



History of IRSI



First IRSI was conducted in 1983

- Dr.RP Shenoy, then Director LRDE and Chairman IETE Bangalore Centre with Sri NL Krishnan, then CMD BEL mooted the idea of first ever International Radar Symposium India. This dream was realised very successfully by the team headed by them in Oct 1983.
- The surplus generated was given to IETE Bangalore Centre to institute IETE-IRSI(83) Awards (Main Award and Young Scientist Award).
- This corpus fund amounting to Rs 4 Lakhs + was later transferred to IETE HQ.
- These awards are presented annually from then on, usually during AGM of the Centre.



IRSI -83 .. Contd.

- During AGM conducted on 28th June 1998 at IE Building (IETE Auditorium under renovation), Dr Ambedkar Veedhi, Bangalore CMD BEL ,Dr VK Koshy and Director LRDE ,Dr.GM Cleetus were invited to be Chief Guest and Guest of Honour for IRSI Awards Presentation Ceremony.
- The idea of reviving IRSI, which came up in several previous meetings, was pushed again and led to discussion. Dr Shenoy mentioned that it needs minimum 2 years preparation for an international event. Then it was decided that we will have this event in Dec 1999.
- Dr VK Koshy was nominated as Chairman IRSI-99 and DR.GM Cleetus as Co Chairman , Dr S Pal Co-Chair which they all readily accepted. The ball was set rolling.

Revival of IRSI – AGM 98

Extract from annual report 98



RADAR SYMPOSIUM INDIA-99 (IRSI-99)

During AGM-98 the idea for an International Radar Symposium was mooted by IETE, BEL & LRDE. Subsequently on 14th Nov a meeting of Pioneers and Professionals in the field of Radar was organised at IETE Bangalore Centre to formally plan the Symposium. Call for Papers & Initial Information Bulletin were despatched and the Symposium is co-sponsored by IEEE, IETE, BEL, DRDO, ISRO, HAL and SEE(Society of Electronics Engineers, LRDE). The Symposium will be held at Hotel Ashok Bangalore during 14-17 Dec 1999.



Seed of IRSI-99 is being watered





Brain Storming at IETE Bangalore Centre 14 Nov 1998.



IRSI-99 inaugurated. Dr.Kasturi Rangan (Chief Guest) , Cdr.HS Sharma (President IETE) Dr.VK Koshy CMD BEL,Dr.GM Cleetus ,Director LRDE and Dr.MH Kori ,Chairman IETE Bangalore Centre are seen. Dr.RP Shenoy, the architect of IRSI -83 is enjoying at its revival. Venue: Banquet Hall, Hotel Grand Ashok



IRSI-99 Section of Audience



Sri.S.Ravind of LRDE after receiving IRSI-83 Award. He became Director LRDE subsequently and was Chair for IRSI-13.



IRSI-2001 (Extract from Bangalore Centre Annual Report 2001-02)



IRSI-2001

Wg Cdr CPK Menon, VSM (R), Symposium Chairman welcoming the participants



Extract from Centre's Annual Report.

INTERNATIONAL RADAR SYMPOSIUM INDIA – 2001 (IRSI-2001): DEC 11-14 2001

The third International Radar Symposium India (IRSI-2001) was held during Dec 11-14, 2001 at Hotel Ashok, Bangalore. This event was jointly organized by IETE, IEE (UK) Bangalore Section, IEEE Bangalore chapter, Society of Electronic Engineers (SEE), BEL, DRDO, HAL and ISRO.

Pre Symposium Tutorials were held on 11th Dec 2001. Dr. Francois Le Chevalier and Dr. Guy Desodt of Thales, France delivered the tutorial on "Adaptive Radar Processing". Tutorial on "Photonic Technologies for phased arrays Passive/ Active" was delivered by Dr. Arokiaswami Alphones of Nanyang Technological University Singapore. More than 150 delegates attended the tutorials.

