INTRODUCTION:

The common challenge that large and small business enterprises face today is to demonstrate sustained superiority in their products/services to increasingly demanding customers. Besides competitive pricing, and assured delivery, this translates into demands for shorter time frames for new product launch, high flexibility to meet changing customer preferences, smooth and quicker changeover to new processes, and assured, sustainable quality levels. Attrition of experienced factory workforce further compounds the problems. Under these circumstances, organisations seek answers to the following challenges:

- How to ensure consistency in product quality in spite of workmen with widely varying experience levels?
- How to modify plant operations to incorporate customer preferred changes, with minimum shutdown periods?
- How to exploit the benefits of high automation levels at low cost and even for smaller applications?

One significant technological development providing solutions to the above is the PLC (programmable logic controller). PLCs offer the combined advantage of the latest computer based process control features and strategies and at a fraction of the cost of earlier computer based systems.

PLCs which earlier were capable of performing only binary or logic associated on-off functions now have enhanced capabilities. They can additionally perform advanced functions such as PID control, motion control and math control, and have evolved into Programmable Automation Systems.

Besides, PLCs are capable of working reliably even in harsh industrial environments, giving plant owners confidence and assurance to go digital. They also need significantly smaller space and consume much lesser power compared to conventional equivalents.

Most significantly PLCs make all the above possible at a fraction of the cost of systems such as the Distributed Control Systems. The PLC has thus democratised the fruits of high levels of automation and brought its benefits within the reach of even medium and small level enterprises.

This training programme has accordingly been conceived, designed, and structured with the objective of spreading the above message and showing how PLCs can be profitably used to achieve high reliability, productivity and flexibility and at low cost.
COURSE OBJECTIVE:

✓ To appreciate demands placed on instrumentation and control systems by present business environment.
✓ To understand basics of PLCs and their advantageous use for control and automation.
✓ To become familiar with high quality control strategies for safe, reliable and fault-tolerant operation.
✓ To understand how to use benefits of high level automation at “down to earth” costs.
✓ To enable workforce experienced only in hardwired controls to migrate smoothly to digital automation.

METHODOLOGY:

✓ Highly interactive participative learning.
✓ Practically oriented training programme with emphasis on “how to?”
✓ Understanding of key concepts and techniques reinforced through structured exercises.
✓ Intellectual impact to participants provided through selected case studies.

TARGET PARTICIPANTS:

This programme is particularly structured for:

Executives/managers from middle to senior levels as well as functional heads in Production, Operations, Maintenance:-Instrumentation/Electrical/Mechanical, R&D, New Product Design and Development, Process Control, Reliability / Quality Control, Quality Assurance functions.

It will also enable senior executives associated with Organisational Strategy, Planning, Marketing, Sales Finance, and allied functions to take relevant critical decisions in an informed manner.

INDUSTRIES:

✓ Energy / Utilities / Airports and Ports.
✓ Metals.
✓ Oil & Gas / Chemical / Petrochemicals/Fertilisers/ Pharmaceuticals.
✓ Food and Beverages.
✓ Cement / Paper and Pulp / Packaging.
✓ Manufacturing / Automotive / FMCG.
✓ Material Handling.
✓ Logistics: Warehouse / Store Management.
✓ Mining.
✓ Building Automation (for gated communities, housing complexes etc.)

Programme Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 am</td>
<td>Registration and Coffee</td>
</tr>
<tr>
<td>09:30 am</td>
<td>Workshop Commences</td>
</tr>
<tr>
<td>11:00 am to 11:15 am</td>
<td>Tea Break</td>
</tr>
<tr>
<td>01:00 pm to 02:00 pm</td>
<td>Lunch</td>
</tr>
<tr>
<td>03:30 pm to 03:45 pm</td>
<td>Tea Break</td>
</tr>
<tr>
<td>05:30 pm</td>
<td>Course Ends</td>
</tr>
</tbody>
</table>

Register Today:

Tel: +91 22 6711 2444
Mob: +91 9769545325
E-mail: rishab@hmg.org.in / hrdind@hmg.org.in

Tel: +91 22 6711 2444
Mob: +91 9769545325
E-mail: rishab@hmg.org.in / hrdind@hmg.org.in
Meet Your Expert Coach:
Mr. M. Venkat Ram

The Faculty, Mr M Venkat Ram is presently a freelance trainer and facilitator in Technical, Management and Business Excellence related areas for corporates as well as institutions. He also serves as Academic Supervisor, Project Guide and Examiner for Warwick University U.K. for its M.Sc (Engineering Business Management) Post-Graduate Degree Programme.

