

Minchu

Department of Electrical & Electronics Engineering



Volume 1

Issue 1

12-2015

Vision and Mission of the Institute

Vision

- To be one of the premier Institute of Engineering and Management education in the country.

Mission

- To provide Engineering and Management education that meets the needs of human resources in the country.
- To develop leadership qualities, team spirit and concern for environment in students.

Vision and Mission of the Department

Vision

- To be a premier department for education in Electrical and Electronics Engineering in Visvesvaraya Technological University, molding students into professional Engineers.

Mission

- To provide teaching/ learning facilities in Electrical and Electronics engineering better than prescribed by University for easy adaptation to industry and higher learning.
- Provide environment for self-learning to meet the challenges of changing technology and Inculcate team spirit and leadership qualities to succeed in professional career.
- Empathize with the societal needs and environmental concerns in electrical engineering practices.



"Minchu" from the Department of Electrical & Electronics Engineering, is dedicated to Late Dr. A.P.J. Abdul Kalam - "The People's President".

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B.N.M. Institute of Technology

Affiliated to V.T.U. Belgaum | Approved by A.I.C.T.E., New Delhi.

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Veluppa Ananthan Acharya

From Editor's Desk

Dear Readers,

Welcome to the November 2015 issue of our newsletter MINCHU.

A thought that has been enduring in mind when it becomes real; is truly an interesting and exciting experience. This news letter was one such cherished work that had its roots in the persuasion. Proper communication plays a vital role in institution's development. This newsletter will serve to reinforce and allow increased awareness, improved interaction and integration among all of us.

With a sense of pride and satisfaction I would like to say that with the active support of the management, faculty and my fellow mates, MINCHU has come alive. With all the efforts and contributions put in by the students and teacher of the editorial team, I truly hope that the pages that follow will make some interesting reading.

P. Vivek
VII SEM, EEE

About EEE Department

Department of Electrical & Electronics Engineering started in the Year 2001 with an intake of 60 students and the department offers UG program in Electrical & Electronics Engineering and M.Tech in Computer application in Industrial drives and is currently headed by Dr.Vidya.H.A. The department has many well equipped laboratories and Research & Development centre. It has excellent staff many of whom have secured University ranks in their post graduate degree from Institutions of International fame. They are regularly participating in International / National Conferences / Workshops to upgrade themselves. The faculty members of the department hold various positions in University body such as Chairman Board of Examiners, Paper setters, Examiners of UG/PG and PhD Programs. The department has various Professional Society Memberships and an in-house association to provide platform for developments in the field of Electrical & Electronics Engineering. Five faculty members are pursuing PhD program under VTU. All the faculty members are members of ISTE. The faculties of the department publish research papers regularly in peer reviewed journals and national & international conferences. The staff members have delivered several Invited lectures.

The students have consistently good performances in the University examinations. The department has Twelve university Ranks to its credits. The students have excelled in technical paper presentations, sports, yoga and cultural activities.

The department conducts workshops & conferences regularly which are well attended.

Success stories



*IEEE based
"International
Conference on Power
and Advanced
control Engineering"
12-14th August 2015*

An International conference “**ICPACE 2015**” was organized by the department of Electrical & Electronics Engineering, B.N.M Institute of Technology, Bengaluru Karnataka in association with M/s. Wudmin Energy Private Limited, Pune, India and IEEE Power and Energy Society (IEEE PES) Bangalore Chapter as the Technical Sponsor. The conference was held for three days during August 12th – 14th 2015 and encompassed diverse areas in the field of Electrical Engineering.

The ICSPACE 2015 delves on advances in Electrical Engineering which provided a platform to widen the horizon, interact and exchange novel ideas. Participation from Industry and academia made the conference a vibrant experience.

The inaugural function was attended by Mr. Howard E. Michel, President IEEE USA.



ICSPACE 2015: A glimpse into the International Conference held at BNMIT under E&E department from 12-14th of August 2015.



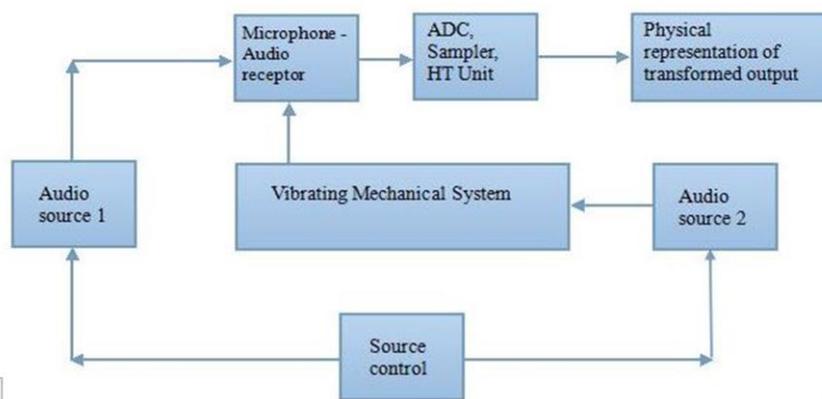
ICSPACE 2015: Endearing performance at the International Conference held at BNMIT under E&E department from 12-14th of August 2015.

