

Sistemas de Control Distribuido (DCS)



Por:
Jose Carlos Villajulca



Agenda

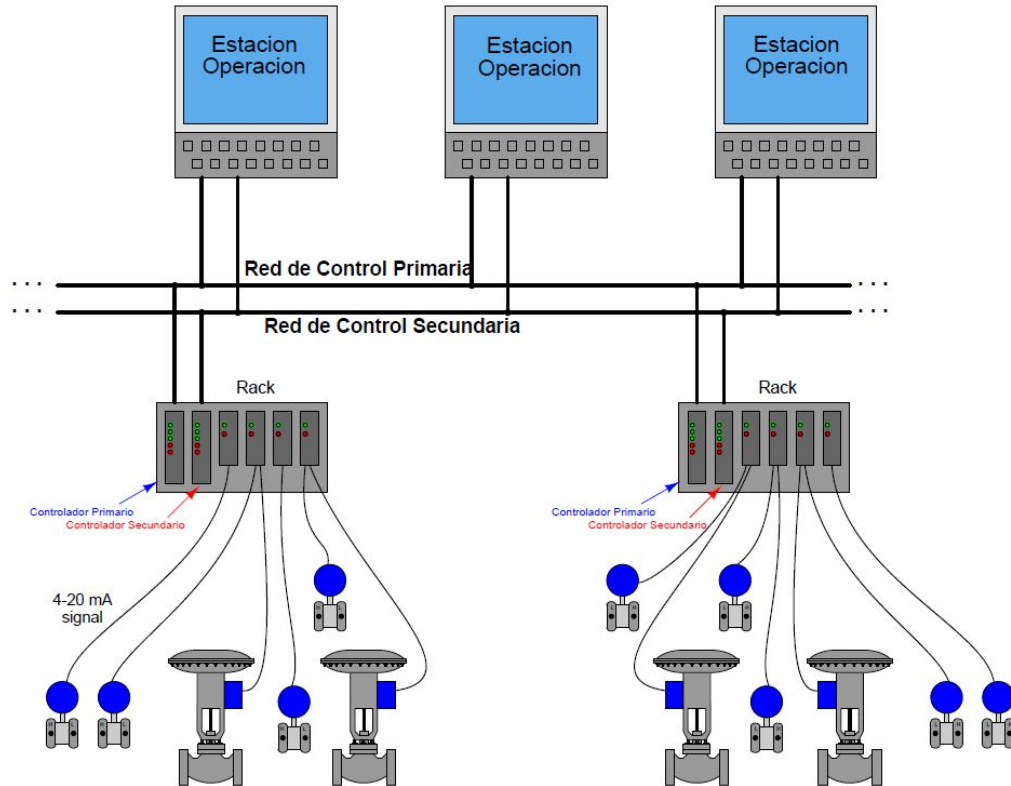
1. Conceptos Generales
2. Revisión de Hardware, Red de Control y Arquitecturas
3. Componentes de Software
4. Conceptos de Control Continuo en un DCS
5. Interfaz HMI en un DCS (faceplates)
6. Programacion de Bloques (Lazos de control)
7. Configuracion de HMI en un DCS
8. Históricos y Tendencias
9. Sistema y Procesamiento de Alarmas
10. Herramientas de Diagnóstico Integrado en un DCS

Modulo 1: Conceptos Generales

Que es un DCS?

1. Las aplicaciones de control se distribuyen a los controladores del sistema que se dedican a procesos específicos de la planta utilizando dispositivos de campo.
2. Este tipo de sistema de control industrial está conectado por una red de comunicación de alta velocidad. Mientras que cada controlador funciona de forma autónoma, existe un control de supervisión central a cargo de un operario.
3. Un DCS lo constituyen tanto elementos de software como de hardware. Los costes de instalación se reducen al mínimo gracias a la simplicidad de la instalación local con la mayoría de los controladores
4. Los procesos individuales tienen sus propios controladores con CPUs separadas, por lo que otros procesos pueden continuar en una situación de avería individual, a diferencia de un sistema de controlador central

Que es un DCS?



