FINAL ANNOUNCEMENT

Sixth International Conference on Electronic Warfare

EWCI 2020

"EW : COLLABORATE FOR SUCCESS"

17 - 20 FEBRUARY 2020

Venue : National Science Seminar Complex
Indian Institute of Science, Bangalore, India

Email : ewci@aoc-india.org Web: www.aoc-india.org

The Sixth EW International Conference India (EWCI 2020)

The Sixth International Conference on Electronic Warfare (EWCI 2020) is the latest event in the internationally acclaimed EWCI Conference Series in India, in the field of Electronic Warfare and related areas. The Conference is being organised by the much Awarded India Chapter of Association of Old Crows (AOC), Bangalore. The Conference has the active support of Defence Research and Development Organisation (DRDO), Government of India, Ministry of Defence and the Defence Public Sector Unit (DPSU), Bharat Electronics Limited (BEL), Bangalore. The Conference is envisaged to be of great use for Modern Armed Forces, Military Planners, Developers, Procurers, Testers, Trainers and Vendors of the latest EW Technologies and Systems. Past Conferences in the Series attracted large delegations from Indian Armed Services, DRDO, Defence PSUs, National and International EW Professionals. A large scale Indoor Exhibition will accompany the Conference, displaying the latest EW Products from International EW Organisations. There will be an intense one-day Pre-Conference Tutorials preceding the Conference. The Conference is visualised to be an important platform for EW Professionals who would share the Research and Development output in the field of EW at the global level. Hence, the theme of the Conference is chosen as "EW : COLLABORATE FOR SUCCESS".

Technical Papers Presentation

The Conference attracts a large number of technical papers internationally with deep research content, covering all aspects of EW concerning exploitation of Electro Magnetic Spectrum for Electronic Attack (EA), Electronic Protection (EP) and Electronic Support (ES) and related fields. Technical papers are invited in these areas including the following topics:

- Advances in EW Systems, Architectures, Techniques and Technologies
- EW Systems Modelling and Simulation
- EW & EO Threat Simulators, Testing & Evaluation
- Advances in ECM / ECCM Techniques, Expendable Repeater and IR Jammers
- Electro-Optic based EW Systems - Missile Approach Warning Systems & Laser Warning Systems
- Network Centric & Information Warfare, EW Cyber Warfare
- EW Antennas, Active Electronically Scanned Arrays (AESA) and Shared Apertures
- Radar Finger Printing, LPI Emitters Techniques for Interception and Countermeasures
- Communication DF Receivers, Digital Receivers, EW Signal Processors, Satellite Based EW Challenges
- SIGINT, RWR, ESM, Multi Sensor Warner, Directed Energy Weapons(DEW), Microwave and Millimeter Wave Technology for EW
- Light Weight EW Systems for UAV, Aerostat & Other Platforms
- Emitter Location Algorithms, Program Management of Complex EW Systems
- EW Interference to TV/Radio/Mobile Transmissions and their Maintenance
- EW Ops & Spectrum Management in Joint Services Operation Scenario and Challenges
- Operation Flight Programs and Airborne EW Software and their Verification and Validation
- IED Detection, EW for Counter Terrorism Operations and Low Intensity Warfare

EWCI 2020 Schedule

DATE	EVENT
17 February 2020	Pre-Conference Tutorial
18 February 2020	Inaugural Session, Inauguration of Exhibition, Plenary Sessions, Invited Talks, Technical Sessions, Cultural Programme (in the evening) and Conference Dinner
19 February 2020	Technical Sessions and Exhibition
20 February 2020	Technical Sessions, Exhibition and Closing Session

Pre-Conference Tutorials

A one day Pre-Conference Tutorials by Eminent International Experts on the Following Advanced EW Topics are arranged on 17 February 2020. The Tutorials will be of immense value to the R&D and young EW Professionals to get in-depth exposure to the State-of-the-Art Technology.

