Editors

In 2014, *Welding in the World* published 6 issues that included 84 papers, representing over 900 pages of fundamental and applied research associated with materials joining.

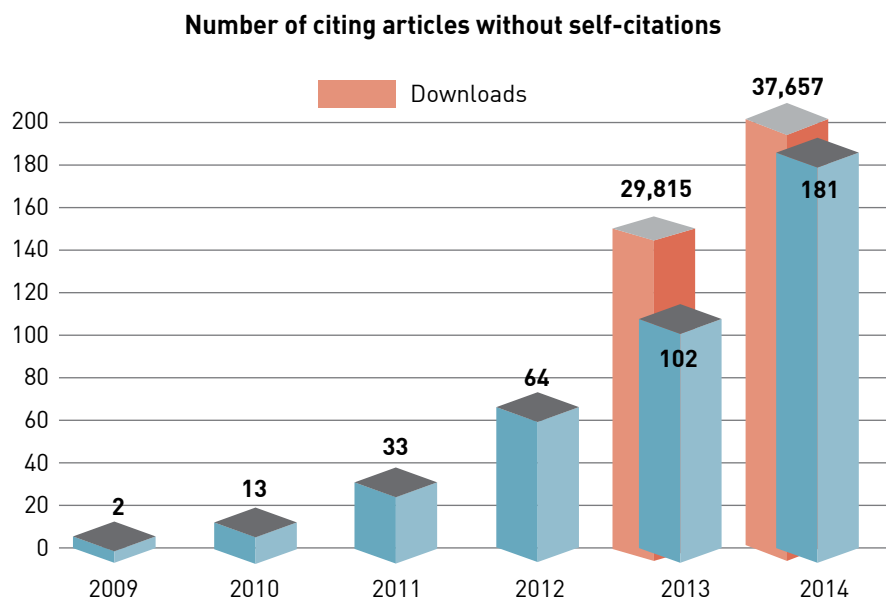
All of the papers published in 2014 were recommended by the working units and were primarily the product of papers presented at the annual assemblies in 2013 (Essen) and 2014 (Seoul).

Nearly 50% of the papers were recommended by four commissions (II, IX, XII, and XIII) resulting in a strong focus in the areas of materials/metallurgy, arc welding processes, and fracture/fatigue.

Of the 84 papers published, 30% addressed metallurgy and materials, 25% fracture and fatigue, and 20% welding processes.

In July 2014, an "open submission" policy was approved by the TMB. Under this provision, papers may be submitted directly to the journal without prior screening and recommendation by the working units. Papers submitted in this manner are first screened by the editors and then forwarded to the appropriate chair. If the working unit chair finds the paper acceptable, it is then put into the peer review system. In 2014, a total of 28 papers were submitted via open submission and 16 of these were forwarded into the peer review system.

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 0.35.

At the end of 2014 it stood at 0.45. 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 1.0-1.5 by the end of 2016.

Interest in the journal continues to be high as indicated by the number of articles that are downloaded. The number of downloads per month for 2013 and 2014

is shown in the accompanying chart. There were nearly 40,000 downloads of *Welding in the World* papers in 2014. Also, the number of articles cited (on which Impact Factor is calculated) increased dramatically in 2014.

The editors are grateful to all who contribute to the quality of the journal including authors, working group chairs, principal reviewers and members of the review panel, the IIW Scientific Officer (Dr. Pierre Tran), and members of the Editorial Board. The combined contributions of this group have helped the journal achieve great success and widespread recognition.



# ANNUAL ASSEMBLY 2014

## THE ANNUAL ASSEMBLY OF THE INTERNATIONAL INSTITUTE OF WELDING (IIW) SEOUL - 2014

The 67<sup>th</sup> Annual Assembly of the International Institute of Welding (IIW) was recently held from 13-18 July, 2014, at the Sheraton Grande Walkerhill & W Seoul Walkerhill, Seoul-Korea. The Korean Welding and Joining Society achieved great success at its first Annual Assembly & International Conference. Everyone agreed they would remember IIW 2014 for a long time, especially the warm welcome and attention to detail, the traditional Korean performances, and of course, the many virtues of kimchi. Sincere thanks are extended to the professional event organiser, COEX, who successfully collaborated with Sheraton Grande Walkerhill & W Seoul Walkerhill to welcome the IIW and its extended family.

Indeed, high attendance figures of previous years were maintained, with a total of 768 participants from 44 countries uniting to share the IIW's "world of joining experience." IIW 2014 welcomed 433 delegates/experts, 81 students, 20 IIW "Young Professionals" and 69 accompanying persons, plus 161 participants who attended the International Conference only.

