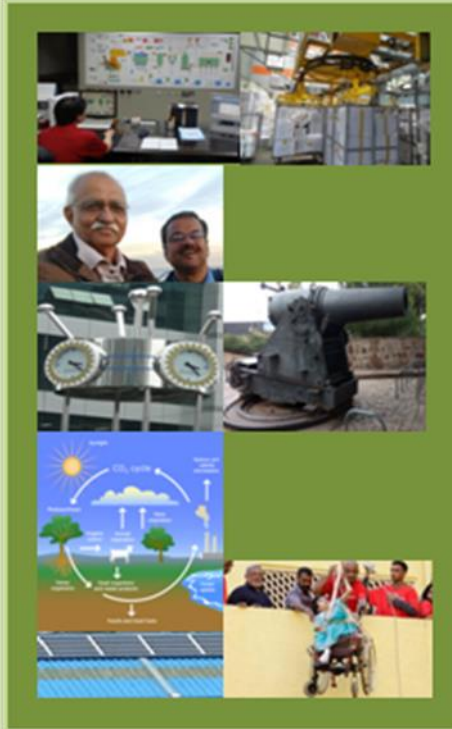


# An Exploration Program on Role of ICT/IoT in reducing applicable Energy –a deep dive



*The objective of this program is to explore possible use of Information Communication Technology (ICT) and Internet of Things (IoT) to sense, quantify and control a given process by appropriate POWER (kW) and its application TIME (h) to reduce consumption of energy.*

**Dates: 24<sup>th</sup> June, 25<sup>th</sup> June, 26<sup>th</sup> Jun, 2019**

**Venue: Shikhar Camp Site, Titwala, Dist: Thane**

**Jointly Organized by**



## **The need of this program:**



The above pictures shows two processes having same source of energy, **the SUN**. The solar panels installed are harnessing the **photons** from the sun rays to generate the electrons for the use as electricity. Whereas, the interaction of sunlight and algae i.e. the **process of photosynthesis** enabling algae to release oxygen needed by aerobic bacteria to degrade the pollutants in the incoming wastewater

The solar photon conversion process is having efficiency of conversion into electrons, but at the same time the process is also having conversion of solar thermal energy. Can we improve this useful energy conversion through innovations based on data generated from the applications of sensors, ICT, IoT systems? Similarly, can we improve the efficiency of **process of photosynthesis**?

And, many more such applications of solar radiations in our life which includes need of vitamin- 'D' by human being. Can we access and regulate this factor of health using ICT/IoT techniques?

Tree and Human relation of O<sub>2</sub> and CO<sub>2</sub> exchange is natural but do we need to monitor its balance equation? Seven or Eight mature tree each around 12m tall and weigh two tons, including the roots and leaves, generates 740Kg Oxygen per year. A human breathes 740kg of oxygen per year. Using ICT/IoT can we decide how many trees should exist in a particular area for sustainability?

Having rains every year is a need of living being to have water for their survival on the earth. The clouds get formed due to 100% saturation of air by water vapors which are part of available water on the earth. These clouds flow with wind and wherever gets converted into droplets or snow due to atmospheric conditions of a particular locations and falls back on the earth. After use rain water by living being, the remaining water flows with the salts of land, back to sea and water logs. Can we regulate this natural system of clouds to get formed and go and have a rain fall equally at all places using ICT/IoT solutions?



At City Diskit, Laddakh, shown a house under construction, at the altitude of 3101 Mtr (MSL), temperature range of -12°C to +26°C, considering snowfall the design of house will be different than a house to be built at coastal area near Mumbai where, altitude is 7Mtr above MSL and temperature range is +18°C to +34°C and 2345mm rainfall during rainy season. It's not only process of building the house but also the material to be used for construction shall be different for both the places. Can ICT/IoT

help out optimizing the designs to manage the happy temperature during all seasons?



An average woman eats about 2000 calories per day to maintain, and 1500 calories to lose one pound of weight per week. An average man eats 2500 calories to maintain, and 2000 to lose one pound of weight per week. Today, ICT/IoT body wearable devices are available as on date, to keep informed the status of calories burnt by an individual but can we work out the exact need of calories by an individual to keep a balance of calories?



