	MD. UMAR HASHMI		10317014
	Energy Science and Engineering		M.Tech.
	Indian Institute of Technology, Bombay		Male
	Specialization: Energy Systems Engineering		DOB: 06/10/1988

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2012	8.32
Undergraduate Specialization: Electrical & Electronics Engineering				
Graduation	AMU, Aligarh	ZHCET, AMU	2010	8.264

Key Projects / Seminars / Course Projects / Internships

M. Tech. Dissertation: Development of a Laboratory scale MICROGRID using Solar Photovoltaic (PV) and Wind [May'11- ongoing]

- **Objective**: Development of Wind Simulator and formation of Lab scale Microgrid and droop implementation
- **Methodology:** Wind Turbine Rotor Blade Modeling with Mathematical model of Wind Turbine and its DC motor emulation using Torque imitation scheme implemented using a Digital Signal Processor (DSP). DC motor emulating the wind turbine drives a Permanent Magnet Synchronous Generator (PMSG) which feeds the load.
Wind Simulator developed is integrated with a solar simulator to form a microgrid with virtual Wind and Solar Photovoltaic (PV) as distributed generation sources (DGs), which are interfaced using Power Electronics Interface i.e. inverters. Droop control implementation in a microgrid considering power coupling.
- **Future work**: The laboratory scale microgrid developed can be used for accelerating and refining the research in this field. More complex algorithms of power sharing can be implemented. In case of wind simulator the operation can be refined implementing MPPT algorithms and considering towering effect.

M. Tech. Seminar: Components of Solar PV Stand-Alone System: Reliability, Parameters, Classifications, Cost Analysis: A Study   [July'09-Nov'09]

- **Objective:** To evaluate the areas of improvement in reliability of presently existing Stand Alone PV (SAPV) components. Components primarily used in SAPV are: Solar Photovoltaic Panel, Charge Controller (which also includes a MPPT circuit), Inverter and Battery Panel.

- **Methodology:** Reviewed components types, robustness and reliability. We tried to make a classification of these according to the commercially manufactured types. In component description the performance of the equipment parameter by parameter was explored. Case study gave an insight into SAPV installation and equivalent Carbon dioxide (CO_2) emission which is insignificant compared to fossil.

- **Result:** Cost as a constraint for maximizing reliability and performance. Deciding factor is the type of application of the system and load which is to be used. System complexity leads to increased cost. Parameter standardization and certification would lead to cost enhancement as users customize performance according to their trade-offs.

B.Tech. project: Advances in Solar Photovoltaic and MPPT   [July'09- May'10]

- **Objective:** Technological advancements in improving the efficiency and bringing down the cost of solar photovoltaic. To study the maximum power point tracker (MPPT) using solar PV cell.
- **Methodology:** Literature survey of emerging technologies in Solar Photovoltaic. Highlighted the emerging technologies like multiple exciton generation, impurity PV and tandem solar cell. Hardware and Software (pSpice) implementation of Buck Boost based MPPT.
- **Results:** Fabrication of 555 based oscillator. Simulated and fabricated the buck boost circuitry for efficient performance. Designed the heat sink arrangement for the switch(MOSFET). Checked the working of MPPT and tabulated the results for optimal performance. Fabricate the circuit on sun-mica sheet. Recommend the desired changes as evident from experimental result**s.**

- Project as a part of the **Cognizance, IIT Roorkee**: AHEC, Ideaz Paper Presentation competition, where was the second runner-up and winner at Tekesis, TekElan'08 and TekElan'09 ZHCET.

Powergrid, NRLDC, New Delhi	**6th Semester, B.Tech.**	**June '09- July '09**

- **Objective**: Reactive power management and voltage control.
- **Methodology**: Understanding the working of Northern Regional Load Dispatch Centre control room. Visit to Gas Insulated Substation (GIS) 400kV/132kV substation at Maharani Bagh, New Delhi.

Siemens, I&S Division, New Delhi	**4th Semester, B.Tech.**	**June '08- July '08**

- **Objective**:132kV switchyard design with introduction of SCADA in operation.
- **Methodology**: Analysis of switchyard devices, their operations and their choice in substation design. Substation Automation using IEC-61850.

Print Media Advertisement Design	**Feb '08- Mar '05**

A profile of a company was given with overview and working portfolios and task was to design print media advertisement. Project was part of **Megabucks, IIT Kanpur**. We were the winners.

Power Plant Design	**Dec '06- Jan '07**

Paper Presentation based on Non Conventional Power Plant design using Magneto-Hydro Dynamic Power Generation and presenting the retrofit scheme of Conventional Thermal Power Plant

- Project developed as a part of **TECHNEX-07, IT-BHU**. We were the runner up of the event.

Competencies / Key Academic Interests

Technical Skillset

Programming Languages : Basic knowledge of C and MATLAB
Platforms worked upon   : Windows (XP), Microsoft Office
Area of Interests: **Renewable Energy**, **Microgrid**, Smart Grids, Rural Electrification

Hobbies and Extra Curricular Activities

- Enthusiastic participant in literary and debating activity at college level.
- Favourite creative outlets are Playing Table Tennis, Reading Novels, Watching movies, Social Work: 'Put on Ur Sweaters' a campaign in which we collected waste clothes from our hostel mates and distribute to the poor

Achievements

Awards and other Achievements

- Coordinator: Energy Day 2010, DESE IIT Bombay
- Public Relations & Alumni Secretary of Hostel 12, IIT Bombay
- Secured 2nd prize at technical quiz Turbulence, Cognizance-08, IIT Roorkee.
- Secured 3rd prize in Inter School Debate Competition at St Xavier's High School, Patna.
- **Secretary Literary Societ**y of Sir Sulaiman Hall and organized ELYSIUM '10
- **Mentor** of @ingenioussolutions and worked as **editor** for @ingenioussolutions newsletter.
- Second runner up in aluminia sponsored Resume Competition, Essay writing, Punchline competition in the college
- Worked in the college's **Broucher making team** and College Web Development Team
- **Organized** Gold Spot, D-Crypt-It at Tekelan'08 Model Mania at Tekelan'09
- All India Rank 523 in GATE 2010 with a **GATE** Score of 642 with 98.99 percentile