



SHREE VENKATESHWARA **Hi-Tech Engineering College**

(AUTONOMOUS)

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DEPARTMENT OF **MECHANICAL ENGINEERING** **MECHITECH MAGAZINES** **2023**





SHREE VENKATESHWARA HI-TECH ENGINEERING COLLEGE

DEPARTMENT OF MECHANICAL ENGINEERING

B.E. MECHANICAL ENGINEERING



VISION

- Produce competent Mechanical Engineering professionals with scientific temper, values, ethics, team spirit and capabilities to face new challenges.

MISSION

- Provide conducive learning environment with state-of-the-art infrastructure facilities, laboratories and teaching learning systems.
- Produce skilled Mechanical Engineers with skills towards employability, leadership, communication skills with social responsibilities and ethical values.
- Inculcate Professional skills to function as proficient engineers and designers capable of building sustainable equipment and infrastructure for the society.
- Promote research and development activities in the rapidly changing technologies related to Mechanical Engineering and allied areas.

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MESSAGE FROM HOD

Mechanical Engineering is evergreen, dynamic, skill as well as knowledge-oriented Department. Students of this department always show their revolutionary attitude through activities. Departmental technical magazine, “MECHITECH-2018” will be effective platform to show case the research and other academic thought of the students and faculties as individual and team. We also welcome articles from our alumni, academicians from other institute and industries to enrich our academic endeavors.

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VACUUM BRAKES

The vacuum brake was, for many years, used in place of the air brake as the standard, fail-safe, train brake on railways in the UK and countries whose railway systems were based on UK practice. Here is an implied description of the vacuum system. A moving train contains energy, known as kinetic energy, which needs to be removed from the train in order to cause it to stop. The simplest way of doing this is to convert the energy into heat. The conversion is usually done by applying a contact material to the rotating wheels or to discs attached to the axles. The material creates friction and converts the kinetic energy into heat. The wheels slow down and eventually the train stops. The material used for braking is normally in the form of a block or pad.

The vast majority of the world's trains are equipped with braking systems which use compressed air as the force used to push blocks on to wheels or pads on to discs. These systems are known as "air brakes" or "pneumatic brakes". The compressed air is transmitted along the train through a "brake pipe". Changing the level of air pressure in the pipe causes a change in the state of the brake on each vehicle. It can apply the brake, release it or hold it "on" after a partial application. The system is in widespread use throughout the world.

An alternative to the air brake, known as the vacuum brake, was introduced around the early 1870s, the same time as the air brake. Like the air brake, the vacuum brake system is controlled through a brake pipe connecting a brake valve in the driver's cab with braking equipment on every vehicle. The operation of the brake equipment on each vehicle depends on the condition of a vacuum created in the pipe by an ejector or exhaustor. The ejector, using steam on a steam locomotive, or an exhaustor, using electric power on other types of train, removes atmospheric pressure from the brake pipe to create the vacuum. With a full vacuum, the brake is released. With no vacuum, i.e. normal atmospheric pressure in the brake pipe, the brake is fully applied.

VALVE TRONIC ENGINE TECHNOLOGY

The first objective is to minimize emission components such as hydrocarbon, CO₂ and nitrogen oxides (NO_x) subject to specific limits. At the same time, manufacturers are seeking to minimize fuel consumption and accordingly, CO₂ emissions. All of this should be achieved with a maximum standard of comfort and safety on the road. In the homologation of motor vehicles, Europe, Japan and the US apply different driving cycles to determine emissions and fuel consumption. However, it is the individual customer who ultimately decides on his/her particular style of motoring and up to 30% of a car's fuel consumption depends on how it is driven and the style of motoring that is preferred by the driver. Clearly, the development engineer is unable to influence these external parameters – all that he/she can do is change the basic functions and control factors in the car and its drive train. The amount of energy required for driving a vehicle also drops with decreasing driving resistance provided by, for example, a reduction in roll and air resistance. To make more efficient use of the energy in fuel, the actual process fusing energy must reach a higher standard of efficiency. Despite modern engine technology, the process of on-going development has not yet come to an end. Looking at the overall concept of a vehicle, the development engineer must therefore optimize the efficiency chain formed by all of the car's individual components. For example, a car with a state-of-the-art spark-ignition engine uses only about 20% of the energy consumed to actually generate driving power and mobility in the EU test cycle. This alone demonstrates the remaining potential.

UNDER WATER WELDING

The two main categories of underwater welding techniques are:

- Wet under water welding
- Dry under water welding(also called Hyperbaric welding)

In wet underwater welding, shielded metal arc welding is commonly used, employing a waterproof electrode. Other processes that are used include flux-cored arc welding



And friction welding

Under water Welder

. In each of these cases, the welding power supply is connected to the welding equipment through cables and hoses. The process is generally limited to low carbon equivalent steels, especially at greater depths, because of hydrogen-caused cracking. In dry under water welding, the weld is performed at the prevailing pressure in a chamber filled with a gas mixture sealed around the structure being welded. For this process, gas tungsten arc welding is often used, and the resulting welds are generally of high integrity. The applications of underwater welding are diverse – it is often used to repair and construct ships, offshore platforms, and pipelines. Steel is the most common material welded. In terms of underwater cutting, oxygen-arc cutting with exothermic electrodes and steel tubular electrodes are also used. Due to the danger and demands on the body, welders or cutters often work 1 month on and 3 months off. This overview is not meant to be a reliable substitute for professional instruction and the manufacturer's directions. This is for general information only.