During the Inaugural Session Wg.Cdr.CPK Menon Symposium Chair welcomed

Extract from Centre's Annual Report..contd



the participants, Dr.V.K.Koshy delivered the Patron's address, Sri.S.Varadarajan spoke about the IRSI. The Symposium was inaugurated by Prof.U.R.Rao, Chairman, Prasar Bharati and former Chairman ISRO. The keynote speech was delivered by Prof.R.P.Shenoy Distinguished Scientist and former Director, LRDE. Maj Gen Yashwant Deva, President IETE presided over the function and released the Souvenir. Dr.M.H.Kori, Chairman, Organizing Committee proposed the vote of thanks.

113 papers of excellent quality were presented in 18 sessions during the symposium. More than 275 delegates participated including those from US,UK, Canada, Israel, France, Italy, China, Netherlands, Poland, Finland, Australia, etc.

Invited talks were delivered by Sri.G.Vishwanathan (ISRO), Prof.Bharathi Bhat (IIT Delhi), Sri.Tapan Misra (SAC Ahmedabad), Dr.Subhash Challa (Melbourne University), Dr.Arokiasami Alphones (Nanyang Technological University, Singapore) and Prof. Girish Saraph (IIT Mumbai). These talks were highly appreciated by all the participants.

Extract from Centre's Annual Report .. contd



The Plenary Session talks on the Inaugural Day were delivered by Prof. Philippe Lacomme, of Thales France on "Airborne Radars" and Sri. S.Varadarajan, Addl Director LRDE on "Indian Radar Scenario".

President of IETE Maj Gen Yashwant Deva inaugurated the exhibition arranged in Ashoka Hall. ALELCO (Italy), Expo International (USA), Cenrex (POLAND), PIT (POLAND), Thales (Netherland), Oerlikon Contraves AG (Germany) were the foreign companies who participated in the exhibition other than major Indian companies.

In addition a Panel Discussion was held on the concluding day chaired by Col. H S. Shankar, Director R & D BEL. " Affordable Radar Systems" was the theme and many suggestions for international co-operation in achieving this goal, at least in the civilian application of Radar, came up during discussions.

Extract from Centre's Annual Report... contd



A Sponsored local sight-seeing trip was also arranged for interested delegates. The symposium helped all those who attended to update their knowledge and also have useful technical discussions with their counterparts from abroad. The feedback received from the participants indicate the overall remarks about the event as excellent. Most delegates look forward to the next symposium during 2003.

It is planned to have the next IRSI in December 2003.

A Research Fellowship on Radar & Microwave was proposed by HQ IETE, for which Rs.5 Lakhs has been given from IRSI-2001 surplus to IETE New Delhi. The center received Rs 3 Lakhs for the second floor and Rs 1 Lakh for the formation of IETE-IRSI Cell



IRSI-2003 Dr.VS Arunachalam, Chief Guest



Dr.Yakkov Bar Shalom, International expert on Tracking and Multisensor Data Fusion being felicitated by Dr Shenoy. Sri H.Ramakrishna looks On.



IRSI-2003 Report in IETE Bangalore Centre's Annual Report.



02-05 Dec 03 International Radar Symposium India-2003 (IRSI-2003)

The 4th International Radar Symposium India (IRSI-2003) was held from 02-05 Dec 2003 at Hotel Grand Ashok , High Grounds , Bangalore .This prestigious international event organized by IETE Bangalore Centre was co-sponsored by the IEE , (UK) IEEE ,SEE, BEL,DRDO, HAL and ISRO.

02 Dec 03

Pre symposium Tutorials (Tutorials I & II) were held on 02 Dec 2003 from 9 a.m. to 6 p.m. in two parallel sessions . The attendance for Tutorials I & II was 148 and 147 respectively.



Report of IRSI-2003 ... contd.

The Tutorial on “MULTITARGET TRACKING AND MULTISENSOR DATA FUSION” was conducted by world renowned Prof. Yaakov Bar-Shalom, Distinguished Lecturer IEEE-AESS, Connecticut University, USA who has come to India for the first time and Dr. Subhash Challa of Melbourne University, Australia.

The pre-lunch Tutorial-II was conducted by Dr. Philippe Lacomme, Thales, France on Active Phased Array Radars and the post lunch session was conducted by Prof. S. K Koul, CARE, IIT , Delhi on “RF MEMS for RADAR Applications”.