Articles

Fault Detection and Measurement in Mechanical Systems Using Dual Acoustic Signature Feedback

Appropriate analysis of vibrations caused by mechanical systems can provide accurate information for detection and measurement of faults in the system. Contrary to widely used methods of fault detection such as demodulation of vibration signals using Morlet Wavelets or spectral analysis of vibrations, this article aims at presenting signal processing based analysis of mechanical systems using the system's acoustic signature.

This method is based on continuous processing of two acoustic feedback signals, from the system, using ADCs and samplers. Algorithms designed to compute Hilbert Transform of the two feedback signals are used and the results are analyzed for fault detection and measurements.



The two audio sources are tuned to produce vibrations of the same frequency. One of the two audio sources is attached mechanically to the test system such that the vibrations are transmitted through it. A mono channel contact microphone which acts as an audio receptor is also mechanically attached to the mechanical system. The audio source which is not attached to the system is directly rigged to the microphone, which also simultaneously catches the summation of the other audio source and the acoustic signature of the setup. Hence, the output of the microphone is effectively two audio signals. The first is the unaltered signal from the source and the other is the combination of the source signal and the vibrations of the mechanical system.

This audio output of the microphone is converted to digital signals using appropriate ADCs and algorithms compute their Hilbert transform, hence making its analysis mathematically simpler. This gives a physical representation of the comparison of the system vibration to the pure input signal hence giving a comprehensive analysis of the mechanical system's vibrations which in turn can be used to detect faults.

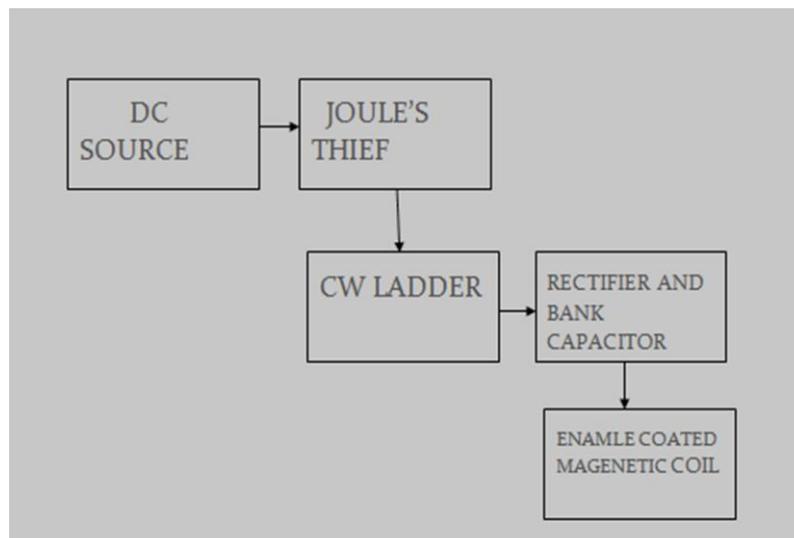
This method is an easier and more cost effective way of fault analysis and can be used in most applications where high degrees of precision are not required. Also, these systems need little or no maintenance and all computation is programmable and hence is extremely flexible and robust.

Vasudev.R
V SEM, B.E.

E.M.P. JAMMER/GENERATOR

In the present world, most electronic devices we use are digital and are mainly based on integrated circuits and semiconductor devices.

All weapons or security devices currently used are based on either heat or mechanical energy as their principle and hence are bulky and are ineffective against electronic devices. Hence the hunt is on to develop an electronic device for the digital age, which is friendly to the living but are deadly for electronic circuits. The answer to the miscellaneous puzzle is E M P Jammer.



E.M.P Jammer or Electro-Magnetic Pulse jammer is an electronic device which generates a pulse of electro-magnetic radiation of large amplitude.

When electronic circuits (especially those with I.Cs or semiconductor devices such as MOSFET) are in the path of these electro-magnetic field, there is a surge of induced current in them, these currents (usually above given rating of devices) either fry the circuit or disrupt its functions.

