

Name of Faculty Dr. Umakanta Choudhury  
 Designation Professor  
 Nature of Job/Appointment Contract  
 Date of Joining 17-02-2020  
 E-mail director\_ii@cbit.ac.in



Education Qualifications	Name of the Degree	Class
Ph. D	Doctor of Philosophy (Electrical Engg.)	Awarded
PG	-----	-----
UG	B. Tech (Hons)	Distinction

Work Experience

Teaching	1.5 Years in Academic Institution
Research	38 years Research in Industry ( Govt./Public Sector)
Industry	38 Years Research, Development and Cooperate Technology Management, Joint Ventures etc. at BHEL
Others	0.5 years Honorary consultant to Edison Motors, Korea

Area of Specialization Electric Machines, Electric Drives, PM Machines, Superconducting machines

Professional Memberships IEEE

Responsibilities held at Institution Level 1. Director I & I from February 2020 to till date.

Responsibilities held at Department Level 1. Professor, EEE Dept. from February 2020 to till date

Research Guidance M.Tech Projects and B.Tech Projects.

Awards Received

1. AOTS Japan, from New Product design & development for India in 2005.
2. Best Technical Paper Award, from BHEL Minister of Industry MHI&PE in 2019.
3. CBIP Young Engineer. Award, from CBIP, in 1992.

Courses Handled at Under Graduate / Post Graduate Level. Electric Hybrid Vehicles

No. of Papers Published	National Journals – 03	International Journals – 05
Projects Carried out	National Conference – 05	International Conference – 08
Patents	<p>A number of Projects carried out starting Project outlay from Rs 5 Lakhs to Rs 10 Crores in BHEL. Coordinated 100 Plus projects per year as R&amp;D and CTM Head.</p> <ol style="list-style-type: none"> <li>1. Dr. U. K. Choudhury and S. J. Reddy (of BHEL RC Puram), A permanent magnet machine with shaped magnet mounted in a trapezoidal slot and with flux barrier Patent filled with file No. 050007RD</li> <li>2. Dr. U. K. Choudhury and S. J. Reddy (of BHEL RC Puram), A new approach for assembling permanent magnets on rotor of a permanent magnet generator using magnetic bolts and flux barrier Patent filled with file No. 050008RD</li> <li>3. Dr. U. K. Choudhury and P. T. Pathrabe (of BHEL, Bhopal) A brushless exciter capable of providing initial excitation power during field flashing for black start operation of brushless synchronous generators Patent filled with file No. 050009RD</li> <li>4. Dr. U. K. Choudhury, Vivek Kumar, R. C. Bajpai, M. S. Rawat, S. Karunakar &amp; S. K. Mishra Optimized design and a novel technique for permanent magnet rotor assembly of a pilot exciter of power plant generator Patent filled with file No. 070124RD</li> <li>5. C. G. Vijaybalan, S. Nagesh Kumar, S. Vinaya Kumar, Dr. H. S. Jain, K. Sambasiva Rao (Retd), K. Nagachandar &amp; Dr. U. K. Choudhury Hybrid stepper motor drive with optimized rotor stack for circuit breaker application Patent filled with file No. 070125RD</li> <li>6. Dr. Umakanta Choudhury, V.C. Gnanaraj &amp; Venugopal Reddy C A reliable and energy efficient permanent magnet-based alternator for auxiliary power applications Patent filled with file No. 100116RD</li> <li>7. Dr. Umakanta Choudhury &amp; Gade Sobha Rani A compact synchronous permanent magnet-based motor generator set for hybrid excitation Patent filled with file No. 100124RD</li> <li>8. Dr. Umakanata Choudhury &amp; Uday Kumar Mudhigollam A method for making the stator core of an axial flux permanent magnet machine Patent filled with file No. 110120RD</li> <li>9. Dr. Umakanta Choudhury, Gutti Vidyanandam &amp; Mudhigollam Uday Kumar An improved process for inserting a magnetized rotor shaft into a stator core of a permanent magnet generator (PMG) Patent filled with file No. 110121RD</li> <li>10. Dr. Umakanta Choudhury, Mudhigollam Uday Kumar An improved dual-excited round pole synchronous machine generating sinusoidal voltage waveform with wide-range regulation characteristic Patent filled with file No. 120030RD</li> <li>11. Dr. Umakanta Choudhury &amp; Uday Kumar Mudhigollam A permanent magnet machine with enhanced air gap flux density and operable as permanent magnet motor or generator Patent filled with file No. 120111RD</li> <li>12. Uday Kumar Mudhigollam &amp; Dr. Umakanata Choudhury A high performance permanent magnet generator with optimized air gap flux density level Patent filled with file No. 130073RD</li> <li>13. Uday Kumar Mudhigollam &amp; Dr. Umakanata Choudhury An improved hybrid excited synchronous generator accommodating both the excitation windings and permanent magnets in the rotor core for wide regulation of output voltage and reducing risk of demagnetization of the permanent magnets Patent filled with file No. 130074RD</li> <li>14. Uday Kumar Mudhigollam &amp; Umakanta Choudhury A permanent magnet machine with a shaped rotor to reduce harmonic content in the output voltage Patent filled with file No. 130133RD</li> <li>15. Uday Kumar Mudhigollam &amp; Umakanta Choudhury Permanent magnet machines with asymmetric rotor construction to increase peak air gap flux density in the Machine Patent filled with file No. 130134RD</li> <li>16. Dr. Umakanta Choudhury, M. Seetaram, VAS Muralidhar Bathula &amp; T Ramesh Field coil housing for high temperature superconducting motor Patent filled with file No. 130184RD</li> <li>17. Dr. Umakanta Choudhury, Venkanna Annapureddy &amp; Kalyani</li> </ol>	

