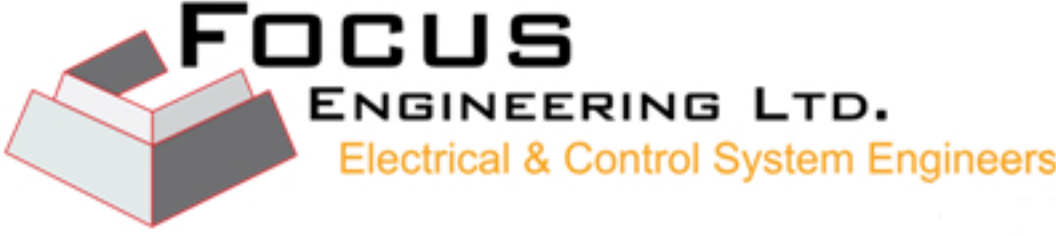
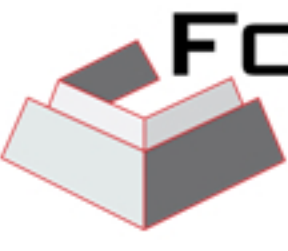


# Scope Of Training Requirements For Tech Support Engineers

Training Needs Analysis			High Priority	Average Priority	Not Required.
	Introduction to P&IDs and Symbols	General Layout of the Equipment.			
		Tagging (Motors, Valves)			
		Symbols Used (Manual Valves, PID Loop)			
		Describe Unit Process No and Description.			
		Describe Instrument Type Abbreviations.			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
		Expand to include description of the process. i.e. what sequences need to run to operate skid.			
	Methotology of Processes and Construction of (FDS, NDS, SDS, IQ, OQ and PQ)				
		Describe in detail the Design concepts in the Structure of a Control System i.e. Units, Units of Equipment and the Entity Structures. Describes the overall objective of the system (maintaining process flows, temps, pressure etc)			
		Introduce the concepts of the Design Phases in relation to the Control System i.e. The Functional Design Specification (FDS / FS) the Network Design Specification (NDS) and the Hardware Design Specification (HDS)			
		Introduce the concepts of the Commissioning Phases in relation to the Control System i.e. The Installation Qualification (IQ) the Operation Qualification (OQ) and the Process Qualification (PQ). THE USE OF THESE DOCUMENTS CAN BE AND ARE THE BASIS OF HOW THE ZEMURON SYSTEM WORKS			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
	Electrical Priniciples Used Industry in Referance to the New Zemuron Control System	Describe the Safety aspect around Motors, Valves (Lock Off Tag Off)			
		Describe the Earthing mythology around Electrical Systems			
		Describe MCC's (Motor Control Centers) Direct on Line (DOL), Motors with Softstarts and Motors with VFD's attached.			
		Describe the Types of Valves used Manual, Three Port Single Acting or Five Port Double Acting Fail Close or Fail Open.			
		Describe Using the above Different Types of Motors and Valves the Feedbacks that are associated with each. This can be achieved using the existing panel drawings.			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
	Introduction to Panel Wiring and Layout	General Layout of Equipment in the Panel			
		Labelling of Equipment in relation to Electrical Drawings (Page No. Column, Type, device No. and No. of Devices e.g. 103S21			
		Power Distribution Incoming, Control Power Distribution Layout in relation to the panel drawings			
		E.Stop Circuits Explanation of Normally Closed. If Pilz Units E.Stop Monitoring Devices used explain how they work in relation to the panel drawings.			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
	Introduction To The Hardware of PLC Systems	Power Supply Used (Fault LED's) Replacement etc			
		Rack Structure, Addressing and Layout of Slots.			
		Central Processing Unit (CPU) Type Used and Available.			
		The Type of Digital Input / Output Modules Used (Describe using the Siemens wiring diagrams as to how the modules are wired and installed).			
		The Type of Analogue Input / Output Modules Used (Describe using the Siemens wiring diagrams as to how the modules are wired and installed).			
		If there are any Specialized Modules Position or Weighing etc Explain briefly what each module is used for.			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
	PLC SCADA System				
		All control is preformed at the PLC or below.			
		Architecture of the CONTROL System (Client Server etc) Explain this.			
		Describe the communications between the PLC and SCADA or loss of communications with the SCADA system itself will not effect the ability of the PLC / PLC's to control the Process. Introduce the term ETHERNET, REMOTE I/O, PROFIBUS, POINT TO POINT (PEER TO PEER) in relation to the system installed.			
		Identify the PLC's used for controlling the process and any interaction with other PLC's			
		Identify the method and mythology associated with using REMOTE I/O. Describe what the PURPLE CABLE is used for. Reinforce the terms PROFIBUS and REMOTE I/O show in physical characteristics of the cable and the concept behind REMOTE I/O.			
		Identify			
	Introduction To PLC Control Structure	Describe what happens in relation to the REMOVAL or WIRE BREAK of a REMOTE I/O RACK. Describe the reaction of the CPU. SCADA Screens "FREEZE" etc			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
		Reinforce the concept of the Units, Unit of Equipment and Entities.			
		Interlocks Describe HARDWIRED Interlocks and SOFTWARE Interlocks			
		Explain Alarm Database, Alarm Class, Alarm HiHi Limit, Alarm Hi Limit, Alarm Low Limit and Alarm LoLo Limit for each Vessel.			
		Explanation of States Transition Diagrams, Sequences or Phases depending on which Manufacturing Plant you are on.			
	Introduction To the SCADA System	PLC Communications. Describe detail messaging between PLC's. Describe the mechanism of the PLC failing and recovery (Master / Slave relationships etc)			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
		Introduction to the Graphics Screens (Process Overview, Process Pages, Popups, Alarms, Trends and Reports).			
		Setup on each of the TRAINING Laptops the SCADA system introduce the personnel to the DRIVING AROUND the Graphics			
		Introduce one to the Auto/Manual features on each of the Motors / Valves and the Process in General.			
		The concepts of Valve Running in Auto Semi Auto (If it exists) and Manual.			
	Add Your Own Comment	Setup up a Alarm condition and introduce one to the concept of how the system displays the Motor / Valve / Unit / Entity in alarm.			
		Generate FAMILIARITY and CONFIDENCE in using the SCADA System as a FAULT Finding Tool.			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
		More detail about navigating and reading electrical drawings			

