ABHAY SINGH GOUR

Contact Information

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Research Interests

Superconductivity is a game changing technology in the power sector. Superconducting magnets for energy storage, superconducting cables, linear and rotating motors/ generators, fault current limiters and magnetic shielding are my current areas of research. I had also worked on cryocooler for ground and space applications, cryo instrumentation for space flights, electromagnetic shielding for cryo sensors, High Temperature Superconductor (HTS) based cryo level sensors for flights, permanent magnets actuators electronic drives and vacuum systems.

Current Position

Assistant Professor Grade-I **May 2018 -Till date**
Cryogenic Engineering Centre
Indian Institute of Technology
Kharagpur - 721302, West Bengal, India.

List of Sponsored Projects

1. Feasibility Study on HTS based Magnet at 65K for Superconducting Magnetic Energy Storage Device (65K), Board of Research in Nuclear Sciences (BRNS), Mumbai $Rs.48.20Lakhs$, (01-07-2021 to 30-06-2024).
2. Design and Development of a 5m Long Single Phase HTS Cable(LPH), Central Power Research Institute, Bangalore $Rs.51.21Lakhs$, (20-11-2018 to 30-09-2021).
3. Design, Development and Testing of Laboratory Scale SMES using HTS Tapes(TLH), ISIRD, SRIC, IIT Kharagpur $Rs.26.71Lakhs$, (12-02-2019 to 11-02-2022).

List of Consultancy Projects

1. Calibration of RTD PT-500 sensors with thermowell from lowest possible temperature (4 - 30K) to room temperature using cryocooler/ liquid helium, SHAR, ISRO, $Rs.3.6639Lakhs$, (25-06-2020 to 24-06-2021)

Short Term Courses

1. Online Training programme on "Advanced Electrical Machines (High Temperature Superconducting Machines and Variable Speed Hydro Generators)for BHEL from 28^{th} to 30^{th} November 2022.
2. Two Day Training Program on "'Cryogenic Technology"' for IOCL officers From 14^{th} to 15^{th} September 2022.
3. Online AICTE QIP Course on "Superconductor based power applications" from 1^{st} to 7^{th} October, 2020.
4. Two Week Short Term Course on "Vacuum Technology and Process Applications" from 14^{th} to 23^{rd} October, 2019.
5. AICTE QIP Course on "Vacuum Technology and Process Applications" from 1^{st} to 14^{th} December, 2018.

Teaching Courses

1. Vacuum Technology,
2. Superconducting Magnets: Design and Applications,
3. Superconducting Technology for Power Applications,

Laboratory Courses

1. Vacuum Technology Laboratory,
2. Cryogenic Systems Laboratory.

Laboratory Development

1. Cold Electronics and Control Laboratory

Industrial collaboration

1. SuperQ Technologies India Pvt Ltd: A MoU was signed between IIT Kharagpur and SuperQ Technologies India Pvt Ltd effective from 01st Sept 2021 to 30the Sept. 2024 for developing superconducting devices for power applications.

Academic and Research collaboration

1. Doctoral Committee External Member for Mr. Kaushal Kishor Singh (Roll no. 410121002) Research Scholar at National Institute of Technology, Tiruchirappalli, India.

PhD Thesis Supervision

1. Desouza Isaac Ivo: On-going (Jan 2019- till date)
2. Ankit Anand: On-going (Jul 2019-till date)
3. Sumit Kumar Chand: On-going (Jan 2020 - till date)
4. Divya Kumar Sharma(Working Professional): On-going (Jan 2021 -till date)

M.S Thesis Supervision

1. Maalika Sarkar: On-going (Jul 2019 -2023)

M.Tech Thesis Supervision

1. Chakradhare Pratik Milind: (2023-2024)
2. Pawar Tejas Arun : On-going (2023-2024)
3. Lokesh Kumar Meena : Completed (2021-2022)
4. Abhik Sarkar: Completed (2020-2021)
5. Ankit Anand: Completed (2018-2019)

Administrative experience

1. Building infrastructure/physical facility/housekeeping in-charge, Cryogenic Engineering.
2. Research Scholar Coordinator, co in-charge, Cryogenic Engineering.
3. Assistant Warden, Madan Mohan Malaviya Hall.

