

AMAL VINOD K.

M.Tech. Student at IIT Palakkad

Thrissur, Kerala - 680312 • +91 75618 20170 • amalvinodkallumpuram3@gmail.com

<https://www.linkedin.com/in/amalvinodk/>

EDUCATION

M.Tech. in Power Electronics & Power Systems <i>Indian Institute of Technology, Palakkad</i>	2024 – Present CGPA - 9.3 (Current)
B.Tech. in Electrical & Electronics Engineering <i>Government Engineering College, Thrissur</i>	2020 – 2024 CGPA – 8.82 (First Class with Distinction)
Higher Secondary • Biology Science <i>Government Higher Secondary School, Mupliyam, Thrissur</i>	2018 – 2020 Grade – 98.6%
SSLC • Science <i>St. Mary's High School, Chengaloor, Thrissur</i>	2018 Grade – 100%

SKILLS

- ▷ **Technical Skills:** C, Python, STM32, Arduino, TI C2000, Renesas RX24T Microcontrollers, Circuit Design, PCB Design, Control System Design
- ▷ **Soft Skills:** Effective Communication, Technical Documentation, Troubleshooting, Team Collaboration, Critical Thinking, Time Management, Adaptability
- ▷ **Software:** MATLAB & Simulink, Altium Designer, KiCad, PSCAD, LTspice, CCS, Keil μ Vision, STM32CubeMX, PLECS, CS+ for CC, TeXstudio

MAJOR ACADEMIC PROJECTS

MPPT using a Synchronous Buck Converter (Course Project)

- ▷ A synchronous buck converter was designed, simulated using MATLAB/Simulink, and implemented to extract maximum power from a PV panel for battery charging application.
- ▷ PCB was designed using Altium Designer, the inductor was designed and hand-wound, the PI controller constants were properly designed using the Bode plot approach, the Incremental Conductance method was employed for MPPT, and the TI LAUNCHXL-F28069M development board was used for the digital implementation.
- ▷ The project was successfully completed and was done as part of the course project for the Renewable Energy Systems course under the supervision of Dr. Naga Brahmendra Gorla, IIT PKD.
- ▷ LinkedIn post link - MPPT using a Synchronous Buck Converter

Single-Phase D-STATCOM (Final Year B.Tech. Project)

- ▷ A Single-Phase Distribution STATCOM was designed, simulated using MATLAB/Simulink, and implemented for compensating the reactive and harmonic currents.
- ▷ Various PCBs were developed using Proteus, including isolated power supply boards needed for the gate drivers. The STM32F407VET6 development board from STMicroelectronics was used for the digital implementation of the control algorithm.
- ▷ The hardware setup was developed and satisfactory results were achieved in separating out the harmonic and reactive components of load current and obtaining successful compensation.
- ▷ LinkedIn post link - Single-Phase D-STATCOM

PROFESSIONAL EXPERIENCE

FLUDYN Advanced Technology Centre, CRI Pumps

Research and Development Intern

(Final Year M.Tech. Project)

05/2025 – Present

- ▷ Working on a power blending system for industrial pumps, integrating a PFC H-Bridge from the grid and a PV panel via a boost converter operating under MPPT. Both sources feed a common DC bus, which drives a motor through a VSI. The control strategy prioritizes solar input, with the grid compensating for any deficit.
- ▷ The total system was designed and simulated using both MATLAB/Simulink and PLECS. The PCB was designed using Altium Designer, and the Renesas R5F524TAAxFF microcontroller is being used for the digital implementation of the control. Additionally, losses for different PFC topologies were calculated as part of a comparative study.
- ▷ Involved in system design, controller design, PCB design, algorithm development, digital implementation of the algorithm, hardware development, and hardware testing.
- ▷ This project is carried out for CRI Pumps, which is considered as my final year M.Tech project, and is done under the guidance of internal guide Dr. Naga Brahmendra Gorla, IIT PKD, and external guide Mr. Shivashankar Gunaki, CRI Pumps.

ACCOMPLISHMENTS

- ▷ **GATE 2024 Qualified:**
Scored 446 and secured an All India Rank of 3423 out of 59,599 candidates in the Electrical Engineering (EE) paper.
- ▷ **National Engineering Olympiad (NEO) 4.0:**
Secured All India Rank 6 in the nationwide exam conducted in July 2021.
- ▷ **Formula Bharat 2024:**
Achieved AIR 14 with Team PetronARC, becoming the first team from Kerala to clear all technical inspections in the competition's history.