

Full Biodata of Prof. H.K. Verma (May 2022)

e-mail: hkvfee@gmail.com
website: www.profhkverma.info



1. NATIONALITY

Indian

2. DATE OF BIRTH

18th July, 1946

3. ACADEMIC PROFILE

B.E. 1967

Electrical Engineering
University of Jodhpur

M.E. (Hons.) 1969

Electrical Engineering (PSE)
University of Roorkee

Ph.D. 1977

Protection/Static Protective Relays
University of Roorkee

4. PROFESSIONAL PROFILE

Sr. Research Fellow Sep. 1969 – July 1970

Department of Electrical Engg.
University of Roorkee

Lecturer July 1970 – May 1975

Department of Electrical Engg.
University of Roorkee

Reader May 1975 – Feb. 1980

Department of Electrical Engg.
University of Roorkee

R & D Manager Feb. 1980 – Feb. 1982

Universal Electrics Ltd., Faridabad

Professor Feb. 1982 – June 2012

Department of Electrical Engg.
University of Roorkee/IIT Roorkee

Distinguished Professor July 2012 – Feb. 2022

Department of Electrical and Electronics Engg.
School of Engineering and Technology
Sharda University, Greater Noida

5. ADMINISTRATIVE PROFILE

R & D Manager Universal Electrics Ltd. Faridabad	Feb. 1980 – Feb. 1982
Head, Electrical Engg. Deptt. University of Roorkee Roorkee	Sep. 1991 – Sep. 1994
Dean, Research & Ind. Liaison University of Roorkee/IIT Roorkee Roorkee	May 2000 – April 2002
Dean, Sponsored Res. & Ind. Consultancy IIT Roorkee Roorkee	May 2002 – June 2003
Dean, Faculty Affairs IIT Roorkee Roorkee	Aug. 2003 – Aug. 2004
Deputy Director IIT Roorkee Roorkee	May 2006 – July 2011
Director (Offg.) IIT Roorkee Roorkee	July 1– July 31, 2011
Dean Academic Affairs Sharda University Greater Noida	October 2013 – June 2016

5.1 R&D Manager, Universal Electrics Ltd. (Feb. 1980 – Feb. 1982)

- As R&D Manager, **headed R&D Division** of Universal Electrics Ltd., Faridabad, a Birla Group public limited company, manufacturing control and protection panels, protective relays and meters, for two years.
- Also had charge of Quality Control Manager.
- Was assisted by Deputy Manager R&D and Deputy Manager QC.
- **Setup a new R&D unit** of the company.
- Developed several new instruments, transducers and control panel accessories.
- Initiated industrial research in microprocessor-based instrumentation and protection, **first initiative of this kind in India.**

- Also created a quality assurance system for metering, control and protection panels, motor control centres, protective relays, measuring instruments and panel accessories.

5.2 Dean R&IL / SRIC, University of Roorkee / IIT Roorkee (May 2000 – June 2003)

- Lead author and presenter of the proposal for conversion of University of Roorkee to IIT Roorkee to MHRD in 2001.
- Played a pivotal role in the preparation of blue-print and the management of change from University of Roorkee to IIT Roorkee.
- Set up “*Uttaranchal Development Cell*” and “*Intellectual Property Rights (IPR) Cell*”.
- Got the accounts of sponsored research and consultancy projects computerized.
- Institute was registered as engineering consultancy service provider with Central Excise Department.
- Initiated and published a new booklet, “*IITR at a Glance*”.
- Initiated and published a new *R&D News Magazine of IITR*, “*SCI-TECH*”.
- Developed and implemented software for on-line filling of consultancy forms.
- Developed and implemented software for on-line filling of forms related to sponsored research projects.
- Up scaled and updated the *SRIC Website*.
- Compiled, edited & published revised edition of “*Expertise and Facilities*”.
- Instrumental in signing an *MOU with Govt. of Uttaranchal* for total quality assurance of civil and electrical works in Haridwar for Ardh-Kumbh Fair, 2004.
- Instrumental in signing an *MOU with UNDP* for implementation by IITR of the project on Pro-Poor IT Initiatives in Uttaranchal.