Education

Indian Institute of Science, Bangalore, India

Ph.D. (Instrumentation and Applied Physics) **August 2009- August 2016**

- Dissertation topic: *Design and development of linear permanent magnet synchronous motor based twin PTC and HTS level sensor for LOX recondenser*
- Advisor: Prof. R. Karunanithi ; Co-Advisor: Prof. S. Jacob

National Institute of Technology, Tiruchirappalli, India

M.Tech. (Process Control and Instrumentation) **August 2006-June 2008**

- Dissertation topic: *Modeling and Control of Multi-Variable Process Using LabVIEW*
- Advisor: Prof. N. Sivakumaran
- Degree in First Class with CGPA: 8.1/10

Rajiv Gandhi Prodyogiki Viswavidhyalay, Bhopal, India

B.E. (Electrical and Electronics Engineering) **August 2001-June 2005**

- Dissertation topic: *Designing of Single Phase Solid Rotor Induction Motor and Study Various Methods of Speed Control*
- Degree in First Class with 70.31 % marks.

Books / Chapters

- Chapter on **Optimal R-SFCL Location in Power Grid**, by *Abhay Singh Gour* in Techniques and Innovation in Engineering Research Vol. 9, 41-50, by BP International, 2023.

Patents

Patent Application No: 201641042684 [Status : PUBLSIHED : (IN Patent R20,164,035,984)]

- Title : Multilayer planar Inductor based proximity sensor and associated electronics operating down to liquid Helium temperature
- Filling Date: 14-Dec-2016
- Inventors: Pankaj Sagar, Abhay S. Gour and R. Karunanithi

Professional Experience

Indian Institute of Technology, Kharagpur, India

Designation: Institute Post Doctoral Fellow (Cryogenic Engineering Centre) **February 2017 - May 2018**

- **Roles & Responsibilities:** Teaching M.Tech. courses on (a) Vacuum technology, (b) Superconducting magnets: Design and applications, (c) Superconducting technology for power applications and (d) Cryogenic systems laboratory.
  Design of superconducting magnet for energy storage. Development of HTS based 3 m cable and cold electronics for superconductor power system devices. Identifying the optimal location of Superconductor Fault Current Limiter (SFCL).

Indian Institute of Science, Bangalore, India

Designation: Post Doctoral Fellow (Centre for Cryogenic Technology) **October 2016 - February 2017**

- **Roles & Responsibilities:** Development of calibration facility for space flight cryogenic level and temperature sensors for ISRO. The level sensor was calibrated using liquid Nitrogen (77 K), whereas, the temperature sensors were calibrated down to 4.2 K using Liquid Helium. The automation of calibration facility with using LabVIEW software was done. Automatic data logging, interactive graphical user interface, sensor multiplexing and EMI shielding were the key aspects of work.

ABB Global Industries & Services Limited, Bangalore, India

Designation: Management Staff (Control & Optimization Group) **June 2008 - July 2009**

- **Roles & Responsibilities:** *Dealt with the integration of different types of analyzers (FTIR, Particle size analyzer, Mass Spectrometer etc) with Distributed Control System (DCS). Development of soft sensors for online assessment of pulp quality in a paper industry.*

Ranbaxy Laboratories Limited, Dewas, India

Designation: Apprentice Engineer (Maintenance Department) **June 2005 - June 2006**

- **Roles & Responsibilities:** *Responsible for Commissioning, handling and maintenance of dehumidifiers, Heat Ventilated Air Conditioning (HVAC) system, air drier, Programming Logic Control (PLC) & Computer Numerical Control (CNC) machineries used for production and packaging of medicinal drugs, boilers, generators, water treatment plant, hydraulic, pneumatic and electromagnetic actuating systems.*

Honors and Awards

- Post Doctoral Fellowship: *IIT, Kharagpur*
- Excellent Initiative Award: *ABB Global Industries and Services Ltd. for the year 2008.*
- Graduate Aptitude Test in Engineering (GATE) 2006: *All India Rank 639 (96.72 percentile score) in Electrical Engineering (EE) discipline*

