Dr. BHUPENDRA KUMAR GANDHI

NHPC Chair Professor
Department of Mechanical and Industrial Engineering
Indian Institute of Technology, Roorkee 247 667 INDIA

Tel: +91-01332-285544
Fax: +91-01332-285665
Email: bkgandhi@me.iitr.ac.in or
bhupendragandhi@gmail.com

Education

Degree	Specialization	Year	Institute
Ph. D.*	Fluids Engg.	1998	IIT Delhi
M.Tech.	Thermal & Fluid Engg.	1992	IIT Bombay
B.E.	Mechanical Engg.	1984	SGSITS Indore (MP)

* Ph. D. thesis Topic: "Studies on Performance and Wear Characteristics of Centrifugal Slurry Pumps handling Multi-sized Concentrated Particulate Slurries"

Career

2001- Cont.	Mechanical and Industrial Engineering, IIT Roorkee – 247 667
1985-2001	Mechanical Engineering Department, SGSITS Indore (MP)
1984-1985	Kirloskar Brothers Ltd., Dewas (MP)

Research Interests

Fluid mechanics, Hydro turbo machines, Erosion wear, Flow measurement and Computational fluid dynamics

Facility creation and Laboratory Development Work

- Modernization of Fluid Mechanics Laboratory, 1992-95.
- Development of Computational Fluid Dynamics Laboratory, 2003-07.
- Development of Pilot Plant for Slurry Transportation System, 2006-13.
- Development of Flow Diagnostic Lab with Particle Image Velocimetry (PIV) System, 2005-2012.
- Development of Slurry Erosion Test Facility, 2002-2005.
- Development of Cavitation Jet Test Rig, 2006-09
- Development of Hydro-Turbine Laboratory, 2010-2016.
- Development of Small Turbine Test Rig for Vortex Rope Mitigation, 2017-2022.

Awards/ Recognition

- Post-Doctoral Fellowship, Awarded by Japan Society for Promotion of Science (JSPS), Graduate School of Human Informatics, Nagoya University, Japan, 2002-2003.
- Star Performer, IIT Roorkee 2003-04.
- Member in panel of experts in area of erosion wear of BHEL, India.
- Chair Professor-HAL, 2015-18
- Chair Professor-NHPC, 2019 –contd.
- IAHR Executive Committee member, division of Hydraulic Machinery and Systems, 2019 –contd.
- Chairman, Technical Committee on Hydro Research, CPRI, 2017-2021
- Member, Scientific Committee, IAHR Conference, 2016, Grenoble, France
- ISH Jal Vigyan Puraskar 2016 (Best Paper in ISH Journal)
- Member BoG of REC Bijnor (UP) 2016-2021.
- Member, Academic Council of Pandit Madan Mohan Malaviya University of Technology, Gorakhpur (UP), 2020-contd.
- Member, BIS technical committee on MED 21 Sectional Committee, 2020-contd.
- Member (Senate nominee), Board of Governors, IIT Roorkee. 2024-25

Member

- Fellow, American Society of Mechanical Engineers (ASME)
- Fellow, The Institution of Engineers (I)
- Fellow, Indian Water Resources Society
- Member, International Association of Hydraulic Research (IAHR) and Executive Committee Member, IAHR division of Hydraulic machinery and systems.
- Life Member, Indian Society for Technical Education
- Life Member, National Society of Fluid Mechanics and Fluid Power

Administrative Responsibilities

- General Secretary, Applied Mechanics Society (IIT Delhi), 1995-97
- Staff Advisor, Mechanical and Industrial Engineering Students' Society, 2003-05
- Staff Advisor, Lawn Tennis, 2005-07
- Co-coordinator, Continuing Education Centre and QIP Centre, 2007-11
- Member, Executive Committee, Institution of Engineers (I), Roorkee Local Center, 2008-09
- Coordinator, Thermal Engineering, 2009-11
- Coordinator, Continuing Education Centre, QIP Centre and Education Technology Cell, 2015-2019.
- Coordinator, LEAP 2018.
- Head of Mechanical and Industrial Engineering Department, IIT Roorkee India, 2019-2022.

- Member, Governing body of IIT Roorkee, 2024-25

Students

(A) Doctoral (14+4)

Sr. No.	Thesis Title	Name of Student	Year of award	Co-supervisor	Status
1	Heat Transfer and Fluid Flow Characteristics of Rib-grooved Artificially Roughened Solar Air Heaters	Anand Rao Jaurkar	2006	Prof. J. S. Saini	Completed
2	Study on Slurry Erosion Characteristics of Ductile Type Materials and Laser Cladded Surfaces	Girish R. Desale	2006	Prof. S. C. Jain	Completed
3	Heat Transfer and Fluid Flow Characteristics of Discrete-rib Roughened Solar Air Heaters	Kashi Ram Aharwal	2008	Prof. J. S. Saini	Completed
4	Fluid Flow and Heat Transfer Investigations Behind Surface Mounted Solid and Slitted Ribs	Md. Shaukat Ali	2013	Dr. Andlib Tariq	Completed
5	Experimental and Numerical Investigations on Steady State and Transient Characteristics of a High Head Model Francis Turbine	Chirag Trivedi	2014	Prof. Michel Cervantes	Completed
6	Investigations on Performance Characteristics of a Centrifugal Slurry Pump handling Water and Ash	Satish Kumar	2014	Dr. S. K. Mohapatra	completed
7	Characterization of wake and suppression of fluid forces acting on a row of square Cylinders	Bhupendra More	2016	Dr. Sushanta Dutta	Completed
8	Control of flow field over a square cylinder using active and passive methods	Manish Chauhan	2016	Dr. Sushanta Dutta	Completed
9	Flow Field Investigations on a Francis Turbine Model during Steady and Transient Operations	Rahul Goyal	2017	Prof. Michel Cervantes	Completed
10.	Performance and Wear Characteristics of A Centrifugal Slurry Pump Handling Solid-Liquid Mixtures	Rahul Tarodiya	2019	-	Completed
11	A Numerical Investigation of the Winter-Kennedy Method with Application to Axial Turbines	Binaya Baidar	2020	Prof. Michel Cervantes, Dr. Jonathan Nicolle	Completed
12	Numerical study of formation and mitigation of vortex rope in elbow draft tube	Subodh Khullar	2016-2022	Dr. K M Singh Prof. Michel Cervantes	Completed
13	Sediment Erosion of hydrodynamic Machines	Shubham Sharma	2017-2022	-	Completed
14	Experimental Investigation of formation and mitigation of vortex rope in an elbow draft tube	Sandeep Kumar	2016-2023	-	Completed
15	Guide Vane Design of a Francis turbine for operation with Sediment laden water	Rohit Kumar Sahu	2018-contd.	-	In progress
16.	Large eddy simulation of flow instabilities in hydraulic turbines at off-design operation	Manish Pipal	2021	Dr. K M Singh	In progress
17	Investigations on Flow instabilities of a Hydraulic turbine	Om Prakash Yadav	2023	Dr. Nikhil K. Singh	In progress
18	Erosion wear of the pump	Naveen K. Ippaka	2024		In progress

(B) Post Graduate (55)

Sr No	Thesis title	Name of Student	Year	Co-supervisor
1	Condition Monitoring and Fault Diagnosis in Centrifugal Pumps	Vijay Kumar Sukhawani	1993	Dr. D.P.S. Chauhan
2	Diagnosis of Deterioration in the Pump Characteristics with Vibration and Noise as Parameters	Deepesh Sunar	1993	Dr. A. G. Ambekar
3	Monitoring and Fault Detection in Centrifugal Pumps Using Vibration Analysis	Tribhuvan Narayan Rai	1994	Dr. D.P.S. Chauhan
4	Experimental Investigations on Cavitation in a Centrifugal Pump by Noise and Vibration Signals	Manmohan Pandey	1994	Dr. D.P.S. Chauhan
5	Computer Aided Performance Monitoring of Centrifugal Pumps Using Hydraulic Parameters	Raj Kumar Jain	1994	Dr. D.P.S. Chauhan
6	Effect of Particle Size and Size Distribution on Erosion Wear of Cast Iron In Sand-Water Mixture	Satish V. Borse	2001	-
7	Erosion Wear Characteristics of Cast Iron in Solid-Liquid Flows	Girish R. Desale	2001	R. K Porwal
8	Influence of Laser cladding on SS 304L Plate using Powders	Dheeraj Gupta	2004	Dr. S. R. Gupta
9	Improvement of Surface Properties of Aluminum Alloy by Laser cladding using Powders	Sudhakar Behera	2004	Dr. N. Arora
10	Numerical Study on Flow Field inside a Centrifugal Impeller Passage	Ashok Patidar	2004	-
11	Investigation of Surface Roughness Effect for turbulent Flow in a Rectangular Duct	Sanjay Kumar	2004	-
12	Measurement and Numerical Simulation of Turbulent Flow over a Rectangular Duct	Sumedh P. Pawar	2005	Dr. K. M. Singh
13	Numerical Simulation of Heat Transfer and Fluid Flow for Chamfered Rib Roughened Solar Air Heater Duct	Shyam Sunder Gupta	2006	Dr. K. M. Singh
14	Error Sources and Error Correction for Flow Measurement in Open Channel by Ultrasonic Transit Time Flow Meter and Propeller Current meters	Bobby Abraham Y.	2006	Dr. H. K. Verma
15	Evaluation of Different Velocity Measurement Methods of Turbine Testing	Naveen Gupta	2006	MukeshSinghal
16	Numerical Investigation on Turbulent Flow over Transverse Ribs	Rakesh Kumar	2006	Dr. K. M. Singh
17	Computer Aided Design of High Speed Trains	Nitin Gupta	2007	Dr. K. M. Singh, Dr. A. Gairola
18	Experimental and Numerical Investigations on Centrifugal Slurry Pump Performance	Sanjay S. Patel	2007	-
19	Flow Measurement using UTTF	M. S. R. Pavan Kr.	2007	Dr. H. K. Verma
20	Measuring Water Flow Profile using Current-meters and Acoustic Doppler Profiler	S. B. Kusunedru	2007	Dr. H. K. Verma
21	Ground Water Pumping System: A Review	N. Verma	2007	Dr. D. Khare

