Workshop on

"Microwave Tubes "

14-12-2020

Guest of honor: Sri B.Ramesh, Customer Support Engineer,Krinydi Technologies.

Target Audience: IV B.Tech ECE students

Objective:

- Bringing experts in the field of Engineering, Management, and Sciences to the campus for understanding of the students related to the advanced technologies.
- To provide and sharing the knowledge in various technologies and research environment.

OUTCOME:

- Students are expected to pay considerable attention in the advanced technologies.
- To motivate students to work on the relatively new methods for acquisition and processing of in future projects.
- To create interest in compressive sensing.
- To motivate students to work on future operational systems of this technology.

INITIATION:

Thisprogram is to provide the students with the latest theoretical and experimental results on applications of compressive sensing to radar. It is a relatively new method for acquisition and processing of sparse signals. The

benefits of using this technique for reducing the acquisition time and costs will be discussed and its highresolution capabilities for target detection, classification and recognition will be presented. Though the application of CS to radar has been successfully demonstrated in the last few years, there are issues related to integration and implementation of CS techniques in the current and future operational systems.

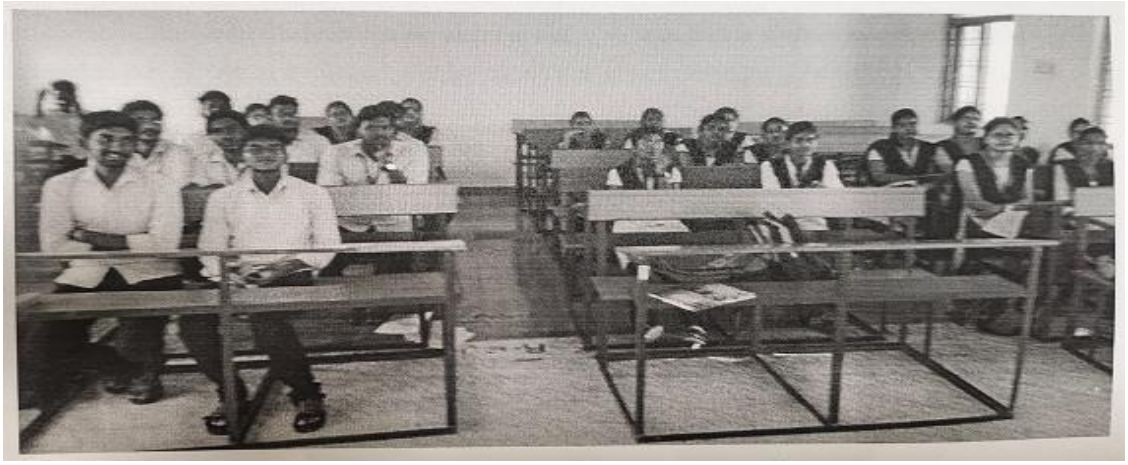
The program is inaugurated on 14thDecember,2020 morning at 9AM at RISE India auditorium of RISE Krishna Sai Prakasam Group of Institutions,

Sri B.Ramesh, Customer Support Engineer, Krinydi Technologies is the resource person of program.

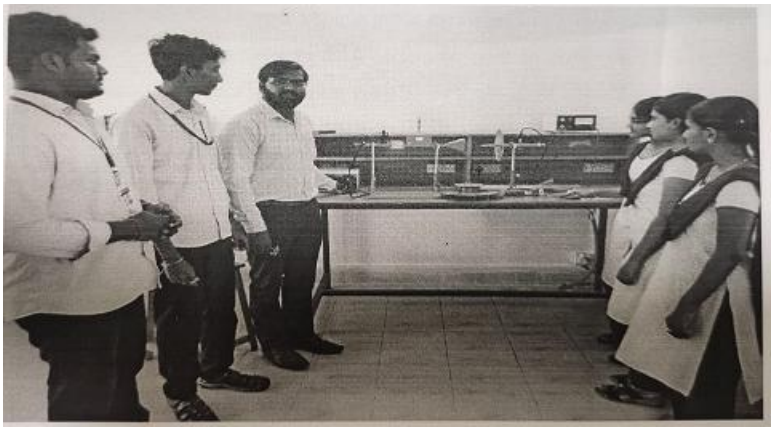
The Head of the Department of ECE gave the welcome address and enlightened the students regarding the emerging Microwave Tubes & Optical Fiber Kits to various sectors and explained the various research thrust areas.

In the morning session Sri B.Ramesh explained the establishment, research process at Krinydi Technologies, facilities available and the nature of work culture. He has given a holistic view of he types of missiles: surveillance and tracking. He has given explanation to the three generations of missiles. Explanation to how radar is an eye to the defence system and Doppler frequency are given.

For extremely high-frequency applications (above 1 GHz), the interelectrode capacitances and transit-time delays of standard electron tube construction become prohibitive. However, there seems to be no end to the creative ways in which tube may be constructed, and several high-frequency electron tuve designs have been made to overcome these challenges.



It was discovered in 1939 that a toroidal cavity made of conductive material called a cavity resonator surrounding an electron beam of oscillating intensity could extract power from the beam without actually intercepting the beam itself. The oscillating electric and magnetic fields associated with the beam “echoed” inside the cavity, in a manner similar to the sounds of traveling automobiles echoing in a roadside canyon, allowing radio-frequency energy to be transferred from the beam to a waveguide or coaxial cable connected to the resonator with a coupling loop. The tube was called an inductive output tube, or IOT.



Optical fibers typically includes a core surrounded by a transparent cladding material with a lower index of refraction. Light is kept in the core by the phenomenon of total internal reflection which causes the fiber to act as a waveguide. Fibers that support many propagation paths or transverse modes are called multimode fibers, while those that support a single mode are called single-mode fibers(SMF). Multimode fibers generally have a wider core diameter and are used for short-distance communication links and for applications where high power must be transmitted. Single-mode fibers are used for most communication links longer than 1,000 meters.

The program came to an end with the felicitation of the resource person Sri B.Ramesh. The students expressed their thanks and experiences in the form of vote of thanks to the management, HOD, and Teaching fraternity for giving them such a wonderful practical experience on microwave tubes and optical fiber kits.