



THE INDIAN INSTITUTE OF WELDING

(A Member Society of the International Institute of Welding)

Government Initiatives and the role of IIW-India towards National Welding Capability

RITURAJ BOSE, Vice President, IIW-India
Welding Innovations Network, September 2026



60 years of Excellence – Welding for Nation Building



Radical shifting of Welding Landscape

Over the last 50 years, welding technology has undergone a phenomenal change.

These changes have led to adoption of higher productivity processes with consistent quality, Automation, safety and improvements of work environment.

However, the quantum of welding is mainly depending upon the steel consumption. So, where we stand?

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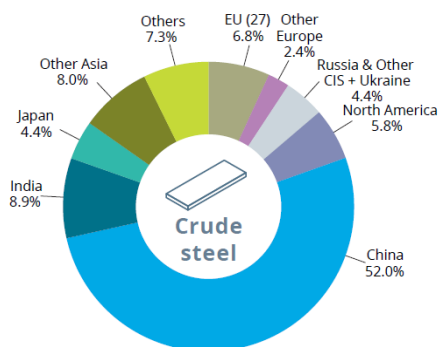
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Steel Production and Use: 2025 (World Steel Association)



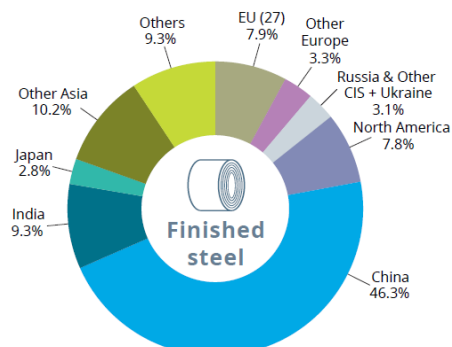
Crude steel production

World total: 1 849 million tonnes



Apparent steel use (finished steel products)

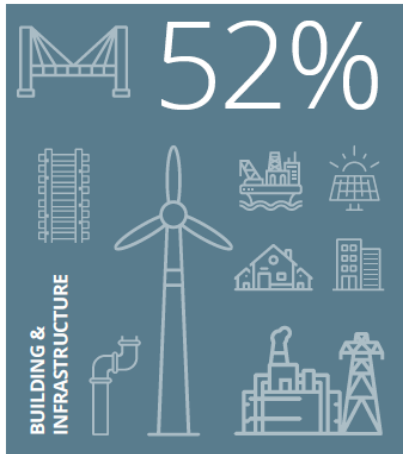
World total: 1 718 million tonnes



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What makes up our Steel use (World Steel Association)



So, what is common between them?

It is Welding



Steel use and Welding: Indian Scenario

In 2025, India's total finished steel consumption reached around 160 million tonnes.

- **Structural Fabrication & Construction Share:** 68% of the domestic steel demand (approximately 109 million tonnes) goes directly into infrastructure, building, and heavy structural steel fabrication.
- **General Engineering & Automotive Fabrication:** The remaining 32% (approximately 51 million tonnes) is consumed by general metal fabrication, machinery manufacturing, capital goods, and automotive production lines.

India's total welding consumable volume in 2025 sat at 635,000 tonnes.

- Solid Wires (GMAW): **36.8%**
- Stick Electrodes (SMAW): **34.5%**
- Flux-cored Wires (FCAW): **15.4%**
- SAW Wires & fluxes: **13.3%**



Market Size and Core Growth Drivers in India

Market Size:

- **Equipment Market Size (2025):** USD 1.2 Billion, projected to reach USD 2.1 Billion by 2034 at a compound annual growth rate (CAGR) of 6.66%.
- **Consumables Market Size (2025):** Around USD 1.32 Billion, expected to climb past USD 2.2 Billion by 2034 at a 5.76% CAGR.

