

CONTINUING EDUCATION PROGRAMME (CEP)

INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR



A Workshop on

INDUSTRIAL HYDRAULICS AND PNEUMATICS

(14th, 15th & 16th February 2014)

Duration: 3 Days

Instructor: Prof. N. Ramakrishnan

1. Introduction

Industrial oil hydraulics is a technology widely used in all strategic industries – for controls in Aerospace industry, in Earthmoving equipments, Heavy Presses, Huge cranes and Material handling systems, Injection moulding and Diecasting machines, Automobiles, Machine tools, Medical equipment etc.

Industrial Pneumatics, using compressed air, is another versatile technology

With wide applications in Packaging, Printing, Painting, Bulk Material Handling etc

A good awareness & appreciation of these technologies will be valuable to any engineer involved in design /development / maintenance of almost all machinery & equipment in any industry.

2. Scope

The 3 day workshop starts from basics and then goes on to develop skill in designing simple circuits (hydraulics, pneumo-hydraulics, electro-hydraulics, pneumatics, electro-pneumatics etc.). Some hands –on will be added for practical understanding.

3. Course Contents

There will be 12 modules (4 of 1½hours each on each day).

It will include lectures, videos, case studies, lab demo, etc.

Module 1	Introduction to Oil Hydraulics & Pneumatics. Comparison with Electrical and Mechanical Systems. Hybrids-Influence of Mechatronics.
Module 2	Elements of Hydraulic Systems - The Power Pack – Elements of Power Pack – Positive Displacement Pump – Fixed Delivery/Variable Delivery. Pump Characteristics. Relief Valve & Safety Valve. Strainer & Filter. Tank – Baffles – Heat Exchanger. Hydraulic Oil – Characteristics – Selection.
Module 3	The Actuator – Rotary, Oscillatory & Linear. Types of Actuators – Force Speed / Torque Speed Diagram. Selection of Actuator. Speed Control.
Module 4 & Module 5	Control Valves. Flow, Pressure & Direction Control .Types. Pressure & Temperature Compensation. Meter-In, Meter-Out & Bypass Circuits. Auxiliary Devices – Accumulators & Intensifiers. Operating Principle, Characteristics & Applications. Plumbing:- Pipes & Tubes- Installation.
Module 6	Development of Simple Hydraulic Circuits. Proportional Valves – Types, Characteristics, Applications. Illustrative Examples.
Module 7	Introduction to Servo-hydraulic Systems.
Module 8	Pneumatics-Compressed air-generation, control & distribution. Conditioning. Differences in Pneumatic Components &Circuits
Module 9	Electric control –Simple ladder Circuits, Control panel.
Module 10	Development of Pneumatic Circuits.
Module 11	Lab session.
Module 12	Brain Storming & Concluding Session.

4. Who can be benefited?

All Faculties & ME/M.Tech/PhD Students of Mechanical Engineering, & Allied Branches
Participants from Industry should have minimum diploma in mechanical engineering,
preferably Degree. All the presentations will be in English.

5. REGISTRATION:

The course fee is Rs. 15,000/- (Rupees Nine Thousand Only) per faculty/ participant.

For ME/M.Tech/PhD Students: Rs. 7,500/- (Rupees Seven Thousand Five Hundred only)

NOTE:

Registration is on First-cum First-served basis

Last Date for registration: 12th Feb 2014.

Please make payment On or Before 13th Feb. 2014

The fee includes Course Material, Tea and working lunch during the course days.

Kindly note that TDS is NOT to be deducted from the course fee payments as IIT Gandhinagar is exempt from the same.

(Relevant documents can be provided on demand)

Name of Account : IIT Gandhinagar Project & Consultancy Account
**Address of Bank : Devpreet Complex, Opp. Engineering College,
Sabarmati, Ahmedabad - 382424**
Name of Bank : State Bank of India
Name of Branch : IIT Gandhinagar Branch
Account No. : 30826075384
Branch Code : 11770
IFS/ RTGS Code : SBIN0011770
MCIR Code : 380002106
Swift Code : SBININBB417

Faculty



Dr. N. Ramakrishnan was in IIT Bombay, Mechanical Engineering Department for more than thirty years doing teaching, research, consultancy, etc. having close interaction with many industries like L&T Mumbai, Godrej & Boyce Mumbai, Bajaj Auto Pune, Cadilla Labs Ahmedabad, IFB Bangalore, Ashok Leyland Chennai, Hero Motors Gurgaon etc.

He has conducted this course many times in the past for engineers from Industry.

Experts from industries with long experience will be associated.

Contact Details

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