During the General Assembly held on Sunday 13<sup>th</sup> July, 2014, a new member was welcomed: Cyprus represented by CWI (Cyprus Welding Institute).

The week's activities were officially launched at the Opening Ceremony, held in the Sheraton Grande Walkerhill & W Seoul Walkerhill Theater on Sunday 13<sup>th</sup> July, 2014. The evening's programme was opened with an original show called "Sand Animation" created and performed by Matilda.

The Master of Ceremonies for the evening, Prof. Jong Won Yoon, Chair of Finance of the Korean Organising Committee, launched the official proceedings. The gathering was first welcomed by Prof. Hee Seok Chang, Chair of the Korean Organising Committee. The 67<sup>th</sup> IIW Annual Assembly was later officially declared open by outgoing IIW President, Dr. Baldev Raj (India).



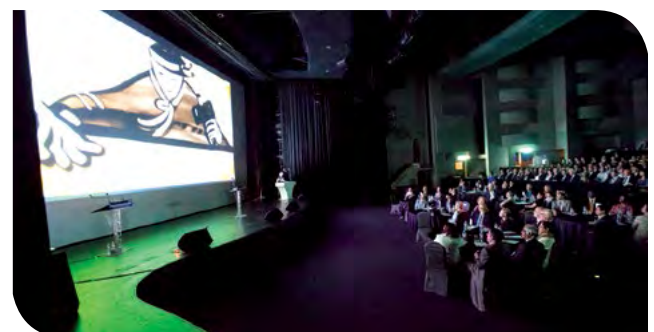
Prof. Jong Won Yoon



Prof. Hee Seok Chang



Dr. Baldev Raj



## 2014 IIW AWARDS

The 2014 IIW Awards Ceremony then followed, with presentations made to the winners in attendance.



### THE 2014 WINNERS

From left: Prof. Dorin Dehelean, MSc. Eng. Aleksandra Weglowska, Dr. Beate Rickes, Mr Lars Johansson, Prof. Suck-Joo Na, Mr Ernest D. Levert, Mr Matthew R. McFadden, Prof. Dr.-Ing. Wolfgang Fricke.

### THE HENRY GRANJON PRIZE

The Henry Granjon prizes were presented by Dr. Sylvain de Lescazes, President of IS-Institut de Soudure (French Welding Institute).



From left: **Dr. Sylvain de Lescazes** and **MSc. Eng. Aleksandra Węglowska**

#### Category A

##### "Joining and Fabrication Technology"

The prize was awarded to **MSc. Eng. Aleksandra Węglowska (Poland)** for her paper, "Research into linear vibration welding of glass fibre reinforced nylon 66".



From left: **Dr. Sylvain de Lescazes** and **Prof. John C. Lippold**, who received the prize on the behalf of **Dr. Xin Yue**

#### Category B

##### "Materials Behaviour and Weldability"

The prize was awarded to **Dr Xin Yue (China)** for his paper, "Investigation on heat affected zone hydrogen-induced cracking of high-strength naval steels using the Granjon implant test". Unfortunately, **Dr. Xin Yue** was unable to attend the ceremony to receive his award; IIW nevertheless extended its congratulations to **Dr. Xin Yue**.



## THE HENRY GRANJON PRIZE

### Category C "Design and Structural Integrity"

The prize was awarded to **Mr Matthew R. McFadden (Canada)** for his paper, "Weld effective lengths of rectangular hollow section T-connections under branch bending".



From left: **Dr. Sylvain de Lescazes** and **Mr Matthew R. McFadden**

## 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. Suck-Joo Na (R.O. Korea)**.



From left: **Prof. Dr-Eng. Yoshinori Hirata** and **Prof. Suck-Joo Na**

## 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 **Prof. Dr-Ing. Wolfgang Fricke (Germany)**, for his paper, "IIW guideline for the assessment of weld root fatigue".



From left: **Prof. John C. Lippold** and **Prof. Dr-Ing. Wolfgang Fricke**

## ARTHUR SMITH AWARD

The Arthur Smith Award, sponsored by the United Kingdom Delegation, was presented by the Head of the United Kingdom Delegation, Dr. Paul Woollin, to **Mr Ernest D. Levert (United States)**.



From left: **Dr. Paul Woollin** and **Mr Ernest D. Levert**



### THOMAS MEDAL

The Thomas Medal, sponsored by the American Welding Society (AWS), was presented by Mr Dean R. Wilson, President of the American Welding Society, to **Dr. Beate Rickes (Germany)**.