5.3 Dean Faculty Affairs, IIT Roorkee (Aug. 2003 – Aug. 2004)

- Revised the guidelines and procedures of *faculty selection*.
- Revised the guidelines and procedures of *re-employment, leave and financial assistance*.
- Introduced guidelines and rules for appointment of *joint professors, guest faculty and visiting faculty*.
- Introduced *Outstanding Teacher* and *Outstanding Research Awards* for the faculty.
- Introduced *Research Initiation Grant* for the new faculty.

5.4 Dy. Director, IIT Roorkee (May 2006 – July 2011)

- Approving Authority for matters of Group B, C and D Employees, Pension and Gratuity of all retiring / retired employees, Purchases and Stores, Institute Hospital, Medical Attendance and House Allotment.
- Second Appellate Authority of IIT Roorkee under RTI Act, 2005.
- Chairman, Institute Investment Committee, IIT Roorkee.
- Introduced new *Medical Attendance & Treatment Rules*.
- Revised *House Allotment Rules*.
- Prepared "*Master Plan for IIT Campus: Vision 2025*".
- Prepared action plan for *wired connectivity* in 5 married students' hostels.
- Prepared action plan for *Wi-Fi connectivity* in 9 single students' hostels.
- Prepared action plan for Implementation of *OBC Reservation Policy of GoI* at IIT Roorkee.

5.5 Director (Offg.), IIT Roorkee (July 1- July 31, 2011)

- Pending a regular appointment, officiated as Director till the date of superannuation, viz. July 31, 2011.
- Ex-officio Member, IIT Council (common for all IITs).
- Ex-officio Member, Board of Governors, IIT Roorkee.
- Ex-officio Member, Finance Committee, IIT Roorkee.
- Ex-officio Chairman of Senate and several other standing committees of IITR.

5.6 Dean Academic Affairs, Sharda University (October 2013 – June 2016)

- Introduced Performance Appraisal and Reward Scheme for Faculty (PARS-F)
- Member, University Court, Sharda University
- Member, Executive Council, Sharda University
- Member, Academic Council, Sharda University

5.7 Other Administrative Involvement

- Member, Board of Governors, IIT Roorkee (Jan. 2004 – Dec. 2005).
- Permanent Invitee, Board of Governors, IIT Roorkee (May 2006 – June 2011).
- Member, Finance Committee, IIT Roorkee (Jan. 2004 – Dec. 2005).
- Permanent Invitee, Finance Committee, IIT Roorkee (May 2006 – June 2011).
- Chairman, Microprocessor Application Centre (1985-1990).
- Chairman, Barrier-Free Environment Committee (Oct. 2008 – Dec. 2010).
- Chairman, Steering Committee for National Mission on Education through ICT at IITR (Jan. 2009 – July 2011).
- Chairman/Member of several Standing/Monitoring Committees of IIT Roorkee (Sept. 2001 – July 2011).

6. RESEARCH INTERESTS

- MEMS and Smart Sensors
- Wireless Sensor Networks
- Smart Grid and Micro-Grid
- Energy Conservation and Management
- Industrial Automation
- Hydro-Electric Power Plant Automation
- Power System Protection and Digital Relays
- Intelligent and Energy Efficient Buildings
- Intelligent Instrumentation and Embedded Systems
- Assistive Technologies for Elderly and Disabled Persons
- Hydraulic Measurements

7. HONOURS AND AWARDS

Received 19 Honours / Awards, including Outstanding Teacher Award of IIT Roorkee twice, viz. in 2004 and 2009.

8. Ph.D. THESES AND M.E./M.Tech. DISSERTATIONS GUIDED

18 Ph.D. theses.
175 M.E./ M.Tech. dissertations.

9. RESEARCH PAPERS

Around 250 research papers published/presented in Journals/Conferences.

10. TECHNICAL REPORTS

176 Technical Reports prepared, submitted and accepted.

11. MONOGRAPHS

Written 9 e-monographs and published on the website www.profhkverma.info.