22	Design of Hydro Turbines using Computational Fluid Dynamics	Gaurav Tayal	2007	Mukesh Singhal
23	Thermo-hydraulic Optimization of Solar Air Heater using Artificial Roughness	Pramod Kumar	2007	Dr. J. S. Saini
24	Investigations of the Effect of System and Operating Parameters on the Performance of Packed Bed Solar Air Heating System	Nitin B. Patel	2007	Dr. J. S. Saini
25	Body Shape Optimization of Indian Loco and Passenger Cars for Higher Running Speed	Lokendra Singh	2009	Dr. K. M. Singh
26	Numerical and Experimental Investigations on Clamp-on Ultrasonic Flowmeter	S. S. Rao	2009	Dr. R. P. Saini
27	Development of Non-Cobalt base Claddings for Improving Erosion Resistance using Laser Cladding Process	S. RajaKiran	2009	Dr. D. K. Dwivedi
28	Heat Transfer Investigations over the Rib Roughened Wall using Liquid Crystal Thermography	Karamveer	2010	Dr. A. Tariq
29	Design and Development of Aerodynamic Braking System for High Speed Trans	Siddharth Jain	2010	Dr. K. M. Singh
30	Performance Characteristics of Centrifugal Slurry Pump handling Solid-liquid Mixtures	Jayant S. Pawar	2010	Dr. K. M. Singh
31	Investigations on Passive Techniques to minimize the effect of Stall on the Axial Flow Pump	Rakesh Kumar Soni	2010	Dr. S. Dutta
32	Design Analysis of Bulb Turbine	Vishwendra Singh	2010	Dr. R. P. Saini
33	Estimation of Performance Characteristics of Hydraulic Turbine using CFD	Tarun	2011	Dr. K. M. Singh
34	Numerical Simulation of Pollutant Dispersion in a Long Ventilated Highway Tunnel	Harish Kumar	2011	Dr. K. M. Singh
35	Numerical Simulation for flow of liquid through a centrifugal impeller	Praveen Singh	2011	Dr. K. M. Singh
36	Flow Analysis in Penstock	Praveen K. Kulkarni	2011	Dr. Arun Kumar
37	Investigation of Flow Field of Pot Tester	Vineet Singh	2012	- -
38	Design of Suitable Ventilation System for a Long Highway Tunnel using CFD	Jitendra Kumar	2012	Dr. K. M. Singh
39	Numerical Investigations on Flow through a Centrifugal Pump Handling Water and Ash Slurries	Bhola Kumar Gupta	2012	Dr. S. Dutta
40	Numerical Investigations of Flow Field behind Side by Side Triangular Prisms in Sequence at Low and High Reynolds Number	Laxman Singh Pawar	2012	Dr. S. Dutta
41	Experimental and Numerical Estimation of Performance Characteristics of a Centrifugal Slurry Pump Handling Ash-Water Slurries	Mithilesh Kumar	2013	Dr. S. Dutta
42	Flow Analysis of Penstock using CFD	Sudhandhu Kumar	2013	Mr. M. K. Singhal
43	Flow Analysis of Penstock for Multiple Outlets	Rahul Goyal	2013	Prof. G.

	using Computational Fluid Dynamics			Chauhan
44	Study of Performance Characteristics of Discrete Rib Roughened Solar Air Heater	Rohit Kumar Sahu	2013-14	--
45	Numerical Simulation of Flow Field of Centrifugal Slurry Pump handling Multi-size Particulate Slurries	Subodh Khullar	2014-15	--
46	Hydraulic efficiency measurement of a centrifugal pump by thermodynamic method	Raj Kumar Mishra	2016-17	--
47	Performance evaluation of lift irrigation scheme: A case study of Koshi pump canal system, Nepal	Ram BabuSah	2016-17	Prof. Deepak Khare
48	Study of cavitation erosion resistance of different turbine blade materials using ASTM G32	Pawan Kumar Yadav	2016-17	Prof. Deepak Khare
49	Study of cavitation erosion resistance of different turbine blade materials using ASTM G134	Ankit Kumar	2016-17	Prof. Deepak Khare
50	Study of flow field and erosion wear in pipelines and bends of slurry transportation using CFD	Jesim Hasmy	2017-18	Dr. K. M. Singh
51	Investigation on Flow through draft tube	Amit Kumar	2018-19	Dr. K. M. Singh
52	CFD analysis of flow through draft tube	Shubham	2018-19	Dr. K. M. Singh
53	Numerical study of sediment erosion of Francis Turbine	Rama Thapa	2019-20	Dr. K. M. Singh
54	Mitigation of vortex rope by air injection	Harendra Yadav	2019-20	Dr. K. M. Singh
55	Sediment erosion of laser clad surfaces for hydropower applications	Bishow Acharya	2023-24	---

(C) Under Graduate projects supervision (56)

1. Major Project : 50 (completed) + 0 (ongoing)
2. SURA Project : 04
3. Independent Study: 02

Reviewer (Journal)

- Journal of Fluids Engineering, Trans ASME
- Journal of Power and Energy: Proc. I Mech E. Part A
- Renewable Energy
- Journal of Hydraulic Research
- Journal of Heat Transfer Engineering
- Indian Journal of Engineering and Material Sciences
- Mechanical Engineering Journal of Institution of engineers (I)
- Powder Technology
- Sadhana - Academy Proceedings in Engineering Science
- Surface and Coatings Technology
- Tribology International
- Wear

Publications (h-index =41, Google scholar total citation = 6124)
(A) Journals (89)

1. Rohit Kumar Sahu and Bhupendra K Gandhi, " Sediment erosion behavior of WC-Co-Cr coatings on 13-4 Martensitic Stainless Steel for hydraulic turbine application", Accepted ASME J. of Tribology, 2025.
2. Subodh Khullar, Krishna M. Singh, Michel J. Cervantes and Bhupendra K. Gandhi, "Impact, analysis and mitigation of flow instabilities in draft tube of Francis turbines", Physics of Fluid, Vol. 37(2), 2025.
3. Sandeep Kumar and Bhupendra K. Gandhi, “Repeatability in Measurements and Control Settings of a Small Francis turbine Test Rig” Journal of verification validation and uncertainty quantification, 9(1), 2024.
4. Sandeep Kumar and Bhupendra K. Gandhi, “Peripheral air jet injection at part load operation of a low head Francis turbine." Sadhna: Academy Proceedings in Engineering Sciences, Vol 49 (2) , 2024.
5. Sandeep Kumar and Bhupendra K. Gandhi, "A Novel Electromechanical System for Guide Vane Adjustment in a Small Turbine Test Rig", Journal of the Brazilian Society of Mechanical Sciences and Engineering, Vol. 46 (2), Ar. 103, 2024.
6. Sandeep Kumar, B.K. Gandhi and Michel Cervantes, "Flow field Analysis of Francis turbine Draft Tube using POD at Design and Part Load Operating Conditions", Journal of Applied Fluid Mechanics, Vol 17 (4), 770-784, 2023.
7. Subodh Khullar, Sandeep Kumar, Krishna M. Singh, Michel J. Cervantes and Bhupendra K. Gandhi, "Numerical Study of Peripheral Air Injection in Draft Tube of a Francis Turbine at Upper and Normal Part Load Operations", Sadhana, Vol, 49 (2), 172, 2023.
8. Sandeep Kumar and Bhupendra K. Gandhi, "Effect of Water Jet Area on Mitigation of Vortex Rope in a Francis Turbine", Physics of Fluids, Vol. 35, 105146, 2023.
9. Sandeep Kumar and Bhupendra K. Gandhi, "Axial Water Jet Injection in a Low head Francis Turbine at Part Load", Physics of Fluids, Vol. 35, 065132, 2023.
10. Shubham Sharma and Bhupendra K. Gandhi, "Assessment of Erosion Wear in Low Specific Speed Francis Turbine due to Particulate Flow", Advanced Powder Technology, Vol. 34, 2023, p. 104065.
11. Shubham Sharma and Bhupendra K. Gandhi, "Experimental Investigation on Rotating Domain Wear of Hydrodynamic Machine due to Particulate Flow", Powder Technology, Vol. 410, 2022, p. 117884.
12. Shubham Sharma and Bhupendra K. Gandhi, "Experimental Study on Erosion of Hydro-Turbine Grade Steels due to Solid Particle Impact", Tribology - Materials, Surfaces & Interfaces, Vol 16 (3), 2022, p. 211-225.
13. Rohit Kumar Sahu and Bhupendra K Gandhi, "Erosive Flow Field Investigation on Guide Vanes of Francis Turbine- A Systematic Review", Sustainable Energy Technologies and Assessments, Vol. 53 (Part B), 2022, p. 102491.
14. Subodh Khullar, Krishna M. Singh, Michel J. Cervantes and Bhupendra K. Gandhi, "Numerical Analysis of Water Jet Injection in the Draft Tube of a Francis Turbine at Part Load Operations", ASME J of Fluids Engineering, Vol. 144(11), 2022, p. 111201.
15. Subodh Khullar, Krishna M. Singh, Michel J. Cervantes and Bhupendra K. Gandhi, "Influence of Runner Cone Profile and Axial Water Jet Injection in a Low Head Francis Turbine at Part Load", Sustainable Energy Technologies and Assessments, Vol. 50, 2022, p. 101810.
16. Shubham Sharma, Bhupendra K Gandhi and Lila Dhar Pandey, "Measurement and Analysis of Sediment Erosion of a High Head Francis Turbine: A Field Study of Bhilangana-III Hydropower Plant, India", Engineering Failure Analysis, Vol. 122, 2021, p. 105249.

