

## **Write-up for Brochure**

### **Center of Excellence- SMC Pneumatics lab**

#### **Department of Mechanical Engineering, I.T.S Engineering College, Greater Noida**

SMC Pneumatics- Centre of Excellence was established in 2015 under the Mechanical of Mechanical Engineering in collaboration with SMC Pneumatics India Pvt. Ltd- The world's largest manufacturer of pneumatic components. The centre provides the platform for Training, Interdisciplinary Research, and Projects & Industrial Solutions in the field of Industrial Automation in the field of Pneumatic Technology. The center is open for Engineering Students, Industry Personnel and Research Scholars.

#### **Vision:**

- To be a leading center for Fluid Power Solutions in Academia and industrial world.

#### **Mission:**

- To make active center to explore avenues for need based learning and implementation in automation.

#### **Objectives:**

- To develop skill of automation through international level training
- To provide consultancy for Industrial Automation
- To provide platform for Projects, Research and Innovation

#### **Center Focuses on:**

- Skill development
- Industrial solution for automation
- Innovation platform for UG/PG students
- Workshops on pneumatic technology

#### **Training and Courses Offered**

##### **Module 1: Basic Pneumatics (24 Hours)**

- Properties of compressed air and its area of application
- Basic pneumatic system and compressed air theory
- Description of different types of pneumatic compressor and their efficiencies
- Compressed air production, purification and distribution
- Explanation of different air filtering, regulation, and lubrication techniques
- Construction and principle of operation of actuators and directional control valves
- Familiarization with pneumatic symbols-ISO 1219/559

## **Module 2: Basic Electro-Pneumatics (24 Hours)**

- Economical and technical aspects of Electro-Pneumatic Systems
- Basic electric theory
- Construction and principal of operation of Electro-Pneumatic Components
- Electrical symbols DIN and ladder diagram
- Reading/designing and control schematics
- Safety requirements in pneumatic systems

## **Module 3: Elementary Pneumatics (16 Hours)**

- Brief introduction of basic components of pneumatic system and practical.

## **Module 4: Customized Corporate and Student Training Programs**

### **Eligibility and Pre-requisites**

- Open to students of Mechanical, Electrical, and Electronics Engineering disciplines
- Participants should have a basic understanding of engineering fundamentals (mechanics, circuits, and control systems)
- For advanced certification courses, completion of the Basic Pneumatics module is recommended
- Industry professionals and faculty members are also eligible for specialized training sessions

### **Course Timelines and Roadmap**

The COE training roadmap is structured as follows:

<b>Phase</b>	<b>Module</b>	<b>Duration</b>	<b>Semester</b>	<b>Focus Area</b>
Phase 1	Basics of Pneumatic Technology	24 Hours	5th	Basic Pneumatics (Theory + Practice)
Phase 2	Basics of Electro-Pneumatic Technology	24 Hours	6th	Basic Electro-Pneumatics (Theory + Practice)
Phase 3	Projects	Continuous	7th and 8th	Final Year Projects and Industrial Internships

### **Learning Outcomes**

- Understand the fundamentals of Pneumatics, Electro-Pneumatics, and Automation Systems
- Gain hands-on experience in the operation and maintenance of pneumatic circuits
- Understand various disturbances, causes and rectification of faults in pneumatic cylinders and valves
- Develop skills in designing, assembling, and troubleshooting pneumatic systems
- Strengthen problem-solving and project implementation skills relevant to industry applications

### Certifications Offered

- Centre of Excellence Participation Certificate from I.T.S Engineering College
- Eligibility for industry internships and project assistance under SMC and partner companies

### Lab Activities and Guidelines

- Regular hands-on sessions, mini-projects, and enhancement trainings for students.
- Industry expert lectures and technical workshops are conducted regularly.
- Students must design circuits, perform experiments and analyze system performance.
- Lab access is restricted to trained and authorized participants under faculty supervision.
- Safety norms, tool handling, and operational protocols must be followed at all times.

### External Certification Courses on Pneumatics:

Sr. No.	Course Name / Certification	Company / Institute	Approximate Cost (INR)
1	Basic Pneumatics	SMC Pneumatics India Pvt. Ltd.	7000/-
2	Advance Pneumatics	SMC Pneumatics India Pvt. Ltd.	10500/-
3	Basic Electro-Pneumatics	SMC Pneumatics India Pvt. Ltd.	7000/-
4	Advance Electro-Pneumatics	SMC Pneumatics India Pvt. Ltd.	7000/-
5	Industry 4.0	SMC Pneumatics India Pvt. Ltd.	13000/-
6	Proficiency in Pneumatics	FESTO India Pvt. Ltd.	15000/-
7	Basic Pneumatic Training Course	FESTO India Pvt. Ltd.	8000/-
8	Basic Electro-Pneumatics Training	FESTO India Pvt. Ltd.	10000/-
9	Oil Hydraulics & Pneumatics (NPTEL/SWAYAM)	IIT Madras (NPTEL)	Free (course material)1,000 for certificate exam
10	Hands-on Pneumatic and Automation Workshops	Pneumax Academy (CETOP-certified)	Varies, generally available upon inquiry

### Career Opportunities in Pneumatics:

Job Role	Description	Approximate Salary (INR)
Pneumatics Technician	Maintain, troubleshoot pneumatic systems in production	3.0 - 6.0 LPA
Maintenance Engineer	Oversee maintenance of pneumatic and hydraulic systems	3.0 - 6.0 LPA
Project Engineer (Pneumatics)	Manage pneumatics projects including design and execution	6.0 - 12.0 LPA

Automation Engineer	Integrate pneumatics with PLC, SCADA for automation	5.0 - 12.0 LPA
Service Engineer	Provide onsite pneumatic system support and repairs	3.0 - 7.0 LPA
Sales Engineer (Technical)	Technical sales and customer support for pneumatic products	4.5 - 8.0 LPA
Mechanical Design Engineer	Design pneumatic systems and components using CAD tools	4.0 - 10.0 LPA
Lead Mechanical Commissioning Engineer	Lead commissioning/testing of pneumatic systems	10.0 - 18.0 LPA
Software Engineer (Pneumatic Automation)	Develop software for pneumatic systems control and monitoring	12.0 - 27.0 LPA

### Top Recruiters in India Hiring Pneumatic Engineers:

Sr. No.	Company Name	Major Indian Locations
1	SMC Pneumatics India Pvt. Ltd.	Noida, Chennai, Ahmedabad, Bangalore, Pune, Kolkata, Mumbai, Hyderabad, Delhi, Gurgaon, Chandigarh
2	Festo India Pvt. Ltd.	Bengaluru, Pune, Chennai, Gurugram
3	Emerson Electric Co.	Pune, Chennai, Noida, Mumbai
4	Janatics India Pvt. Ltd.	Coimbatore, Chennai, Pune
5	Airmax Pneumatics Ltd.	Ahmedabad, Pune, Delhi
6	Parker Hannifin India	Chennai, Mumbai, Ahmedabad, Pune
7	Chicago Pneumatic	Pune, Ahmedabad, Chennai, Faridabad
8	SPAC Pneumatic	Delhi NCR, Noida
9	IPH (Indian Pneumatic & Hydraulic)	Maharashtra, nationwide
10	Cummins India	Pune, Delhi