- Best Student College Award: *Indian Society for Technical Education (ISTE) Student Chapter for the year 2004-05.*
- Best Student National Award: *Indian Society for Technical Education (ISTE) for the year 2003-04.*
- First Position: *National Level Paper Presentation at Technokumbh, organized by Mahakal Institute of Technology, March 2004.*
- Second Position: *National Level Model Presentation at Technokumbh, organized by Mahakal Institute of Technology, March 2004.*
- Seventh Position: *National Level Model Presentation at Techfest, organized by Saint Longowal Institute of Technology, October 2003.*
- Third Position: *National Level Model Presentation at Ishaayan2k3,organized by Truba Institute of Technology, March 2003.*
- Second Position: *National Level Model Presentation at Ujjain Engineering College, March 2003.*
- First Position: *College Level Model Presentation at Mahakal Institute of Technology, February 2003.*
- Third Position: *State Level Model Presentation at Ujjain Engineering College, February 2002.*

Invited Talks

- Online talk on '*Cryogenic Level Sensor and Vacuum Measurement Techniques'*, in 7^{th} National Seminar on "Advances in Scientific and Industrial Instrumentation" (ASCII-2021)', by Cochin University of Science & Technology, Cochin, India, 25^{th} March 2021.
- Online talk on '*Design and development of India's first superconductor cable'*,in National Level Online Faculty Development Programme on 'Cryogenics and Superconductivity - A Research Perspective', by Coorg Institute of Technology, Ponnampet, Bengaluru, India, 21^{st} September 2020.
- Online talk on '*Superconductor based Power Cable: Future of Indian Power Grid'*, by Institution of Engineers (India),Teaching Learning Centre,BHEL,Tiruchirappalli, India, 21^{st} July 2020.
- Online talk on '*Vacuum technology and its application to nano science and engineering'*, Workshop on Nano Electro-Mechanical Systems (Under TEQIP), Mahakal Institute of Technology, Ujjain, India, 21^{st} May 2020.
- *Cryogenic Instrumentation and High Vacuum Technology*, Workshop on Process Instrumentation and Control (Under TEQIP), National Institute of Technology, Trichy, India, 4^{th} July 2016.
- *Data Acquisition Using LabVIEW Laboratory Session*, Workshop on Process Instrumentation and Control (Under TEQIP), National Institute of Technology, Trichy, India, 5^{th} July 2016.

Scientific Affiliations

- Editorial board member for *"Journal of Computer Science and Artificial Intelligence"*.
- Member, IEEE
- Member, Indian Cryogenics Council (ICC)
- Reviewer Panel, International Cryogenic Engineering Conference (ICEC)
- Reviewer Panel, IEEE-IAS Electric Machines Committee

Research Experience

Doctoral Studies

The main emphasis of my doctoral studies is on design, development and integration testing of Permanent Magnet (PM) based linear actuator, Pulse Width Modulated (PWM) power supply, twin pulse tube cryocooler, High Tc Superconductor (HTS)based level sensor for LOX recondensor.

- **Permanent Magnet (PM) Linear Actuator**: The design and fabrication of Permanent Magnet based linear actuator for generating pressure wave to drive the designed 3 Watts @77 Kelvin pulse tube cryocooler forms the core of doctoral thesis. This involves material selection, designing, fabrication and testing of different parts of linear actuator (PM rings, Flexures (which are frictionless & wear-less supporting structures for moving pistons assembly), & Coil Winding. The PM rings are fabricated using segmented arc magnets using Flux Diversion Technique.The actuator has two pistons mounted, one on each end of moving assembly shaft, thus the assembled unit will generate two oscillating pressure waves operating 180 degree out of phase in a single cycle using a single linear actuator. This reduces the need of two linear actuators for generating a single pressure wave, thus reduces the weight and cost of the system. Need for synchronizing two linear actuators has been eliminated as its

uses by single actuator.

- **Pulse Width Modulation (PWM) Based Power Supply**: The development of light weight, compact, cost effective, variable frequency and voltage power drive for driving the PM linear actuator forms another important core of doctoral thesis. The single phase power drive developed consists of OP-AMP based analog circuits for PWM generation, power MOSFETs for the single phase PWM output using the D.C. source.
- **Twin Pulse Tube Cryocooler (PTC)**: A pair of identical pulse tubes joint together serves as a twin pulse tube forms another important design, fabrication and testing addressed in doctoral thesis. The two pressure waves generated gets integrated on each of these end of PTC forming twin PTC's. Thus, on first half cycle one PTC will have compressed pressure wave input while the other PTC goes under gas expansion, the expanded PTC and compression volume acts as an buffer to the other PTC and vice versa in the next half cycle. This provides the double cooling power with single compressor unit with elimination of buffer volume reducing is cost volume and weight of the system. The PTC's are operated to provide 3 Watts of net cooling @ 77 K.
- **Development of Light Weight High Temperature Superconductor (HTS) Based Cryo Level Sensor For LN_2 & LOX Level Monitoring**: The development of light weight, easy fabrication and low cost cryo fluid level sensor is developed using 2^{nd} generation HTS wire. The HTS probe is used to detect the cryo fluid level (LN_2 & LOX)in a cryostat. The measurement involves four probe method. The scope of the project also includes designing and fabrication of four wall cryostat for calibration of HTS sensor against discrete diode array and continuous level sensor. The automatic data logging and switching is done using LabVIEW program.

