

PLC, Telemetry & SCADA Technologies

24th, 25th & 26th
NOVEMBER 2021
DURBAN, SOUTH AFRICA

IN-PERSON | VIRTUAL



PEGANIX

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INTRODUCTION

This is a highly relevant, industrially based training course that will update the skills and knowledge of Technicians and Engineers alike. The training course is 'hands-on' using industry standard PLC's in a simulated environment. Through this approach the delegate will progress from learning the fundamentals of PLC application to writing, debugging and finally designing their own programs.

Radio and wire based telemetry systems, essential for an understanding of modern communication methods deployed in the field are also studied and explained. These are vital for a comprehensive understanding in their use with not only programmable controllers but any Instrumentation/Controller remote application.

The training course also includes a study of modern SCADA technologies. Again, together with a hands-on approach using a modern industrially compliant SCADA software package, the delegate will acquire new and updated skills essential in any fast moving industrial environment.

Some of the main topics covered include:

- A study and explanation of the PLC for Control purposes
- Understanding through 'hands-on' approach using industry standard PLC's in a simulated environment of PLC programming – design and debugging
- Investigation of Radio telemetry methods, frequencies used and application and limitation of each frequency band
- Case study in the design of a Radio Telemetry link
- Study of commonly used wire based telemetry methods and protocols such as RS232 and RS485
- Investigation of SCADA, its structure and application. Understanding of a typical SCADA application through a hands-on approach using an industry compliant SCADA software package

OBJECTIVES

The main objectives of this training seminar are:

- To give an understanding of the operation, architecture and use of an industry standard PLC for Control purposes
- By using a hands-on approach, enable the delegate to investigate the operation of the PLC through designing, building and testing typical programs in the ladder programming language using industry standard PLC's in a simulated environment
- To allow the delegate to become familiar and confident with the PLC, Telemetry and SCADA environments
- To understand the concepts of Radio Telemetry and acquire the knowledge relating to the application, limitation and use of frequency bands used
- To gain an understanding and knowledge of common wire based communication protocols
- To disseminate and share experience and knowledge with other delegates through open session discussions hence broadening the knowledge base of all
- To become familiar and knowledgeable with an industry compliant SCADA software package
- To have the confidence and knowledge to apply the above techniques and principles to solve unfamiliar and bespoke situations in the workplace

TRAINING METHODOLOGY

The training seminar is delivered via a series of mixed activities that will at times involve delegate participation.

Theoretical content is delivered by informal lecture and discussion and supplemented where appropriate with tutorial sessions using worked examples.

An important part of the training course is the hands-on aspect. Using industry compliant software and PLCs, approximately a third of the total time will be devoted to practical activities. Delegates will acquire the skills and confidence to investigate, debug and where necessary modify and/or design their own control systems employing a PLC

WHO SHOULD ATTEND?

This training seminar is suitable for and is designed to attract and be of benefit to a range of people who work in the Control and Instrumentation process and plant areas.

Typically but not exclusively this training seminar will be of benefit to:

- Electronic Engineers and Technicians
- Design Engineers
- Electrical Engineers and Technicians
- Instrumentation Engineers and Technicians
- Control Engineers and Technicians
- Electricians
- Communication Engineers and Technicians
- Instrument and Process Control Engineers and Technicians
- I.T. and Software Engineers and Technicians
- Mechanical Engineers and Technicians

PLC, TELEMETRY & SCADA TECHNOLOGIES

ORGANISATIONAL IMPACT

By attending this training seminar, delegates will return to their organisations more confident in the knowledge and use of PLC, Telemetry and SCADA systems.

