



HOD DESK

Greetings to Dear students, Faculty and Friends!

Yet another issue of "Mechnova" highlighting various activities conducted by the department in the last two months. Informative articles by our esteemed faculty members add spice to this issue. Inauguration of CNC production centre was major event and a milestone in our pursuit to have world class lab facilities. Participation of our SAE, Team (S5ME Students) in SAE Virtual BAJA team presentation was yet another feather in our cap. Two of our students Mr. Melvin Cyriac and Mr. Shijith A of S7 ME brought laurels to VJEC by winning major events in national tech fest at Saintgits College. S1S2 University results of our S3ME students though good indicated hard work ahead. We are taking small but steady steps towards documentation process with an aim to achieve a NBA certification. I would like to thank all my colleagues for their tireless efforts to help the department progress at a very steady pace.

Cdr(retd) Raju K Kuriakose
HOD

Engineering problems are under-defined; there are many solutions, good, bad and indifferent. The art is to arrive at a good solution. This is a creative activity, involving imagination, intuition and deliberate choice.

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CNC VERTICAL MACHINING CENTER

**New arrival at
our
production lab**

Features :
Air blast for spindle
nose clearing
Pneumatic tool clamping
Serial interface port

A cost effective & user friendly machine with integrated automatic tool magazine, cladding to contain chips and coolant, telescopic covers for complete protection of guideways & ball screws, low set up time & low maintenance. It is ideal for batch production of Auto components, Die & mould, Defence components, Job shops, General engineering, & aerospace components. Its cartridge type spindle assembly ensures high rigidity & stiffness, designed for complex profile machining as well as heavy metal removal. It is also equipped with armless drum type automatic tool changer for directly picking up the tools.



CNC MACHINE INSTALLATION AND
COMMISIONING

ELEGANT FIRST YEAR RESULTS

MECH TOPPERS

ZAMNAD K	83.52
JUSTIN JOY	81.1
SOBIN JOSEPH	77.31
ASWIN P.V	76.69
AJAY P	75.66

RECENT STRATEGY OF PRODUCTION INDUSTRIES IN INDIA

Subin Micheal (AP ME)

Demand for information and automation systems in manufacturing is soaring. Systems in demand include programmable controls, robotic systems, supervisory controls, data acquisition and information management systems. These systems deliver high-quality, reliable and repeatable solutions to our customers, improving their processes. In view of these systems, it has been observed ten important emerging trends:

- 1. Following the economic downturn, automation spending has sharply increased as manufacturers continue to look for ways to increase productivity, improve quality and reduce costs by automating human tasks that involve hard physical or monotonous work.*
- 2. The use of automation, including industrial robots, is increasing across a range of industries. A couple of decades ago, 85 percent of robots were used in car manufacturing. Today the auto industry represents only 40 percent, with the other half spread among other factories, laboratories, warehouses, energy plants and other industries.*
- 3. As robots replace workers in the more ordinary, repetitive areas, the need for workers with more advanced training is increasing.*
- 4. Additionally, technical operations and high-tech maintenance personnel are in greater demand, as automation enables more proactive monitoring and information management with preventative and predictive maintenance strategies.*
- 5. Automation equipment and process vendors have recognized this trend and are now providing field service teams to meet manufacturer's maintenance demand.*



- 6. Manufacturers can now monitor production remotely and be alerted to systems that need attention.*
- 7. In highly regulated industries such as the food industry, where food safety is paramount, a shift is occurring, with many manufacturers placing a greater focus on quality, repeatability and safety in automation, in addition to productivity and cost reduction.*
- 8. Robots can now handle higher speeds, increasing the volume of material that one line can handle.*
- 9. Manufacturers can now do more with less space as robots and automation are reducing the space needed for production lines. More vertical space is also being used. This reduction in footprint leads to lower energy costs per square foot.*
- 10. Combining technologies such as robots with vision systems — enabling them to recognize things like barcodes, color and size — means that manufacturers can use assets on one line for improved tracking or to handle multiple products, increasing the speed and efficiency of production and delivery system*

THERMOACOUSTIC IS GOING TO MAKE A LOT OF NNNNNNOISE.....