1. Smart Sensors
2. Sensor Networks
3. Telemetry
4. SCADA
5. Smart Sensors and MEMS
6. WSN
7. Industrial Data Networks & Protocols
8. Smart Grid
9. Energy Conservation and Management

12. LABORATORY DEVELOPMENT

Developed 20 new laboratories:

(a) At Electrical Engineering Department, University of Roorkee/ IIT Roorkee

1. Power System Protection Laboratory (1975)
2. Printed Circuit Boards Laboratory (1979)
3. Microprocessor Laboratory (Centre for Microprocessor Application) (1984)
4. Instrumentation and Signal Processing Laboratory (1986)
5. Applied Instrumentation Laboratory (1986)
6. Meter and Relay Testing Laboratory (1988)
7. Data Acquisition Laboratory (1988)
8. FPGA and Embedded Systems Laboratory (1999)
9. Virtual Instrumentation Laboratory (2002)
10. Intelligent Sensors and Sensor Networks Laboratory (2006)
11. Intelligent Instrumentation and Instrument Networks Laboratory (2007)
12. Embedded Systems Laboratory (2008)
13. Building Automation Laboratory (2008)

(b) At Alternate Hydro Energy Centre (AHEC), IIT Roorkee

1. Hydraulic Measurements Laboratory (2008-2009)
2. Hydraulic Turbine R&D Laboratory (2010-2014)

(c) At Electrical and Electronics Engineering Deptt., School of Engineering and Technology, Sharda University

1. Virtual Instrumentation Laboratory (2013-2014)
2. Process Instrumentation and Control Laboratory (2013-2014)
3. Advanced Instrumentation and Automation Laboratory (2014-2016)
4. Energy Audit and Conservation Laboratory (2014-2016)
5. Smart Micro-Grid R&D Laboratory (2015-2017)

13. CURRICULUM DEVELOPMENT

1. Member, Working Group, Laboratory Instruction Manuals B.E. Elect (1972-73)
2. Member, Working Group for revision of B.E. (Elect) Curriculum (1977-78)
3. Member, Working Group for revision of M.E. (Elect) Curriculum (1978-79)
4. Member, Working Group, Revision of B.E. (Elect) Curriculum (1987-88)
5. Member, Working Group for revision of M.E. (Elect) Curriculum (1989-90)
6. Member, Working Group for revision of B.E. (Elect) Curriculum (1995-96)
7. Leader, Working Group for revision of M.E. (M&I) Curriculum (1995-96)
8. Leader, Working Group for revision of M.Tech. (M&I) Curriculum (2005-06)
9. Developed / revised syllabi of M&I subjects for B.Tech. and IDD programmes (2008-09)
10. Leader, Working Group for revision of M.Tech. (M&I) to M.Tech. (I&SP) Programme and Curriculum (2009-10)
11. Developed curriculum and syllabi for a new M. Tech. (Instrumentation & Control) programme at Sharda University (2012-13)
12. Leader, Working Group for revision of B.Tech. (EEE) curriculum at Sharda University (2013-14).
13. Developed curriculum and syllabi for a new M. Tech. (Industrial Automation) programme at Sharda University (2017-18)

14. MEMBERSHIP OF SOCIETIES

1. Fellow, Institution of Engineers (India) (FIE)
2. Fellow, Institution of Electronics & Telecommunication Engineers (FIETE)
3. Fellow, Institution of Instrumentation Scientists & Technologists (FIIST)
4. Life Member, Systems Society of India (SSI)
5. Life Member, Bio-Medical Engineering Society of India (BMSI)
6. Life Member, National Institution of Quality & Reliability (NIQR)

7. Member, International Group for Hydraulic Efficiency Measurement (IGHM)
8. Member, International Society of Automation (ISA)

15. NATIONAL / INTERNATIONAL COLLABORATIONS

1. Collaborated on efficiency measurement of hydro-turbine prototypes and models with Voith Hydro, Germany (2010 – 2012).
2. Collaborated on hydro-turbine model testing with Turbo-Institut, Slovenia (2010 – 2011).
3. Collaborated on hydraulic measurements with School of Technology & Architecture (HTA), University of Applied Sciences, Switzerland (2006 – 2012).
4. Joint research on reconfigurable system-on-chip architectures with Technische Universitat Darmstadt, Germany (2005 – 2008).
5. Leader of a national network of institutions for performance testing and R&M study of SHP Stations, sponsored by MNRE, Govt. of India (2004 - 2012).
6. Joint e-Governance/ Pro-Poor IT initiatives with Govt. of Uttaranchal (2003 – 2009).
7. Joint research project on development of integrated software for quantification of autonomic tone with IIT Delhi & AIIMS Delhi, sponsored by MICT, GoI (2002 – 2003).
8. Joint initiative with Military Hospital Roorkee for ECG interpretation and ECG-database creation (1987 – 1995).
9. Adviser to Regional Engg. College Srinagar for setting up Microprocessor Applications Laboratory (1985 – 1987).

16. SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY

Carried out 8 Sponsored Research Projects and 175 Consultancy Projects, mostly as Principal Investigator.

16.1 Nature of Industrial Research and Consultancy

- Design and development of SCADA system for smart micro-grid
- Design of instrumentation and control system of boundary-layer wind tunnel
- Design of instrumentation and control system of hydro-turbine R & D laboratory
- Performance evaluation of SHP stations
- Renovation, modernization and up-rating (RMU) study of SHP stations
- Design of SCADA systems
- Development of static and digital protective relays
- Software and infrastructure development for e-Governance and IT-enabled services
- Modeling and evaluation of overhead current collection system

- Development of microprocessor-based instruments
- Development of PC-based test systems
- Development of meter test and calibration equipment
- Design of industrial instrumentation systems
- Design of distributed data acquisition systems

16.2 Consultancy Receiving Organizations

<i>International Organization</i>	: UNDP
<i>Government</i>	: Government of Uttarakhand
<i>Govt. Organizations</i>	: RDSO Ministry of Railways Lucknow, IRI Bhopal, CBRI Roorkee, Doordarshan, New Delhi
<i>Research/Test Centres</i>	: ISRO, National Test House, Eicher Research Centre
<i>Power Corporations/Boards</i>	: Uttarakhand Jal Vidyut Nigam, UP Jal Vidyut Nigam, Himachal Pradesh State Electricity Board, Chhattisgarh State Electricity Board, APSEB, MPEB, KSEB
<i>Power Equipment Manufacturers</i>	: Bharat Heavy Electricals Ltd., Boving Fouress Ltd., Andritz Hydro, VA Tech, Jyoti Ltd.
<i>SHP Developers</i>	: KM Power Hyderabad, Kotla Hydro Power Noida, Aleo Manali Hydro Power Noida, Himalayan Crest Power New Delhi, Hateshwari Om Power Enterprises Ahmedabad, Cauvery Hydro Energy Ltd. Bangalore, etc. (over 50 nos.)
<i>Protective Relay Manufacturers</i>	: AVK-SEG & Controls (India), English Electric, G.E.C. Alstom
<i>EM Energy Meter Manufacturers</i>	: Havells' Industries, Towers & Transformers, APEEC, Baroda Electric Meters, Capital Power Systems, VXL Landis & Gyr., etc.
<i>Static Energy Meter Manufacturers</i>	: Genus Overseas Electronics, H.S. Chawla and Co., Rajasthan Electronics and Instruments
<i>Others</i>	: Jaiprakash Associates Ltd.

16.3 Set up “Hydraulic Turbine Research and Development Laboratory” at AHEC, IIT Roorkee with funding by MNRE, Government of India

- Was leading a Core Group of faculty members from April 2010 to June 2012 for setting-up a state-of-art Hydraulic Turbine R&D Laboratory at IIT Roorkee in the

premises of AHEC. Later on, associated as an expert consultant.

- A grant of Rs. 146.8 million was received from Ministry of New and Renewable Energy (MNRE), Government of India on April 1, 2010, later enhanced to Rs. 228.1 million.
- The project was completed in 2015.
- The objectives of the laboratory include: (a) model testing of hydraulic turbines, (b) human-resource development, (c) design and (d) R&D in the area of hydro-turbines, including hydro-mechanical equipment, control and instrumentation of small hydroelectric power plants.
- A number of experts from within the country and outside the country were also involved in designing the layout, components and sub-systems of the laboratory.

16.4 “Strengthening of Test Facilities and Networking of Institutions for Performance and R&M Related Testing of SHP Stations”: A project of National importance, funded by MNRE, Government of India.

- Collaborated with Alternate Hydro Energy Centre (AHEC) in studying requirements of testing related to performance of new SHP stations and renovation and modernization (R&M) of old SHP stations in the backdrop of Indian SHP scenario and subsequently submitting a project proposal to MNRE, GoI.
- A total funding of **Rs. 29 million** received from MNRE, GoI was utilized to strengthen field-test facilities for evaluation of performance of new and old small hydro power stations.
- A National Network for SHP Testing involving faculty and scientists of IIT Roorkee (AHEC and Electrical, Mechanical and Civil Engineering Departments), Jadavpur University, MANIT Bhopal and BRANIT Jalandhar was setup.
- Lead the National Network of over 15 faculty members from five institutes from 2004 to 2012.
- Highly sophisticated equipment and other field-test facilities were procured and maintained at AHEC.
- Performance testing of more than 130 SHP stations in 10 states of India was carried out during 2004-2013.
- R&M related testing of 7 SHP stations in Uttarakhand, UP and Bihar states was carried out during 2004-2013.
- Awareness meetings and workshops for equipment manufacturers, designers, consultants and SHP developers were organized in Roorkee, Delhi, Trichy and Kolkata.
- A Hydraulic Measurements Laboratory was setup at AHEC for demonstration and training on the instruments and methods used for hydraulic measurements in small hydropower stations.