03rd Dec 2003 :

The IRSI-2003 was inaugurated by Dr. VS Arunachalam, Former Scientific Advisor to Minister of Defence and presided by Prof. K. K Aggarwal, President IETE.



Dr. V S Arunachalam during his inaugural speech has brought out that the Industries and R & D has come together in IRSI-83 itself , to project and implement the advancement of Radar and Microwaves Technologies bringing together the Scientists from India & abroad. He was very happy to see the large participation of scientists in the specialized field of Radar Science and Technology..

Prof. K K Aggarwal released the Souvenir of IRSI-03 . He spoke about IETE which has celebrated Golden Jubilee Year(1953-2003) and informed that IETE has created a Research Fellowship at Indra Prastha University with a monthly remuneration and a suitable grant. This was made possible from the previous IRSI- proceeds.



Report of IRSI-2003 ... contd.

Wg Cdr CPK Menon (Retd) , Chief Operating Officer , Spectrum Infotech Pvt Ltd, Former Executive Director , BEL who was the Symposium Chair, welcomed the guests, invitees and delegates of the Symposium and brought out the aim and scope of this IRSI-2003.

Shri Y Gopala Rao CMD BEL delivered the Patron's Address. He has brought out that how BEL, a PSU, has manufactured radar systems indigenously and helped in the defence of the country.

Shri K U Limaye , Director LRDE, DRDO and Symposium Co-Chair spoke about the contribution of LRDE / DRDO for the Development of indigenous Radar Systems.



Report of IRSI-2003 ... contd.

The IETE-IRSI(83) award was presented to Sri L. S Radhakrishnan , Scientist 'G' of LRDE by Prof. K K Aggarwal, President IETE

The IRSI-2003 indoor exhibition arranged at the convention hall was inaugurated by President IETE.

There were 21 Exhibitors from India / abroad . Pit Poland , Thales Netherlands, CSIR Defencetek South Africa, Specs synergy USA, Primagraphics UK and Elisra ISRAEL were the foreign participants..

There were 31 Advertisers in the Souvenir.

During this symposium the IRSI-2003 proceedings in Book form and CD were brought out which included more than 130 research papers from India & abroad.

On the concluding day on 05th Dec 2003 , a panel discussion was held consisting of specialist from PSUs , Pvt sectors, DRDO deliberating on the theme "Indigenous Radar System Realisation: Industry Participation".



IRSI-2005

19th Dec 2005 to 22nd Dec 2005 : International Radar Symposium India-2005(IRSI-05) was held at J N Tata Auditorium, NSSC Complex, I I Sc Bangalore.

- a) “Space-Time Adaptive processing for Heterogeneous clutter Scenario”: by Dr.Muralidhar Rangaswamy . Air Force Research Laboratory,USA
- b) “Polarimetric Weather Radar” by Dr.Richard Doviak, and Dr.Dusan Zrnic, National Severe Storms Laboratory,USA.



IRSI-2005 contd

c) :Ultra vide Band Techniques in Radar” by Prof.Jose Luis Garcia & Dr.Alvaro Alvarez University of Cantabria, Spain.

20th Dec 2005: The Symposium (IRSI-05) was inaugurated by Prof.V K Aatre, I I Sc., Bangalore (former SA to RM, DG DRDO,Secretary Dept of DRDO) and delivered the key Note address. He also released the Souvenir & inaugurated the Radar India-2005 Exhibition.

Sri.K U Limaye ,CCR & D ,Symposium Chair welcomed the delegates and guests. Sri.H Ramakrishna, Former Executive Director, CRL BEL Bangalore,Chair,Technical Programme Committee, briefed about IRSI-05. Sri.Y. Gopla Rao,CMD,BEL delivered the patron's address.IETE-IRSI (83) award was presented to Sri.S.Varadarajan, Director LRDE and Dr.D R. Jahagirdar,RCI,DRDO,Hyderabad was conferred the IETE-IRSI (83) Young Scientist award for the year 2005, by Prof.V K Aatre. Sri.D.Rajagopal was felicitated for his continued contributions to IRSI-99,01,03 and 05 during the function.