The travel is need of human being. It's a process which starts from destination to destination. The mode, media and distance shall depend on the user's preference of time, cost and availability. The energy required for each mode is different. Whether ICT/IoT can address optimization of time, power and fuel required for specific journey.

Such so many processes in the daily life of human being where energy required at a given stage need to be explored for optimizing it through adaptation of ICT/IoT solutions. This exploration program is beginning of the process to identify the energy involved in a given process at a given point of action and to work out possible ICT/IoT "point of view" for addressing reduction in applied power and its application time.

## **Who should be the part of this program?**

This program is designed for:

1. Experienced Professionals who are already into Process engineering, solution architecture, Energy planning, Industrial designing, Human engineering, Bio technologists and all those who are into business of ICT/IoT solutions.
2. Educational Institutes: Teachers/Associate Professors/ Professors/Subject Experts/Scientists/Research Scholars having interest in process planning for their respective areas, Energy applications and ICT/IoT System engineering.

## **The fees:**

Including lodging and Boarding for three nights  
23<sup>rd</sup>, 24<sup>th</sup> and 25<sup>th</sup> June, 2019:

1. For Experienced Professional: INR 15000/-
2. For Educational Institutes: INR 9000/-

## **Amount to be paid to:**

Account Name: M/s SPEED

Account Number: 007220100040093; IFSC code: JSBP0000007

MICR code: 411074005; Bank Name Janata Sahakari Bank Ltd

Branch: Karve Road Pune

SPEED-Society for Promotion of Excellence in Electronics Discipline

**Contact person:** Dr.Ms.Supriya Patil, Ph.D.

Department of Electronics Science, Abasaheb Garware College, Karve Road, Pune 411004

**email ID:** speedelectronicscience@gmail.com

## The program:

Date: 23rd June, 2019: Reporting at site onward 17.00Hrs.

Date: 24th June, 2019:

Morning 06.00Hrs-08.00Hrs: Outdoor group activity

09.00Hrs-09.30Hrs. Breakfast

1st Session: 10.00Hrs -13.00Hrs

Conceptual Energy in a happening process

- 'As is' without ICT/IoT
- 'To be' with ICT/IoT

*A process does have a 'start' and also an 'end'. The time elapsed between the 'start' and 'end' if reduced by using ICT /IoT solution the desired energy employed to complete the job will be reduced.*

Lunch: 13.00Hrs

2nd Session: 14.00Hrs -17.00Hrs

Energy in Environmental Process

- Before '5G'
- Post '5G'

*Although an environmental phenomenon is considered natural, it has a defined process with a cause of initiation at a given instance involving energy transformation. 5G Solutions can smartly assess and monitor the energy employed against energy available.*

High Tea: 17.00Hrs

3rd Session: 17.30Hrs -19.00Hrs

A debate: Artificial Intelligence and Machine Learning based assistance shall help to improve energy efficiency of any process.

Date: 25th June, 2019

Morning 06.00Hrs-08.00Hrs: Outdoor group activity

09.00Hrs-09.30Hrs. Breakfast

1st Session: 10.00Hrs -13.00Hrs

Energy in Transformation Process

- 'As is' without ICT/IoT
- 'To be' with ICT/IoT

*Energy Transformation processes follow laws defined by scientific studies. The process is modular and can be monitored, measured and observed with change in physical states. ICT/IoT Solutions can have better control on the process and efficient outcome.*

Lunch: 13.00Hrs

2nd Session: 14.00Hrs -17.00Hrs

Energy Loss Identification and control Process

- Before '5G'
- Post '5G'

*Every energy transformation process has useful component of energy along with components that are not part of this process or are transformed into a different form which becomes part of the surroundings. Appropriate sensors associated with 5G technology shall monitor the energy transformation process to improve useful components and reduce the adverse impact on the environment.*

High Tea: 17.00Hrs

3rd Session: 17.30Hrs -19.00Hrs

A debate: Reduction of Energy losses will be cost effective using '5G' based sensing solutions.

