

Government Engineering College, Valsad
Chemical Engineering Department

Webinar Title: Domains of Nuclear Energy

Name of Expert: Dr. Rakhi Mehta

Date of Webinar: 9/6/2020

Time: 5:00 P. M onwards

Faculty Coordinator: Prof. A.R.Magodara

Organising Committee: Prof. H.M.Jariwala, Prof. A.H.Prajapati

No. of Registered Participants: 47

Guest Profile:

Dr. Rakhi Mehta has done PhD, Chemical Engineering Post Doctoral Research, California State University, USA. She is presently working as Sessional Lecturer, Department of Chemical Engineering and Applied Chemistry University of Toronto. She had 12 years of Experience as a Associate Professor & Chair in Chemical Engineering Department

Webinar description:

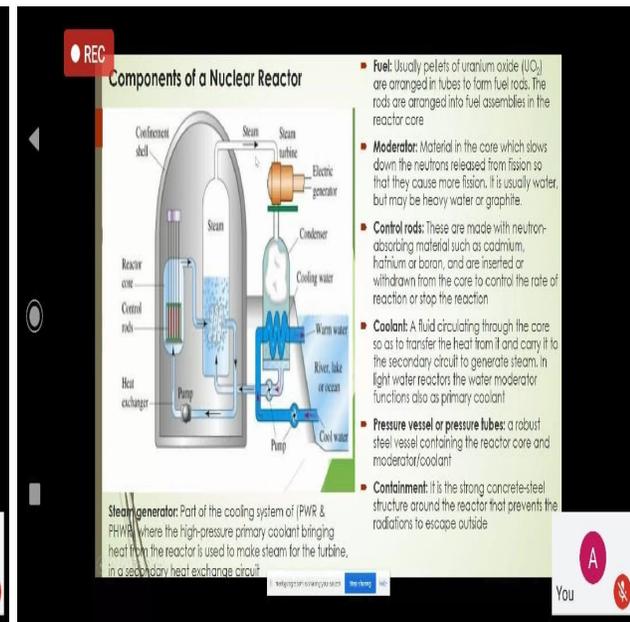
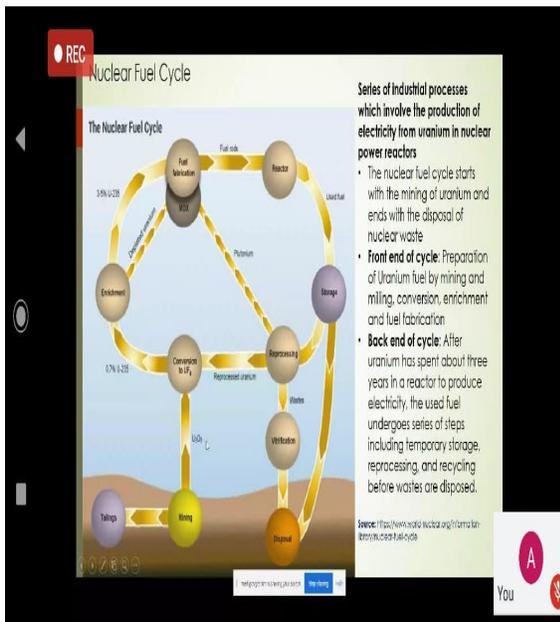
The Department of Chemical Engineering organized a webinar on “Domains of Nuclear Energy” on 9th June 2020. The webinar was organized for all students of the chemical engineering department. Prof. A.R.Magodara introduced Dr. Rakhi Mehta to all participants. Dr. Rakhi Mehta started with introduction of Nuclear technology with applications. Dr. Rakhi Mehta shared her knowledge on types of nuclear fuels and nuclear power plants with working principle of pressurized water reactor and CANDU reactor. The session ended with a vote of thanks by Prof. A.R.Magodara in appreciation to Dr. Rakhi Mehta for sharing her valuable time for interacting with students and faculties.

Glimpses of Expert lecture

Nuclear power plants in commercial operation

Reactor type	Main countries	Number	Gifts	Fuel	Coolant	Moderator
Pressurized water reactor (PWR)	USA, France, Japan, Russia, China, South Korea	299	283	enriched UO_2	water	water
Boiling water reactor (BWR)	USA, Japan, Sweden	65	65	enriched UO_2	water	water
Pressurized heavy water reactor (PHWR)	Canada, India	28	21	natural UO_2	heavy water	heavy water
Gas-cooled reactor (AGR)	UK	14	8	natural U (metal), enriched UO_2	CO_2	graphite
Light water graphite reactor (LWR)	Russia	13	9	enriched UO_2	water	graphite
Fast neutron reactor (FNR)	Russia	2	1.4	^{235}U and UO_2	liquid sodium	none
TOTAL		411	387			

- Applications of Nuclear Technology**
- Nuclear Medicine:** Diagnostic (Positron emission tomography (PET), Radiation Therapy and Sterilization)
 - Food Irradiation:** Increasing shelf life of food by destroying the micro-organisms that cause spoilage and by slowing the ripening process.
 - Agricultural application:** Mutation breeding to develop better variety of crops, nuclear radiation is used to control insect populations via the Sterile Insect Technique (SIT) of crops
 - Industrial Inspections:** Examine molecular and macroscopic structures, instruments for any damage, break or crevices using Non-destructive tests, oil pipeline breaks
 - Industrial gauges and tracers:** analyze mineral deposits, searching for underground caves or other formations that could make a building site unstable. Radotracers are used to characterize ground and surface water resources
 - Nuclear Desalination:** Nuclear desalination plants use the heat from small nuclear reactors to evaporate water, leaving the salt and debris behind
 - Nuclear Powered travel:** Nuclear power has been used for space travel since 1961. Radioisotope thermal generators (RTGs) are used in most space missions. The heat generated by the decay of a radioactive source, often plutonium, is used to generate electricity



Head of Department
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