16.5 Three *e-Governance* Projects Funded by UNDP (\$ one million) and Government of Uttarakhand (Rs. 96 million)

The first e-governance project with a total funding of *US\$ one million* from UNDP was initiated in Jan. 2003 and completed in May 2006.

- Needs, priorities and aspirations of the people of Uttaranchal were ascertained by PRA and RUA techniques in seven places.
- BPR studies, aimed at achieving transparency, automaticity, cost reduction, quality and efficiency, were carried out for six departments of GoU.
- An electronic service delivery system was setup.
- An n-tier, citizen - centric and secured Uttara Portal with 115 websites and about a dozen applications was developed.
- About 30 information kiosks (Soochna Kutirs) were setup in rural and remote areas of Nainital district in public-private-partnership mode, which are since operational.
- One mobile information kiosk is providing services in Nainital district.
- Several government departments in Nainital district were partly computerized and connected to Uttara Portal to enable them provide services to citizens electronically.
- A computer-network was created in rural areas of Nainital district and linked to internet to provide accessibility to Uttara Portal as well as internet services in remote areas.
- 14 VSATs were installed in remote information kiosks and nodal government offices.

The second e-governance project was received from the Government of Uttarakhand in April 2005 and a total funding of Rs. 46 million has been received in several installments. The project has been formally closed in Sept. 2009.

- The project aimed at strengthening the infrastructure created under the UNDP-funded project, extending implementation in more places of the state and expanding the government services delivered electronically.
- At the time of completion of the project, Uttara Portal had 234 websites and incorporated 7 theme portals and 8 district portals within it.
- Application software for many new services were developed and the services were provided to the public of Uttarakhand on daily basis.
- Five Janadhar e-Service and Information Centres (JeSICs) were set up at Sadar Tehsil (Collectorate) Dehradun, Tehsil Rishikesh, Tehsil Vikas Nagar, Sadar Tehsil (Collectorate) Almora and Tehsil Ranikhet, to deliver certain government services to the citizens.
- 26 VSATs were procured and installed in information kiosks/ government offices in the state.

The third e-governance project with a funding of *Rs. 50 million* under Border Area Development Programme was received from the Government of Uttarakhand in July 2006 and completed in March 2008.

- The project aimed at setting up e-Service and Information Centres/Kiosks in 5 border districts of the State.
- Sixty Janadhar e-Community Service and Information Centres (JeCISCs) were setup in the five border districts of Chamoli, Uttarkashi, Pithoragarh, Champawat and Udham Singh Nagar, with the support of Sashastra Seema Bal (SSB), Uttarakhand Police Department and the respective district administration.
- Six mobile units were fabricated, equipped and pressed into service for providing government services and information electronically in the areas where stationary JeCISCs were not viable.
- District portals of the five border districts were developed, populated and launched on Uttara Portal.

17. OTHER PROFESSIONAL ACTIVITIES

- Resource Person for the preparation of standards, guidelines and manuals for Design, Development, Installation, Commissioning, Operation, Maintenance and Evaluation of Small Hydropower Stations/Projects.
- Member of National Working Group on “Philosophy and Application of Backup Protection for Transmission Lines, Reactors and Busbars”, Head Office: Central Board of Irrigation and Power, New Delhi.
- Member of CIGRE National Study Committee on “Information System and Telecommunication for Power Systems”, Head office: Central Board of Irrigation and Power, New Delhi.
- Founder Chief Editor of “IITR at a Glance”.
April 2002 – March 2003
- Founder Editor-in-Chief, SCI-TECH (R&D Magazine of IITR)
July 2002 – June 2003
- Chief Editor, “Expertise & Facilities in IIT Roorkee”
Jan 2002 – July 2003