From left: **Mr Dean R. Wilson** and **Dr. Beate Rickes**

### HALIL KAYA GEDIK AWARD

Sponsored by the Turkish Delegation, the Halil Kaya Gedik Award was presented by Dr. Mustafa Koçak, CEO of Gedik Holding, to **Mr Lars Johansson (Sweden)**.



From left: **Dr. Mustafa Koçak** and **Mr Lars Johansson**

### EVGENY PATON PRIZE

The Evgeny Paton Prize, sponsored by the National Welding Committee of the Ukraine and the E.O. Paton Electric Welding Institute, was presented by Dr.-Eng. Cécile Mayer, CEO of IIW, on the behalf of Prof. Konstantin Yushchenko, head of the Ukrainian Delegation, to **Univ.-Prof. Dr.-Ing. habil. Bernhard Wielage (Germany)**.

Unfortunately, **Univ.-Prof. Dr.-Ing. habil. Bernhard Wielage** was unable to attend the ceremony to receive his award; IIW nevertheless extend to him its heartiest congratulations.



From left: **Dr.-Eng. Cécile Mayer** and **Prof. Dr. Mayr**, on the behalf of **Univ.-Prof. Dr.-Ing. habil. Bernhard Wielage**

### IIW REGIONAL ACTIVITIES AWARD

Sponsored by the Australian Delegation and awarded for the first time in 2014, the IIW Regional Activities Award was presented by Mr John Burnett, head of the Australian Delegation, to **Prof. Dorin Dehelean (Romania)**.



From left: **Mr John Burnett** and **Prof. Dorin Dehelean**

## INTERNATIONAL CONFERENCE

The IIW International Conference on “Advanced Technology in Welding and Joining for Heavy, Automotive and Electronics Industries” was held from 17-18 July, 2014, at the Sheraton Grande Walkerhill & W Seoul Walkerhill, Seoul-Korea. The Conference was opened with the Houdremont Lecture “**Vizualisation of Welding Processes and its Application to Design of Welded Structures**” delivered by **Prof. Suck-Joo Na**, from the Department of Mechanical Engineering, KAIST, Korea. The Houdremont plaque was presented by **Dr. Roland Boecking**, Head of the German Delegation.



From left : **Prof. Suck-Joo Na** and **Dr. Roland Boecking**

More than 100 papers were presented during the 6 sessions which focussed on the different industrial sectors (automotive, electronics, heavy industry) and cutting edge technologies in today's welding applications (High-tech NDT, nanotechnologies).

## ATTENDANCE RECOGNITION CERTIFICATES

Attendance Recognition Certificates, in addition to commemorative lapel pins, were presented during the various meetings to honour those who contributed significantly to the IIW by having attended 10, 20, or 30 IIW Annual Assemblies:

- 9 Attendance Recognition Certificates were presented for attendance at 10 IIW Annual Assemblies;
- 2 Attendance Recognition Certificates were presented for attendance at 20 IIW Annual Assemblies;
- 1 Attendance Recognition Certificate was presented for attendance at 30 IIW Annual Assemblies.



From left : **Prof. Gary B. Marquis**, President-Elect and Chair of TMB, and **Dr-Eng. Cécile Mayer**, IIW CEO, honour **Dr. Zheng Sun** for his attendance at 10 IIW Annual Assemblies

## SERVICE RECOGNITION AWARDS

Service Recognition Awards were presented in appreciation of longstanding voluntary service by IIW Working Unit Chairs. Three individuals were honoured during the IIW 2014 Gala Banquet:

- **Dr. Luca Costa (Italy)**, for 8 years' service as Chair of Commission VIII
- **Dr-Ing. Miro Uran (Slovenia)**, for 6 years' service as Chair of Commission III
- **Dr-Ing. Thomas Böllinghaus (Germany)**, for 9 years' service as Chair of Commission IX

The awardees were each presented with an engraved pin by IIW President, **Dr. Baldev Raj**, and Chair of the Technical Management Board, **Prof. Gary B. Marquis (Finland)**.



At centre:  
**Dr. Luca Costa**



At centre:  
**Dr-Ing. Miro Uran**



From left : **Prof. John C. Lippold**, Chair of Welding in the World Board of Editors, honours **Prof. Bruno de Meester** with a special award

A special award was attributed to **Prof. Bruno de Meester (Belgium)** for his many contributions as one of the editors of *Welding in the World*. Having been the initiator of the peer review system and one of the most dedicated supporters to the candidacy of *Welding in the World* for the registration in the Science Citation Index, Prof. de Meester decided to hand over his position of editor of *Welding in the World* to **Dr. Ian Richardson (the Netherlands)**.