TUTORIAL 1 : Naval EWS : The Modern Naval EW Defence System

Military Ships constitute an important asset for their Nations for the many tasks and missions they fulfil. However, they are also a premium target for the enemies, which can employ a number of sophisticated and dangerous weapons to attack them. Within these weapons, we can indicate cyber-attacks, many types of missiles, unmanned air (drones) and surface vehicles. Those threats exploit RF communication signals to be addressed toward the ship from far distances and RF or IR ship signatures to precisely hit it. Thus ship defence must be provided not only with AESA radars with detection and tracking toroidal space coverage but also with an effective EW system, which allows the terminal RF/IR/Cyber defence of the ship.

Elettronica addressed the above EW task with its new Naval EWS system. The system is composed of five sub-systems that are managed and coordinated by the Electronic Warfare System Manager (ELT-950 EWSM). The five sub-systems are: the Radar Electronic Support Measure (ZEUS RESM), the Communication Electronic Support Measure (ELT-332 CESM), the Radar Electronic Counter-Measure (Virgilius RECM), and the counter-UAV (ADRIAN) with detection, classification and CECM protection

against multiple commercial drone attacks. The EWSM, which is provided with Cyber defences functionalities to protect the overall MINERVA system operation, is further coordinating the off-board launches of the chaff and flares ship ammunitions. The tutorial addresses the technologies and attacking methods of the threats as well as the technologies and the defence capabilities of the MINERVA System.

The Speaker Dr Andrea De Martino graduated in Nuclear Engineering (Electronic Track) and Ph.D. in Automatic Control Systems. He worked in Selenia S.p.A From 1972 to 1985 where he was involved in design of variety of Radar Systems. Since 1985 he worked in Elettronica where he developed New EW Products, held positions up to Technical Director of the EFA-DASS Consortium.. He currently holds position of CTO in Elettronica, Italy. Dr De Martino is a patent holder and author of the book "Introduction to Modern EW Systems" and many Technical Papers on Radar and EW. Dr. De Martino is an expert in Surveillance and Reconnaissance Sensors, in their Data Fusion and Countermeasures (ECM) in both RF and IR.

TUTORIAL 2 : Border Surveillance and Traffic Analysis : The Boost of Artificial Intelligence in Homeland Security

The modern border surveillance networks exploit an enormous quantity of data and information collected using Radar ESM and SIGINT systems installed on terrestrial, naval and air platforms, and Signals transmitted by AIS (Automatic Identification System) for maritime traffic and IFF(Identification Friend or Foe) for air traffic.

All the collected data are processed by one or more Command and Control (C2) Centers in order to generate complete and exhaustive operative picture of Detection of all anomalous activities and behaviours of the platforms under monitoring, with capability of an immediate optical feedback, and Protection of all border surveillance network nodes from "cyber-attacks" in order to guarantee integrity/confidentiality of the collected data.

Two innovative functions are enabled by the use of Artificial Intelligence techniques:

1) The Specific Emitter Identification (on both Radar and COMM signals) that provides a method to associate in a unique way the received waveform with the corresponding radio transmitter.
2) The Anomalous Behaviour Detection that provides a method based on analysis trajectory/kinematic and waveform behaviour to detect anomalous activities of the platforms under monitoring.

Given the huge amount of data, it is necessary to introduce, in each node to be protected, the functionality of Advanced Cyber Defence. This functionality is also based on "Artificial Intelligence" techniques and it is able to detect, identify and classify harmful and malicious network traffic flows (e.g., intrusions/infections).

The Speaker is Dr Andrea De Martino, Elettronica, Italy.
The Co Speaker Dr. Timothy Battisti graduated in Telecommunications Engineering from the University of Rome "La Sapienza" in February 2006. After the graduation, he started his PhD in Information and Communication Engineering, during which he has been working on complex optimization techniques applied to distributed communication systems and sensor networks. In 2009, he joined Elettronica S.p.A as System Analyst in the Research & Innovation Department and has worked on both EW communication systems and EW radar systems. In particular, his main aim has been to develop advanced Signal Processing algorithms and design advanced EW systems and solutions. Moreover, he was involved in important national and international Defense Programs. Dr. Battisti is also the author of several technical papers on Distributed Sensor Networks and Signal Processing for Telecommunications.

