



NEWS LETTER

ESTD : 1964

The Institution of Engineers (India)

Mysore Local Centre (ESTD : 1964) Jhansi Laxmibai Road, Mysore, 570005, India

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*"46 Years of Relentless Journey towards
Engineering Advancement for Nation-building"*

Vol. 05 / No. 10

August - 2011

Er. A. S. Satish. FIE

Chairman

Er. T. Ananthapadmanabha. FIE

Honorary Secretary and Editor

From the Chairman's Desk :



Dear Member,

It gives us immense pleasure and satisfaction by your continued cooperation and a word appreciation through your active participation in all our activities of IEI Mysore Local Centre. We have continued to carry forward the light of IEI lit by great Engineers of Yeaster years. The recent technical lecture presented by Lt.Gen.(Dr).V.J.Sundaram PVSM, AVSM, VSM (Retd), has been a revealing one coming from a person of his stature and seniority, his undying desire and vision towards research and Innovation is a model to younger generation. His dream and vision for India is worth emulating by every one of us. Such frequent Inspiring lectures will certainly transform young minds and enthuse them to achieve greater heights. The forth coming 44th Engineer's

Day and 150th Birth Anniversery celebrations of Dr. Sir M.V. will organised by the Local Centre in a befitting manner as in previous years. Eminent personalities will make presentations on the theme and various other activities will precede the main event of 15th September 2011. It is our earnest request to all the members and their family to attend and actively participate to make the function grand success.

With warm regards,

A.S.Satish.

Chairman, IEI,Mysore

Monday , 8th August 2011

TECHNICAL LECTURE ON " MISSILES TO MICRO AIR VEHICLES"

By: Lt.Gen.(Dr).V.J.Sundaram PVSM, AVSM, VSM(Retd), Advisor, Micro & Nano Systems , NDRF, IEI



THE INDIAN MISSILE FAMILY

Name	Type	Range (kn)
Prithvi	Surface-to-Surface (Land)	350
Dhanush	Ship to Surface	350
Agni I	Surface-to-Surface (Land)	700
Agni II	Surface-to-Surface (Land)	2000
Agni III	Surface-to-Surface (Land)	3000
Akash	Surface-to-Air	25
Nag	Anti-Tank	4

PRITHVI

AIM: Induct Reliable Surface to Surface Missile System with range of 40 to 150 km and One Tonne warhead i n t o Army within 10 years

PHILOSOPHY

Maximum Indigenous Components to Specific Standard
QUALITY IS FREE Design Guidelines

1. Av P 32
2. Av P 35
3. Other applicable Standards
4. Design for actual environment / Test Data
 - o Major grouping for Development / Production

1. Missile (less Warhead)
2. Warhead

CRITICAL DECISIONS / ACTIONS

1. Weldable Aluminum (Al Mg Si)
 - o Sheets - BALCO
 - Special Spec drawn up with CRE (Materials) and Designers considering BALCO Limitations
 - o 1000 mm Rings - HAL (F/F) - Echjay (Rajkot)
2. Mg plate - DMRL - HAL (F/F)-Venkateshwara - MIDHANI
3. Titanium Plate - MIDHANI (Air Bottle) - Design for Realizable Fracture Toughness
- 4 (a) Gyros and Accelerometers stockpiled
(b) TOT for Gyros and Accelerometers only - Refused by SAGEM
(c) TOT offer for complete Nav system with Bit Slice Computer not accepted by PRITHVI

- (d) SAGEM Accepted TOT (Gyros/Accem)
5. Actuators - Moog offer NOT accepted - HAL (Lucknow) asked to develop Devasis Choudhuri Later CMD MIDHANI
6. Servo-Valves - Stockpiled - TOT concluded between Dowty and HAL (Luck) - Dowty withdrew midway! - Techy established at RCI
- 1987 - Missile Technology Control Regime (MTCR)
- 1988 - First Flight - PE - 01
- 1990 - Indigenous Capability for all Mechanical items (Expect Servo Valves and miniature bearings)
- 90% of Total BOM
 - Balance - 10% - Electrical, Electronics
 - COTS and SCOTS OTS - Components Off The Shelf
 - Interpretation - any commercial component
 - SCOTS - Standard Components Off The Shelf
- 1991 - Group formed to attack Electrical / Electronic components in Prithvi BOM
- LCSD (LRDE) - Jain / Balaji - BEL - Muthuswamy, - HAL (Hyderabad)
- Mathur, -ECIL - Sathyanarayana