Additional Research Studies Beside Doctoral Studies

- **Development of Discrete Diode Array Cryo Level Primary Standard Sensor of 700 mm and 400 mm Height** : This works involves the development of primary standard sensor for calibrating cryo level sensors. It consists of cryo treated diode sets mounted at and equal interval of 70 mm or 40 mm on an printed circuit board multiplexed together using cryo treated multiplexers. The four probe method has been used for voltage measurement by supplying constant current. The difference in forward voltage in cryo fluid and vapor across the diode is used as a level detector. As the calibration of this sensor does not need any other sensor as standard, thus it serves as primary calibration standard sensor. The accuracy of the developed discrete array is +/- 1mm.
- **Development of Calibration Setup for LH_2 & LOX Triple Redundant Capacitance Type Indian Space Flight Level Sensors**: The calibration setup for triple redundant capacitance type cryo level sensor for flight involves the automation of the setup using LabVIEW, elimination of stray capacitance and electromagnetic noise. This setup provides the information about the linearity sensors and its behavior with cryo fluid level. The calibration were conducted using LN_2.
- **Development of Calibration Setup for LH_2 Depletion Capacitance Type Indian Space Flight LH_2 Level Sensors**: The hydrogen depletion capacitance type flight sensors are calibrated against the secondary standard continuous type capacitance level sensor, which was pre-calibrated using primary standard discrete diode array. The automation is done using LabVIEW.
- **Calibration of Indian Space Flight Temperature Sensors Using LHe** : The flight temperature sensors are calibrated using LHe as the cryo fluid.The GPIB interfacing and automatic data logging has been done using LabVIEW.
- **Development of Cryo-Grinding Setup for Bio-Degradable Plastics**: The modification of the commercial grinder has been done to make it suitable for cryo-grinding the bio degradable plastics. This was done as support to Plastic Research Institute.

Master Research Studies

- **Modeling & Control of Multi- Variable Process Using LabVIEW**:This involves a study on effect of interaction in an two interacting tank system for level and temperature

control. The decoupling methods were studied and implemented in real-time for reducing the effect on interaction and compared with fuzzy logic controller for controlling temperature and level in two tanks interacting mode. The SCADA and DCS screen for the setup was developed in LabVIEW.

- **Modeling & Control of Chemical Processes Using Soft Computing Techniques**:This involves a real time implementation and comparison of fuzzy logic controller with Skogestead IMC – PID controller used for level control in vessels of different shapes (cylindrical, conical & spherical).

Journal Publications

International Journals: Assistant Professor From May 2018 till date

1. Ankit Anand, **Abhay Singh Gour**, Tripti Sekhar Datta and Vutukuru Vasudeva Rao "Novel shape based HTS magnet coil for SMES application ", *Journal of superconductivity and novel magnetism*, Manuscript accepted for publication.
2. Maalika Sarkar, Isaac De Souza, Harris K Hassan, **A S Gour** and V.V.Rao "Influence of water content on the dielectric characteristics of LN2 impregnated PPLP for HTS power cables ", *IEEE Transactions on Dielectrics and Electrical Insulation*, Manuscript accepted for publication.
3. Isaac de Souza, Abhik Sarkar, Ankit Anand, Maalika Sarkar, J. Senthil Kumar, **Abhay Singh Gour** and Vutukuru Vasudeva Rao "Calibration of a Cryogenic Turbine based Volumetric Flow Meter (CTVFM) using sub-cooled Liquid Nitrogen and solution for its practical issues ", *IEEE Sensors Journal*, Vol. 21, No. 10, pp.12077-12083, 2021.
4. R. Karunanithi, Pankaj Sagar, Harris K Hassan, E.D.A. Lakshmi, Kashif Akber, Girsh P.S and **Abhay Singh Gour**, "Investigation on Temperature Dependent Inductance (TDI) of a Planar Multi-Layer Inductor (MLI) down to 4.2 K", *Review Of Scientific Instruments*, Vol. 91, No. 8, 2020.
5. Pankaj Sagar, Harris K. Hassan, **Abhay Singh Gour** and R. Karunanithi, "Multilayer planar inductor array based angular position sensor for cryogenic application", *Cryogenics* , Vol.96, pp. 18-24, 2018.

