

## About the centre

The Bosch Rexroth-CET Centre of Excellence in Automation Technologies is a joint initiative of Bosch Rexroth, Germany and Government of Kerala for imparting hands on training with latest components used in the area of industrial automation such as hydraulic drives, pneumatic drives, proportional hydraulics, sensors, PLCs, mechatronics, robotics, motion logic controllers etc.

The primary objective of the centre is to bridge the gap between the Industries and the Academics. Centre caters to the needs of Polytechnics, Vocational Institutes, Engineering Institutes and Industries in the field of automation technology. The centre has dedicated faculty trained by Bosch Rexroth from College of Engineering, Trivandrum.

The centre aims at training industries personal and students of various institutions from +2, ITI, Diploma, Engineering degree and PG level in Automation field to enable our industry personnel, faculty and students to have hands on experience and upgradation of technical skills which are essential for industrial progress.

## VISION

Be a world class training institute in Automation, recognized as employment generator through true commitment of quality, training and corporate social responsibility.

## MISSION

- \* Emphasis on transferring knowledge to each and every student in the area of Automation by providing the latest technological inputs required to all aspirants in the field of Automation.
- \* To bridge the gap between formal education and the demand of personnel of industries at supervisory level.
- \* To provide ecosystem for people to meet technological changes, maintain a close relationship

with the practitioners of engineering disciplines to gain insight in to program development and outcome assessment

- \* Introduce short term and long term job oriented courses.
- \* Emphasis on training middle Management personnel of industry.

## OBJECTIVES:

- \* To bridge the Technical gap, Improve the technical competence, Employability and Entrepreneurship with a focus on the students of rural segment.
- \* To impart training to students of the PG, UG and diploma to meet industry requirements.
- \* To promote and support the education and training needs of industry personnel.
- \* To provide an insight in to major research in the field if Automation Technology.



**Rexroth**  
Bosch Group

## COLLEGE OF ENGINEERING TRIVANDRUM

### BOSCH REXROTH CET CENTRE OF EXCELLENCE IN AUTOMATION TECHNOLOGIES



*Contact us:*

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## FACILITIES OF THE CENTRE

- \* Hydraulic kit- 6 nos.
- \* Pneumatic kit- 6 nos.
- \* PLC kit- 6 nos.
- \* Sensoric kit- 4 nos.
- \* Differentially driven mobile robot – 1 nos.
- \* Quadcopter – 1 nos.
- \* ABB manipulator – 1 nos



## Course Contents

### BASICS

- \* Introduction to hydraulics, pneumatics and electric drives.
- \* Physical fundamentals and principles
- \* Hydraulic and pneumatic components
- \* Basic hydraulic circuits
- \* Instructions, guidance and review for practical hydraulics
- \* Principles of Electro-Hydraulics and electro-pneumatics



- \* Time-dependent control
- \* Symbolic representation of devices
- \* Standards Relay Logics
- \* Electro-Pneumatics,
- \* Programmable Logic Controllers
- \* Interfacing hydraulic and pneumatic system with PLC
- \* Study of different types of sensors and their application.
- \* Hands on Training on Pneumatic, Hydraulic, Electro-Pneumatic circuits, electro hydraulic and Interfacing hydraulic and pneumatic system with PLC.

### Basics Of CNC programming

- \* G codes and M codes. Advanced programming techniques using
- \* Basic machining cycles
- \* Advanced machining cycles
- \* Canned cycles
- \* Mirroring commands
- \* Subroutines (Subprogram)
- \* Hands on training sessions using Vertical Machining Centre

### Robotics

- \* Introduction - Definitions, Robot Elements, links, joints, end effector, actuators.
- \* Robot specifications, Work envelope of different robots, Classification of Robots.
- \* Sensors in Robotics - Status sensors, Environment sensors, Quality control sensors, Safety sensors.

### Mobile robots

- \* Steered and differentially driven robots, Quadcopter.
- \* Hands on training on differentially driven robots, quadcopter, manipulator.

## COURSES OFFERD AND FEES STRUCTURE

1. 120 Hrs automation course on Robotics and Industrial Automation - Rs. 7500/-
2. Industrial Training Programme (14 days 70 hrs) - Rs. 4000/-

The 70 hours training programme on industrial automation provides a certificate that comply to the compulsory training program for Diploma students as per their curriculum.

3. Internship Programme (5 days - 30 hrs) - Rs. 1800/-

The 30 Hrs program on internship automation provides certificate that comply to the compulsory internship programme as per APJ Abdul Kalam Technological University.

- \* Overview of proportional valve technologies.

### Valves

- \* Brief review of conventional valves
- \* Component design of – Proportional, Directional, Pressure and Flow control valve directional servo and pressure servo valves and electro hydraulic
- \* Electronic controls and PLC applications
- \* Typical continuous control hydraulic circuits

### Controls

- \* Pneumatic, hydraulic, and electric controls of valves
- \* Position control: Limit switches and sensors
- \* Speed control: Uses of throttle valves
- \* Logic control: AND/OR valves
- \* Pressure control: Uses of adjustable pressure sensors