Core Growth Drivers:

- **Infrastructure Push:** Large-scale public investments via programs like PM Gati Shakti and the National Infrastructure Pipeline drive heavy fabrication demand.
- **Key Sectors:** Automotive, construction, and railway modernization command the highest equipment demand.
- **Automation Shift:** Adoption of robotic and automated welding systems is steadily rising as manufacturers pursue higher precision and efficiency under Industry 4.0 standards.



Challenges for Skilled Manpower

The steel demand in India has almost doubled in the last decade and therefore the growth of welding industry and demand of skilled welding professional is evident.

There are around 2876 ITIs (Industrial Training Institutes) providing training about 1,25,948 welders every year. More than 20% of these welders opt out of welding trade in less than 2 years.

Welders and Welding Engineers passing out from different levels of institutions are not enough to cope up with the requirement.

The Indian Institute of Welding (IIW-India) plays a significant role to overcome these challenges through its noble presence and activities for the nation building!



Skill India Mission

The Directorate General of Training (DGT) and National Skill Development Corporation (NSDC) are the two primary pillars of India's vocational training ecosystem under the **Ministry of Skill Development and Entrepreneurship (MSDE)**.

Directorate General of Training (DGT): The apex government body responsible for national vocational training programmes. It directly manages the Industrial Training Institutes (ITIs) and National Skill Training Institutes (NSTIs). It oversees long-term educational frameworks like the Craftsmen Training Scheme (CTS) and Craft Instructor Training Scheme (CITS).

National Skill Development Corporation (NSDC): A non-profit, public-private partnership (PPP) that acts as the implementation arm for skill development. It focuses on private sector engagement, funding skill training initiatives, and scaling short-term, market-driven courses, including international placement and apprenticeship programmes.





कौशल विकास और
उद्यमशीलता मंत्रालय
MINISTRY OF
SKILL DEVELOPMENT
AND ENTREPRENEURSHIP



Directorate General of Training



Skill India
कौशल भारत-कुशल भारत



N.S.D.C.
National
Skill Development
Corporation

Transforming the skill landscape



Craftsmen Training Scheme (CTS) through ITIs in India

There are approximately 15,034 Industrial Training Institutes in India, out of which 3,298 (22%) ITIs are Government operated, and 11,736 (78%) ITIs are privately run.

Under the Directorate General of Training (DGT) guidelines, there are 169 designated National Skills Qualifications Framework (NSQF) compliant trades. Out of which 86 are Engineering Trades, 78 are Non-Engineering Trades and 5 Trades are exclusively for the people with disabilities.

Though total intake capacity is around 2.4 million, a portion of these seats go unoccupied due to gaps in curriculum relevance and industry demand. However, government initiatives are there to overcome the issue and to include relevant and newer trades through PPP model with the support from Industries.



Initiatives by NSDC

India is one of the youngest nations in the world with nearly 68% of its population in the working age group of 15-64 years with a median age of just 28 years. To reap this demographic dividend, India needs to equip its workforce with employable skills and knowledge so that they can contribute substantively to the economic growth of the country.

To take this challenge, NSDC was established in the year 2008 under Ministry of Skill Development and Entrepreneurship (MSDE), for providing employable skill trainings through its Authorized Training Centers, under 36 different Sector Skill Councils.

 **15,000+**
NSDC Training Partners

 **42,000+**
Training Centers

 **2700+ NSQF**
Job Roles

 **36**
Sector Skills Councils

 **28+8**
Presence

 **4,01,89,404**
Trained
(PMKVY, Apprenticeship, and other schemes)



250K+
Specially-abled Trained



2500+
National Qualification Packs



1.9+Cr
Women Trained

Government Initiatives for Skill Development

Pradhan Mantri Kaushal Vikas Yojana (PMKVY 4.0): Provides industry-aligned short-term training and certification, heavily emphasizing on-the-job training and new-age courses for Industry 4.0 (coding, AI, IoT, and drones).



PM-SETU (Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs): Upgrades 1,000 Government ITIs to modern, industry-led institutions utilizing a hub-and-spoke model.