17. Rahul Tarodiya and Bhupendra K. Gandhi, "Numerical Investigation of Erosive Wear of a Centrifugal Slurry Pump due to Solid-Liquid Flow", ASME Journal of Tribology, Vol. 143(10), 2021, p. 101702:1-14.
18. Rahul Tarodiya and Bhupendra K. Gandhi, "Effect of Particle Size Distribution on Performance and Particle Kinetics in a Centrifugal Slurry Pump handling Multi-Size Particulate Slurry", Advanced Power Technology, Volume 31(12), 2020, p. 4751-4767.
19. Shubham Sharma and Bhupendra K. Gandhi, "Erosion Wear Behaviour of Martensitic Stainless Steel under the Hydro-Abrasive Condition of Hydropower Plants", Journal of Materials Engineering and Performance, Vol. 29, 2020, p. 7544-7554.
20. Sandeep Kumar, Michel J. Cervantes, Bhupendra K. Gandhi, "Rotating Vortex Rope Formation and Mitigation in Draft Tube of Hydro Turbines - A Review from Experimental Perspective", Journal of Renewable & Sustainable Energy Reviews, Vol. 136, 2021, p. 110354.
21. Rahul Tarodiya, S. Khullar and Bhupendra K. Gandhi, "CFD Modelling of Multi-Sized Particulate Slurry Flow through Pipe Bend," Journal of Advance Fluid Mechanics, Vol. 13(4), 2020, p. 1311-1321.
22. B.S. More, S. Dutta and B.K. Gandhi, "Flow around Three Side-by-Side Square Cylinders and the Effect of the Cylinder Oscillation", ASME Journal of Fluids Engineering, Vol. 142 (2), 2020, p. 021303:1-12.
23. Binaya Baidar, Jonathan Nicolle, Bhupendra K. Gandhi and Michel J. Cervantes, "Numerical study of the Winter-Kennedy Flow Measurement Method in Transient Flows", Energies, Vol. 13, 2020, p. 1310.
24. Binaya Baidar, Jonathan Nicolle, Bhupendra K. Gandhi and Michel J. Cervantes, "Effects of Runner Change on the Winter-Kennedy Flow Measurement Method - A Numerical Study", Renewable Energy, Vol. 153, 2020, p. 975-984.
25. Rahul Goyal, Michel Cervantes and Bhupendra K. Gandhi, "Synchronized PIV and Pressure Measurements on a Model Francis Turbine during Start-Up", J. of Hydraulic Research, Vol. 58 (1), 2020, p. 70-86.
26. Rahul Tarodiya and Bhupendra K. Gandhi, "Experimental Investigation of Centrifugal Slurry Pump Casing Wear Handling Solid-Liquid Mixtures," Wear, Vol. 434-435, 2019, p. 202972.
27. Rahul Tarodiya and Bhupendra K. Gandhi, "Numerical Simulation of A Centrifugal Slurry Pump handling Solid-Liquid Mixture: Effect of Solids on Flow Field and Performance," Journal of Advanced Powder Technology, 30(10), 2019, p. 022028.
28. Rahul Tarodiya and Bhupendra K. Gandhi, "Experimental Investigation on Slurry Erosion Behaviour of 304l Steel, Grey Cast Iron, and High Chromium White Cast Iron," ASME J. of Tribology, Vol. 141, 2019, p. 091602.
29. Binaya Baidar, Jonathan Nicolle, Bhupendra K. Gandhi and Michel J. Cervantes, "Sensitivity of the Winter-Kennedy Method to Different Guide Vane openings on an Axial Machine", Flow Measurement and Instrumentation, Vol. 68, 2019, p. 101585.
30. Arun Kumar, R.P. Saini, B.K. Gandhi, R.K. Srivastava, Pradeep Chandra and A.K. Dubey, "Experiences in Discharge Measurements at Small Hydropower Stations in India", Flow Measurement and Instrumentation, Vol. 69, 2019, p. 101605.
31. Manish Kumar Chauhan, Sushanta Dutta, B.K. Gandhi and Bhupendra Singh More, "Wake Flow Modification behind a Square Cylinder using Control Rods", J. of Wind Engineering & Industrial Aerodynamics, Vol. 184, 2019, p. 342-361.
32. Rahul Goyal, B.K. Gandhi and Michel Cervantes, "Experimental Investigation on a High Head Francis Turbine Model during Shutdown Operation", IOP Conference Series: Earth and Environmental Science, Vol. 240(2), 2018, p. 022028.
33. Sushanta Dutta, Bhupendra Singh More, Bhupendra K. Gandhi and Manish Kumar Chauhan, "Experimental Investigation of Flow over a Square Cylinder with an Attached

Splitter Plate at Intermediate Reynolds Number", J. of Fluids and Structures, Vol. 76, 2018, p. 319-335.

34. Rahul Goyal and B.K. Gandhi, "Review of Hydrodynamics Instabilities in Francis Turbine during Off-Design and Transient Operations", Renewable Energy, Vol. 116, Part A, 2018, p. 697-709.
35. Rahul Goyal, B.K. Gandhi and Michel Cervantes, "Particle Image Velocimetry Measurements in Francis Turbine: A Review and Application to Transient Operations", J. of Renewable and Sustainable Energy Reviews, Vol. 81, 2018, p. 2976-2991.
36. Rahul Goyal, B.K. Gandhi and Michel Cervantes, "Experimental Study of Mitigation of a Spiral Vortex Breakdown at High Reynolds Number under an Adverse Pressure Gradient", Physics of Fluids, Vol. 29, 2017, p. 104104.
37. Rahul Goyal, Chirag Trivedi, B.K. Gandhi and Michel Cervantes, "Numerical Simulation and Validation of a High Head Francis Turbine at Part Load Operating Condition", The Institution of Engineers (I), Part C, Vol. 99 (5), 2017, p. 557-570.
38. Arun Kumar, B.K. Gandhi, Praveen Kumar Kulkarni, "Effect of Misalignment of Penstocks on Pressure Loss", J. of Pipeline Systems Engineering and Practice, ASCE, 8(4), 2017, p. 04017012.
39. Rahul Goyal, Michel Cervantes and B.K. Gandhi, "Characteristics of Synchronous and Asynchronous Modes of Fluctuations in Francis Turbine Draft Tube during Load Variation", Intl. J. of Fluid Machinery and Systems, Vol. 10 (2), 2017, p. 164-175.
40. Rahul Goyal, Michel Cervantes and B.K. Gandhi, "Vortex Rope Formation in a High Head Model Francis Turbine", ASME J. of Fluids Engineering, Vol. 139, 2017, p. 041102.
41. Rahul Tarodiya and B.K. Gandhi, "Hydraulic Performance and Erosive Wear of Centrifugal Slurry Pumps - A Review", Powder Technology, Vol. 305, 2017, p. 27-38.
42. Rahul Goyal, Chirag Trivedi, B.K. Gandhi, Michel Cervantes and Ole Dahlhaung, "Pressure Measurements at Part Load Operating Condition of a High Head Model Francis Turbine", Sadhana, Vol. 41(11), 2016, p. 1311-1320.
43. Md. Shaukat Ali, A. Tariq and B.K. Gandhi, "Role of Chamfering angles and Flow through Slit on Heat Transfer Augmentation behind a Surface Mounted Rib", ASME Journal of Heat Transfer, 138(11), 2016, p. 111901.
44. S. Kumar, B.K. Gandhi and S.K. Mohapatra, "Leaching Characteristics of Bottom Ash from Thermal Power Plants", Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, Vol. 38 (5), 2016, p. 686-694.
45. Chirag Trivedi, Michel Cervantes and B.K. Gandhi, "Experimental and Numerical Investigations on a Francis Turbine during Runaway Operating Conditions", Energies, Vol. 9(3), 149, 2016, p. 1-22.
46. B.K. Gandhi, H.K. Verma and Boby Abraham, "Mathematical Modelling and Simulation of Flow-Velocity Profile for Rectangular Open Channels", ISH Journal of Hydraulic Research, Vol. 22(2), 2016, p. 193-203.
47. N. Agrawal, S. Dutta and B.K. Gandhi, "Experimental Investigation of Flow Field behind Triangular Prisms at Intermediate Reynolds Number with Different Apex Angles", Experimental Thermal and Fluid Science, Vol. 72, 2016, p. 97-111.
48. Manish Kumar Chauhan, Sushanta Dutta, B.K. Gandhi and Bhupendra Singh More, "Experimental Investigation of Flow over a Transversely Oscillating Square Cylinder at Intermediate Reynolds Number", ASME Journal of Fluids Engineering, Vol. 138, 2016, p. 051105.
49. B.S. More, M.K. Chauhan, S. Dutta and B.K. Gandhi, "Experimental Investigation of Flow Field Behind two Tandem Square Cylinders with Oscillating Upstream Cylinder", Experimental Thermal and Fluid Science, Vol. 68, 2015, p. 339-358.