Date: 26th June, 2019

Morning 06.00Hrs-08.00Hrs: Outdoor group activity

09.00Hrs-09.30Hrs. Breakfast

1st Session: 10.00Hrs -13.00Hrs

Energy in Human Processes

- 'As is' without ICT/IoT
- 'To be' with ICT/IoT

*Human energy is limited to the "Food intake +Solar Light + Oxygen + Water". The Energy is consumed while work done by body internally and externally. The ICT/IoT solutions shall be tools for humans to make effective use of energy available on cause and effect basis using timely smart analysis of available data.*

Lunch: 13.00Hrs

2nd Session: 14.00Hrs -16.00Hrs

A debate: Artificial Intelligence, Machine Learning, Predictive Analysis based assistance is good to improve energy efficiency of human being.

3rd Session: 16.00Hrs -17.00Hrs

Feedback Session

High Tea: 17.00Hrs

Departure: 17.30Hrs

## About Organisers:

### Society for Promotion of Excellence in Electronic Discipline (SPEED)

(The society is registered under registration act 1860 R. No. Maha.2683/2010/PUNE on 30/12/2010.)

The fundamental aim of the Association is to exchange information, knowledge and expertise among members of the association. The organization will be non profit making and working on voluntarily basis. It shall in particular, be capable of organizing competitions, symposia, workshops and conferences, collaborating with other international bodies with which it has common interests, finding the necessary financial resources, encouraging the introduction of advanced techniques, promoting educational and industrial collaboration, undertaking all other activities relevant to the object of the Association. Society for Promotion of Excellence in Electronics Discipline (SPEED) is a legal registered Association for this purpose.

### Kshiti CleanTech Pvt. Ltd.(KCPL)

(CIN: U74900PN2011PTC140320, Registration Number: 140320 dated 1<sup>st</sup> August, 2011)

Kshiti CleanTech Pvt. Ltd. (KCPL) has been constituted to address the invention, discovery, designing, research and development, planning, management, execution, implementation, life time support, consultancy, advisory in the field of clean technology which includes information communication technology (ICT) and energy.

KCPL remained incubated with Science and Technology Park, Pune (Promoted by Dept. of Science and Technology, Government of India) for period of three years and now standing of its own in the area of advisory and consultancy for Clean-tech and ICT based Project Developments, implementation, operation and management.

KCPL has signed MoU with Savitribai Phule Pune University on dated 24th August, 2016 for working together for various Science & Technology Ideas & Projects. KCPL is advisor for CDM Projects: Solar PV, Solar Thermal, Micro & Mini Hydro, Tidal, Plastic to fuel, Animal waste to CNG, Desalination of Water, Geo Thermal, Smart City's Integrated Data Centre and Command Control Room, Environmental ICT /IoT solutions, WiFi City, Surveillance Cameras, Digital Platform and many more areas.

### SHIKHAR Outward Bound Institute (SHIKHAR)

(The society is registered under registration act 1860

R. No. Maha.641/82/GBBSD/ Bruhan Mumbai on 30/09/1982.

Charity Commissioners office R.No. F7957 (Mumbai) on 17<sup>th</sup> December, 1982)

**SHIKHAR means peak, pinnacle or zenith**, in one of the Indian languages. This metaphor sums the organization's vision to aim to achieve international Human Co-operation.

SHIKHAR's motto is Co-existence or No existence.

SHIKHAR conducts programs in Community Development, Corporate Outbound, Child Life Skills and Adventure. **SHIKHAR** has developed and strengthened bonds with like minded organisations in UK, Italy, Austria and Nepal. Over 50,000 individuals from India and overseas have participated in the various programs conducted by **SHIKHAR**. A list of few corporate houses benefited from the skill building programs conducted by **SHIKHAR**:

Airtel, Aramax, Anglo Eastern, Autodesk, AMD Processors, Clariant India, Cognizant Tech., Crisil, Ciba UK, Fulford India, Genpact, GTL, HCL-HP, Hughes Telecom, Hutch-3g, IBM, IPL, AMC, KPMG, Neon Laboratories, Oracle, Polaris-Lloyds(UK), Qualcomm, Sun Alliance UK, Tata Interactive, Tatatel, TCS, Trent, Tyco, TAFE, Vm-ware, Vantage India, and many more.