National Journals: Assistant Professor From May 2018 till date

1. Ankit Anand, Srikumar Nayek,**Abhay Singh Gour** and V. V. Rao "I-V characterization of HTS tape under tensile stress using cryogenic UTM along with FEM analysis", *Indian Journal of Cryogenics*, Vol-45, pp. 136-139, 2020.
2. **Abhay Singh Gour**,Senthil Kumar J and V. V. Rao "Optimum Location of R-SFCL in an IEEE Bench-Marked Four-Machine, Two-Area Test System", *Indian Journal of Cryogenics*, Vol-45, pp. 155-159, 2020.
3. V A S Muralidhar Bathula, D K Sharma, **Abhay S Gour**, U K Choudhury and V. V. Rao, "A study on high Temperature Superconducting (HTS) Double Pancake Field Coils for HTS Synchronous Machines Applications", *Indian Journal of Cryogenics*, Vol. 44, No. 1, pp.199-204 , 2019.
4. Srikumar Nayek, Ankit Anand, **Abhay Singh Gour** and V. V. Rao, "Selection Criteria of Cooling System for a Cryopump Based on Heat Load Estimation", *Indian Journal of Cryogenics*, Vol. 44, No. 1, pp.150-154, 2019.
5. Ankit Anand, Srikumar Nayek,**Abhay Singh Gour** and V. V. Rao,"Simulation and Testing of Stacked HTS 2G Tapes for Superconducting Cable", *Power Research* , Vol.14, pp. 132-137, 2018.
6. Srikumar Nayek, Ankit Anand, **Abhay Singh Gour** and V. V. Rao,'Design of Electrical Terminals for High Temperature Superconducting (HTS) Power Cable", *Power Research* , Vol.14, pp. 138-142, 2018.

International Journals: Post Doctoral Fellow

1. **Abhay Singh Gour**, S. Thadela and V. V. Rao: "Cold Electronics based 128 Temperature Sensor Interface with 14 Leads for Testing of High Tc Superconducting Cable", *Progress in Superconductivity and Cryogenics* , Vol. 20, No.1, pp. 15-18, 2018.
2. Pankaj S., **Abhay S. Gour** , R. Karunanithi : "A multilayer planar inductor based proximity sensor operating at 4.2 K", *Sensors & Actuators: A* , Vol. 264, pp. 151-156, 2017.

National Journals: Post Doctoral Fellow

1. Pankaj Sagar, **Abhay S. Gour**, Sudharshan H. and R. Karunanithi:"Capacitance level sensor with integrated cold electronics", *Indian Journal of Cryogenics* , Vol. 43, No. 1, pp.160-163, 2018.
2. **Abhay S. Gour**, Pankaj Sagar, Sudharshan H., R. Karunanithi, and S. Jacob:"HTS based 400 mm level sensor for liquid Nitrogen", *Indian Journal of Cryogenics*, Vol. 43,No.1, pp. 143-147, 2018.
3. Pankaj Sagar, Vignesh Krishna, **Abhay S Gour**, M Gowthaman, H Sudharshan, S Srinivasan, R Karunanithi, S Jacob: "Design and development of experimental setup to measure the RRR values of a thin film coated superconducting sample"',*Indian Journal of Cryogenics*, Vol.42-1, pp. 152-155, 2017.

International Journals :Doctoral Fellow

1. **Abhay Singh Gour**, Pankaj S. , R. Karunanithi and S. Jacob: "Design, development and testing of twin pulse tube cryocooler", *Cryogenics* , Vol.86, pp. 87-96, 2017.
2. **Abhay Singh Gour**, Pankaj S. and R. Karunanithi: "Investigation of cryogenic level sensors for LN_2 and LOX", *Cryogenics*, Vol.84, pp. 76-80, 2017.

