

Technical Club : Power Electronics & Devices

CORE DISCIPLINE: ELECTRICAL & ELECTRONICS ENGINEERING

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TECHNICAL BACKGROUND AND UTILITY OF THE CLUB

POWER ELECTRONICS IS INTERDISCIPLINARY IN NATURE AND IS USED IN A WIDE VARIETY OF INDUSTRIES FROM COMPUTERS TO CHEMICAL PLANTS TO ROLLING MILLS. THE IMPORTANCE OF POWER ELECTRONICS HAS GROWN OVER THE YEARS DUE TO SEVERAL FACTORS. MAIN AMONG THESE ARE THE ADVENT OF SMART POWER DEVICES AND THE INCREASING GLOBAL CONCERNS ABOUT THE EFFECTS OF ENVIRONMENTAL POLLUTION. SMART POWER ELECTRONICS DEVICES ARE EXPECTED TO BECOME UBIQUITOUS AND REVOLUTIONISE THE WAY POWER IS HANDLED AND TO ENSURE BETTER UTILISATION OF EXISTING CAPACITY. THIS HAS RESULTED IN RESEARCH INTO ACTIVE POWER FACTOR CORRECTION, HARMONIC COMPENSATION ETC., AND ASSUMING GREAT SIGNIFICANCE.

POWER ELECTRONICS PLAY A CRITICAL ROLE IN TRANSFORMING THE CURRENT ELECTRIC GRID INTO THE NEXT-GENERATION GRID. INCREASED *POWER ELECTRONICS* INTEGRATION INTO THE ELECTRIC GRID PROVIDES: (1) INCREASED GRID RELIABILITY; (2) COMPELLING COST SAVINGS; AND (3) LARGE ENVIRONMENTAL BENEFITS AND ENERGY SAVINGS.

POWER ELECTRONICS APPLICATIONS ARE VERY VARIED AND COVER VIRTUALLY ALL TYPES OF INDUSTRIES. A FEW OF THE APPLICATIONS ARE:

- SWITCH MODE POWER SUPPLIES (SMPS)
- UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEMS
- PHOTO-VOLTAIC AND FUEL-CELL POWER CONVERSION SYSTEMS
- RECTIFIER SUPPLIES FOR ELECTROCHEMICAL PROCESSES
- INDUCTION HEATING
- DC AND AC SERVO DRIVES
- ELECTRIC VEHICLE APPLICATIONS
- ELECTRIC TRACTION
- FLEXIBLE AC TRANSMISSION SYSTEMS (FACTS)

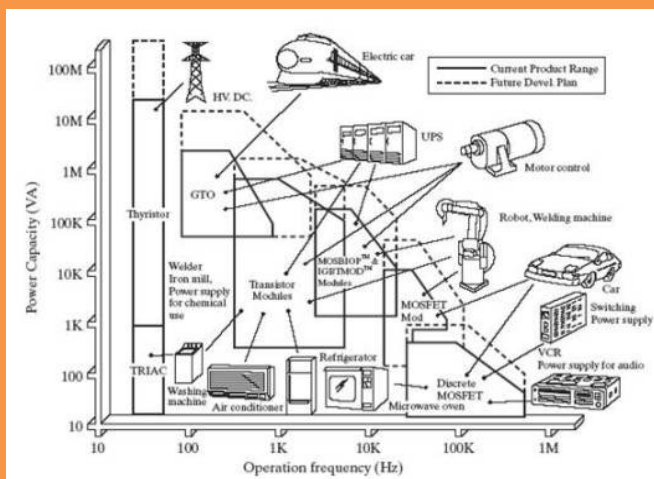
THE ASSOCIATION WITH THIS CLUB WILL CREATE INTEREST OF STUDENTS IN THIS TECHNOLOGICAL DOMAIN AND INSPIRE THEIR CREATIVITY TO INNOVATE THROUGH PRACTICAL LEARNING AND APPLICATION ORIENTED MINDSET. UNDOUBTEDLY, THIS IS THE ASPECT MAINLY SEEN IN THE ENGINEERING PROFESSION AND THUS

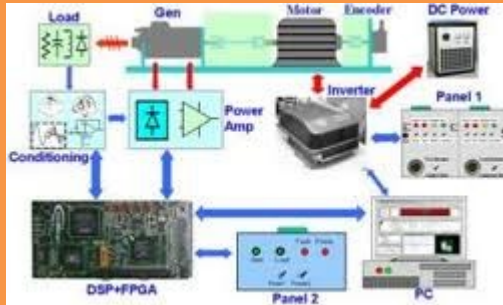
DEFINITELY BOOSTS THE CAREER PROSPECTS AND EMPLOYABILITY. WITH COMPETENCE IN THIS DOMAIN, STUDENTS COULD POSITIVELY LOOK FOR EXCITING CAREER IN ELECTRICAL MACHINE AND INSTRUMENTATION INDUSTRIES, PREMIER RESEARCH ORGANIZATIONS LIKE: ISRO, DRDO, ETC.

ACTIVITIES TO BE CONSIDERED UNDER THE CLUB:

THE ACTIVITIES OF THE CLUB HAVE BEEN WELL FORMULATED TO DEVELOP INTEREST AND COMPETENCE OF THE STUDENTS IN THE RELATED TECHNOLOGIES WITH EMPHASIS ON APPLICATION ASPECTS OF THE CONCEPTS. FOLLOWING ACTIVITIES HAVE BEEN CONSIDERED:

- LEARNING THROUGH TECHNICAL MAGAZINES AND JOURNALS.
- FABRICATION OF SMALL CIRCUIT BASED ON SCRS, MOSFETS, IGBTs AND OTHER POWER ELECTRONICS COMPONENTS.
- FABRICATION OF SMALL CONTROL CIRCUITS.
- DEVELOPING INTEGRATION OF POWER ELECTRONICS WITH RENEWABLE ENERGY.
- ENHANCING USE OF POWER ELECTRONICS IN HYBRID ELECTRICAL VEHICLES.
- PAPER WRITING AND PRESENTATION
- QUIZ AND GROUP DISCUSSIONS ON THE CLUB THEME RELATED TOPICS
- CONDUCTION OF WORKSHOPS AND PRACTICAL TRAINING SESSIONS
- INTERACTION WITH EMINENT INDUSTRIAL AND ACADEMIC EXPERTS IN THE DOMAIN OF CLUB THEME
- INDUSTRIAL AND INSTITUTIONAL TOURS
- CONSIDERING INDUSTRIAL R&D PROJECTS IN THE DOMAIN OF THE CLUB THEME





SOME IMAGES OF TECHNOLOGICAL DEVELOPMENT IN THE CLUBS DOMAIN