More specifically, they will:

- Be equipped with new skills and knowledge which must impact positively within the company structure
- Be able to evaluate the suitability and application of current in-house PLC/SCADA systems and offer guidance and advise on whether such systems may be modified or improved
- Consequently be able to leverage their skills to potentially cause an increase within the plant or process in terms of overall productivity and efficiency through analysis of current systems
- Be better equipped to advise on new system communication installations in terms of evaluating choices between radio and wire based telemetry systems
- Potentially through their newly acquired knowledge and understanding of PLC systems and their integration into a SCADA system using a variety of digital communication standards and telemetry links be able to advise system designers, thereby negating or at least reducing the dependency on external agencies and vendors
- Therefore potentially contribute towards and result in plant and process cost reductions leading to financial savings for the company

PERSONAL IMPACT

The delegate will benefit personally from attendance of this training seminar and will enhance their own knowledge base and level of confidence in the area of PLC, SCADA and Telemetry systems.

Specifically, delegates will be able to:

- Return to their organisations equipped with new skills and knowledge that will enable them to understand, analyse, and optimise their own plant requirements in terms of PLC and SCADA systems
- Design, construct, download and evaluate PLC programs written in a standard programming language to meet a given specification
- Develop a working knowledge of basic and advanced PLC and SCADA programming techniques
- Predict the suitability of a Radio telemetry system by a study of the terrain under investigation and by gaining a knowledge of the operating parameters of the frequency bands available
- Make informed decisions on methods of conveying data from RTU's by an acquired understanding of commonly used wire based data communication protocols such as RS232 and RS485
- Upgrade their level of confidence in PLC based systems and determine the appropriateness of new system design in terms of PLC/SCADA or a DCS configuration



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COURSE OUTLINE

DAY 1

Introduction to Control Strategies

- Continuous Control systems
- Sequential Control systems
- Relay based systems

Practical Session 1

- Relay based programming examples

Introduction to PLC Systems

- PLC vs. relay systems
- Programming formats
- Logical continuity

Practical Session 2

- Software familiarisation
- Introduction to industry standard PLC programming software
- Construction of test programme

DAY 2

PLC architecture

- System architecture
- Memory and I/O types
- Scanning algorithms
- Program Scan cycle

Radio Telemetry Systems

- Introduction
- Elements of a Radio Link
- The radio spectrum
- Frequency ranges
- System design considerations

Practical Session 3

- Serial transfer of Programs
- Design exercise 1

PLC Programme Development

- Analysis of PLC programs
- Design methodology and development of PLC programs
- Timer method of program development

Practical Session 4

- Design exercise 2 - Program design of Process Controller

Serial Data Communications

- Communication methods (Simplex, Half-Duplex, Full-Duplex)
- RS232 standard
- RS422 standard
- RS485 standard

Practical Session 5

- Sequence Controller and Application boards

Analogue I/O and Processing

- Analogue inputs and outputs
- A/D and D/A conversion
- Programming analogue modules and advanced instructions

DAY 3

Introduction to SCADA

- System architecture
- Configuration and operation

Practical Session 6

- Introduction to industry standard SCADA software
- Design and development of a new SCADA project

Practical Session 7, 8

- Design and development of a SCADA project (continued)
- Local Area Networks (LAN's)
- Consolidation of Previous practical activities

PLC, Telemetry & SCADA Technologies

24th, 25th & 26th November 2021 | Durban, South Africa

Registration Form:

Register or Enquire

Contact Jeff via:

- 1 Tel : (+27) 11 041 0181 | +2768 053 6221 (What's App)
- 2 Email : registration@peganix.com
- 3 Web : www.peganix.com



Please register the following delegate(s) for the event

- I would like to claim my group discount
 I would like to use my credit.
 We would like this as an In-House - Dates: _____

Number of staff your company/organisation is delegating to the event?

Approving Manager	First Name :	Surname :
Job Title & Department :	Email :	Direct Tel :
Fax :	Country:	Postal Address:
Billing Information / Account Manager	First Name :	Surname :
Full Company Name :	Nature of Business :	
Address :		

Delegate Attendance information:

Note: Please provide information as you wish it to appear on your name badge and on the official participant database.