National Journals :Doctoral Fellow

1. **Abhay S. Gour**, R. Karunanithi, S. Jacob, M. Das: "Assembly of Magnets Using Flux Diversion Techniques", *Indian Journal of Cryogenics*. Vol. 40-B, pp. 87-92, 2015.
2. **Abhay S. Gour**, R. Karunanithi, S. Jacob, C. Damu: "Comparison of C-Type Flexures with Different Bending Radii", *Indian Journal of Cryogenics* Vol. 39-B, pp. 159-163, 2014.
3. **A. S. Gour**, M. Das, R. Karunanithi, S. Jacob, M. V. N. Prasad and D. Subramanian: "Eleven point calibration of capacitance type cryo level sensors of LOX and LH_2 systems of cryogenic stage using four wire type discrete array level sensor setup", *Indian Journal of Cryogenics*, Vol-36, No.1-4, pp. 164-168,2011.

International Journals :M.Tech.

1. S. Nithya, **Abhay Singh Gour**, N. Sivakumaran, T. K. Radhakrishnan,T. Balasubramanian and N. Anantharaman: "Design of Intelligent controller for nonlinear processes", *Asian Journal of Applied Sciences (ISSN 1996 - 3343)*, Vol.1, Issue 1, pp.33-45, 2008.
2. S. Nithya, **Abhay Singh Gour**, N. Sivakumaran, T. K. Radhakrishnan and N. Anantharaman: "Measurement and control of Process using soft computing", *Instrumentation Science and Technology, Taylor and Francis*, Vol. 36, Issue 2, pp. 194-208, 2008.
3. S. Nithya, **Abhay Singh Gour**, N. Sivakumaran, T. K. Radhakrishnan and N. Anantharaman: "Model based Controller design of shell and tube Heat exchanger", *Sensors & Transducers Journal* , Vol. 84, Issue 10, pp. 1677-1686, 2007.

Conference Publications

International Conference: Assistant Professor From May 2018 till date

1. Bhuvana R G, Parthasarathi Ghosh and **Abhay Singh Gour** "Experimental Investigation of valve driven transient effect in liquid nitrogen pipeline", *CEC-ICMC-21, 2021.*
2. Maalika Sarkar, Abhik Sarkar, Isaac De Souza, **Abhay Singh Gour and Vutukuru Vasudeva Rao** "Experimental evaluation of dielectric losses of PPLP for single phase HTS cable at sub-cooled LN2 temperature", *CEC-ICMC-21, 2021.*
3. Harris K. Hassan, Pankaj Sagar,**Abhay Singh Gour and and V V Rao** "Feasibility study of a novel capacitance based quench detection sensor for HTS power transmission cables", *CEC-ICMC-21, 2021.*
4. Isaac De Souza, Ankit Anand, Harris K. Hassan, Sumit K. Chand,**Abhay Singh Gour and Vutukuru Vasudeva Rao** "Numerical studies on two-phase flow of liquid nitrogen to cool HTS power cables", *CEC-ICMC-21, 2021.*
5. Abhik Sarkar, Vutukuru Vasudeva Rao and **Abhay Singh Gour** "Development of Arduino based power conditioning unit for Superconducting Magnet Energy Storage (SMES) system used as UPS for load levelling during charging of Electric Vehicle", *CEC-ICMC-21, 2021.*
6. Ankit Anand, Abhay Singh Gour **Abhay Singh Gour and Vutukuru Vasudev Rao** "Design optimization of 50 kJ HTS SMES using real coded genetic algorithm", *CEC-ICMC-21, 2021.*
7. D K Sharma, V A S Muralidhar Bathula, **Abhay Singh Gour and Vutukuru Vasudeva Rao** "Investigation on Effect of Shape of High Temperature Superconducting (HTS) Field Coil on Airgap Magnetic Field of HTS Synchronous Motor", *CEC-ICMC-21, 2021.*
8. Sumit Kr Chand,**Abhay Singh Gour and Tripti Sekhar Datta** "Comparative study on HTS magnet coil design approach for 1.0 T @ 65 K with 80 mm DSV", *CEC-ICMC-21, 2021.*
9. Namitha Venugopal, Harris K Hassan,**Abhay Singh Gour and Pankaj Sagar** "A non-contact Method to measure the Electrical conductivity of metals down to cryogenic temperatures, utilizing system of linear equation interpretation of eddy current analysis", *CEC-ICMC-21, 2021.*
10. Lokesh Meena, Ankit Anand and **Abhay Singh Gour** "Thrust estimation for HTS-magnet based Magneto Plasma Dynamic Thrusters (MPDT)", *CEC-ICMC-21, 2021.*
11. **Abhay S Gour** and V. V. Rao"Optimal Location of Resistive SFCL for protecting electrical equipment in Indian Power Grid: a case Study", *IOP Conference Series: Materials Science and Engineering*, Vol. 502, pp.012143, 2019.
12. V A S Muralidhar Bathula,**Abhay S Gour**, U K Choudhury and V. V. Rao "Electromagnetic Analysis of 0.2MW High Temperature Superconducting (HTS) synchronous Machine for HTS pole coil development", *IOP Conference Series: Materials Science and Engineering*, Vol. 502,2019, pp.012144, 2019.