National Apprenticeship Promotion Scheme (NAPS): Incentivizes industries to provide on-the-job training to youth, bridging the gap between classroom theory and practical workplace requirements.

Jan Shikshan Sansthan (JSS): Focuses on vocational skills and technical knowledge for individuals with low formal education or school dropouts, aiming to boost local, grassroots productivity.



Government Initiatives through Entrepreneurship

Prime Minister's Employment Generation Programme (PMEGP): A major credit-linked subsidy scheme offering up to **INR 5 M** for manufacturing projects and **INR 2 M** for service projects. It is implemented by the **Ministry of Micro, Small and Medium Enterprises (MSME)**.

Startup India Scheme: Offers ease of business registration, low-cost legal and patent support, access to the **MAARG Platform** (Mentorship, Advisory, Assistance, Resilience and Growth), and tax exemptions for recognized startups.

Navachar Mantra: A grassroots entrepreneurship initiative implemented by **NIESBUD** (National Institute for Entrepreneurship and Small Business Development) to expand opportunities for innovators in emerging and rural parts of the country.

Stand Up India: Promotes entrepreneurship among women, Scheduled Castes (SC), and Scheduled Tribes (ST) by facilitating bank loans between **INR 1 M** and **INR 10 M**.



SKILL INDIA MISSION
Skilling Youth, Building New India

KEY SCHEMES

- 01 Pradhan Mantri Kaushal Vikas Yojana (PMKVY)
- 02 Pradhan Mantri Kaushal Kendras (PMKK)
- 03 Integration with General Education
- 04 Jan Shikshan Sansthan (JSS)
- 05 Pradhan Mantri YUVA Yojana
- 06 SANKALP (Skills Acquisition and Knowledge Awareness for Livelihood Promotion)
- 07 Vocational Training Programme For Women



IndiaSkills 2026-27 Competition

63 Skills
36 States & UTs

REGISTRATIONS OPEN

QR Code

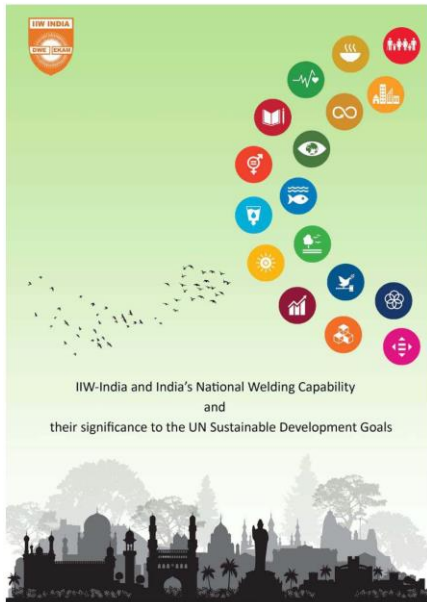
Social Media: @IndiaSkills, @WorldSkillsInd, @worldskillsindia

Women Empowerment

Beside Government initiatives, many of the Indian manufacturing companies including member organisations of IIW-India, provide equal opportunities to the women workforce to enter into male dominated fields like welding.

Women of today's world are endeavouring to their best to be an active part of further excel in every sphere of industrial activities and thereby stepping out of the four walls of their coniferies so as to raise the standard of themselves and thereby the society. Presently, the labor force participation rate among females is increased to 32.4% in India.





IIW-India and India's National Welding Capability (NWC)

IIW-India, together with its members and industry networks, has worked for many years on improving India's National Welding Capability (NWC). IIW-India also has many examples of NWC initiatives it has implemented to significantly progress the UN Sustainable Development Goals (SDGs) and improve the quality of life of people and the environment in India. Also, published a White Paper on the subject.

Such initiatives include amongst others, education, training, qualification and certification of personnel to both national and international standards, assisting companies to meet the exacting standards of customers, R&D and technology transfer. IIW-India also assists in improving education and training to increase self-sufficiency and diversity in skilled personnel in the country.