Fabricantes de DCS

ABB : 800xA

Emerson: DeltaV y Ovation

Invensys Foxboro: I/A Series e Evo

Honeywell: Experion PKS

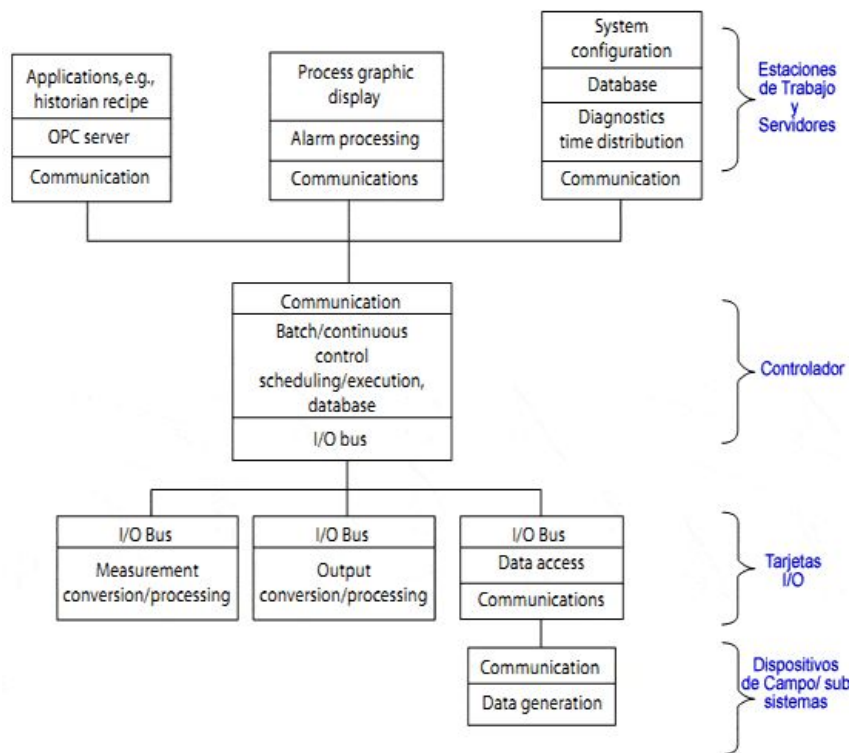
Yokogawa: CENTUM VP y CENTUM CS