## About Resource Persons:

**Dr. A.D.Shaligram** is a visionary person at International Level in the area of Sensors Design, Artificial Intelligence, Machine learning, Predictive Analysis, Deep Learning, Robotics and Internet of Things. Ph.D. by University of Pune (1986) for his research work on "Positron lifetime studies in non-crystalline solids". Presently, he is Dean, Science and Technology and Head of the Department, Electronics Science Department, Savitribai Phule Pune University, Pune. He is Founder Chairman of SPEED and Secretary of Foundation for Interdisciplinary Research (FIR). He is having research interest in the subjects such as IoT, VLSI Design, Optoelectronics , Embedded System Design, Wireless Sensors Network, Simulation Software Development, Biomedical Instrumentation and Sensors.

**Er.Sharad Pustake** is having more than 40 years of experience in the field of Energy and ICT. Served with Maharashtra State Electricity Board for Urban Distribution (2 Years) and Planning and Execution of Computerized Load Dispatch Center along with Transmission and Generation Substation SCADA (11Years).Developed and manufactured Ni-Cd Battery Chargers, RF Antennas, Mounting Structures/Towers, Voice and protection couplers , Sensor interfaces, display boards etc. Worked as CEO and Managing Director of Shreecom Group of Companies for 18 years and executed state of the art ICT solution projects for Government and public sector companies throughout India and abroad. Ongoing projects in the area of : Solar PV, Solar Thermal, Micro & Mini Hydro, Tidal, Plastic to fuel , Animal waste to CNG, Desalination of Water, Geo Thermal, Aquaponics, Smart City's Integrated Data Centre and Command Control Room, Environmental ICT /IoT solutions, WiFi City , Surveillance Cameras, Digital Platform , Adaptive Traffic Control, Fire Disaster Management System .

**Mr.Mahesh Chaturvedi** has had his formative education from Cambridge. He can be credited with pioneering Outbound Intervention for Corporate India. He is a trained mountaineer and outdoor education instructor and Introduced the first ever artificial Rock Climbing wall in India. He is having experience of over 43 years in Education. In 1982, with his experience in education he foresighted the need of development of the human personality in harmony with nature and to pursue the vision he founded "Shikhar Outward Bound Institute". Today, **Mahesh Chaturvedi**, is a name of national and International level in the corporate world. More than 100 Brands have been benefited with his expert advice and training to the top management team.

**Dr. Vijay Gadkar** is having 41years experience as an educationist in the area of electronics having specialisation in wave guide based sensors. Ph.D. University of Pune in year 2008 for his research work on: " Design fabrication and characterisation of Planner optical wave guide and its application as sensors ". His 10 years' experience as Head of the Department of Physics and Electronic Science, at New Arts Commerce and Science College, Ahmednagar has created research oriented work in the areas: Opto-Electronics- Design and characterization of Planer optical waveguide, Solar Energy-Solar collectors, PV panels, Plasma Physics- Glow discharge Plasma and its Characterization.

**Dr S. V. Ghole** has M.Sc. and Ph.D. in Biochemistry (1980): Doctoral research was conducted at B. J. Medical College, Pune, India. He is a methodical and result-oriented scientific researcher with experience in Biochemistry, Molecular Biology and Environmental Sciences. He has devoted nearly thirty five years of his lifetime in extensive research, teaching Post-graduate students, supervising students pursuing Master's in Biochemistry and Environmental Sciences. He has also guided 41 Doctoral students and has published more than 120 research papers in International and National peer-reviewed journals. He was Head of the Department of the Environmental Sciences Department at Vasantdada Sugar institute and Pune University. He has a unique and enriching academic and administrative experience. He has extensive laboratory research experience at various reputed laboratories in India, Sweden, Germany and USA. Presently he is attached to ICMR-National Institute of Virology, Pune and working as a Coordinator of Academic Cell.

## Contact Numbers:

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3. Mr. Mahesh Chaturvedi (SHIKHAR):+919820235110 (for Site details)
4. Er. Sharad Pustake: +917709355313 (for information on program)
5. Dr. Vijay Gadkar: +91 9423466611 (for registration)