About The Indian Institute of Welding (IIW-India)

- ❑ A premiere professional institute of Welding in India, incorporated on 22nd April 1966, at Kolkata.
- ❑ Was formed to foster the development of welding science, technology and engineering in India.
- ❑ A not-for-profit organisation registered under Company's Act and under Income Tax Act as an Institution for charitable purpose.
- ❑ The only Responsible Member Society of the International Institute of Welding (IIW) in India, with representation in the Board of Directors.
- ❑ Member of the Governing Council of Asian Welding Federation (AWF), since its inception.
- ❑ Member of the Board of Directors, Indian Iron & Steel Sector Skill Council (IISSSC).
- ❑ Adopted 2 ITIs as per the directives of Directorate of Industrial Training, W.B.
- ❑ An institute with motto – **“Welding for Nation Building”**.



IIW-India Network



BRANCHES
Ahmedabad
Bangalore
Baroda
Bhilai
Bhubaneswar
Chennai
Cochin
Delhi
Hyderabad
Jamshedpur
Kolkata
Mumbai
Pune
Tiruchirappalli
Visakhapatnam

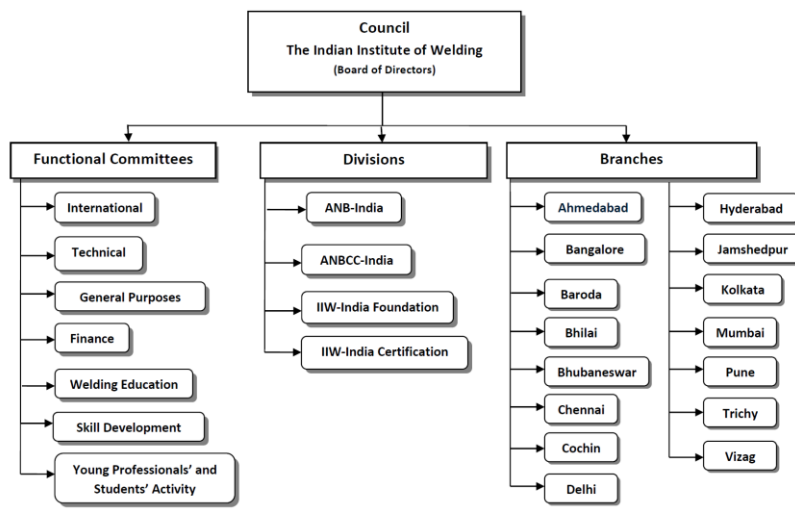


Around 5500 individual and corporate members

26 Students' Chapters



Verticals



National and International Presence

Member



Confederation of Indian Industry



Technical Collaboration



American Welding Society®

Proud Partner



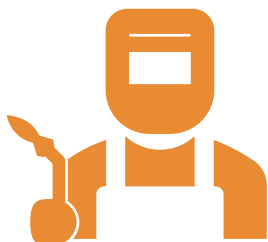
Primary objectives of the Institute

- To assist human resource development through national and international diplomas and certification.
- Research and development in the field of welding science and technology.
- To establish and promote international standard of quality for the Indian fabrication industry, so that the global competitiveness can be achieved.
- Skill development programme for every level of welding professionals.
- To support educational institutes and industries when welding is in concern.
- To establish a good relationship with industry to support issues related to welding.
- To improve the image of welding and its practitioners in the society by bringing awareness about its importance and contribution to the national economy.

We are trying to help the Welding Fraternity in every possible way, with the support from our members, industry partners and welding professionals.



Skill Development Programmes



- Welding curriculum for school dropouts.
- Supports industries for welding related issues.
- Assessment Body for different Government programmes related to welding.
- More than 50,000 welders assessed and certified so far.
- Upskilling programmes for the existing welders of different industries, including Railways.
- Awareness Programmes for the Welding Engineers and Welding Supervisors to support the industries.