Deep Under water Welding

The definition of underwater welding usually refers to the wet welding technique where there is no mechanical barrier that separates the welding arc from the water.

IMPACT OF COVID-19 ON EDUCATION IN INDIA

No one would have guessed that a virus like covid-19 would come and without differentiating, it will alter the life style of people. Due to covid-19, many changes came to our world and it took some time for everyone to adopt the new normal. The covid-19 impact was every where, which resulted in the closure of schools and other educational institutions.

Initially, most governments have decided to temporarily close the schools to reduce the impact of covid-19. Later it was reopened for a few grades, which increased the number of infection rates and then closed again.

Though Schools are closed, student are attending their classes through various education initiatives like online class rooms, radio programs. Though it is a good thing happening on the other side, there are lots of students who didn't own the resources to attend the online classes suffer a lot. Many students are struggling to obtain the gadgets required for online classes.

Teachers, who are all experts in Blackboard, chalk, books and classroom teaching are really new to this digital teaching, but they are adopting the new methods and handling it like a pro to all the students in the current position.

But on the negative side, many teachers are looking for an alternative job to support their families.

Educated parents are supporting their children through out the pandemic, but we require understanding that there are some illiterate parents and their feeling of helplessness to help their children in their education.

There are students in India who came to school just because they can get food. The great midday meal scheme has helped many children who couldn't bring their food from the home to get their nutrition.

OIL WELL DRILLING

EARLIEST KNOWN DRILLING

The earliest known oil wells were drilled in China during the 6th century. Using drill bits attached to bamboo poles, they dug wells about 800 ft (240 m) deep. Oil produced was transported via bamboo pipelines and was used for early lighting and heating applications.

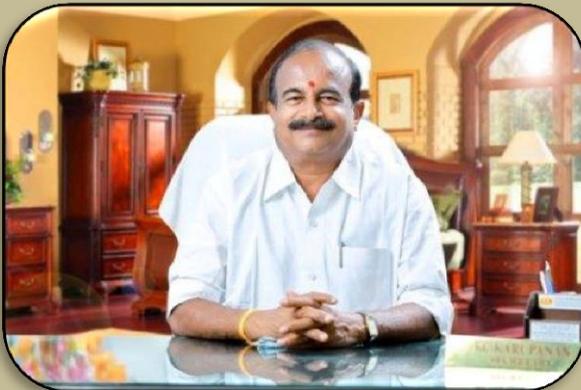
EARLY TECHNOLOGY DEVELOPMENTS

Effects from the Industrial Revolution lead to an increased demand for a cheaper, more efficient fuel than coal. This demand led to Colonel Edwin Drake's famous 1859 discovery of oil in Pennsylvania, which marked the first commercial well drilled in North America. The first modern wells were drilled by using a 'cable-tool' system that was raised and dropped to the earth percussively to create a wellbore. The year 1901 is marked for what is often identified as the most famous and influential oil well drilled in the Spindle top Oilfield located in South East Texas. The success of this oilfield influenced the introduction and popularity of the rotary drilling system, which became the globally accepted preferred method of drilling. Parallel to the entry of the rotary drilling system, other key technologies were developed, such as the introduction of the derrick/draw works system, the tri cone drill bit, and the first recorded use of drilling mud.

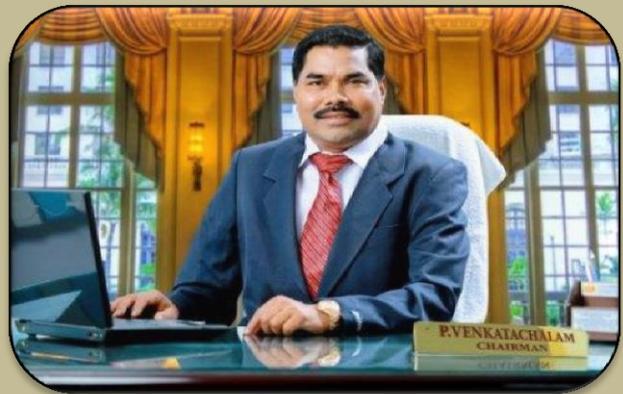
About the Institution

Shree Venkateshwara Hi-tech Engineering College, gifted with a serene atmosphere is located at Othakuthirai, near Gobichettipalayam, Erode. The College was founded by Shree Venkateshwara Educational and Charitable Trust in the year 2008 with the divine aim of educating the students of rural background. The College inculcates in students technical and innovative skills catering to the dire need of the present scenario. It imparts professionalism and critical thinking in them for a dynamic engineering career. It also sensitizes students to uphold academic excellence and become technically competent.

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I feel it a privilege to launch the seventh and eighth edition of News Letter. I appreciate everyone who has taken sustained efforts in bringing out this edition successfully.