50. Chirag Trivedi, B.K. Gandhi, Michel Cervantes and Ole Dahlhaung, "Experimental Investigations on a Model Francis Turbine during Shutdown at Synchronous Speed", Renewable Energy, Vol. 83, 2015, p. 828-836.
51. Chirag Trivedi, Michel Cervantes, Ole Dahlhaung and B.K. Gandhi, "Experimental Investigation of a High Head Francis Turbine during Spin-No-Load Operation", ASME Journal of Fluids Engineering, Vol. 137(6), 2015, p. 061106-1-10.
52. C.P. Paul, B.K. Gandhi, P. Bhargava, D.K. Dwivedi and L.M. Kukreja, "Cobalt Free Laser Cladding on AISI type 316 L Stainless Steel for Improved Cavitation and Slurry Erosion Wear Behaviour", Journal of Materials Engineering and Performance, Vol. 23(12), 2014, p. 4463-4471.
53. Chirag Trivedi, Michel Cervantes, B.K. Gandhi and Ole Dahlhaung, "Transient Pressure Measurements on a High Head Model Francis Turbine during Emergency Shutdown, Total Load Rejection, and Runaway", ASME Journal of Fluids Engineering, 2014, Vol. 136(12), p. 121107.
54. Chirag Trivedi, Michel Cervantes, B.K. Gandhi and Ole Dahlhaung, "Experimental Investigations of Transient Pressure Variations in a High Head Model Francis Turbine during Start-up and Shutdown", J. Hydrodynamics, Vol. 26 (2), 2014, p. 277-290.
55. Chirag Trivedi, Michel Cervantes, B.K. Gandhi and Ole Dahlhaung, "Pressure Measurements on a High Head Francis Turbine during Load Acceptance and Rejection", J. Hydraulic Research, 52(2), 2014, p. 1-15.
56. S. Kumar, B.K. Gandhi and S.K. Mohapatra, Performance Characteristics of Centrifugal Slurry Pump with Multi-Sized Particulate Bottom and Fly Ash Mixtures, Particulate Science and Technology, Vol. 32(5), 2014, p. 466-476.
57. Chirag Trivedi, Michel Cervantes, B.K. Gandhi and Ole Dahlhaung, "Experimental and Numerical Investigations for a High Head Francis Turbine at Several Operating Points", ASME Journal of Fluids Engineering, Vol. 135, 2013, p. 111102.
58. Md. Shaukat Ali, Andallib Tariq and B.K. Gandhi, "Flow and Heat Transfer Investigation behind Trapezoidal Rib using PIV and LCT Measurements", Experiments in Fluids, Vol. 54, 2013, p. 1520.
59. Chirag Trivedi, B.K. Gandhi and M.J. Cervantes, "Effect of Transients on Francis Turbine Runner Life: A Review", J. Hydraulic Research, Vol. 51(2), 2013, p. 121-132.
60. S.S. Patnaik, H.K. Verma and B.K. Gandhi, "New Technology for Discharge Measurement at Small Hydro Stations", Hydropower & Dams, Vol. 18 (5), 2011, pp 103-108.
61. G.R. Desale, B.K. Gandhi and S.C. Jain, "Development of Correlations for Predicting the Slurry Erosion of Ductile materials", ASME Journal of Tribology, Vol. 133, 2011, p. 031603.
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107. M.D. Agrawal, B.K. Gandhi and D.P.S. Chauhan, "Energy Conservation in Agricultural Pumping Systems", Proc. All India Seminar on Pumping Systems-Selection Maintenance & Management, Univ. of Roorkee, Roorkee, 1992, pp. 13-16.

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(C) Books / Proceedings Edited (01)

1. "Proceedings of 18th National Conference of Fluid Mechanics and Fluid Power", SGSITS Indore, December 1991 (Co-editors: Prof. M. D. Agrawal and Prof. D. Singh).

(D) Communicated/ under preparation (03)

1. Jesim Hashmy, Rahul Tarodiya, and Bhupendra K. Gandhi, "Numerical Study of Erosion Wear of Straight Pipes due to Suspended Solid Particles", revised submitted to Multiphase Science and Technology.
2. Rohit Kumar Sahu and Bhupendra K Gandhi, "Reduction of Francis turbine erosion with guide vane modification", under preparation.
3. Rohit Kumar Sahu and Bhupendra K Gandhi, "Improvement in flow field with change in guide vane profile of a Francis turbine", under preparation.

Patents/ Technology Transfer

- Slurry Pot Test Rig For Evaluating Erosion Wear, Patent Application No. 2000/DEL/2004, The Patent Office Journal, dated 28-07-2006, India, p. 13908.
- High Speed Slurry Pot Testing Apparatus, Indian Patent no. 461869, 18 August 2017 for 20 years.
- Combined air and water injection for mitigation of rotating vortex rope in the draft tube of a reaction hydro turbine, Submitted at IITR, 2023

Prototype Development

- Replacement of an imported centrifugal impeller used for oil cooling blower system of Indian Railway Loco by an indigenously fabricated low cost impeller.

Organisation of National / International Conferences / workshops

- Joint Organizing Secretary, for 18th National Conference of Fluid Mechanics and Fluid Power, SGSITS, Indore, December, 1991.
- Co-coordinator, Workshop on Laboratory Manual Writing for Fluid Mechanics Laboratory, February 1993.
- Joint Organizing Secretary, Second International (& 29th National) Conference on Fluid Mechanics and Fluid Power, December 2002.
- Convener, International Workshop on Recent Trends in Flow Visualization, IIT Roorkee, December 2009.
- Reviewer and Member, Organizing committee 1st International and 22nd National AIMTDR conference, Dec.21–23, 2007, IIT Roorkee
- Member, Advisory Committee, National Conference on Fluid Mechanics and Fluid Power, 29-31 August, 2013.
- Reviewer and Member, Organizing committee, 1st International and 16th National Conference on Machines and Mechanisms, Dec. 18-20, 2013, IIT Roorkee.
- Member, Organizing Committee, National Conference on Fire Research and Engineering: FiRE 2014, March 1-2, 2014, IIT Roorkee.
- Member, Scientific Committee, IAHR Conference 2016, Grenoble, France
- Member, National Advisory Committee, 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power, December 15-17, 2016, MNNITA, Allahabad, U.P., India
- Chairman, 49th National & 9th International Conference on Fluid Mechanics & Fluid Power, to be held in December 2022, IIT Roorkee.
- Co-chair, 32nd IAHR symposium on hydraulic machinery and systems, to be held in September 2024, IIT Roorkee.

Review/Research/Design/Feasibility Reports:

Sr. No.	Title	No. of Pages	Name of Agency	Year	Co-author, if any
1	Quality manual on testing procedures in Fluid Mechanics Laboratory at SGSITS Indore	29	National Board for Accreditation of Laboratories	2000	Dr. Sanjeev Bharani

Sponsored Research Projects (15)

Sr. No	Title	Capacity	Sponsoring agency	Amount (in INR)	Duration
1	Study on Parametric Dependence of Erosion Wear for Flow of Solid-Liquid Mixture	PI	AICTE, MHRD, Govt. of India	0.16 M	1999-01
2	Slurry Erosion Properties of Laser Cladding	PI	BRNS (DST), Govt of India	0.96 M	2002-05
3	Modernization of Mechanical Engineering Laboratories	CI	BRNS (DST), Govt of India	0.9 M	2004-06
4	Cost Effective Transportation of Bulk Solids through Slurry Pipeline	PI	MHRD,Govt of India	1.4 M	2005-07
5	Development of Non-cobalt base Cavitation Resistant Surfaces by Laser Cladding Process	PI	BRNS (DST), Govt of India	1.46 M	2006-08
6	Flow Field Investigation of an Axial Flow Pump under near Stall and Stall Conditions	PI	DAAD-DST (PPP)	0.455 M	2007-10
7	Investigation on Vortex Generator Induced Heat Transfer Enhancement Using Liquid Crystal Thermography	CI	IITR	0.98 M	2008-10
8	Investigations on Ash Disposal System of a Thermal Power Plant for Transportation of Bottom Ash Slurry at Higher Concentrations	PI	DST-FAU	1.903 M	2009-12
9	Setting up of Small Hydro Turbine R&D Laboratory at AHEC	CI	MNRE, India	150.0 M	2010-16
10	Manipulation of Flow Field over a Square Prism for Vortex Load Reduction using Feedback Control	CI	DST	3.66 M	2011-14
11	Thermodynamic efficiency tests in the HPP Baner and Binwa	PI	Voith Hydro, India	2.736 M	2015-2018
12	Flow field and erosion wear analysis of casing of a centrifugal slurry pump	PI	CSIR	2.096 M	2017–2021
13	Investigation on flow instabilities in draft tube at off-design operation of hydraulic turbines	PI	CPRI	17.5 M	2017 -2021
14	The unsteady aerodynamic response in LP turbine blade and its control under part load conditions	CI	CPRI	3.864 M	2019-2021
15	Experimental and numerical analysis for development of an erosion friendly Francis turbine	PI	CSIR	2.21	2021-2024