TUTORIAL 3 : Software Architectures for New Generation Multifunctional Electronic Warfare Systems

With today's increasingly sophisticated threats in the global defence battlefield and the proliferation of Anti-Access/Area Denial (A2/AD), technology must rise to 'smart' systems that address multiple threats and perform simultaneous functions, be adaptive, multifunctional and operate on any platform (whether in the air, at sea, on the ground or unmanned) – all under reduced size, weight and power.

Such new systems need to have modern software architectures that can keep pace with commercial software development cycles and loosely coupled to hardware. This will enable future hardware and software systems to operate in diverse environments and scales. These systems must be built from the ground up to support collaborative network operations and ability to adaptively change functionality in real-time.

Dated systems built with one specific purpose and function (e.g., one individual system for electronic attack; a different system for electronic support measures, etc.) require on going upgrades and multiple parts, which can limit mission effectiveness and slow down critical mission turnaround time. This tutorial will discuss : 1) The evolving EW threat and why "legacy databases and lookup operations" will not work, 2) New requirements for extreme adaptivity and cognitive operations, 3) The role of software defined radios (SDRs) in modern multifunction EW, 4) High-performance embedded computing (HPEC) for advanced real-time EW, 5) Advanced antennas for EW, 6) Low SWAP-C enablers.

The Speaker Matthew Orr is the founder of Ocupoint Inc., USA which is a start-up company that develops advanced Small form factor hardware for wide range of commercial applications such as 5G wireless as well as defense Applications such as cognitive electronic warfare and electronic support measures systems. Prior starting Ocupoint, Mr Orr was a principle systems engineer in the Advanced Systems Technologies group within the Harris Electronic Systems division and was responsible for several early research programs consisting of small form factor multifunctional EW system modules. Mr Orr has been working in research and development programs in the areas of electronic warfare (EW), global navigation satellite systems and military tactical communications systems for 21 years. Mr. Orr holds patents in the areas of radar detection and signal processing and his background includes software defined radio architectures, GPS Block IIR/III navigational payload design and the development of signal interception and processing techniques. His current research interests include advanced electronic attack (EA) and electronic countermeasures (ECM) technique development, small form factor EW and multifunction EW systems.

TUTORIAL 4 : Advancements and Design Concepts for Modern EW Test and Training Ranges

The evolution of EW systems is adding new system capabilities that must be tested. The threat environment is changing with threats becoming more sophisticated and numerous, requiring large scenarios and pulse density. The EW simulation used to test EW systems must have greater fidelity and realism. There is a trade-off between cost and fidelity/realism. Systems now need to be designed with common aperture that requires simulators to provide stimulus for more than just the EW signals. They are required to stimulate radar, EW, communications, navigation. Multispectral stimulus is no longer a "nice to have" and is becoming a hard requirement. Air Test Ranges will focus on land-based assets that are generally mobile shelter-based systems with integral EW systems that can be used for jamming, deception and monitoring of radar and communications, as well as simulating the presence of opposing force communications. Naval Test Ranges explain and review how an integrated suite of electronic warfare simulators and sensors are designed to support EW training and test both at sea and in harbor, reviewing how it can be optimised to enable complete training of all Navy Radar and EW sensors. Land Training System will explain the communications-related capability required in the Land environment which differs to that required in the Maritime and Air domains due to the multitude of communications systems in use by land forces and the way in which they are operated. The land training system range needs to be able to monitor and disrupt both voice and data communications across various systems ranging from tactical handheld combat radios to headquarters (HQ) C2 nets and satellite systems.