MSQAA

Director DRDL / RCI

- Met once in 2 months at BEL, HAL, ECIL by turns, eg: Connectors, Crystal Oscillators
 - Minimum Standards for Missiles, -Augmentation of Test Facilities to clear Components (CQAL)
- Designer - Choose a Component to a specific standard which will meet the Subsystem Qualification Level
- Qualify subsystem
 - Subsequent Subsystems to use components of SAME standard
 - Approved by GMB-well before COTS fever in India (based on Perry)
- 1995 - Indigenous manufacturers for 60% of Electronic System Components identified and cleared
- ANUPAMA microprocessor - ANURAG- PCM Encoder - SCL
 - MEMS - Initiated - Accelerometer - IIT (Madras)- Gyro-IIT (Kharagpur)

CONCLUSION

For Success in today's Globalized, Competitive World,

- o AIM - Proper selection most important
- o RESOURCES - Realistic, Honest Assessment
- o PROJECTS - Mission Mode
- o PARTNERSHIP -User, R&D, Academia, Industry, Govt
- o TEAM SPIRIT
- o QUALITY and RELIABILITY
- o SYSTEM ENGINEERING - Total Life Cycle

Many seeds are available today in India. They can all sprout to make India strong and Self Reliant

MICRO / NANO AIR VEHICLE MISSIONS

Disaster Management & Response

- Fire- Floods - Explosions - NBC/Explosive/Mine - Detection
- Earthquakes- Landslides - Gas Leaks - Search & Rescue
- Crowd Monitoring - Stampedes -Commercial - Photography/TV/ Cinema - Agriculture

Defence / Security /

- Low Intensity Conflict - Surveillance - Recce - Communication Relay - Electronic Warfare - NBC detection -Explosive/Mine detection - Riot Control - Crowd

- Monitoring- Traffic Control
- Research & Development -Evaluation of new concepts
- Unmanned Underground Vehicle Robot Mole - Hitech Robotics , Gurgaon

Unmanned Water Vehicles - Surface and Under water

- NSTL - Vishakhapatnam NIO - Goa
- NIOT - Chennai

Avalanche Recce

- SASE - Manoli Jahgirdar - Pune

- Special Technologies - Unmanned Applications BARC CDAC

- Wavelet Group - Pune
- Serial Innovation - Bangalore
- Systemantics - Bangalore

- National Programme - Micro Air Vehicles
- DRDO & DST 2010-2015 GOALS, Fixed Wing, 300mm & 150mm, Rotary Wing, 300mm, Flapping Wing, 300mm, 150mm, 75mm
- Entomopter, Swarm Operations

Cooperation with unmanned surface and submerged vehicles {R&DE (Engrs),

VRDE, CVRDE, NSTL, NIOT

NANO AIR VEHICLES

- Size - 25 to 75 mm
- Weight - 10 to 15 gms
- Power - 1 to 2 W for Propulsion
- Speed - 1 to 5 m/s
- Gust - 2.5 m/s
- Range - 0.5 to 1 km (Flight)
- 1 km (Command & Control)

Endurance- 2 to 5 minutes

Intelligence, Search & Rescue (ISR)

- o Inside buildings, o Caves, o Tunnels, o Jungle, Transmit Images - Dormant, - Perched, - In Flight, Detect-Movement
- NBC Toxins, - Noise

NAV SWARMS

- o Identify extent of contamination
- o Suppression of Enemy Air Defence (SEAD) by damaging Systems / A/C on ground with NANO explosives
- o Form electronic barrier around enemy sensor systems protecting their Command & Control Centres (can be dropped as clusters behind enemy lines)
- o Mobile, micro mine fields to protect own forces-depending on direction of attack.