Consultancy Projects (141)

Sr. No.	Title	Capacity	Sponsoring agency	Amount (in INR)	Duration
1	Performance Assessment Certification for Self Priming Pumps	PI	Kirloskar Brothers Ltd., Dewas, (MP)	10,000	1999
2	Assessment of Raw Material Required for Manufacturing Submersible Pump Sets	PI	Shakti Pumps India Ltd., Prithampur (MP)	15,000	1999
3	BIS Testing of Various Pumps and Valves	Team (PI / CI)	Bureau of Indian Standards	2,000,000	1987-2001
4	Automatic Quadrilateral Grid Generation in 2-D	PI	University of Ulsan, Korea	95,698	Apr. 2004-Apr. 2005
5	Performance Testing of Madhavwaram SHP Station in Hyderabad	CI	K.M. Power Ltd., Hyderabad	551,000	Apr. 2004 Dec. 2004
6	Performance Testing of Babbanpur SHP Station in Punjab	CI	Kotla Hydropower Ltd., Noida, UP	330,600	Apr. 2004 –Mar. 2005
7	Performance Testing of Manal SHP Station in Himachal Pradesh	CI	Himalayan Crest Power Ltd. New Delhi	551,000	May 2005 – Sep. 2005
8	Performance Testing of Ching SHP Station in Himachal Pradesh	CI	Hateshwari Om Power Enterprises Pvt. Ltd, Ahmedabad	330,600	June 2005 – Sep. 2005
9	Performance Testing of AleoManali SHP Station in Himachal Pradesh	CI	Aleo Manali Hydo Power Ltd. Noida	551,000	Nov. 2005 –Dec. 2005
10	Performance Testing of TB Dam SHP Station in Karnataka	CI	NCL Energy Ltd., Hyderabad	991,800	Nov. 2005 –Dec. 2005
11	Design of Conveyance System from UG Canal to Raw Water Reservoir System of Thermal Power House	CI	Reliance energy, Gaziabad	220,400	Mar. 2006 –Aug. 2006
12	Investigations on Flow induced stresses in the centrifugal fan used for transformer oil cooling	PI	Northern Railway, Ghaziabad	220,400	Nov. 2005 –Aug 2006
13	Performance Testing of Mandagere SHP Station in Karnataka	CI	Bhoruka Power Corporation Ltd.	551,000	Jan. 2006 – Feb. 2006
14	Performance Testing of ChunchiDodi SHP Station in Karnataka	CI	SaiSpurthi Power Ltd.	991,800	Jan. 2006 – Feb. 2006
15	Performance Testing of Sugur SHP Station in Karnataka	CI	SLS Power Industries Ltd., Karnataka	551,000	Apr. 2005 –Apr. 2006
16	Performance Testing of Someshwara SHP Station in Karnatka	CI	Pioneer Genco Ltd. Hyderabad	991,800	Nov. 2005 –May 2006
17	Performance Testing of Sahyadri SHP Station in Karnataka	CI	Sahyadri Power Co. Pvt. Ltd. Shimoga	220,400	Oct. 2005 – Jun 2006
18	Performance Testing of Chakbai	CI	Aqua Power Ltd.,	551,000	Feb. 2005

	SHP Station in Punjab		Noida, UP		–Feb. 2007
19	Performance Testing of Killa SHP Station in Punjab	CI	Kotla Hydro Power Ltd., Noida	561,200	July 2006 – Feb. 2007
20	Performance Testing of Lohgarh SHP Station in Punjab	CI	Aqua Power Ltd., Noida, UP	561,200	July 2006 – Mar. 2007
21	Performance Testing of Sahoke SHP Station in Punjab	CI	Kotla Hydro Power Ltd., Noida	336,720	Dec. 2006 –Apr. 2007
22	Performance Testing of Rani Avanti BaiSagar in Madhya Pradesh	CI	VA Tech Escher Wyss Flovel Ltd., Faridabad	1,010,160	Feb. 2007 – May 2007
23	Performance Testing of Khauli SHP Station in Himacha Pradesh	CI	VA Tech Escher Wyss Flovel Ltd., Faridabad	1,010,160	Apr. 2007 – Sep. 2007
24	Performance Testing of Marhi SHP Station in Himachal Pradesh	CI	Sai Engineering Foundation, Shimla	561,800	Jul. 2007 – Oct. 2007
25	Measurement of Head and Discharge at different locations of Bassi Power Station in HP	CI	Himachal Pradesh State Electricity Board, Palampur	1,346,880	May 2007 –Nov. 2007
26	Performance Testing of Kadamane SHP Station in Karnataka	CI	Paschim Hydro Energy, Hyderabad	1,011,240	Sep. 2007 – Nov. 2007
27	Performance Testing of Lower Meenmutty SHP Station in Karnataka	CI	Kerala State Electricity Board, Thiruvananthapuram	1,010,160	Jan. 2007 – Jan. 2008
28	Performance Testing of Chayadevi SHP Station in Karnataka	CI	Bhoruka Power Corporation, Bangalore	1,011,240	Sep. 2007 – Jan. 2008
29	Performance Testing of Neria SHP Station in Karnataka	CI	Bhoruka Power Corporation, Bangalore	1,010,160	Mar. 2007 – Jan. 2008
30	Performance Testing of Ranganathaswamy SHP Station in Karnataka	CI	Pioneer Power Corporation Ltd.	1,011,240	Sep. 2007 – Feb. 2008
31	Analysis of Sump model for Recirculating Cooling water system for MA-DMF plant	PI	Simon India, New Delhi	337,080	Oct. 2007- Mar. 2008
32	Performance Testing of MGHE Tailrace SHP Station in Karnataka	CI	Ambuthirtha Power Pvt. Ltd., Bangalore	1,011,240	Feb. 2008 – Aug. 2008
33	Performance Testing of Sarbari SHP Station in Himachal Pradesh	CI	DSL Hydrowatt Limited, Mumbai	561,800	Jan. 2008 – Sep. 2008
34	Performance Testing of Upper Awa SHP Station in Himachal Pradesh	CI	Astha Projects Limited, Hyderabad	561,800	May 2008 – Sep. 2008
35	Performance Testing of Patikari SHP Station in Himachal Pradesh	CI	Patikari Power Private Ltd., Shimla	1,011,240	Mar. 2008 –Oct. 2008
36	Performance Testing of Brahmganga SHP Station in Himachal Pradesh	CI	HarisonsHydel Construction Co. Pvt. Ltd., Kullu	561,800	June 2008 – Oct. 2008
37	Performance Testing of Hemagiri SHP Station in Karnataka	CI	Trishul Power Pvt. Ltd., Bandihole	561,800	Mar. 2006 – Jan. 2009
38	Performance Testing of Sikasar SHP Station in Chhattisgarh	CI	Chhattisgarh State Electrical Board, Raipur	1,011,240	Jan. 2008 – Dec. 2008

39	Performance Testing of Akkihebal SHPStation in Karnataka	CI	Cauvery Hydro Energy Ltd, bangalore	561,800	June 2008 – Jan. 2009
40	Performance Testing of Sidhana SHP Station in Punjab	CI	Aqua Power Pvt. Ltd. Chandigarh	561,800	Aug. 2008 – Feb. 2009
41	Performance Testing of Sattegala SHP Station in Karnataka	CI	Bhoruka Power Corporation, Bangalore	1,011,240	Dec. 2008 – Feb. 2009
42	Study of Aerodynamic behavior of Passenger Trains and Development of Aerodynamic Profiles of Coaches and Locomotive to Reduce Wind Resistance	CI	Ministry of Railways, Govt. of India	1,746,918	2008-2009
43	Performance Testing of Babehalli SHP Station in Punjab	CI	Gill Power Generation Company Pvt. Ltd., Gurudaspur	561,800	Jan. 2009 – Jun. 2009
44	Capacity Assessment of ITC Haridwar and ManpuraUnits	PI	ITC Ltd, Kolkatta	275,750	2009-2010
45	To design and deliver Technical capacity Building Programs	PI	Uttarakhand Rural Water Supply & Environmental Sanitation Project, PMU – Dehradun	6,648,000	2009-2011
46	Performance Testing of Lower Baijnath SHP Station in Himachal Pradesh	CI	Changer VidyutKranti Pvt. Ltd., Palampur	441,300	Mar. 2010 –Jun. 2010
47	Performance Testing of Baragran SHP Station in Punjab	CI	KKK Hydro Power Ltd., Faridabad	441,200	Feb. 2010 – June 2010
48	Performance Testing of Taraila-II SHP Station in Himachal Pradesh	CI	Cimaron Construction Pvt. Ltd., Hyderabad	561,800	Feb. 2010 – July 2010
49	Performance Testing of Upper Taraila SHP Station in Himachal Pradesh	CI	A.T. Hydro Pvt. Ltd., Hyderabad	661,800	Feb. 2010 – Aug. 2010
50	Performance Testing of SohamMannapitlu SHP Station in Karnataka	CI	Soham Mannapitlu Power Pvt. Ltd., Bangalore	1,103,000	Aug. 2010 –Nov. 2010
51	Performance Testing of Ullunkal SHP Station in Kerala	CI	Energy Development Company Ltd., Faridabad	1,103,000	Aug. 2009 –Dec. 2010
52	Performance Testing of Mrujaara SHP Station in Karnataka	CI	Mrujaara Power Plant, Shimoga	441,200	July 2010 – Dec. 2010
53	Performance Testing of Kenchengudem SHP	CI	Pusala Power Project Pvt. Ltd., Hyderabad	1,103,000	Jan. 2010 – Feb. 2011
54	Performance Testing of Terkiana SHP Station in Punjab	CI	Atlantic Power Pvt. Ltd., Chandigarh	441,200	May 2010 –Mar. 2011
55	Performance Testing of Gholian SHP Station in Punjab	CI	Abohar Power Generation Pvt. Ltd, Noida	441,200	Sep. 2010 – Mar. 2011

