

AICTE/QIP SPONSORED SHORT  
TERM COURSE

*on*

**SUPERCONDUCTOR BASED  
POWER APPLICATIONS**

01<sup>st</sup> to 07<sup>th</sup> October 2020



*organised by*

***Cryogenic Engineering Centre***

***Indian Institute of Technology,  
Kharagpur***

Course Coordinators

**Dr. Abhay Singh Gour**

**Prof. V. Vasudeva Rao**

**About the Institute:**

Indian Institute of Technology Kharagpur was established by the government of India in 1951. Being first of its kind, it is recognized as an Institute of National Importance by the government of India. The institute was established to train scientists and engineers after independence. It shares its organizational structure and undergraduate admission process with other IITs. IIT Kharagpur has the largest campus (2,100 acres), several departments, centres & schools and the highest student enrollment. Recently IIT, Kharagpur has been recognized as an Institute of Eminence.

**About the Center:**

Cryogenic Engineering Centre is the only Centre in India that is engaged in R & D activities in Cryogenic Engineering, Applied Superconductivity and Vacuum Technology. The Centre, since its inception in 1976, has been actively engaged in training engineers from industries, academic institutions and scientists from R & D organizations through continuing education program by conducting short term courses and workshops in specialized areas at regular intervals. The Centre also offers M.Tech./M.S/PhD programs in Cryogenic Engineering. The ongoing research activities include Applied Superconductivity for power applications, Cold electronics, Vacuum Technology, Cryophysics, Cryogenic process systems and Air separation. The Centre has established a sophisticated Applied superconductivity and vacuum technology laboratory under Indo-German collaboration for training teachers/ Industry personal in applied superconductivity and vacuum process applications.

**Course Overview:**

Superconductor based technology for power application is a cutting edge technology, which will have a great impact on the techno-commercial aspects in electrical power generation, energy storage, bulk power transmission with minimal losses, high torque compact motors and protection of power system against faults. The stated technology has wide application in the field of electrical power sector (both on-shore and off-shore), energy storage systems, defence sector for ship propulsion, degaussing, rail-gun, electrolysis industries, nuclear and particle accelerators.

**Course content:**

- Introduction to superconductors & its applications.
- Comparison of normal conductor and superconductor based electrical power devices.
- Requirements of cryogenic environment for superconducting power devices.
- Superconductor based power cables-design, development and testing with laboratory demonstration.
- Superconductor based magnet design and development for energy storage application with laboratory demonstration.
- Superconductor based compact motors and generators.
- Superconductors based fault current limiters and transformers.

## Resource Persons:

- Coordinator: Dr. Abhay Singh Gour



- Co-Coordinator: Prof. V. Vasudeva Rao



## Eligibility:

### Category A: AICTE-QIP

Faculty members of AICTE-QIP approved Engineering colleges/ Institutes/ Universities with B.Tech/ M.Tech/ PhD in Electrical/ Mechanical/ Metallurgical/ Electronics/ Instrumentation/ Nuclear Engineering and M.Sc./PhD in Physics. The course is free for Category A and the number of participants in Category A is limited to 30.

### Category B: Sponsored

Personnel Sponsored by the Industry/ R & D labs/ other organizations with B.Tech/ M.Tech/ PhD in Electrical/ Mechanical/ Metallurgical/ Electronics/ Instrumentation/ Nuclear Engineering and M.Sc./PhD in Physics. The course fee for Sponsored Candidates from industry, R & D labs (Category B) is (Rs. 30,000/- + 18% GST on Rs. 30,000/-) = **Rs. 35,400/-**.

## Course material & Certificates:

Registration fee includes electronic copy of study materials and refreshments during sessions. Certificate will be issued to all the registered participants on attending the complete course.

## Important Dates:

- Start date for registration: 01<sup>st</sup> March, 2020
- Last date for registration: ~~25<sup>th</sup> May, 2020~~ 25<sup>th</sup> September, 2020
- Start of Course: ~~1<sup>st</sup> June, 2020~~ 01<sup>st</sup> October, 2020
- End of Course: ~~7<sup>th</sup> June, 2020~~ 07<sup>th</sup> October, 2020

## Registration link:

<https://erp.iitkgp.ac.in/CEP/courses.htm>

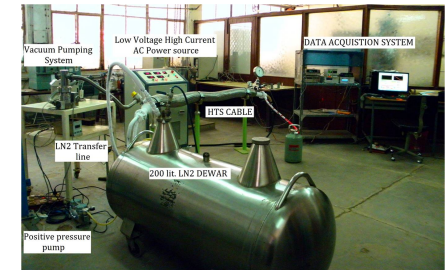
## Contact:

**Dr. Abhay Singh Gour &  
Prof. V. Vasudeva Rao**

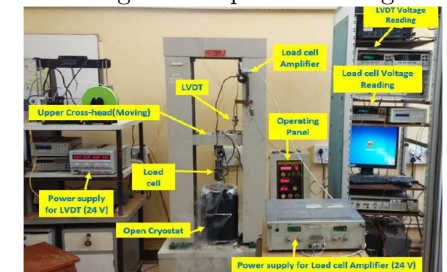
Cryogenic Engineering Centre  
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**Mr. Subba Rao** (Lab Assistant)  
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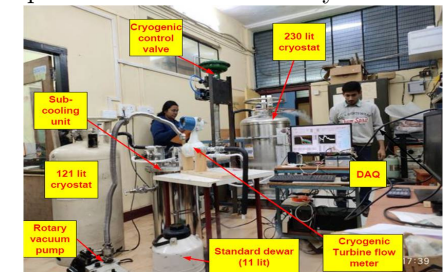
## Accomplishment of Superconducting Laboratory:



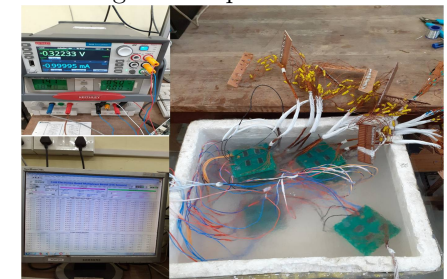
- India's first indigenous superconducting cable



- HTS tape characterization facility



- Superconducting devices process control facility



- Cold electronics & instrumentation