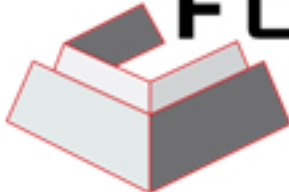


# Scope Of Training Requirements For Tech Support Engineers

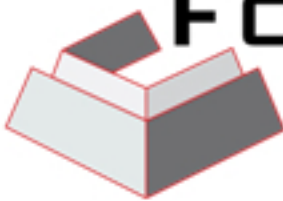
Training Needs Analysis		 <b>FOCUS</b> <b>ENGINEERING LTD.</b> Electrical & Control System Engineers			High Priority	Average Priority	Not Required.
Introduction to Windows.	Operating System (Windows 7, XP, 2000 / Unix / OCX etc)						
	ICONS, Hot Keys						
	Opening Windows Explorer and Introducing the personnel to the Subdirectories of the SCADA and Siemens Step7 file structures. ( Take the mystery out of the PC in general)						
	Creating and Deleting a Folder (Subdirectory).						
	Renaming and Copying a Folder (Subdirectory).						
	Opening and Closing a Folder (Subdirectory).						
	Minimise, Maximise and close an Opened window						
	Introduce one to the CONCEPTS of WINDOWS (Have the SCADA System RUNNING together with the PLC GRAPH7 using ALT TAB TO switch between the Windows.						
	<b>BUILD A CONFIDENCE AROUND PC's</b>						
PLC Addressing	Describe BIT, BYTE, WORD and DOUBLE WORD.						
	Introduction to Fixed Format, Block and Variable Slot Addressing.						
	How REMOTE I/O is Addressed.						
	Removing Modules and Replacing Like For Like etc. Familiarity with the Order No. found on the Modules depending on which.						
Creating, Handling and Setting Up A Siemens Step7 PLC Project	Starting the Simatic Manager.						
	Creating and Setting up a Simatic S7 Project. Selecting the CPU, DI, DO, AI, AO and setting up REMOTE IO Rack that's mounted on the BACK of the TRAINING RIGS.						
	Introducing one to the Simatic Step7 HELP Menu						
Fundamentals of Siemens PLC Software	Introduction to the CONCEPT of PLC Software. (How to look at a PROJECT specifically)						
	Introduction to the SOFTWARE Program Structure of the Newly Installed System.						
	Program Scan Cycle Time and Cycle Monitoring Time.						
	Introduction to the CONCEPT of the Different TYPES of MOTORS (e.g. 1S1D, 1S2D, or 2S1D and 2S2D where S = Speed and D = Direction)						
	Introduction to the CONCEPT of the Different TYPES of VALVES (e.g. 1C0C, 1C1C, or 1C2C, 2C1C, 2C2C where 1st C = Coil and 2nd C = Contacts)						
	Describe what an Organisation Block (OB's), Function Call Block (FC's), Function Blocks (FB's), Data Blocks (DB's), System Function Call Blocks (SFC's) and System Function Blocks (SFB's) are used for.						
	<b>CARE MUST BE TAKEN NOT TO GET TO TECHNICAL AS IT IS MORE AN APPRECIATION OF TO THE CONCEPTS INVOLVED</b>						
Binary and Logic Operations.							
	Introduction to the concept of "AND", "OR", "AND & OR" and the START / STOP circuit. (Practical example of hardwired START / STOP been replaced by SOFTWARE (Use the NEW System Electrical Drawings to RE-INFORCE this.						
PLC Timers	Simatic S7 Timers, How a Timer is Numbered.						