56	Performance Testing of Akhara SHP Station in Punjab	CI	Abohar Power Generation Pvt. Ltd., Noida	441,200	Sep. 2010 – Mar. 2011
57	Performance Testing of Channuwala SHPStation in Punjab	CI	Abohar Power Generation Pvt. Ltd., Noida	441,200	Sep. 2010 – May 2011
58	Performance Testing of Khanpur SHP Station in Punjab	CI	Abohar Power Generation Pvt. Ltd., Noida	441,200	Sep. 2010 – May 2011
59	Performance Testing of GGSSTP SHP Station in Punjab	CI	Punjab State Power Corporation, Patiala	441,200	Mar. 2010 –Jun. 2011
60	Study of Design of Ventilation System of Traffic Tunnel of Largi HEP	PI	H. P. State Electricity Board	441,200	Aug. 2010 – Dec. 2011
61	Performance Testing of Sudhar SHP Station in Punjab	CI	Abohar Power Generation Pvt. Ltd., Noida	441,200	Sep. 2010 –Jun. 2011
62	Performance Testing of Korba SHP Station in Chhattisgarh	CI	Chhattisgarh State Electricity Board, Raipur	441,200	Nov. 2009 – Jul. 2011
63	Performance Testing of Kadamane-II SHP Station in Karnataka	CI	Nagarjuna Hydro Energy Pvt. Ltd., Hyderabad	1,103,000	Feb. 2011 – Nov. 2011
64	Performance Testing of Deoghar SHP Station in Maharashtra	CI	Gadre Marine Export Ltd., Ratnagiri	441,200	Oct. 2010 – Dec. 2011
65	Study on Erosion Wear using Slurry Pot Tester	PI	Voith Hydro Holding GmbH Co., Germany	1,003,000	Sept.2011-Aug. 2014
66	Performance Testing of Manjanadka SHP Station in Karnataka	CI	Bhoruka Power Corporation Ltd., Bangalore	1,103,000	Apr. 2011 – Feb. 2012
67	Performance Testing of Nandigama-III SHP Station in Andhra Pradesh	CI	Kallam Spinning Mills Ltd., Guntur	441,200	Dec. 2011 – Feb. 2012
68	Performance Testing of Yettinahole SHP Station in Karnataka	CI	Mysore Mercantile Co. Ltd., Bangalore	661,800	May 2011 – Feb. 2012
69	Performance Testing of Perla SHP Station in Karnataka	CI	AMR Power Pvt. Ltd., Hyderabad	1,103,000	May 2011 –Mar. 2012
70	Performance Testing of Dadupur SHP Station in Haryana	CI	Bhourka Power Corporation Ltd., Bangalore	1,103,000	Mar. 2012 –June 2012
71	Performance Testing of Darna SHP Station in Maharashtra	CI	DLI Power (India) Pvt. Ltd., Mumbai	661,800	Sep. 2011 – June 2012
72	Performance Testing of Rakchad SHP in Himachal Pradesh	CI	Regent Energy Ltd, New Delhi	661,800	Oct. 2011 – June 2012
73	Performance Testing of Rukti-II SHP Station in Himachal Pradesh	CI	Door Sanchar Hydro Power Pvt. Ltd., Gurgaon	674,160	May 2012 –Aug. 2012
74	Performance Testing of Kumbhi SHP Station in Maharashtra	CI	Sh. T. K.WaranaSahakariNavshaktiNirmanSanstha Ltd,	681,000	Dec. 2011 –Aug. 2012

			Warannanagar		
75	Performance Testing of Chitri SHP, Maharashtra	CI	Sh. T. K.WaranaSahakariNavshaktiNirmanSanstha Ltd, Warannanagar	441,200	Dec. 2011 – Sep. 2012
76	Performance Testing of Radhanagari SHP Station in Maharashtra	CI	R.M. Mohite Industries Ltd., Maharashtra	1,103,000	Dec. 2011 – Sep. 2012
77	Performance Testing of Aniyur SHP Station in Karnataka	CI	Prasanna Power Ltd., Bangalore	1,103,000	Sep. 2011 – Oct. 2012
78	Efficiency Test on PeriyarVaigai-II SHPStation in Tamil Nadu	CI	Kirloskar Brothers Ltd., Pune	674,160	Dec. 2012 – Jan. 2013
79	Performance Testing of Mussapur SHP Station in Haryana	CI	Puri Oil Mills Ltd., New Delhi	441,200	Mar. 2012 –Mar. 2013
80	Unit Efficiency Test on Bassi Hydro-Electrical Project in HP	CI	Andritz Hydro Pvt. Ltd.	1,685,400	Jan. 2013 – Mar. 2013
81	Performance Testing of Kasari SHP Station in Maharashtra	CI	Vishwaj Energy Pvt. Ltd., Pune	661,800	Mar. 2011 –Apr. 2013
82	Performance Testing of Kadavi SHP Station in Maharashtra	CI	Sh. T. K.WaranaSahakariNavshaktiNirmanSanstha Ltd, Warannanagar	449,440	Sep. 2012 –Jun. 2013
83	Performance Testing of Khukhni SHP Station in Haryana	CI	Puri Oil Mills Ltd., New Delhi	449,440	Sep. 2012 – Aug. 2013
84	Renovation, Modernization and Uprating of Kuttiadi HEP	CI	Kerala State Electricity Board	2,030,345	Apr. 2012 – Oct. 2013
85	RLA studies and DPR for R & M of Koshi SHP Station	CI	Bihar State Electricity Board, Patna	1,763,200	2006-2007
86	Analysis of GI pipes of different places of Uttarakhand	PI	Uttarakhand Lal Nigam	2,213,000	Apr. 2012-Mar. 2013
87	Analysis of GI Pipes of Different Places of Uttarakhand	PI	Project Management Unit, Deharadun	183,147	2013-14
88	Performance Testing of Pench RBC SHP (2x700 kW) at Parseoni, District Nagpur, Maharastra	CI	Director, SMS Vidhyut Pvt. Ltd, Nagpur	449,440	Dec. 2012 –Dec.2013
89	Efficiency Testing of the generating unit of Bassi Hydropower Station (4x16.5 MW) in Mandi District, HP	CI	M/s Andriz Hydro Pvt. Ltd., Palwal	1,685,400	Dec. 2012 –Dec.2013
90	Turbine Flow Measurement for PG test at Periyar Veghai-II (2x1.25 MW) Hydel Project Tamilnadu	CI	M/s Kirloskar Brothers Ltd., Pune	674,160	Dec. 2012 –Dec.2013
91	Performance Testing of Kadavi Hydroelectric Project (1.5 MW) in District Kolhapur, Maharashtra	CI	M/s Shree TatyasahebKoreWarnaSahakariNavashaktiNirmanSansthan Ltd., Wranangar	449,440	Sep. 2012 – Dec. 2013
92	Performance Testing of Mussapur (2x700 kW) SHP in Haryana	CI	M/s Puri Oil Mills Ltd., New Delhi	441,200	Feb. 2012 – Dec. 2013
93	Performance Testing of Kesari	CI	M/s Vishwaj Energy	661,800	Mar.2011 –