IRSI-2005 contd

Plenary Session talks by experts from India and abroad on Radar related topics were delivered.

There were about 140 technical papers presented during the Symposium, which includes poster sessions also.

About 53 Firms, which includes DRDOs, PSUs, Pvt, and Foreign firms have participated in the “Radar India-2005 exhibition.



IRSI-07 Report by the Centre

10th Dec 07- “International Radar Symposium-2007 (IRSI-07)” “Pre Symposium Tutorials” were held at NIMHANS Convention Centre Auditorium. The details are:-

- Tutorial-I (Pre-Lunch Session)

“Radar Signal Detection and Multisensor Fusion”

By Dr.Pramod K Varshney, Syracuse University, USA

- Tutorial-I (Post-Lunch Session)

“Recent Advances in Space Time Adaptive Processing (STAP)”

By Dr.Muralidhar Rangaswamy, Air Force Research Laboratory, SNEH, USA

- Tutorial-II

“Active Multifunction Phased Arrays and Digital Beam-Forming”

By Dr.Eli Brookner, Raytheon Corporation, USA.



IRSI-09 Report

08th – 11th Dec 2009: International Radar Symposium India (IRSI-09) was held at NIMHANS Convention Centre, Bangalore. Sri D Rajagopal was the convenor.

08th Dec 2009: Pre – Symposium Tutorials were held.

09th Dec 2009: The Symposium IRSI-09 was inaugurated by Padmavibhushan Sri G Madhavan Nair Former Chairman ISRO and former secretary Dept of space and delivered the inaugural address.

Sri Ashwani Kumar Datt, CMD, BEL delivered the patrons address and inaugurated the “Radar India Exhibition”. A live demonstration of Radar was displayed. Sri A Bhaskaranarayana , IETE Council member on behalf of Lt Gen Ashok Agarwal PVSM (Retd) president IETE read the IETE –IRSI(83) and IETE-IRSI (83) Young Scientist Awards Citations. Sri G Madhavan Nair, chief guest presented the award to Dr. A.K.Singh of LRDE and to Sri Kamaljit Singh of ISRO, SCL, Mohali respectively.

IRSI-11 Report (Release of Souvenir)





IRSI-11 ... Inauguration of Exhibition.





Report on IRSI-11

IRSI-11

- Since many companies have come forward with sponsorship, there is free registration for IEEE/IET/IETE students who are presenting papers in IRSI-11. Other students up to Post graduate Level and all faculty members of Engineering. Colleges IITs , IISc and Armed Forces Personnel are offered 50 % concession in Registration. Fee.



Report on IRSI-11

IRSI-11

Also a Best Paper Award with a Cash Prize of Rs10,000/- in memory of Late Sri.KU Limaye, Former Director, LRDE and CCR&D , DRDO, instituted by Mrs. Malathi Limaye, Scientist G (Retd), Aeronautical Development Establishment (ADE), DRDO was presented to Sri.V.Mahadevan and Sri.VV Srinivasan for their paper on their research carried out at ISAC



IRSI-Funds Distributed after revival in 1999

• IETE HQ : Seed money(Rs 20,000/-) returned	0.5 Lakhs,
• Research Fellow ship	2.5 Lakhs
• Research Fellow ship	5.0 Lakhs
• IRSI Award Enhancement	<u>2.0 Lakhs</u>
Total	9.5 Lakhs



IRSI-Funds Distributed after revival in 1999

• <u>IETE Bangalore Centre*</u>		
• Paid in 2001 (from IRSI-99)	4,06 ,400/-	
• Paid in 2002 (from IRSI-01)	5,00,000/-	
• Paid in 2004 (from IRSI-03)	7,50,000/-	
• Paid in 2006 (from IRSI-05)	16,46,840/-	
• (Library Enhancement)	2,00,000/-	
• Paid in 2010(FROM IRSI-09)	3,06,526/-	
• 08/07/2009	1,00,000/-	
• 23/03/12 ‘	50,000/-	
• 25/11/14	1,00,000/-	
• <u>Total</u>	<u>40,59,766/-</u>	<u>*(E & OE)</u>