



AIWeld 2k16

**WELDING RESEARCH INSTITUTE
BHEL - TIRUCHIRAPPALLI**

and

**INDIAN WELDING SOCIETY
(SOUTHERN ZONE)
TIRUCHIRAPPALLI**

jointly organise

Two-Day Residential Workshop on

**WELDING OF ALUMINIUM
AND ITS ALLOYS**



17-18 October 2016

**WELDING RESEARCH INSTITUTE
BHEL – Tiruchirappalli - 620014**

www.wriindia.com

INTRODUCTION

Lightweight, bright lusture, good corrosion resistance, and high strength to weight ratio, the unique characteristics of aluminium and its alloys make it a natural material choice for many applications. For many years, aluminium alloys are being used in strategic sectors like defence and aerospace industries, and will continue to be the choice of material in those niche areas. Recently, the thrust has been on improving the fuel efficiency to comply with the stringent pollution control norms, and this has made the locomotive sectors like automotive and shipbuilding to look out for the possibilities of using aluminium alloys. Hence, aluminium alloys will penetrate into many markets, which have been dominated by steel so far and the change is inevitable.

Aluminium alloys are classified under different series from 1xxx to 8xxx depending on the alloying elements and their amenability for heat treatment. Each series of alloys are unique in terms of thermo-physical properties, mechanical properties, strengthening behaviour, etc., which dictate the fabricability of these materials, especially the weldability. The peculiar properties of the material like the presence of tenacious oxide layer, high thermal conductivity, high coefficient of thermal expansion, loss in strength in both weld and heat affected zones, metallurgical issues like formation of low strength and low ductility zones will require very careful attention during welding to achieve the desired properties in the material.

The continuous development in the field of materials science is also leading to the development of many new alloys with specific properties for different applications. Availability of different grade of aluminium alloys and very rapid innovation in development of newer grade of alloys, necessitate a clear understanding of the weldability of the material, as all these developments add complexity in the welding fabrication. Additionally, the locomotive sectors are also evaluating the possibility of using hybrid structures (tailor welded blanks) involving steel and aluminium to have a unique combination of desired properties like stiffness, strength and lightweight. Joining dissimilar combination involving aluminium and steel will require even more care and clear understanding of the process and metallurgy. The usage of aluminium will continue to rise and hence, to be at a matching pace with the developments, it is imperative for Indian industries to equip themselves by developing the understanding on the nuances in welding of aluminium alloys and its properties.

Having been actively involved in providing welding solutions to many sectors and to address the above intent, Welding Research Institute (WRI) in collaboration with Indian Welding Society (IWS), Southern Zone is organizing a two day workshop 'AIWeld 2k16' during October 17-18, 2016. The workshop will discuss all these topics which are relevant with respect to welding of aluminium alloys, which include, physical metallurgy, welding metallurgy, welding processes, non-destructive testing, etc. The workshop will have a good blend of theory and practical sessions and will be handled by experts in the field of physical and welding metallurgy, welding processes, consumables, etc. from India and abroad. Dr. V. Ananthanarayanan, a renowned specialist in aluminium alloys and their welding, will be Lead Speaker in this event.

About WRI

Welding Research Institute is the premier Research Centre of India in the field of welding and allied areas, providing holistic services for R&D, Consultancy and Training. It was established on Nov 1, 1975 by the Government of India with assistance from UNIDO/UNDP under the aegis of Bharat Heavy Electricals Limited, Tiruchirappalli, India. The institute continues to be the one stop solution for all welding related needs of India and other countries as well.

About IWS

IWS is the Indian Welding Society with the registered office at New Delhi, which promotes the advancement of welding, cutting and allied areas. IWS has also been instrumental in promoting welding education and networking by organizing conferences, seminars, workshops and welding courses.

Venue

Welding Research Institute, Bharat Heavy Electricals Limited, Tiruchirappalli-620014. India. www.wriindia.com.

Course Fee

This is a residential programme. The course fee shall be Rs. 15000/- (Fifteen thousand only) including applicable taxes. This shall include course kit, pick up from airport/railway station, twin sharing hotel accommodation for two nights, food and refreshments for two days, local commuting from hotel to WRI and back.

About Dr.V.Ananthanarayanan

Lead Speaker in AI Welding -

Dr. V. Ananthanarayanan is presently the President of Innovative Weld Solutions, USA. After graduating in the stream of Metallurgical Engineering from Indian Institute of Technology, Madras, he has completed M.S. (Metallurgical Engineering) and PhD (Welding Engineering) from the Ohio State University, USA in the year 1988.