	SHP (1x2.5 MW) at Village Dhoom-Balkwadi District Satara in Maharashtra		Pvt. Ltd., Pune		Dec. 2013
94	Performance Testing of Khukhni Hydro Electric Project (2x700 kW) in Haryana	CI	M/s Puri Oil Mills Ltd., New Delhi	449,440	Sep. 2012 –Dec. 2013
95	Performance Testing of Dhom SHP (4 MW) at Village Dhom-Balkawadi District Satara in Maharashtra	CI	M/s Vishwaj Energy Pvt. Ltd., Pune	661,800	Mar.2011 – Dec. 2013
96	CFD analysis of Intake arrangement of veer NLBC Hydroelectric Project	PI	Mahati Hydro Power Projects Pvt. Ltd., Pune	1,123,600	Oct. 2013-May 2014
97	Performance testing of Brindavan SHP Station, Near Mysore, Karnataka	CI	Atria Brindavan Project Ltd., Bangalore	11,03,000	Mar. 2012-May 2014
98	Performance Testing of Brandavan Tailrace SHP in Distt. Mandya, Karnataka	CI	Atria Brindavan Project Ltd., Bangalore	6,74,160	Sept. 2012 - May 2014
99	Measurement of Head Loss at Ganguwal and Kotla Power House of BBMB	CI	BBMB PW Ganguwal, Punjab	2,24,720	Feb. 2014 - July 2014
100	Performance Testing of Ghanvi-I SHP near Rampur Bushr, District – Shimla (HP)	CI	Andritz Hydro Pvt. Ltd., Palwal (Haryana)	11,23,600	April 2014 – July 2014
101	Field Efficiency Testing of Machine No. -2 at Mohammadpur SHP, Uttarakhand	CI	GoGoal Hydro Power Pvt. Ltd., Haridwar	11,23,600	April 2013 –Sept. 2014
102	Performance Testing of Phatakwadi SHP in Distt. Kolhapur, Maharashtra	CI	DM Corporation Pvt. Ltd., Maharashtra	11,23,600	Aug.2012-Nov. 2014
103	Performance Testing of Somavathi Mini Hydel Scheme SHP near Samse Village, MudigereTaluk, ChikmangaloreDistt., Karanataka	CI	SRM Power Pvt. Ltd., Bangalore	11,23,600	July 2013-Nov. 2014
104	PG Test at PeriyarVaigai-I Hydel Project Theni District in Tamil Nadu	CI	Kirloskar Brothers Ltd., Pune	6,74,160	Sept.2013-Jan. 2015
105	PG Test at PeriyarVaigai-III Hydel Project Theni District in Tamil Nadu	CI	Kirloskar Brothers Ltd., Pune	6,74,160	Sept. 2013-Jan. 2015
106	Performance Testing of Gonal SHP –III on DevapurNala at Gonal Village, ShorapurTaluk, Yadgir District (Karnataka)	CI	South West Hydro Power Pvt. Ltd., Hyderabad	6,74,160	Dec.2013 – Jan. 2015
107	Performance Testing of Rayabasavanna Canal MHP at Tungabhadra Dam, Distt. Bellary (Karnataka)	CI	Khandaleru Power Company Ltd., Hyderabad	4,49,440	Dec.2013-Jan. 2015
108	Performance Testing of Agrahara-I Scheme Near Kardigudda and Ramdurga, District – Raichur Karnataka	CI	Sarovara Energy Pvt. Ltd., Bangalore	4,49,440	Oct.2013 – Feb. 2015
109	Performance Testing of Agrahara-	CI	Sarovara Energy	4,49,440	Oct. 2013 –

	II Scheme Near Kardigudda and Ramdurga, District – RaichurKarnataka		Pvt. Ltd., Bangalore		Feb. 2015
110	Performance Testing of 1x4.8 MW Veer NLBC Hydro Electric Project Veer Village, Taluka-Purandar, District Pine, Maharashtra	CI	M/s Mahati Hydro Power Projects Pvt. Ltd., Pune	674,160	Aug. 2012 –Dec. 2015
111	Performance Testing of Phatakwadi SHP (2x4 MW) in District Kolhapur, Maharashtra	CI	M/s DM Corporation Pvt. Ltd. Kolhapur, Maharashtra	1,123,600	Aug. 2012 –Dec. 2015
112	Performance Testing of Harangi Stage-II (1x6 MW) Hydro Electric Project, District Kodagu, Karnataka	CI	M/s Energy Development Company Co., Faridabad	1,123,600	Jul. 2013 – Dec. 2015
113	Performance Testing of 2x2.25 MW Charmadi SHP at BelthangadiTaluk in Karnataka	CI	M/s Trinethra Energy Conventions Ltd., Bangalore	661,800	Sep. 2009 – Dec. 2014
114	Performance Testing of Sonna SHP (3x3.5 MW) at Devanagaon, Bijapur District, Karnataka	CI	M/s Jasper Energy Pvt. Ltd., Hyderabad	1,123,600	Jun. 2012 – March. 2015
115	Performance Testing of Beaskund (9 MW) SHP at Village Palchan District Kullu, Himachal Pradesh	CI	M/s Kapil Mohan &Asscoaite Hydro Power Pvt. Ltd., Chandigarh	1,103,000	Mar. 2012 –Dec. 2014
116	Performance Testing of Bhilangana-III (3x8 MW) Hydro Electric Project in Uttarakhand	CI	M/s Abohar Power Generation Pvt. Ltd., Noida	1,123,600	Apr. 2012 –Dec. 2014
117	Performance Testing of Brindavan (2x6 MW) SHP Station, Near Mysore, Karnataka	CI	M/s Atria Brindavan Power Ltd., Bangalore	1,103,000	Mar. 2012 –Dec. 2014
118	Performance Testing of Brandavan Tailrace Scheme (2x2 MW) in Karnataka	CI	M/s Atria Brindavan Power Ltd., Bangalore	674,160	Sep. 2012 - Dec. 2014
119	Performance Testing of 2x2 MW Horizontal Pelton Turbine at Panvi, Himachal Pradesh	CI	M/s Kirloskar Brothers Ltd., Pune	674,160	Jul. 2013 – Dec. 2015
120	Performance Testing of Motighat SHP (2x2.5 MW) at Munsyari, Pithoragarh, Uttarakhand	CI	M/s Himalaya Hydro Pvt. Ltd., Hyderabad	661,800	Feb. 2012 – Dec. 2014
121	Performance Testing of Tangling HEP (2x2.5 MW) in District Kinnour, Himachal Pradesh	CI	M/s Sai Engineering Foundation, New Shimla (HP)	674,160	Mar. 2013 –Dec. 2015
122	Performance Testing of Chakshi Hydro Electric Project (1x2 MW) in Himachal Pradesh	CI	M/s Puri Oil Mills Ltd., New Delhi	449,440	Sep. 2012 – Dec. 2015
123	Performance Testing of BalijKaNallan SHP (2x1.75 MW), Chamba District, Himachal Pradesh	CI	M/s Batot Hydro Power Ltd., Mumbai	674,160	Aug. 2013 –Dec. 2015
124	CFD analysis of CW System for NTPC MEJA	PI	FLOWMORE LTD., Gurgaon	570 000	June 2015-Spet. 2016
125	CFD analysis of Small Hydro Projects of Total 7.5 MW Capacity on Miyagam Branch Canal, Gujrat	PI	P & R Infra Projects Limited, Chandigarh	687 000	Nov. 2015-May 2016

126	Evaluation of Sunderwala Water Supply Scheme	CI	State Water and Sanitation Mission, Dept. of Water Supply, Dehradun	219 249	Dec. 2015-Dec. 2016
127	CFD analysis of Two Small Hydro Projects of Total 4.5 MW Capacity on Miyagam Branch Canal, Gujrat	PI	P&R Infra Projects Limited	343 500	Feb.- July 2016
128	Efficiency testing of Periyar Hydropower Station (4x42 MW) Tamilnadu after RMU	CI	Andritz Hydro Pvt. Ltd.	833 750	Dec. 2016 to Dec. 2017.
129	CFD analysis of CW System for NTPC Telangana project (2x800 MW)	PI	FLOWMORE LTD., Gurgaon	790 600	Sept. 2017 to Dec. 2018
130	CFD Analysis for CW system of Jawaharpur Project (2 x 660 MW)	PI	M/s Doosan Power Systems India Pvt. Ltd., New Delhi	1 180 600	March 2018 to Feb. 2019
131	CFD Analysis for Cooling Water system of NTPC Obra C (2x660 MW)	PI	M/s Doosan Power Systems India Pvt. Ltd., New Delhi	1 416000	Sept 2018 to 2019.
132	Performance Testing of Chikotra (1.8 MW) SHP Station in Maharashtra	CI	Rohan Rajdeep Hydro Power Projects, Maharashtra	4,00,000/- + 72,000/-	October 2017 - Dec. 2020
133	Performance Testing of Kanher (1.2 MW) SHP Station in Maharashtra	CI	Shri Swami Samarth Engineers, Pradyumn Apts., Pune	4,00,000/- + 72,000/-	August 2017 - Dec. 2019
134	Performance Testing of Kartaul (2.4 MW) SHEP at Vill. Neuli Sub Tehsil Sainj, District Kullu (HP)	CI	Raghupreet Hydro Projects Pvt. Ltd., New Delhi	6,00,000/- +1,08,000/-	06.10.2018 To 31.12.2020
135	Performance Testing of 3 MW (33% overload capacity 4 MW) Yedgaon HEP Small Hydro Power Project in Pune	CI	Laxmi Organic Industries Ltd., Nariman Point, Mumbai	6,00,000/- +1,08,000/-	05.03.2018 To 31.12.2020
136	Performance Testing of Nilwande Village (7 MW), Tal Akole, District Ahmednagar, Maharashtra	CI	New Asian Infrastructure Development Pvt. Ltd., Mumbai 400053	10,00,000/- + 1,80,000/-	15.11.2017 To 31.12.2019
137	Performance Testing of Shaung (3.0 MW) SHP at Dist. Kinnaur, Himachal Pradesh	CI	FLOVEL Energy Private Limited, Faridabad	6,00,000/- +90,000/-	23.06.2016 To 31.12.2019
138	Performance Testing of Kurtha (5 MW) SHP in Dist. Chamba, Himachal Pradesh	CI	K.B. Lal Chopra & Co., Mohali-160059	6,00,000/- +87,000/-	25.05.2016 To 31.12.2019
139	Performance Testing of Upper Nanti (13.5 MW) SHP in Himachal Pradesh	CI	M/s Nanti Hydro Power Pvt. Ltd, Hyderabad	10,00,000/- + 1,80,000/-	23.05.2018 To 31.12.2021
140	Vetting of Design and Drawings of Radial gate and Stop Log gate of LOWER ORR Major Irrigation Project, Distt.-Shivpuri (M.P.)	PI	Project Director, Orr River Project Management Unit Bamorekaian	1 200 000 + 216 000	10.08.2020 to 30.12.2020