	Specifying the Time Value as "Constant" or a "Variable". Using the SCADA System to demonstrate this.						
	Time Base 10 Sec, 1 Sec, 1/10 of a Sec and 1/100 of a Sec.						
	Specifying the Different Types Of Timers, Pulse (SP), Extended Pulse (SE), OnDelay (SD) Stored On Delay (SS) and Off Delay (SF).						
	Induction to TIMING Diagrams						
	Practical Exercise "To Setup a PULSE GENERATOR". Change the Value on a SCADA Screen and What effect this has to the System.						
PLC Counters	Simatic S7 Counters, How a Counter is Numbered.						
	Specifying the Count Value as "Constant" or a "Variable". Using the SCADA System to demonstrate this.						
	Specifying the Different Types Of Counters, Up/Down (CD/CU), Up (CU) and Down (CD) .						
Number Processing in PLC's	Introduction to the Decimal, Binary and the Hexidecimal Numbering System						
	How to "ADD", "SUBTRACT", "MULTIPLY" And "DIVIDE" using a PLC						
	Practical Exercises to demonstrate this using the SCADA Systems provided.						
PLC Symbols	Introduction to "ABSOLUTE" and "SYMBOLIC"						
	Export and Importing of Symbols						
	Introducing a New Symbol into the Symbols Table						
Testing and Debugging & Fault Finding Using PLC Software	Generating "Cross Reference", "Assignment Lists" and the User Program Structure.						
	Open the "Cross Reference" Table and Editing the Assignment List.						
	Using the PLC Software to Fault Find as to why a Motor / Valve / Sequence is not updating.						
	Monitoring PLC Software "ONLINE" and using this function to FAULT FIND in general.						
	Monitoring "VARIABLES" and USING the ONLINE Function to GET the STATUS of a Digital/Analogue Input signal.						
	Generate VAT TABLES to be used for FAULT FINDING TOOLS.						
Analogue Value Processing of PLC's	Use of Analogues both Inputs and Output.						
	Different Types of Analogues (Two, Three, Four, Loop Powered, Sink, and Source etc.)						
	Demonstrate PT100, Thermocouples, Pressure Transmitter and the Principles behind a Load Cell etc.						
	Analogue Module Addressing. Code Keys and the Replacing of an Analogue Module.						
	Properties of an Analogue Input Module.						
	Analogue Value Processing and Representation, Resolution within a PLC for both Analogue Inputs / Outputs						
	Scaling of Analogue Inputs in conjunction with the SCADA System.						
Software Structure of the Existing ZEMURON System	Exercise controlling the LEVEL ina Tanks using the SCADA System.						
	Introduction to Software Layout and Structure incorporated.						
	Introduction to the use of Organisation Blocks, Function Calls, Function Blocks and Data Blocks.						
	Induction to the Communications Setup within the PLC up onto SCADA.						
Add Your Own Comment	How to DRIVE around the existing code so as this can be used to FAULT FIND as to why a Motor or Valve is not Starting or Opening.						
	Use of Digital Inputs and Output.						