Mejo M Francis (AP ME)

Thanks to “thermo acoustics”, we know that a difference in temperature can generate a sound, and that a sound can carry heat. The notion that a change in temperature can transport heat is not just an association of

Ideas, but a whole new idea in itself! It involves, for example, generating cold from heat with the aid of a wave. This process gives a thermo acoustic refrigerator

THE PRINCIPLE BEHIND THERMOACOUSTICS

The thermo acoustic (TA) procedure uses a sound wave to achieve local heat exchange between the gas in which it propagates and a solid medium. Heat transfer occurs simultaneously along the length of the solid walls of the structure in which the gas is held. A sound wave is the propagation of a disturbance, the passage of which induces a reversible variation in the local physical properties (temperature, pressure) of the medium in which it propagates. It transports energy, but not matter. The propagation medium undergoes macroscopic displacement in the same direction as the propagating wave, and is therefore a longitudinal wave. As it moves, the membrane of a loudspeaker or a piston set in motion by a connecting rod compresses and expands a small volume of fluid (a pocket of gas molecules) against a neighboring volume, which in turn compresses and expands another volume, and so forth, until the gas reaches our ears. Compression heats the gas, whereas expansion cools it. Each cycle of compression and expansion is associated with an increase followed by a decrease in temperature. The pressure wave causes the volumes of gas to oscillate around a mean value. Thus, half-way through the cycle, the gas is on one side of this mean and is compressed and hot, whereas at the end of the cycle, it is on the other side of the mean and is expanded and cold. If a solid medium, such as a metal plate, is used, this solid medium is likely to accumulate heat or to slow heat transfer. With each compression phase, the heated gas warms the solid medium, whereas,

during expansion phases, it absorbs heat from the solid phase. At the macroscopic level, heat is transferred from one end of the solid medium to the other, creating a temperature difference between the two ends. A heat exchanger can then be placed at each end of the plate to remove heat from a given medium to cool it (refrigerator). During the phases of compression and expansion, heat is exchanged with the wall, generating a difference in temperature between the two ends. The volume of fluid acts like a sponge absorbing water spilled on a table when it expands; when it contracts, it acts like the sponge releasing the water elsewhere on the table. One cycle of expansion and contraction is a bit like using a sponge to transport water from one end of the table to the other.



APPLICATIONS

Thermo acoustic energy conversion techniques can be used to transform heat energy into mechanical work in the form of a sound wave

(wave generator). The power generated is then used to heat, cool, or to produce mechanical and chemical power. This approach has major advantages for meeting new energy needs in a context of sustainable development and meets the economic challenges associated with new technologies. Theoretically, thermo acoustics could be integrated into any application involving heating, cooling and or electricity production. In particular, thermo acoustic systems may be used for:

- Heat pumps for the recovery of lost heat;
- Devices for the condensation and evaporation of natural gas;
- Co-generation systems;
- Tri-generation systems (electricity, heat, refrigeration);
- Solar-based refrigeration systems;
- Devices for converting geothermal heat into electricity;
- Devices for cooling electrical circuits

MECH ARENA

- ✚ **Melvin Cyriac and Shijith A of S7 ME** got first prize in Paper Presentation on the topic “Advancing Fixtures” in The National Tech fest “**DYUTHI’ 13** at Saintgits College of Engineering Kottayam.
- ✚ **Melvin Cyriac** got selected as “**Best Manager and Best Technocrat**” at **DYUTHI’ 13**.
- ✚ **Shijith A** got selected as “**Best Designer**” in CAD at **DYUTHI’13**.



✚ **IN PLANT TRAINING IN KSRTC REGIONAL WORKSHOP CALICUT**

Third semester mechanical students attended in plant training at KSRTC regional work shop Calicut. The training includes in details of Engine assembly





MECH DESIGNER

SAE VJEC Chapter organized workshop on design tools which include Auto-CAD, Catia and Pro-E with leading faculties from CADD Centre and various industrial fields.

SAE VIRTUAL BAJA COMPETITION

Our SAE team have participated the **VIRTUAL BAJA COMPETITION** Conducted by SAE India at Bangalore on 27/07/2013.

The Team Members of SS ME students are

Jinson James, Nithin Kumar K.V, Pranav Shekhar, Deepu Thankachan, Gokul J.B, Sreekanth S, Akash Janrdhanan.

CONGRATULATIONS TO THE INNOVATIVE MINDS OF VJEC AND SAE STAFF IN CHARGE MR. MUHAMMED ANEES V.V

ADIOS AMIGOS

Ms.Karthika Varma and Mr.Christin T Joseph are saying good bye from our Mechanical family. Both of them were eminent faculty and wonderful personalities in ME department. The mechanical department held a farewell ceremony for them. The entire department wishes them a wonderful journey ahead



TRAINING COURSES AVAILABLE IN FOREMEN TRAINING INSTITUTE AT BANGLORE

HYDRAULIC AND PNEUMATIC TECHNOLOGY, CNC PROGRAMMING, CAD/CAM, MAINTENANCE ENGINEERING, JIGS AND FIXTURES, MATERIAL TESTING, WELDING TECHNOLOGY

Welcome to VJEC
MECHANICAL
Family



Mr. Jithin E.V



Mr.Appu Kuriyan



Mr. Binoy Poyili



Mr. Anson Cherian



Mr.Shijil.P