There are many ways to create an E.M.P jammer out of which a combination of circuits which is economic but still very effective is a circuit involving joules thief circuit & crock croft walten ladder circuit. These circuits help convert a 9V DC source to a high voltage pulse.

It is no ways affects humans or other creatures (Unless you have a cardio pacer.).

Mahesh M. Prabhu
V SEM, B.E.

Electric puns

Wind power is very popular because it has a lot of fans.

Q: What do electrical engineers chant when they meditate?

A: OHM!

The man who got electrocuted was unable to give a statement because he was still shocked at the incident.

Q: The red wire said to the black wire "Why are you so sad?"

A: The black wire replied "I've been grounded."

Q: Why was the thermometer smarter than the graduated cylinder?

A: He had more degrees.

Q: Interviewer: Why is a thicker conductor necessary to carry a current in A.C as compared to D.C?

A: Candidate: An AC current goes up and down (drawing a sinusoid) and requires more space inside the wire, so the wire has to be thicker.

Q: How do filter designers get to see their favourite musicians up-close?

A: Simple, they use band passes.

Q: Why did the electrical engineering student prefer resistance to capacitance and inductance?

A: Because impedance is much too complex.

Q: Why did the humble engineer have a mental breakdown after a good design review?

A: Too much positive feedback.

Piezoelectric power generation

The recent fluctuations on the price of conventional sources of fuel have affected worldwide economics which has forced an increased in the price of other items including food. Some even linked the recent collapse of few financial institutions in countries such US and the UK to the recent increased in this price. This shows that we are too dependent of conventional sources of fuel as a source of electrical power. Besides, conventional sources of fuel as electrical energy have contributed to severe air pollution problem. Therefore, an alternative method to produce electricity has to be put in place. Among other solutions which can be explored are nuclear and hydroelectric power generators. However, these options require huge financial capability to run and to maintain. Besides, not many countries are “allowed” to use nuclear power generator due to world political scenario. Thus, photovoltaic cells and wind turbines have been the popular choices and these renewable energy sources are gaining more attention. However, they are expensive and not affordable to many countries to acquire them. As a consequence, other possible energy sources must again be explored.

One of the promising options is by using piezoelectric material or PZT. PZT can be used as a mechanism to transfer ambient vibrations into electrical energy. This energy can be stored and used to power up electrical and electronics devices. With the recent advancement in micro scale devices, PZT power generation can provide a conventional alternative to traditional power sources used to operate certain types of sensors/actuators, telemetry, and MEMS devices. Umeda (1996) for example successfully developed an equivalent electrical model of the PZT transforming mechanical impact energy to electrical power. Similarly, Kymissis (1998) examined the application of piezo film in addition to the ceramic to provide power to light up bulbs in a shoe, entirely from walking motion. Kimura's US Patent (Kimura 1998) centred on the vibration of a small plate, harnessed to provide a rectified voltage signal to run a small transmitter fixed to migratory birds for the purpose of transmitting their identification code and location. Other works by Clark & Ramsay (2000), Goldfarb (1999) and Elvin (2000; 2001) indicated similar possibility.



Ranjitha.R
III SEM, B.E.

Staff Achievements

- Dr. Vidya.H.A was awarded as Best Alumni (Centenary), Government School, Nidasale, 14th February 2015.
- Dr. Vidya.H.A was awarded “Shikshana Saadhaka Prashasthi” Nyamanahally, Melukote 19th February 2015.

Students Achievements

- Students of V Sem, EEE were runners up in Inter Department Football tournament, 2015.
- Darshan S, Karthik V, Hemanth C R, Keerthi Raj, Mohan K R, Anand, Siddesha, Shivaraj, Runners up in Inter Department kabbadi Tournament 2015.
- Manju Prasad of 4th SEM EEE created a new meet VTU record in 10,000 mts Race and secured second place in Annual inter collegiate Athletic meet held at VTU campus Belagavi. He secured 4th place in Inter collegiate Cross Country race held at Guru Nanak College of engineering, Bidar. & he also secured many prizes in various corporate Marathon races.
- Mr. Vasudev R (1BG13EE061) of IV semester EEE has secured 2nd prize in “MANTHAN-2015 Business Plan Presentation Competition” held on 9th April 2015 by “Federation of Karnataka Chambers of Commerce & Industry” at Hotel Le Meridien, Bengaluru.



Student glory: Manjuprasad of V SEM, EEE secured second place in Annual Inter collegiate Athletic meet

EDITORIAL TEAM

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