- Bangari Advanced magnetic coil system for uniform magnetic field intensity and high accuracy Patent filled with file No. 130187RD
18. Venkanna Annapureddy, Pooja Singh & Dr. Umakanta Choudhury An improved and compact rotating rectifier assembly in a brushless excitation system to minimise overall size Patent filled with file No. 130198RD
  19. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury A multiple output hybrid permanent magnet (pm) alternator with three ac outputs of different voltages and frequencies Patent filled with file No. 140140RD
  20. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury Reduction of size of the thrust bearing in vertical motors utilizing axial flux technology Patent filled with file No. 140141RD
  21. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury A modified hybrid excited synchronous generator with desire range of flux regulation Patent filled with file No. 140142RD
  22. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury Novel stator slot profile for reduction of armature reaction in permanent magnet synchronous generators Patent filled with file No. 150082RD
  23. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury Flux weakening in permanent magnet machine with reduced risk of demagnetization of permanent magnets Patent filled with file No. 150083RD
  24. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury A method of producing the stator core of a high capacity electrical machine having multi turn concentrated windings Patent filled with file No. 150084RD
  25. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury A process for modification of rotor core to increase structural strength of the rotor of a hybrid excitation generator Patent filled with file No. 150085RD
  26. Uday Kumar Mudhigollam & Dr. Umakanta Choudhury A compact hybrid excited synchronous machine Patent filled with file No. 150089RD
  27. VAS Muralidhar Bathula, T. Ramesh, A. Venkanna, M. Seetaram, U. Sridhar & Dr. Umakanta Choudhury Integrated rotor hub for high temperature superconducting motor field coils Patent filled with file No. 150111RD
  28. Uday Kumar Mudhigollam & Umakanta Choudhury A hybrid flux permanent magnet motor cum permanent magnet generator Patent filled with file No. 160102RD
  29. Dr. Umakanta Choudhury & Uday Kumar Mudhigollam A process for maintaining the designed movement of sun tracker of a solar panel under strong wind flow environment Patent filled with file No. 160103RD
  30. Kalyani Bangari, Dr. UK Choudhury, Sridhar U, VAS Muralidhar Bathula Novel approach to develop high strength FRP composite tube to mitigate heat influx in HTS application Patent filled with file No. 160168RD
  31. V A S Muralidhar Bathula, T. Ramesh, U. Sridhar & Dr. Umakanata Choudhury Slip-ring shaft arrangement for high temperature superconducting (HTS) motor Patent filled with file No. 160170RD
  32. VAS Muralidhar Bathula, T. Ramesh, Divya Kumar Sharma, Mukesh Kumar, Shesham Ramacharyulu, Rotor structure for high temperature superconducting (HTS) synchronous motor Patent filled with file No. 160178RD

#### Technology Transfer

Invited Speaker (Few Important/  
Prominent)

No. of Books/Chapter / Article  
Published with details

Details of Short-Term Training  
Programs/Faculty Development  
Programs/Seminars/Workshops.  
Other Trainings (Attended and/or

A number technology Transfers( About 10) while in BHEL

1. IEEE, Hyderabad Section.
2. FDP/Lectures on Electric Mobility, Applied Research and Innovation and IPRs. At Various Colleges

1. NA

#### WS/ Seminars/ Conferences/ STTPS/ FDPs Organized

1. STTP on Electric Mobility
2. About 40 Lecture sessions on Innovation, Incubation, IPR

Organized).

etc arranged under the activities of IIC Cell for students and faculties of CBIT.

3. Celebration of World Entrepreneurship day at CBIT.

#### Recent Publication

##### Title

Development and Testing of 2G High Temperature Superconducting (HTS) Field Coils for HTS Synchronous Machines

##### Journal

Journal of Electrical Engineering & Technology, 16(3), 1539-1546

##### DOI

10.1007/s42835-021-00708-6

#### Details of Journal Publications/ Conferences (National and International)

#### International Journal:

#### International Conferences/ National Conferences:

Publications (List of papers published in SCI Journals, in year wise descending order).