The Speaker Robby Miles is currently a Vice President at OAK Defense Ltd, Canada with 20 years of experience in the field of EW Test and Training systems. His background includes roles such as : Software Designer, RF Designer, Product Manager for EW Threat Simulators and Principle System Designer for Land, Naval and Air Force EW Test and Training systems. Also, he has designed large scale SATCOM systems ranging from 2-meter systems to 13-meters. He has developed systems used around the world and is presently the design lead for both naval and air test range simulator that are used in India.

Plenary Talks on 18 February 2020

★ **Multi-Function EMBM Requirements**
Muddy Waters,
President, AOC International, USA

★ **Advances in EW Systems and Technologies for High Altitude Platforms**
Dr Anil Kumar Singh, OS and Director,
DLRL, DRDO, Hyderabad, India

★ **Challenges in EW Systems and Their Life Cycle Sustenance**
Rear Admiral Nair Sreekumar, Asst. Chief of Materials (IT and Systems), Indian Navy

★ **New Generation Airborne EW/EO Systems in Indian Scenario**
Dr K Maheswara Reddy, DS and Director,
DARE, DRDO, Bangalore, India

★ **Development and Concurrent Production of Current Technology EW Systems in India**
Mahesh V, Director (R&D),
Bharat Electronics Ltd, Bangalore, India

Invited Talks on 18, 19 & 20 February 2020

★ **Establishing EW Relationships**
Lisa K Fruge-Cirilli, BAE Systems,
Past President, AOC International, USA

★ **The Transformation and Future of EW Systems, Techniques and Electromagnetic Spectrum Operations**
Dr Robert Andrews MBE,
At-Large Director, AOC International, USA

★ **EW Systems Beyond 2025**
Matthew Orr, Ocupoint Inc, USA

★ **Advances in Submarine ESM Systems**
Patrick Clarke, SAAB Grintek Defence,

★ **New Developments in Test and Evaluation of EW Systems, an US Perspective**
Greg Patschke, Keysight Technologies, USA

★ **Specific Emitter Identification of COMMS Signals**
Fabrizio Vegari, Elettronica, Italy

★ **Poratble Modern Communication and Radar EW Test and Training Systems**
Robby Miles, Oak Defence Ltd, Canada

Delegates Registration

Registration Fee	Indian (INR)+18% GST	Foreign USD
Tutorial	Rs 5,500	$ 300
Conference	Rs 14,000	$ 500

Concessions Offered:

- 10% on the Registration Fee for Early Bird Registration (Registration before 30 November 2019).
- 40% on the Registration Fee for AOC India Chapter Members (Membership taken before 01 November 2019) and Serving Indian Armed Services Personnel.
- 50% on the Registration Fee for College Students and Faculty.
- Authors presenting Technical Papers also need to pay Registration Fees.

Souvenir and Proceedings

Tariff for Advertisements	Indian (INR)+18% GST	Foreign USD
Back Cover	Rs 60,000	$ 1500
Inside Front and Back Cover	Rs 50,000	$ 1250
Special Page	Rs 25,000	$ 700

A Souvenir (A4 size, Multicolour) containing messages from Dignitaries, Abstracts of Technical Papers, Invited Articles, Exhibitors Index and Advertisements from EW Organisations will be published. Soft Copy of the Conference Proceedings and Hard Copy of the Conference Souvenir will be made available for all the Delegates. There is an excellent advertisement opportunity in the Souvenir.