Special thanks were addressed to **Dr. Baldev Raj** for his contributions during his term as President of the International Institute of Welding (2011-2014). **Dr. Raj** thanked the IIW members and family for their confidence, and extended his best wishes to the future President, **Prof. Gary B. Marquis**.



**Dr. Baldev Raj (right)** handed over the Presidential necklace to **Prof. Gary B. Marquis (left)**, who handed in return the Past-Presidents pin to **Dr. Baldev Raj**



**Dr. Baldev Raj (right)** presented **Prof. Hee Seok Chang** on the behalf of the IIW 2014 Organising Committee with the Annual Assembly Host Certificate.



**Prof. Hee Seok Chang** and **Dr. Baldev Raj**



**Korean Organising Committee**

## FUTURE ANNUAL ASSEMBLIES

During the Gala Banquet held on Wednesday 16<sup>th</sup> July, 2014, at the Sheraton Grande Walkerhill & W Seoul Walkerhill Theater, Prof. Hee Seok Chang, Chair of the IIW 2014 Organising Committee, officially handed over the IIW flag to Mr Ismo Meuronen and Mr Jouko Lassila, representing the Organising Committee for the 68th IIW Annual Assembly and International Conference, to be held in Helsinki, Finland, from 28 June to 3 July, 2015.

### Future IIW Annual Assemblies will be held as follows:

- 2015: Helsinki (Finland), 28 June-3 July
- 2016: Melbourne (Australia), 10-15 July
- 2017: Shanghai (P.R. of China), 25-30 June



From left: **Prof. Hee Seok Chang**, Chair of the Korean Organising Committee hands over the IIW flag to representatives of the IIW2015-Helsinki organisers, **Mr Ismo Meuronen**, Chair of the Finnish Organising Committee (left) and **Mr Jouko Lassila** (right)

## 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.

This year, 168 decisions were adopted by the various IIW Working Units, including recommendations to publish 134 documents in the IIW's peer-reviewed journal, *Welding in the World*.

### ELECTION/APPOINTMENT OF CHAIRS OF IIW WORKING UNITS

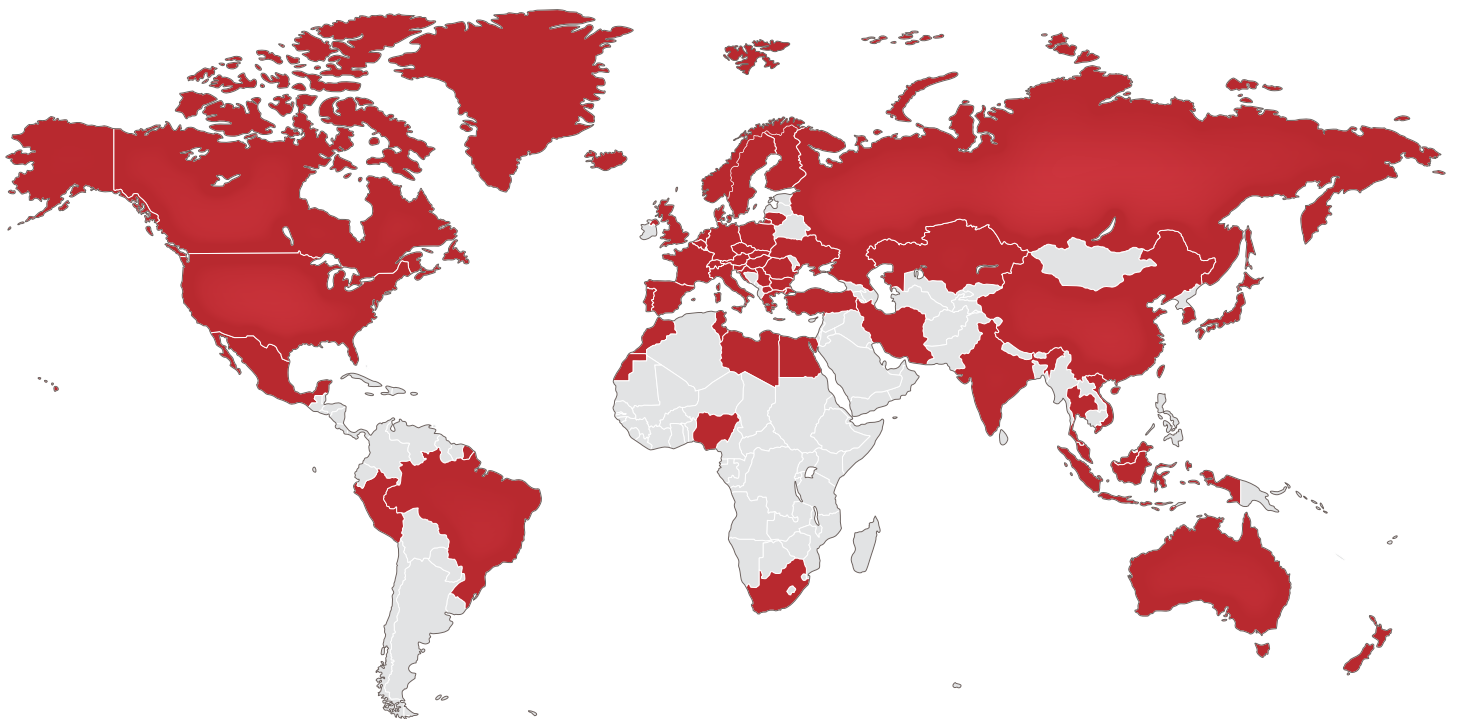
#### ELECTIONS WERE HELD IN THE FOLLOWING WORKING UNITS:

Commission I	<i>Thermal Cutting and Surfacing</i> <b>Prof. Veli Kujanpää (Finland)</b> was re-elected Chair for a new term.
Commission II	Arc Welding and Filler Metals <b>Prof. Dr. Arun Bhaduri (India)</b> was elected Vice-Chair.
Commission III	<i>Resistance Welding, Solid State Welding and Allied joining Processes</i> <b>Prof. Dr.-Ing. Jorge dos Santos (Germany)</b> was elected Chair.
Commission IV	<i>Power Beam Processes</i> <b>Prof. Herbert Stauer (Austria)</b> was elected Chair.
Commission VIII	<i>Health, Safety and Environment</i> <b>med. Priv.-Doz. Wolfgang Zschiesche (Germany)</b> was nominated as acting Chair until elections in 2015. <b>John Petkovsek (United States)</b> was elected Vice-Chair.
Commission IX	<i>Behaviour of Materials Subjected to Welding</i> <b>Prof. Madeleine Du Toit (Australia)</b> was elected Chair. <b>Assoc. Prof. Dipl.-Ing. Dr. techn. Norbert Enzinger (Austria)</b> was elected Chair of Sub-Commission C-IX-L ( <i>Low Alloy Steel Welds</i> ). <b>Dr. María-Asunción Valiente Bermejo (Spain)</b> was elected Chair of Sub-Commission C-IX-H ( <i>Weldability of Stainless Steels and Nickel-base Alloys</i> ). <b>Prof. Christof Sommitsch (Austria)</b> was elected Chair of Working Group Mathematical Modelling of Weld Phenomena.
Commission XIII	<i>Fatigue of Welded Components and Structures</i> <b>Prof. Kenneth A. MacDonald (Norway)</b> was nominated as acting Chair until elections in 2015. <b>Assoc. Prof. Dr. Zuheir Barsoum (Sweden)</b> was elected Vice-Chair.
SC-AUTO	<i>Select Committee Automotive and Road Transport</i> <b>Prof. Dr.-Ing. Michael Rethmeier (Germany)</b> was re-elected Chair for a third term.

# IIW MEMBER COUNTRIES

■ IIW MEMBER COUNTRIES

■ PROSPECTIVE MEMBER COUNTRIES



AUSTRALIA - AUSTRIA - BELGIUM - BRAZIL - BULGARIA - CANADA - CROATIA - CZECH REPUBLIC - CYPRUS - DENMARK - EGYPT - FINLAND - FRANCE - GERMANY - GREECE - HUNGARY - INDIA - INDONESIA - IRAN - ISRAEL - ITALY - JAPAN - LEBANON - 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 - VIETNAM

### IIW MEMBER SOCIETIES, ANBs, ANBCCs

Country	Member: Main Member Society / ANB: Authorized National Body / ANBCC: Authorised National Body for Companies Certification	
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)
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-Applicant ANB	Central Metallurgical Research & Development Institute (CMRDI)
FINLAND	Member-ANB	Suomen Hitsausteknillinen 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 Egység (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)
LEBANON	Member	Industrial Research Institute (IRI)
LIBYA	Member	Advanced Occupational Center for Welding Technologies
LITHUANIA	Member	Lithuanian Welders Association
MALAYSIA	Member	Welding Institute (MALAYSIA) Bhd
MEXICO	Member	Corporación Mejicana 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 Zvaracky (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	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

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

To identify, create, develop and transfer best practices.

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

To promote the IIW and its Member Countries in all regions of the world for the common benefit of all.

To assist in the formulation and preparation of International Standardisation documents.

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

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



**INTERNATIONAL INSTITUTE OF WELDING**

**A world of joining experience**

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