# Scope Of Training Requirements For Tech Support Engineers

Training Needs Analysis		 <b>FOCUS</b> <b>ENGINEERING LTD.</b> Electrical & Control System Engineers			High Priority	Average Priority	Not Required
General Introduction To Calibration of Instruments	List of Instruments and Equipment Listed.						
	Calibration Techniques, Configuration, Setup and Fault Repair						
Calibration Procedures and Records	Layout and Requirements of Procedures						
	Reports for ISO and Auditing						
Pressure	Transmitters, Switches and Gauges.						
	How to Measure Pressure and the Techniques Involved.						
Flow	Transmitters, Switches and Control Valves.						
	How to Measure Flow and the Techniques Involved.						
Temperature	Transmitters, Switches Gauges, PT100 Elements and Barrier Converters and Thermocouples (J,K etc)						
	How to Measure Temperature and the Techniques Involved.						
Mass	Industrial Hoppers, Scales (Mettler Toledo), Load Cells.						
	How to Measure Mass and the Techniques Involved.						
Speed and Current	Transmitters, Sensors, Converters.						
	How to Measure Speed and Current and the Techniques Involved.						
Electrical	Multimeters, Clampmeters, and Milliamp Simulators using Fluke, Avo or Robin.						
	How to Measure Electricity and the Techniques Involved.						
Analytical	Ph, Conductivity, Tribo (Static Charges) and Humidity.						
	How to Measure the above and the Techniques Involved.						
Add Your Own Comment							

SCOPE Of Training Needs Analysis For Tech Support Engineers

Training Needs Analysis		<div><div><div><div>FOCUS</div><div>ENGINEERING LTD.</div><div>Electrical &amp; Control System Engineers</div></div></div></div>	High Priority	Average Priority	Not Required.
	Introduction to The SCADA System	Introduction to the Graphics Screens (Process Overview, Process Pages, Popups, Alarms, Trends and Reports).			
		Setup on each of the TRAINING Laptops the SCADA system introduce the personnel to the DRIVING AROUND the Graphics Introduce one to the Auto/Manual features on each of the Motors / Valves and the Process in General.			
		The concepts of Valve Running in Auto Semi Auto (If it exists) and Manual.			
		Setup up a Alarm condition and introduce one to the concept of how the system displays the Motor / Valve / Unit / Entity in alarm.			
		Generate FAMILIARITY and CONFIDENCE in using the SCADS System as a FAULT Finding Tool.			
		AFTER EACH SECTION TAKE THE PARTICIPANTS OUT INTO THE AREA			
	SCADA Setup	Generating SCADA Display. Creating the STATIC DISPLAYS and Creating the DYNAMIC DISPLAYS and PARAMETERIZING the STATIC SCREENS.			
		Designing Functions (Variable Types)			
	SCADA EXERCISE	Setup a STATIC DISPLAY to include TWO Vessels and a TRANSFER ROUTE between the Vessels.			
		Setup the DYNAMIC DISPLAYS associated with STATIC DISPLAYS.			
		Setup the TAG DATABASE for the Static Displays			
	SCADA SEQUENCER (PAHSE)	Setup a Sequencer Static Display to include 6 Steps (Phases) and 5 Transitions.			
		Setup a Sequencer Dynamic Display to include 6 Steps (Phases) and 5 Transitions.			
		Introduce the Operative to Sequence HOLD, ABORT, RUNNING AUTOMATIC and SEMI AUTOMATIC, STEP + 1 or Step -1 (Back / Previous Step)			
	SCADA MESSAGES & ALARMS	Generate Fault Messages if one of the above Valves fails to Open during the completion of a Step.			
		Introduce one to the Message Archiving of FAULTS.			
	SCADA RECIPES	Types of RECIPES. BATCH TRACKING.			
		Component Listing involved in the Recipe.			
		Main Recipe, Basic Recipe.			
		C.I.P Recipes.			
		Jobs Queuing.			
	Add Your Own Comment				