MISSION (N1)

- o Explosion Spewing toxic gases from a NBC weapon / Industrial plant into a building / tunnel
- o Need-Obtain direction and concentrations of Toxic gas cloud
- Suggested NAV
- o Rotary Wing or Flapping Wing NAV to Criss - Cross Affected Areas
- o Feed data to Central Control Station
- o "Swarm" Control Methodology
- o Collision Avoidance Systems

MISSION (N2)

- o Hostages held in remote location
- General area known

- Exact location to be found
- Number of suspected "hides" to be evaluated discreetly
- o Suggested
 - Insect type MICAVs with-Visual / acoustic sensors - Entomopter
 - INS-GPS Nav
 - Capability for both Crawl and Flight

MISSION (N3)

- o Wounded tiger turned into man-eater hiding in dense jungle
- o Suggested
 - Insect type which can crawl and fly - Entomopter
 - INS-GPS Nav
- o Bio-electronic "Nose" tuned to tiger smell

MISSION (N4)

- o Terrorist infiltration is rising and early warnings of entries are needed.
- o Request - Development of observation platforms in multiple locations for day and night watch
- o Controlled from a central control centre depending on dynamic situation
- o Assessment of requirements
- o They will be static observation points controlled centrally, a NAV with vertical take off and landing capability would be required
- o Terrorists can be in urban built up areas or in Jungles

PRODUCTION OF DEVICES

(Operators not Scientists)

MATERIALS CNT Japan (300 T plant)

Graphite, Quantum Dots, MANIPULATION, FABRICATION, TESTING, AFMs, Nano-Manipulator Systems with SEM, Nanoscale Lithography Equipment, Scanners for High Resolution imaging of n-materials, SOFTWARE, MEMS Design SW Available, Coventer intelligence, Ansys, Can extend to nanotech, Modeling and simulation for Nanotech using Quantum, Mechanics, Molecular Dynamics

SUGGESTIONS

- o Micro and Nanosystems - Apply for Sensors
- o Microtechnology - Use Extensively
- o Nanoscience - Establish good understanding
- o Nanotechnology - Implement in phases
- o Nanobiotechnology - Adapt for use in Sensors
- o Engineers and Biologists - Understand and Learn to interface
 - Plan- Utilize

" Form NETWORKS with Institutions / Groups

Monday 15th August 2011

65th Indian Independence Day Celebrations



44th Engineers' Day & 150th Birth Anniversary of
Bharata Ratna Dr. Sir. M. Visvesvaraya

Saturday, 27th August 2011

WORKSHOP ON " CREATIVE THINKING FOR PERFORMANCE EXCELLENCE "

Conducted By: Capt.H.C.Krishnaprasad.FIE & Prof.K.Shamanna. Ph.D



Chairman Er. A.S. Satish garlanding Sir M.V. Bust to formally Inaugurate the celebrations and the workshop is seen along with the dignitaries

Introduction:

With a view to increase productivity greater emphasis is placed on producing new products and services. Creative thinking is the bases of continues improvements. The need for promoting creative thinking is increasingly recognized in Modern Organization, Collaborative Skills are required to solved problems and Implement decisions in the work situation. Sir.M.V. was a great creative thinker.

Techniques dealing with creative thinking and collaborative problem solving have been successfully used by many organizations. They have achieved significant cost reduction and increased productivity from the implementation of these ideas.

Objectives:

1. To emphasize the importance of creative thinking and evolve methods of solving problems in a participative framework.
2. To analyze obstacles for innovation and creative thinking and help participants develop habits of thinking creatively.
3. To help participants develop action plan for developing creative skills.

Methodology :

Lectures will be supplemented with group discussions, structured-exercises and audio visual aids. Opportunities will be provided for discussion of specific issues and problems. The Size of the group will be kept small to promote active participation and experimental learning.