1. Uday Kumar Mudhigollam, Umakanta Choudhury ;Kamalesh Hatua, Wide regulated series hybrid excitation alternator. , IET Journal (Electric Power Applications) Vol-12, Issue-3, pp.439-446 March, 2018, DOI: 10.1049/iet-epa.2017.0452 , Print ISSN 1751-8660, Online ISSN 1751-8679
2. Uday Kumar Mudhigollam, Umakanta Choudhury ;Kamalesh Hatua, High Power Density Multiple Output Permanent Magnet Alternator. IET (Electric Power Applications) Journal, Vol-12, Issue-4, pp.494-501, January 2018, DOI: 10.1049/iet-epa.2017.0477 , Print ISSN 1751-8660, Online ISSN 1751-8679.
3. U. K. Mudhigollam, U. Choudhury and K. Hatua, "A new Rotor Excitation Topology for Hybrid Excitation Machine," 2016 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES), Trivandrum, 2016, pp. 1-6.
4. U. K. Mudhigollam, U. Choudhury, K. Hatua and U. Sridhar, "Improved rotor structure of hybrid excitation alternator," 2017 IEEE Transportation Electrification Conference (ITEC-India), Pune, 2017, pp. 1-4.
5. U. K. Mudhigollam, U. Choudhury and K. Hatua, "A non uniform air gap hybrid excitation alternator, 2017 IEEE Transportation Electrification Conference (ITEC-India), Pune, 2017, pp. 1-6.
6. U.K. Choudhury et.al, Development of Variable Speed Brushless exciter. 3rd International conference on Electrical Machine ELROMA-1992, Mumbai.
7. V.Vasudeva Rao, K. Venkataratnam, T.K.Bhattacharya, Ashok Chakraborty and U.K.Choudhury , Development and testing of superconducting magnet/ cryostat for 0.5 MJ SMES-UPS Proceeding of the international conference on energy, automation and information technology, EAIT-2001, Kharagpur.
8. U. K. Choudhury, Steady State Field Analysis and Calculation of Inductances of a Superconducting Generator using Field Approach. , AGM, PMM, BHEL, R&D. National Conf. on SEMS, BHEL R&D Hyderabad.
9. U. K. Choudhury, Sri. P.T. Pathrabe, A New Technique of Self Excitation for a Brushless Exciter by embedding Permanent Magnets. National Conf. on SEMS, BHEL R&D Hyderabad. Ref No. : 182020007924 |
10. U. K. Choudhury, Steady State Field Analysis and Calculation of Inductances of a Superconducting Generator using Field Approach. National Conf. on SEMS, BHEL R&D Hyderabad.
11. U. K. Choudhury, S. J. Reddy, Development of Compact Permanent Magnet Generator using magnetic bolts and flux barrier for 2-pole Turbo generators up to 120 MW capacities. National Conf. on SEMS, BHEL R&D , Hyderabad.
12. U. K. Choudhury, AGM, PMM, BHEL, R&D, Sri. Vivek Kumar, Sr. DGM, EM Engg, BHEL, Haridwar, etal Development of 38 kW/65 kW Compact Permanent Magnet Generator suitable as pilot exciter for 250 MW and 500 MW TGs. National Conf. on SEMS, BHEL R&D Hyderabad.
13. Development and testing of a 1 G based high temperature superconducting (HTS) double pancake coil for HTS synchronous machines, V A S Muralidhava Bathula ,U K Choudhury and V V Rao, Physica C,: Superconductivity and its applications 562 (2019) 36–41.
14. Gour, Abhaya Bathula, V A S & Rao, V.V, U.K. Choudhury , Electromagnetic analysis of 0.2 MW High Temperature Superconducting (HTS) synchronous machine for HTS pole coil development., IOP Conf. Series: Materials Science and Engineering 502 (2019) 012144 IOP Publishing doi:10.1088/1757-899X/502/1/012144
15. Thadela, S & Kalyani, B, Bathula, V A S & U. K. Choudhury, S. N. Yadav, Rao, V.V., Measurement of Outgassing rates of Kevlar and S-Glass materials used in Torque-Tubes of High Tc Superconducting

(HTS) Motors Progress in Superconductivity and Cryogenics (PSAC)/Journal of the Korea Institute of Applied Superconductivity and Cryogenics 20(4):11-15 , January 2019.

16. Performance evaluation of rectifier loaded synchronous machines U.K. Choudhury, M. Vijayakumar, International conference on Harmonics, Harmonics-2001, Chennai. )

17. Voltage dip studies for D. O. L starting of large induction motor loads of industrial T.G. sets. U.K. Choudhury and K.S.N. Raju, 4th International conference on Electrical Machine, ELROMA-1996, Mumbai.

18. Development of Variable Speed Brushless exciter U.K. Choudhury et al. 3rd International conference on Electrical Machine ELROMA-1992, Mumbai

19. Performance and design aspects of Brushless exciter for variable-speed synchronous motor, U.K.Choudhury, S.N.Saxena and R.V.R.K.Raju., BHEL Journal, September, 1992

20. Effects of different parameters on nominal response ratio of Brushless Exciter U.K.Choudhury, Dr. S.N.Saxena, R.V.R.K. Raju., BHEL Journal 2, March 1,998

21. Development of 30 kW Super synchronous Brushless Exciter suitable for 3.5 MW, 5300 rpm VFD Super synchronous Motor. U.K.Choudhury and R.V.R.K Raju., BHEL Journal 3, February, 1998.