He was formerly Deputy General Manager, TATA POWER, the largest private electric utility in the country, and also former Senior Consultant, TATA Quality Management Services.

He has over 40 years of combined experience at TATA POWER - Mumbai, SIEMENS AG-Germany, Tata Quality Management Services - Mumbai and as invited Guest Faculty at institutes such as CII, and corporate training centres of a number of organisations.

His experience spans several areas including engineering, design, instrumentation and control, process automation including PLC application software development and its commissioning, technical training, training simulators, remnant life analysis and refurbishment of power plant equipment, besides Total Quality Management & Business Excellence.

After graduating in Electrical Engineering he underwent Post Graduate Studies and Training at the SIEMENS SCHOOL OF PROCESS COMPUTING TECHNIQUES at Karlsruhe, Germany, specialising in high reliability application software development for PLCs. This was followed by work experience at the corresponding divisions in SIEMENS A.G., Germany, under the CDG (Carl Duisberg Gesellschaft) Scholarship.

He was largely instrumental in developing the PLC application software library for the automatic sequence control and high reliability protection system applications of SIEMENS SIMATIC systems for the country’s first 500MW thermal power generating unit at TATA POWER, Trombay. Also for other applications as well as for several interactive PLC based Training Systems.

Mr Venkat Ram is a popular trainer on PLCs, Digital Process Control & Automation, Process Simulation, Math Modelling and several other related topics. He has been conducting scores of training programmes on these and related topics nationally and internationally for profiles of participants ranging from raw beginners to PLC/digital automation system manufacturers / designers. He does this to share his experience and expertise in this field and to suggest new product/ system design features and characteristics

Mr Venkat Ram was invited by the German Government in the years 2009, 2010 and 2011 to participate in the International Entrepreneurial Leadership Conference in Hannover, held concurrent with the Hannover Messe - the world’s largest technical exhibition and technology exposition.

He has also undergone training in Total Quality Management at JUSE (Japanese Union of Scientists and Engineers) in Japan. While at TQMS, he has also had the opportunity of working with leading Japanese Gurus such as Masaki Imai in driving improvement initiatives in TATA Group organisations.

Based on the above expertise and experience, Mr. Venkat Ram presently conducts training workshops for Corporates and Institutions to facilitate practically oriented training programmes in technical, management and business excellence related areas.
Day - 1

FORENOON

Overview of Typical Control and Automation Systems
Functional Requirements & Introduction to PLCs (Programmable Logic Controllers)

- Functional Requirements of Typical Instrumentation, Control and Automation Systems.
- Business Imperatives in prevailing highly competitive business environment and their demands on Instrumentation, Control and Automation Systems.
- Evolution of PLCs.
- Introduction to PLCs.
- Programmable Logic Controllers and Programmable Automation Systems.
- Exercises.

**ACTIVITIES**: Presentation cum Discussion, Individual Exercises.

**BENEFITS**: After this session participants will be able to clearly understand the functional requirements of individual aspects of typical modern control and automation systems.

They will appreciate the demands that the prevailing competitive business environments place on the functions and capabilities of such modern control systems.

They will also gain an introductory level familiarity with PLCs and their capabilities.

AFTERNOON

Converting Functional Requirements to Schematics For Given PLC Based Applications & PLCs and Major Components

- PLC Basic Building Blocks: LOGIC GATES.
- Exercises.
- DEVELOPING CONTROL SCHEMATICS: Converting Functional Requirements to Control Schematics.
- Exercises.

**PLC and Major Components:**

- INPUT / OUTPUT / LOGIC DEVICES.
- PLC HARDWARE MODULES.
- PLC PROGRAMMING LANGUAGES.
- PLC USER INTERFACES.

**ACTIVITIES**: Presentation cum Discussion, Case Studies, Individual / Group Exercises

**BENEFITS**: After this session participants will understand individual Logic Gates and their respective functions as building blocks for using PLCs. They will then be able to translate desired functional requirements into control schematics using such logic gates.

Participants will gain familiarity with typical input, output, and logic devices used in control systems. They will also understand the structure and functions of the Programmable Logic Controller, its individual major hardware components, programming language types as well as user interfaces available.
Day - 2

FORENOON

PLC Programming & Implementing PLC Based Control System For A Given Application Case Study

PLC Programming:
- Input / Output Addresses
- Programming Instructions

Exercise: Defining functional requirements & developing control logics using I-O Addresses.

Implementing Control & Automation Applications using PLC for a given Application Case Study:
- Understanding The Case Study Application: Exercise & Demo.
- Defining Functional Requirements: Exercise & Demo.
- Developing Control Schematics: Exercise & Demo.
- Assigning Input – Output Addresses: Exercise & Demo.
- Preparing a PLC Programme using Ladder Diagram: Exercise & Demo.