Glimpses of Upskilling and Awareness Programmes



Associate Membership Examination of IIW-India (AM-IIW), offering National Welding Engineer certification.

Offering International Diplomas through ANB-India viz. International Welding Engineer (IWE), International Welding Technologist (IWT) etc. in Standard, Alternate and Transition Routes.

Offering International Welder (IW) Diploma through Authorised Training Bodies under ANB-India.

Launched Advance Course on Welding Technology (ACWT) for the benefit of Welding Professionals and Alternate Route IWE / IWT candidates.

Around 2,000 International Diplomas issued so far.

Launched Robotic Arc Welding Operators (RAWO) Certification Programme.

Human Resource Development Initiatives

Prospects of IWE & IWT

Global Recognition:

IWE and IWT qualifications are recognized worldwide, making them valuable for individuals seeking international career opportunities.

Diverse Career Paths:

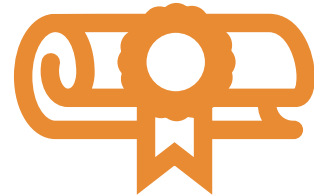
Holders of these qualifications can pursue roles such as welding coordinator, welding technician, quality assurance coordinator, or welding supervisor in various industries.

Fast-Track Qualification:

The IIW offers an "Alternative Route" for IWE/IWT qualifications, allowing experienced professionals to obtain certification without full-time study. Advance Course on Welding Technology (ACWT) is designed to support Alternate Route candidates.

Specific Career Opportunities:

As Welding Coordinator, Welding Technician, Welding Supervisor, Welding Quality Assurance Coordinator etc.



Certification of Companies

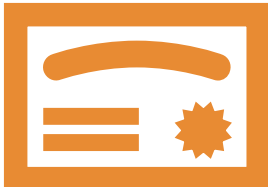
- Training, Auditing, Assessment and Certification as per ISO 3834 (Quality requirements for fusion welding of metallic materials) through ANBCC-India. ISO 3834-2 is for Comprehensive Quality Requirements; ISO 3834-3 is for Standard Quality Requirements and ISO 3834-4 is for Elementary Quality Requirements. (ISO 3834-1: Criteria for the selection of the appropriate level of quality requirements)
- Training, Auditing, Assessment and Certification as per EN 15085 (Welding of Railway vehicles and components) through ANBCC-India
- Around 57 companies certified so far.

Benefit of ISO 3834 – Part 2 / 3 / 4 Certified Organisations:

Enhanced quality & reliability; Increased market opportunities; Improved reputation and credibility; Cost savings; Compliance with regulations; Customer trust, Operational efficiency; Competitive advantage; Access to specialised markets etc.



Training & Certification



As it contradicts, the training providers should not be involved in any assessment activities to issue certificate to the candidates. IIW-India maintains this properly and engaged Authorised Training Institutes (ATIs) and Authorised Testing Centres (ATCs) to conduct the training courses as per the curriculum issued by the Institute wherever necessary; whereas, the assessment is done by IIW-India directly. The following courses and certification offered by IIW-India for Welders, Welding Inspectors, Trainers etc., which are **Accredited by NABCB** (National Accreditation Board for Certification Bodies).

- ☐ National Welding Inspectors' Certification Scheme (**NWICS**) for Certified Welding Inspectors (**CWI**)
- ☐ National Welding Training and Certification Scheme (**NWTCS**) for Certified Welders (**CW**)
- ☐ Training of Trainers (**TOT**) for Certified Welding Trainers (**CWT**)
- ☐ Welder Certification (**WC**) as per different Codes and Standards like **ASME, AWS, ISO, IS** etc.



Glimpses of NWTCS and NWICS Programmes

National Welding Inspectors' Certification Scheme

This Certification Scheme has been prepared in accordance with the requirements of recently issued BIS Standard IS 18224:2023 General Standard for Qualification and Certification of Welding Inspection Personnel.