Topics :

Different types of thinking:

Importance of creative thinking and problem solving for achieving performance excellence.

Quiz on creative thinking and practical tips for promoting creativity

Values for creative thinking

Positive thinking

Issues in implementing creative ideas in work place

Management of stress.

Highlights of workshop:

1. List of books and selected articles and handouts will be provided to all participants.
2. Emphasis will be on practical skills and specific tools and guidelines for practicing creative thinking.

3. Skills relating to team work and collaborative, Problem solving will be illustrated in an experimental frame work.
4. Opportunities for discussion of Specific problems will be provided.

SPORTS MEET & QUIZ

(For Members & their Family)

SUNDAY, 28th August 2011 at 10.00 am



Chairman Er. A.S. Satish & Honorary Secretary Dr. T. Ananthapadmanaba Inaugurated the sports events by way of releasing the pigeons

Sports Conducted

- | | |
|---------------------------|---------------------------|
| 1. Shot-put | 5. Walking Race |
| 2. Aiming the Ring/Ball | 6. Thread & Spoon Race |
| 3. Breaking the Chetty | 7. Lemon & Spoon Race |
| 4. Throwing the Cork Ball | 8. 100 Mtrs. Running Race |

Indoor Games for Members & their Family
Shuttle Cock, Carrom, Table Tennis, Chess



Members and their family participating in the sports events



Er. V. Vasudeva conducting Quiz for Children

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44th Engineers' Day & 150th Birth Anniversary of Bharata Ratna Dr. Sir. M. Visvesvaraya

Chairman & Committee members Cordially Invite You, your family & friends to attend and participate in the Technical Seminar on the Theme "Engineering Preparedness for Disaster Mitigation"

Chief Guest

Dr. H. Maheshappa FIE,

Vice Chancellor Visvesvaraya Technological University
,Gnanasangama, Belgaum.

Will inaugurate the Technical Model Exhibition

Guest Speaker

Er. Vidyashankar Hosakere MS PE (USA)

Managing Director and Principal Consultant, DesBuild Projects Pvt. Ltd., Bangalore
Managing Partner, Turnkey Construction Engineers, Bangalore
Founder Director and Patron, Dhaatu - Center for Sharing, Bangalore, India

Er. A.S. Satish FIE,

Chairman IEI Mysore will inaugurate the Meet

Dr. T. Ananthapadmanabha FIE,

Honorary Secretary IEI Mysore

Saturday, 10 SEPTEMBER 2011 at 5.30 pm

**S.P.BHAT HALL, THE INSTITUTION OF ENGINEERS(INDIA),
JHANSI LAKSHMI BAI ROAD, MYSORE-570 005**

TEA: 5.00 pm.

Technical Seminar on the

Theme "Engineering Preparedness for Disaster Mitigation"

Chief guest

Dr. Wooday P. Krishna BE MS (Engg.) Ph.D. LL.B. FIE

Sunday, 11 SEPTEMBER 2011 at 11 am

**S.P.BHAT HALL, THE INSTITUTION OF ENGINEERS(INDIA),
JHANSI LAKSHMI BAI ROAD, MYSORE-570 005**

TEA: 10.30 am

Lunch : 1.30 pm

CULTURAL MEET

(for Members and their family)

Er. A.S. Satish FIE

Chairman IEI Mysore will inaugurate the Cultural Meet

Dr. T. Ananthapadmanabha FIE

Honorary Secretary IEI Mysore

Sunday, 11 SEPTEMBER 2011 at 5 pm

SIR. M.V. AUDITORIUM

**THE INSTITUTION OF ENGINEERS(INDIA),
JHANSI LAKSHMI BAI ROAD, MYSORE-570 005**

Er.K.B.Bhaskar.MIE **Er.N.S.Mahadevaswamy**.MIE **Er.B.S.Ramesh**.MIE

Programme Convener Programme Co-Convener Programme Co-Convener

TEA: 4.45 pm.

DINNER : 8.30 PM

To,



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