Real Life PLC Based Project Execution: Steps and Activities.

ACTIVITIES: Presentation cum Discussion, Case Studies, Group Exercise cum Presentation (including participants defining functional requirements, developing control schematics and writing ladder diagram programmes for a given Case Study Application).

BENEFITS: After this session participants will understand Input/Output Addresses, how to allocate addresses and how to write PLC ladder programmes using such I/O addresses. Participants will then become familiar with the actual individual steps involved in implementing PLC-based control and automation applications through a series of exercises followed by demos. They will also get exposed to the detailed sequence of steps and activities involved in implementing real life PLC based control and automation projects.

AFTERNOON

Techniques For Enhancing Reliability of PLC Based Control and Automation System & Comparison of Conventional Hardwired and PLC Based Control Systems:

Reliability Enhancement in PLC Applications:
- Factors Influencing Successful Project Execution of PLC Based Systems.
- Intelligence Engineering.
- Superior Control Strategies and Algorithms.

Real Life Experience Sharing on “Commissioning Of Large PLC Projects”:
- Typical Project Related Activities.
- Learning: Dos and Don’ts.

Comparison of Conventional Hardwired and PLC Based Control and Automation Systems:
- Features.
- Costs.

Brief Overview:
- SCADA: Supervisory Control and Data Acquisition Systems.
- DCS: Distributed Control Systems.

Exercise: Preparing Post Training Workshop Action Implementation Plan:
- Open House.
- Feedback.

ACTIVITIES: Presentation cum Discussion, Exercises, Real Life Case Studies and Experience Sharing.

BENEFITS: After this session participants will become familiar with various techniques used to enhance the reliability of PLC based applications. Based on first-hand experience sharing of the design and commissioning of very large PLC application projects by the faculty, participants will become familiar with the corresponding learning, i.e. Dos and Don’ts of such projects. They will be able to compare the features and costs of control and automation applications using conventional hardwired logic and the PLC based version, necessary to take associated techno-economic decisions. They will also gain a brief introductory level understanding of SCADA and DCS applications.
USING PROGRAMMABLE LOGIC CONTROLLERS (PLC) FOR HIGH RELIABILITY, HIGH PRODUCTIVITY AND LOW COST AUTOMATION

“enabling benefits of high level digital process control and automation at down to earth costs”

Register Now
Contact Sales at HMG
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20th / 21st June 2016, Kolkata.

22nd / 23rd June 2016, Chennai.

24th / 25th June 2016, Delhi.

27th / 28th June 2016, Mumbai.

Payment Method
All payment methods should be in favour of “HMG”

☐ Neft ☐ Demand Draft ☐ Cheque ☐ Credit Card

Payment is required within 5 working days on receipt of invoice

Confirmation Details: After receiving payment a receipt will be issued. If you do not receive a letter outlining joining details two weeks prior to the event please contact the training coordinator at HMG training.

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2. Payment Terms: Following completion and return of the registration form full payment is required within 5 days from receipt of invoice. PLEASE NOTE: payment must be received prior to the conference date. A receipt will be issued on payment. Due to limited conference space we advise early registration to avoid disappointment. A 50% cancellation fee will be charged under the terms outlined below. We reserve the right to refuse admission if payment is not received on time. Unless otherwise stated on the booking form payment must be made in pounds sterling.
3. Cancellation/substitution: Provided the total fee has been paid substitutions at no extra charge up to 14 days before the event are allowed. Substitutions between 14 days and the date of the event will be allowed subject to an administration fee of equal to 10% of the total fee that is to be transferred. Otherwise all bookings carry a 50% cancellation liability immediately after a signed sales central has been received by HMG (as defined above). Cancellations must be received in writing by mail or fax six (6) weeks before the conference is to be held in order to obtain a full credit for any future HMG conference. Thereafter the full conference fee is payable and is nonrefundable. The service charge is completely non-refundable and non-creditable. Payment terms are five days and payment must be made prior to the start of the conference. Non-payment or non-attendance does not constitute cancellation. By signing this central the client agrees that in case of dispute or cancellation of this contract that HMG will not be able to mitigate its losses for any less than 50% of the total central value. If for any reason HMG decides to cancel or postpone this conference HMG is not responsible for covering airfare hotel or other travel costs incurred by clients. The conference fee will not be refunded but can be credited to a future conference. Event programme content is subject to change without notice.
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Professional Training Fees

₹ 18,500/- Per Delegate

+ 14.5% Service Tax as Applicable

NON-RESIDENTIAL PROGRAM

All options inclusive of course papers, luncheon refreshments & service charge.

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