There are 3 Levels of Certification:

Sl. No.	Scheme Name	Scheme Code
1	Certified Welding Inspector (Basic)	CWI-B
2	Certified Welding Inspector (Standard)	CWI-S
3	Certified Welding Inspector (Advanced)	CWI-A

IIW-India is the only organisation in India to Certify the Welding Inspector as per IS 18224:2023, which is Accredited by NABCB.



National Welding Training and Certification Scheme

This Certification Schemes are as per IIW-India's own curriculum. Over 1500 Welders certified so far through NWTCS programme.

There are 3 Levels of Certification for 7 Schemes:

Sl. No.	Level of Certification Scheme	Scheme Name	Scheme Code
1	Foundation Scheme	MMAW – Foundation	MMAW-F
2	Foundation Scheme	GMAW – Foundation	GMAW-F
3	Foundation Scheme	GTAW – Foundation	GTAW-F
4	Industry Oriented Standard Scheme	MMAW – Structural Welding	MMAW-S
5	Industry Oriented Standard Scheme	GMAW – Structural Welding	GMAW-S
6	Industry Oriented Standard Scheme	Boiler & Pressure Vessel Welding	MMAW-P
7	Expert in Welding	Expert Welder	EW



Training of Trainers (TOT) Scheme

Training of Trainers (TOT) Scheme of IIW-India has been designed to certify the Welding Trainers / Instructors (CWT), firstly to acquaint the participants with the requirements of different welding training courses under IIW-India's National Welding Training and Certification Scheme (NWTCS) and secondly to fulfil the requirements of different fabrication industries to train the welders either inhouse or through the training institutes. The program is developed to identify gaps in the individuals' practical and theoretical competencies and provide suitable refresher training and practice to enable participants to deliver the required standard of training.

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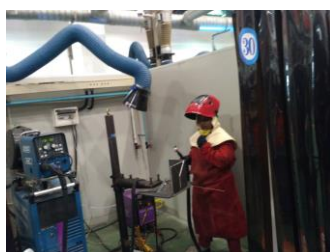
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Other Initiatives

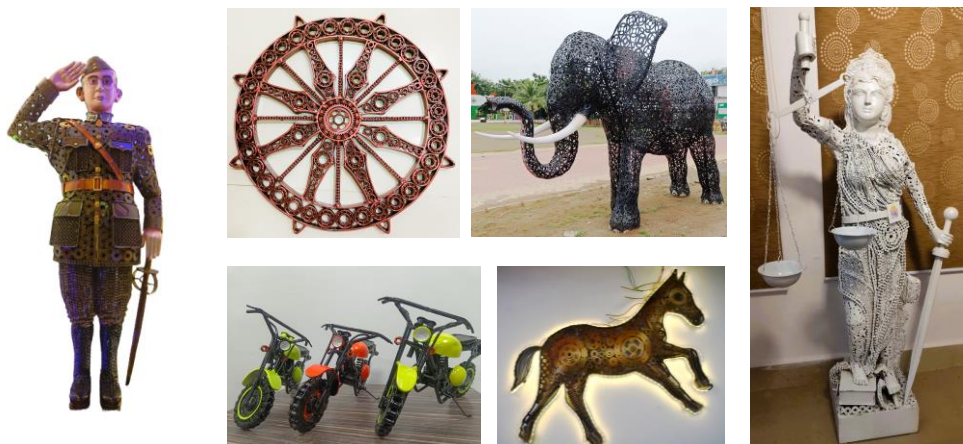
- Organising National level skill competition for Welders (not gender specific);
- Organising National level competition for Women Welders;
- Organising National level competitions for Welding Engineers and Engineering Students;
- Organising National level Young Engineers Competition;
- Organising National level competition for Welded Sculptures from trash;
- Awarding scholarship for the young researchers;
- Organising competition for the Best Students' Chapter;
- Encouraging and supporting National level winners to take part in the International Competitions.