141	Vetting of Design and Drawings of Spillway Stoplog, Rope drum hoist and Gantry crane for radial gate and Stop Log gate of LOWER ORR Major Irrigation Project, Distt.-Shivpuri (M.P.)	PI	M/s Sarthi Constructions, 12 Laxmibai Colony Gwalior	800 000 + 144 000	25.10.2020 To 30.02.2020
142	Vetting of Acoustic material and Design to reduce noise of Indiranagar and Mothorawala STPs at Dehradun	PI	V.R. & Co. Ghaziabad	150 000 +27 000	26.11. 2023 To 31.12.2023

Short Term Courses Organised (36)

Sr. No.	Name of activity	Course	Sponsoring agency	Duration	Coordinator
1	Training Course	Best Practices in Agricultural Pump-sets and Rural Demand Supply Management	PFL Ltd., New Delhi	Nov.28–Dec. 2, 2005	B K Gandhi
2	Refresher course	Orientation Programme for Finishing School Participating Institute	MHRD, Govt. of India	Apr. 24 – 25, 2008	Vinod Kumar B K Gandhi
3	Training course	Finishing School Programme	MHRD, Govt. of India	May 26 – Jul. 18, 2008	Vinod Kumar B K Gandhi
4	Short term course	Computational Fluid Dynamics	AICTE, QIP center, IIT Roorkee	Jun. 11-22, 2008	B.K. Gandhi K. M. Singh
5	Training course	Finishing School Programme	MHRD, Govt. of India	May 28 – Jul. 16, 2009	Vinod Kumar B K Gandhi
6	Training Course	Feasibility, Design & DPR preparation	Swajal,Uttarakhand	Jan. 8-12, 2008	Deepak Khare B.K. Gandhi
7	Training Course	Feasibility, Design & DPR preparation	Swajal,Uttarakhand	Feb. 4-8, 2008	Deepak Khare B.K. Gandhi
8	Training Course	Feasibility, Design & DPR preparation	Swajal,Uttarakhand	Mar. 16-20, 2008	Deepak Khare B.K. Gandhi
9	Short term course	Computational Fluid Dynamics	QIP center, IIT Roorkee	Jun. 28- Jul. 2, 2010	B.K. Gandhi K. M. Singh
10	Training Course	Feasibility, Design & DPR preparation	Swajal,Uttarakhand	Nov. 16-20, 2009	B.K. Gandhi Deepak Khare
11	Training Course	Feasibility, Design & DPR preparation	Swajal,Uttarakhand	Nov. 23-27, 2009	B.K. Gandhi Deepak Khare
12	Training Course	Feasibility, Design & DPR preparation	Dept of Drinking Water, Swajal,Uttarakhand	Dec. 7-11, 2009	B.K. Gandhi Deepak Khare
13	Training Course	Feasibility, Design & DPR preparation	Dept of Drinking Water, Swajal,Uttarakhand	Dec. 14-18, 2009	B.K. Gandhi Deepak Khare

14	Training Course	Feasibility, Design & DPR preparation	Dept of Drinking Water, Swajal,Uttarakhand	Jan. 5-9, 2010	B.K. Gandhi Deepak Khare
15	Training Course	Feasibility, Design & DPR preparation	Dept of Drinking Water, Swajal,Uttarakhand	Jan. 12-16, 2010	B.K. Gandhi Deepak Khare
16	Training Course	Feasibility, Design & DPR preparation	Dept of Drinking Water, Swajal,Uttarakhand	Jan. 5-9, 2010	B.K. Gandhi Deepak Khare
17	Training course	Computational Fluid Dynamics	IEI (I) Local centre Roorkee	Aug. 20-22, 2010	B.K. Gandhi K. M. Singh
18	Short term course	Computational Fluid Dynamics	QIP center, IIT Roorkee	Jun. 28- Jul. 2, 2010	B.K. Gandhi K. M. Singh
19	Training Course	Construction Supervision and Operation &Maint.	Dept of Drinking Water, Swajal,Uttarakhand	Sep.13-17, 2010	B.K. Gandhi Deepak Khare
20	Training Course	Construction Supervision and Operation &Maint.	Dept of Drinking Water, Swajal,Uttarakhand	Oct.11-15, 2010	B.K. Gandhi Deepak Khare
21	Training Course	Construction Supervision and Operation &Maint.	Dept of Drinking Water, Swajal,Uttarakhand	Jan. 10-14, 2011	B.K. Gandhi Deepak Khare
22	Training Course	Construction Supervision and Operation &Maint.	Dept of Drinking Water, Swajal,Uttarakhand	Jan. 17-21, 2011	B.K. Gandhi Deepak Khare
23	Training Course	Construction Supervision and Operation &Maint.	Dept of Drinking Water, Swajal,Uttarakhand	Jan. 24-28, 2011	B.K. Gandhi Deepak Khare
24	Training Course	Construction Supervision and Operation &Maint.	Dept of Drinking Water, Swajal,Uttarakhand	Jan.31- Feb. 4 2011	B.K. Gandhi Deepak Khare
25	Training Course	Construction Supervision and Operation & Maintenance	Dept of Drinking Water, Swajal,Uttarakhand	Feb. 14-18 , 2011	B.K. Gandhi Deepak Khare
26	Training Course	Feasibility, Design & DPR preparation	Dept of Drinking Water, Swajal,Uttarakhand	Feb.28 –Mar. 4, 2011	B.K. Gandhi Deepak Khare
27	Training Course	Catchment Area Conservation and Management Aspects	Dept of Drinking Water, Swajal,Uttarakhand	Sep. 3-5, 2011	Deepak Khare B.K. Gandhi
28	Training Course	Catchment Area Conservation and Management Aspects	Dept of Drinking Water, Swajal,Uttarakhand	Sep. 1-3, 2011	Deepak Khare B.K. Gandhi
29	Short term course	Modern measurement techniques in fluid and thermal engineering	QIP center, IIT Roorkee	Jul. 07 –11, 2011	B K Gandhi S. Dutta
30	Short term course	Computational Fluid Dynamics	QIP center, IIT Roorkee	Feb. 22- Feb. 26, 2016	K. M. Singh B.K. Gandhi
31	Short term course	Advances in Fluid Flow Control and Measurement Techniques	QIP center, IIT Roorkee	Dec. 05 –09, 2016	S. Dutta B K Gandhi
32	Training course	Hydropower Development and General Management	UJVNL, Dehradun	7 March to 14 April, 2017	S N Ragnekar

					Deepak Khare
33	Training course	Refresher Course on Engineering and Management	USIDC, Dehradun	June 19-22, 2017	M. Shrikhande U K Sharma S N Ragnekar
34	Training course	Technical issues of Hydro Power	SJVNL, Shimla	Aug 19 to 26, 2017	Ashish Pandey S K Mishra
35	Short term course	Computational Methods in Fluid Mechanics and Heat Transfer	QIP Centre, IIT Roorkee	February 19-23, 2018	K.M. Singh B.K. Gandhi
36	Short term course	Modern Measurement and Diagnostic Applications in Fluid and Thermal Engineering	QIP center, IIT Roorkee	Nov. 9-13, 2019	S. Dutta B K Gandhi

Significant Contributions

I am working in the area of experimental and numerical fluid mechanics with special emphasis on hydrodynamic machines. My work on performance and wear characteristics of centrifugal slurry pump has been implemented in industries particularly ash handling systems of thermal power plants. I designed and replaced an expensive imported centrifugal impeller used for oil cooling system of Indian locomotives. I initiated the work on transient flow regime of Francis turbine. I am working with the leading universities of Sweden, Norway and Nepal to perform experimental and numerical investigations on hydraulic turbines. I worked on techniques to minimize the damages to hydro-turbines during the peak and base load demand operations. I contributed to develop skills for on-site performance testing of hydropower plants and have expertise in evaluating in-situ hydraulic efficiency measurement using thermodynamic method. I have also developed and patented a unique design of pot tester for evaluating impact erosion wear whose data are well accepted in the research community of India and abroad. I worked on active and passive methods of drag reduction of a bluff body. I also worked on increasing the heat transfer from an absorber plate incorporating artificial roughness in solar air heating systems. Recently, I developed a test rig to investigate the flow instabilities of draft tube at off-design operation of the turbine under National Perspective Plan on R&D of Ministry of Power, GoI. I worked on establishing a procedure to estimate the erosion wear of a pump casing and am currently working on predicting the erosion of turbine and modification of the guide vane profile to minimize the erosion.