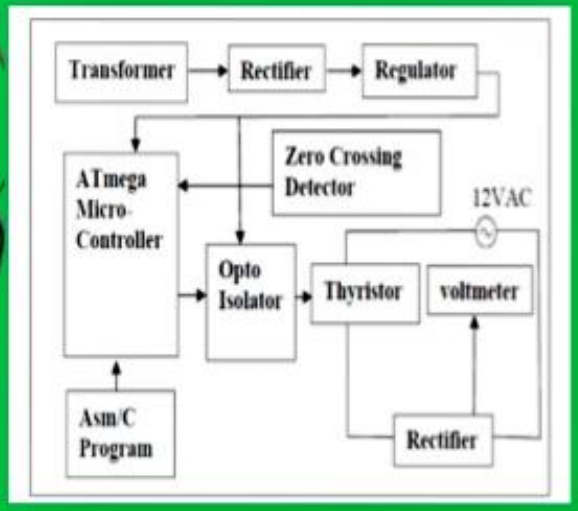
THYRISTOR FIRING ANGLE CONTROL FOR BATTERY CHARGING

Sinhgad Institute

GUIDED BY :-
MRS. K. C. WANZARE

Group No. - T16 _6

Presented By : Nakul Dandekar
Prathmesh Girme
Pratik Jadhav



Abstract

The project aims to charge batteries using DC power obtained from an AC power supply through a thyristor-controlled rectifier system. The AC power supply is controlled by a microcontroller using a bridge rectifier composed of diodes and a triac. The system uses a comparator to detect the zero-crossing point of the waveform, and the microcontroller provides delayed triggering control to the triac through an optoisolator interface to power the load through the triac in series with the bridge rectifier. The output DC is measured using a multimeter and can be adjusted using push button switches connected to the microcontroller.

CONCLUSIONS

- Thyristor firing angle control can effectively control battery charging
- Efficiency and effectiveness depend on battery type, charging current, and temperature
- Microcontroller-based control offers more precise and flexible control than traditional methods
- Areas for improvement may include reducing losses and implementing more advanced algorithms
- Project demonstrates feasibility and potential benefits of thyristor firing angle control for battery charging
- Provides foundation for further research and development in this area.

ADVANTAGES

- Energy-efficient.
- Cost-effective
- Customizable
- User-friendly

FUTURE SCOPE & APPLICATIONS

- Thyristor Firing Angle Control For Battery Charging project has future scope and potential applications.
- The project can be integrated with renewable energy systems for regulating battery charging.
- It can be used to charge and regulate batteries of electric vehicles to optimize battery life.
- The project can be applied in industrial automation for backup power sources of critical systems.
- It can be integrated into smart homes for controlling the charging of backup batteries during power outages.
- The project can be utilized for charging batteries of portable devices such as laptops, mobile phones, and tablets.
- The project can serve as a research and development platform in power electronics and battery charging.
- It can be used to charge batteries of electric power tools and as backup power sources for critical systems.