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Glimpses of International Participation



Welded Marvels – Project Trash to Treasure



IIW-India Awards

Over the years, the institute has introduced several awards for recognizing excellence in various aspects of welding technology such as Research, Fabrication, Repair & Reclamation Welding, Non-ferrous Welding and Automation.

These awards have been instituted to the honour of various eminent individuals or organizations who have made outstanding contributions to the cause of welding in India. These awards are presented each year during the inaugural ceremony of the Institute's National Welding Seminar or of the International Congress.



Collaboration with other Organisations

The Indian Institute of Welding has signed Memorandum of Understandings and Agreements with several other organisations, for mutual understanding and supports to each other.

- With Universities and Engineering Colleges as Knowledge Partner.
- With Professional Associations for mutual collaboration.
- With Industries for support towards IIW-India Activities and Awards.
- With Training Partners for imparting IIW-India Courses.



Research & Development Supports



IIW-India and Pandit Deendayal Energy University (PDEU) has entered in an agreement to establish IIW-India – PDEU Welding Research & Development Centre (IPWRDC). The Centre is now catering Research and Development of newer welding technologies through latest high-end equipment. Industries, Research scholars and students are now getting benefits out of it.

A welding lab at IIW-India Head Office is established to support Students, Research Scholars, Welders, as well as to Industries through latest equipment and Virtual Reality Welding Simulator.



Programme for the Students

https://iitwelds.com' is written in white, followed by the email address 'Email: Information@iitwelds.com' in white."/>





NATIONAL WELDING MEET-2026 (NWM-2026)

THEME

*Welding
Challenges in
Castings and
Forgings*

ORGANIZED BY
 THE INDIAN INSTITUTE OF WELDING
 HOSTED BY
 IIT-INDIA BARODA BRANCH | ATMIYA UNIVERSITY, RAJKOT

VENUE:
ATMIYA UNIVERSITY,
RAJKOT, GUJARAT

DATE:
6TH & 7TH OCT. 2026

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WELDINDIA 11 - 12 February 2027
 HANSAHOTEL WILHELM STRASSE, DORTMUND
 HANNOVER - WELSH TRADE FAIR

17th INTERNATIONAL WELDING TECHNOLOGY EXHIBITION

Future Events



SHARING OF KNOWLEDGE BETWEEN WELDING FRATERNITIES AND CONNECTING WITH INDUSTRY LEADERS AND EXPERTS.



ELIGIBLE TO ATTEND NATIONAL AND INTERNATIONAL SEMINARS AT A CONCESSIONAL DELEGATE FEE.



ELIGIBLE TO RECEIVE FREE QUARTERLY INDIAN WELDING JOURNAL, ENRICHED WITH ARTICLES ON LATEST DEVELOPMENTS IN WELDING TECHNOLOGY AND WITH A SEPARATE AWS SECTION.



ACCESS TO IIW-INDIA LIBRARY IN HEAD OFFICE.



ELIGIBLE TO ATTEND FREE EDUCATIONAL PROGRAMMES.



CAN BE ELECTED AS THE MEMBER OF BRANCH MANAGING COMMITTEE AND NATIONAL COUNCIL OF IIW-INDIA.

Benefits of becoming a member of IIW-India and the opportunity to connect global welding community

AND MANY MORE ----

The Institute Appreciates your Association



So, please come and join the revolution to support Welding!

For detailed information about IIW-India and its activities
visit <https://iiwindia.com> or write to iiw@iiwindia.com



To Conclude

I must express my gratitude to **Mr. Chris Smallbone**, President (2005-08), IIW, for inspiring me towards this presentation.

Acknowledgement: Articles and photographs are taken from different websites and internal documents of The Indian Institute of Welding.

Disclaimer: This presentation is made for providing information only, and not for any commercial interest.