Title	Delegate Name & Surname	Position	Email Address

Important Notes

1. Corporate or independent registrations will be accepted.
2. Fees – Each fee is inclusive of course manual/documentation, morning tea/coffee & snacks, Lunch and refreshments served during the entire event.
3. **Group Discount:** Groups of 5 or more from the same company (booking at the same time and of the same billing source) can enjoy a **10% off the total delegate fees** or have the **6th delegate come for free**.
4. **Super Early Bird & Early Bird Promotion:** Early Bird Fees will only be valid if payment is received by stipulated date, after which Regular Fee will apply.
5. **Full payment is mandatory upon registration for admission to the event.**
6. The organizer reserves the right to make any amendments that it deems to be in the interests of the event without any notice.

TERMS & CONDITIONS

By signing and returning the registration form, the authorising signatory on behalf of the stated company is subject to the following Terms & Conditions:

- Transfers;** Transfer requests must be made in writing 7 days before the start of the event
- Please note that speakers and topics were confirmed at the time of publishing, however, circumstances beyond the control of the organizers may necessitate substitutions, alterations or cancellations of the speakers and/or topics.
 - As such, Peganix. Reserves the right to alter the advertised speakers and/or topics if necessary. Any substitutions or alterations will be updated on our web site as soon as possible

Workshop Venue & Hotel Reservation; Hotel room reservation and hotel billing are to be made by delegates directly with the Hotel. Hotel reservation and travel arrangements are the responsibility of the registrant.

Cancellations and Substitutions - In-person Seminars

Written cancellations through fax or email (from the person who has registered for this conference) received at least 10 calendar days prior to the start date of the event will receive a refund — less a \$300/R4000 administration fee. No cancellations will be accepted — nor refunds issued — within 10 calendar days from the start date of the event. On request by email or fax (before the seminar) a credit for the amount paid minus administration fees (\$300/R4000) will be transferred to any future Peganix event and a credit note will be issued. Substitutions may be made at any time. No-shows will be charged the full amount. We discourage onsite registrations, however if you wish to register onsite payment to happen through credit card immediately or check to be submitted onsite. Conference material will be given on the spot if it is available after distributing to other attendees. In case it is not available we will send the material after the conference is over. In the event Peganix cancels the seminar, Peganix is not responsible for any airfare, hotel, other costs or losses incurred by registrants. Some topics and speakers may be subject to change without notice.

Cancellations and Substitutions - Virtual Seminars & Webinars

Written cancellations through fax or email (from the person who has registered for the training) received at least 10 calendar days prior to the start date of the event will receive a refund — less a 30% administration fee. No cancellations will be accepted — nor refunds issued — within 10 calendar days from the start date of the event. On request by email or fax (before the training) a credit for the amount paid minus administration fees (30%) will be transferred to any future Peganix event and a credit note will be issued. Substitutions may be made at any time. No-shows will be charged the full amount. Some topics and speakers may be subject to change without notice.

Full Name:	Job Title:
Signature:	Date:

Course Fees in Rands

ZAR 3 999.00*

Exclusive Vat | Per Delegate

3 DAYS | VIRTUAL

Course Fees in Rands

ZAR 8 999.00*

Exclusive Vat | Per Delegate

3 DAYS | IN-PERSON

CERTIFICATION

Successful participants will receive Peganix' Certificate of Completion

Payment Policy

Payment - In order to secure your registration, payment is due in full upon receipt of invoice.

Confirmation - Your registration will not be confirmed until such time as payment is received and may be subject to cancellation.

Right of Admission - Peganix reserves the right to refuse admission to the training course where evidence of full payment cannot be shown.

In-House - 50% or full payment is to be made to Peganix before running an In-house Training

Payment Methods

Online Gateway Payment Electronic Transfer Direct Deposit Cash

Banking Details (South Africa)

Bank:	First National Bank
Account name:	Peganix (Pty) Ltd
Account no.:	62453975701
Branch code:	250 655
Swift code:	FIRNZAJJ
Reference:	Insert your ref number on the deposit slip please