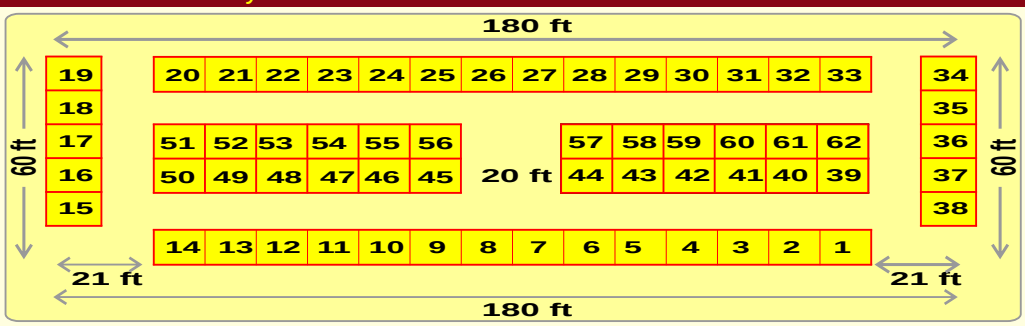
Technical Exposition

The Indoor Exhibition organised at the venue of the Conference during 18 - 20 February 2020 is an extraordinary opportunity for EW Organisations for showcasing EW Systems and Sub-systems, Components, Models, Software and Multimedia Presentations. More than 60 booths (3m x 3m Shell Type) are available for booking. About 50 EW Organisations from more than 15 countries are expected to participate in the Exhibition. The Exhibition will be visited by not only the Delegates for the Conference but also by Professionals, Experts and decision makers and users from the Indian EW field. This gives an excellent business opportunity and allows interacting with various vendors, EW Professionals, R&D Organisations and Armed Services from global participation.

Sponsorship

Exhibition Sponsorship	Indian (INR) + 18% GST	Foreign (USD)	Free Benefits as part of Sponsorship
Diamond	8,50,000	20,000	3 Booths, 8 Delegates
Gold	6,50,000	15,000	2 Booths, 6 Delegates
Silver	5,50,000	13,000	2 Booths, 4 Delegates
Bronze	3,00,000	8,000	1 Booth, 2 Delegates
Booth	1,50,000	4,000	1 Booth
Delegation Kit	5,00,000	12,500	4 Delegates
Dinner	3,50,000	10,000	3 Delegates
Lunch on Day 1or 2 or 3 or 4	2,50,000	7,000	2 Delegates
Cultural Programme	1,75,000	4,000	1 Delegate
Hi Tea	1,25,000	4,000	1 Delegate
CD Facia	1,25,000	4,000	1 Delegate
Back Cover Souvenir	60,000	1,500	-
Inside Front and Back Cover of Souvenir	50,000	1,250	-
A4 Colour Page Advertisement	25,000	700	-

Technical Exhibition Layout



Mode of Payment

All payments are to be made by Demand Draft or Banker's Cheque drawn in favour of "The Association of Old Crows (AOC) India Chapter" in Indian Currency. Bank Transfers are also accepted. Particulars for Bank Transfers are: Vijaya Bank, HAL 3rd Stage, No. 42, 80 Feet Road, Bangalore – 560075. Account Number : 134800301000508, MICR Code : 560029051, IFSC Code : VIJB0001348.

About Association of Old Crows (AOC) India Chapter, Bangalore:

AOC, head quartered at Virginia USA, is a prestigious association of Electronic Warfare and Information Operations professionals. The AOC and its Chapters world over are bringing together the experts and the organisations in the field of Electronic Warfare through its programs including International Conferences, Seminars and Expositions. Considering the importance of Electronic Warfare in modern war scenario and with the vision of providing an institute for the Indian Electronic Warfare professionals, AOC has inaugurated its India Chapter during the International Conference on Electronic Warfare (EWCI 2010), held in Bangalore during 9 to 12 Feb 2010. The Chapter is registered with Registrar of Societies, Bangalore, Karnataka. AOC has enrolled over 200 professionals within one year of its operations. The incumbent (founder) president of AOC India Chapter, Dr UK Revankar, won the prestigious "The International Achievement Award" by the AOC, USA nd the India Chapter is recently awarded as the "Best Growing Chapter" award. The India Chapter has been organising the very successful EWCI series of International Conferences and EWWI series of National Workshops in alternate years.

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