Since then, he has been the Delphi Technical Fellow in Welding for General Motors and Delphi Corporation until the year 2007. During his tenure there, he was actively involved in developing welding solutions for many products including tubular structures and dissimilar materials. In the year 2007, he has set up the Innovative Weld Solutions Ltd. in USA, where he is focusing in welding of conductive and lightweight materials. He has also trained 10,000 + engineers, operators and maintenance technicians on a variety of welding technologies and methods in the US, Europe, South America and Asia and has trained and certified over 200 welding operators of Heil Inc., Tennessee, USA in GTAW and GMAW according to the AWS Structural Welding Code for Aluminium. He has 27 US Patents to his credit and is the recipient of Distinguished Alumnus Award from the Ohio State University in the year 2005 and President's Award for Innovation from Delphi Corporation in the year 2002. He has been actively associated as a partner with WRI in some research projects in the past.

Who Should Attend?

Design and fabrication engineers in defence, aerospace, automobiles, shipbuilding, consumer sectors, Scientists in the field of materials joining, welding supervisors, students/researchers who are pursuing or planning to pursue research in the field of aluminium alloys welding.

CONTACT

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Planned Schedule of the Workshop

Day 1 – 17.10.2016

Sl.No	Title	Duration	Speaker
	Inauguration	09.00-09.30	-
	Tea	09.30-09.45	
1.	Introduction to Aluminium alloys, physical metallurgy and Applications of Aluminium Alloys in Consumer and Strategic Sectors	09.45-10.45	Dr. V. Ananthanarayanan
2.	Arc welding processes for welding Aluminium alloys – state-of-art & Emerging Trends	10.45-11.45	Dr. K. Devakumaran
3	Welding practices & Qualification as per AWS D 1.2	11.45-12.45	Dr. G. Ravichandran
	Lunch	12.45-13.30	
4.	Practical Demonstration - Gas shielded processes	13.30-15.00	Mr. M. Kayarohanam/ Dr. K. Devakumaran
	Tea	15.00-15.15	
5.	Development in consumables for welding Aluminium alloys – M/s Diffusion Engineers Ltd.	15.15-16.15	M/s Diffusion Engineers Ltd.
6.	New resistance welding process changes aluminium alloy welding rules and rewrites the welding handbook	16.15-17.15	Dr. V. Ananthanarayanan
7.	Development in Power Sources for Welding Aluminium Alloys	17.15-18.00	M/s Fronius India Ltd.

Day 2 – 18.10.2016

Sl.No	Title	Duration	Speaker
1.	Solid state welding of Aluminium alloys – State-of-art & Emerging Trends	08.45-09.45	Dr. K. Asokkumar
2.	Welding Metallurgy of Aluminium alloys	09.45-10.45	Dr. V. Ananthanarayanan
	Tea	10.45-11.00	
3.	Resistance welding of Aluminium alloys – Introduction, process and advancements	11.00-12.00	Dr. V. Ananthanarayanan
4.	Nondestructive testing of Aluminium weldments	12.00-13.00	S. Gunasekar
	Lunch	13.00-14.00	
5.	Practical Demonstration - Resistance Welding & Solid State Welding	14.00-15.30	Mrs. A. Santhakumari / Mr. D. K. Verma
	Tea	15.30-15.45	
6.	Difference between GTAW and GMAW techniques for arc welding aluminium alloys and steels and Introduction to self-piercing riveting	15.45-16.45	Dr. V. Ananthanarayanan
7.	Feedback and Panel Discussion	17.00-18.00	

DELEGATE REGISTRATION FORM

AIWeld 2k16

TWO DAYS RESIDENTIAL WORKSHOP ON

WELDING OF ALUMINIUM AND ITS ALLOYS

Dele gate Deta ils	Name	Designation		
1				
2				
3				
Organisation:				
Cell No. & Mail ID for Communication:				
Payment Details	Amount (Rs)	DD / Cheque Number	DD / Cheque Date	Drawn on
	Details of e-Transfer			

Signature of participant

MODE OF PAYMENT

All Payments are payable by a DD / At Par Cheque drawn in favour of "Indian Welding Society Southern Zone", payable at Tiruchirappalli, Tamil Nadu, India.

The payments to be forwarded to:
Indian Welding Society, Institutions Building (Near Kailasapuram Club)
BHEL Township, Tiruchirappalli – 620 014, Tamil Nadu, India,
Phone: + 91-431- 2551847, 257 2988, 257 2702.
E mail: hqiwsindia@gmail.com

Payments also could be made through EFT mode with the following details:
Name of the Bank: ICICI Bank Name of the Branch: Trichy
Cantonment Branch Code: 6204 MICR Code: 620229002

The details of PAN No., Service tax Registration No. and NEFT details are :
Account Number: 620401068440
RTGS / NEFT / IFSC Code Number: ICIC0006204
Address of the Bank: 52, Heber Road, Espee Complex, Tiruchirappalli
Service Tax Regn. No.: AAAT19335ESD001 PAN No.: AAAT19335E