National Conference: Assistant Professor From May 2018 till date

1. **Abhay Singh Gour** and V. V. Rao "Cryoelectronics for multiple sensors in space simulation", *National Conference on Cryogenics for Space (NCCS)*, LPSC, Valiamala, 2019.
2. V A S Muralidhar Bathula, D K Sharma, **Abhay S Gour**, U K Choudhury and V. V. Rao "Development of a Closed Cycle Cryogenic(30 K) Test Facility for Characterization of High Temperature Superconducting (HTS) Field Coils for HTS Synchronous Machine Applications", *National Conference on Cryogenics for Space (NCCS)*, LPSC, Valiamala, 2019.
3. V A S Muralidhar Bathula, D K Sharma, **Abhay S Gour**, U K Choudhury and V. V. Rao "A Review on Design Aspects for Development of High Temperature Superconducting (HTS) Synchronous Machines", *National Conference on Cryogenics for Space (NCCS)*, LPSC, Valiamala, 2019.
4. Senthil Kumar J, **Abhay Singh Gour** and V. V. Rao "Impact of Position of Superconducting Fault Current Limiters on Fault Mitigation in Power Systems - A Review", 27^{th} *National Symposium on Cryogenics and Superconductivity (NSCS 27)*, IIT, Bombay, 2019.

5. V A S Muralidhar Bathula,D K Sharma, **Abhay S Gour**, U K Choudhury and V. V. Rao " A Review on Development of High Temperature Superconducting Synchronous Machines, National Symposium on Cryogenics and Superconductivity", 27^{th} *National Symposium on Cryogenics and Superconductivity (NSCS 27)*, IIT, Bombay, 2019.
6. Rohan Dutta, **Abhay Singh Gour** and Pavitra Sandilya " Development of an Experimental Setup of a Cryogenic Packed-bed Thermal Energy Storage System", 27^{th} *National Symposium on Cryogenics and Superconductivity (NSCS 27)*, IIT, Bombay, 2019.

International Conference: Post Doctoral Fellow

1. S. Thadela, **Abhay Singh Gour**, Maalika Sarkar, B. Nageshwara Rao and V. V. Rao "Development of a High Tc Superconducting (HTS) power cable for smart grid applications", *IEEE conference Proceedings-2017, 3^{rd} International Conference on Condition Assessment Techniques In Electrical Systems (CATCON 2017)*, Ropar, India, pp. 197-201, 2017.
2. S. Thadela, **Abhay Singh Gour**, Maalika Sarkar, B. Nageshwara Rao and V. V. Rao: "Demonstration of India's first cold dielectric based High Tc Superconducting (HTS) cable", 9^{th} *Asian Conference on Applied Superconductivity and Cryogenics (ACASC 2017)*, Jeju Island, South Korea, 2017.
3. Maalika Sarkar, **Abhay Singh Gour** and V. V. Rao: "Optimum positioning of HTS based resistive fault current limiter in a power grid", *EUCAS-2017*, Geneva, UK, 2017.
4. Pankaj S., **Abhay. S. Gour** , Sudharshan H., R. Karunanithi : "Effect of Temperature variation on Cold Electronics based LC Oscillator", 14^{th} *Cryogenics 2017*, IIR International Conference Dresden, Germany, pp. 502-506, 2017.
5. **Abhay Singh Gour**, S. Thadela, Maalika Sarkar and V. V. Rao "A Novel Instrumentation Scheme Based on Cold Electronics for Testing of Superconducting Cable", *IEEE conference Proceedings-2017, 3^{rd} International Conference on Condition Assessment Techniques In Electrical Systems (CATCON 2017)*, Ropar, India, pp 188-190, 2017.

National Conference: Post Doctoral Fellow

1. **Abhay S. Gour**, Pankaj Sagar, Sudharshan H., R. Karunanithi and V. V. Rao:"Design of Magnetic shielding for 600 MWh SMES", *National Symposium on Cryogenics and Superconductivity (NSCS-26)*, Kolkata, India , February 2017.
2. **Abhay S. Gour**, Pankaj Sagar, Sudharshan H., R. Karunanithi and V. V. Rao:"Design of 10 kA DC terminal connector for HTS cable", *National Symposium on Cryogenics and Superconductivity (NSCS-26)*, Kolkata, India , February 2017.

International Conference:Doctoral Publication

1. **Abhay Singh Gour**, Pankaj S., Joewin Joy, Mallappa A., Sudharshan H., R. Karunanithi and S. Jacob: "Experimental studies on twin PTCs driven by dual piston head linear compressor", *International Cryogenic Engineering Conference-26 and International Cryogenic Materials Conference-2016 (Dehli, India) (ICEC 26 - ICMC 2016)* Vol. 171, pp. 012075-012084, 2017.
2. Pankaj S., **Abhay Singh Gour**, Sudharshan H., R. Karunanithi and S. Jacob: "Measurement of thin film superconducting parameters using planar transformers", *International Cryogenic Engineering Conference-26 and International Cryogenic Materials Conference-2016 (Dehli, India) (ICEC 26 - ICMC 2016)* Dehli, India, March 2016.
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National Conference : Doctoral Publication

1. R. Karunanithi, S. Jacob, D. S. Nadig, **Abhay S. Gour**, E. Raja Rajan, P. Deekshith, M. Gowthaman: "High Tc Superconductor Based Level Sensor For Liquid Nitrogen", *National Symposium on Cryogenics (NSC-24)*,Ahmadabad, India , January 2014 .

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2. S. Nithya, **Abhay Singh Gour**, N.Sivakumaran, T.K.RadhaKrishnan and N.AnanthaRaman: "Predictive Controller Design of Shell and Tube Heat Exchanger", *International Conference on Intelligent and Advanced Systems (ICIAS)- 2007*, Malaysia, November 25-28, pp1075 -1080, 2007.
3. **Abhay Singh Gour**, S. Nithya, N.Sivakumaran, N.AnanthaRaman: "Control of Heat Exchanger Using GA Based Controller", *International Conference on Modeling and Simulation CITICOMS – 2007*, Coimbatore, Tamil Nadu, India,August 27-29, 2007.
4. **Abhay Singh Gour**, M. Arivazhagan: "ANN Based Modeling for the Decolorization of Voilet Dye Using Electro Coagulation", *International Conference on Modeling and Simulation CITICOMS – 2007*, Coimbatore, Tamil Nadu, India,August 27-29, 2007.

National Conference: M.Tech.

1. **Abhay Singh Gour**, S. Nithya, N.Sivakumaran, N.AnanthaRaman: "Optimal Controller Design Based on Soft Computing", *National Conference on Frontier Research Areas in Communication, Computer and Control Engineering (CoFRACCCE -08)*, Thanjavur, Tamil Nadu, India, March 6 - 7, 2008.

2. **Abhay Singh Gour**, N. Sattibabu, N. Sivakumaran, T.K.Radhakrishnan: "Monitoring and Control of MIMO System Using LabVIEW", *National Conference by National Instruments (VIMANTRA - 08)* , Bangalore, Karnataka, India, November 2008.

Computer Skills

- Programming: Matlab®, LabVIEW®, Step-7®, Maplab®, Scilab ®.
- Designing Softwares: AutoCAD®, MS-Visio®, CATIA®
- Analysis Softwares: ANSYS®(Structures Simulation), Sage®(Pulse tube Desgin), Ansoft Maxwell ®(Electromagnetic Simulation)
- Publishing: LaTeX 2_ε