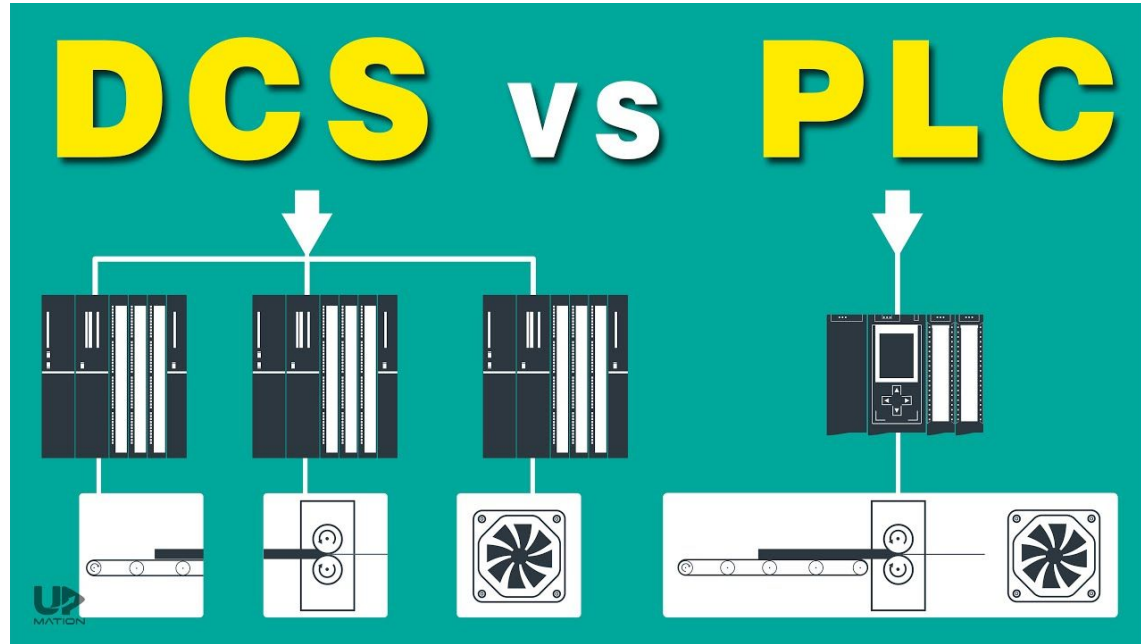
Fabricantes de DCS



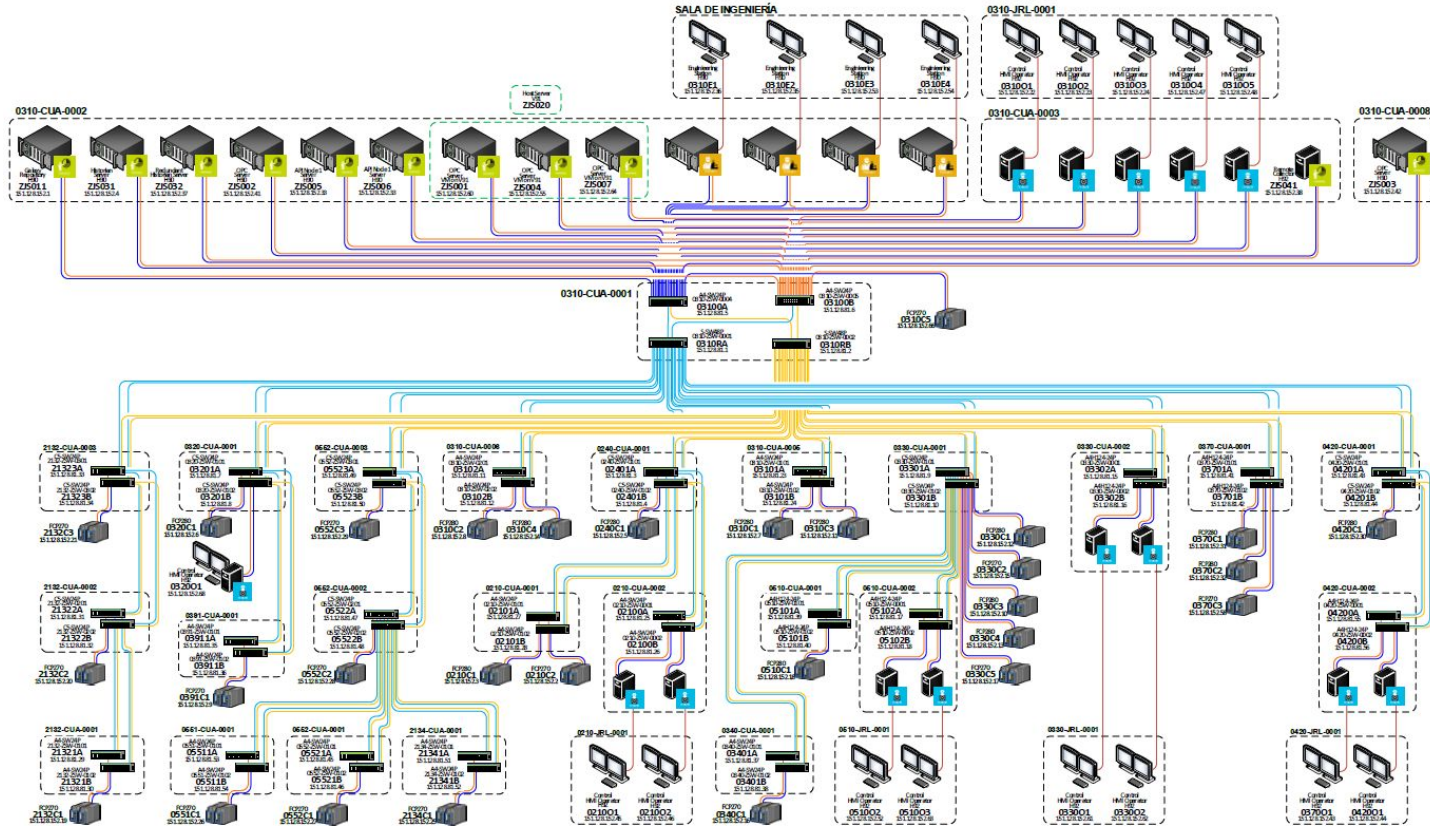
Esqueleto de un DCS



DCS vs PLC



Como es realmente la red en DCS?



Características

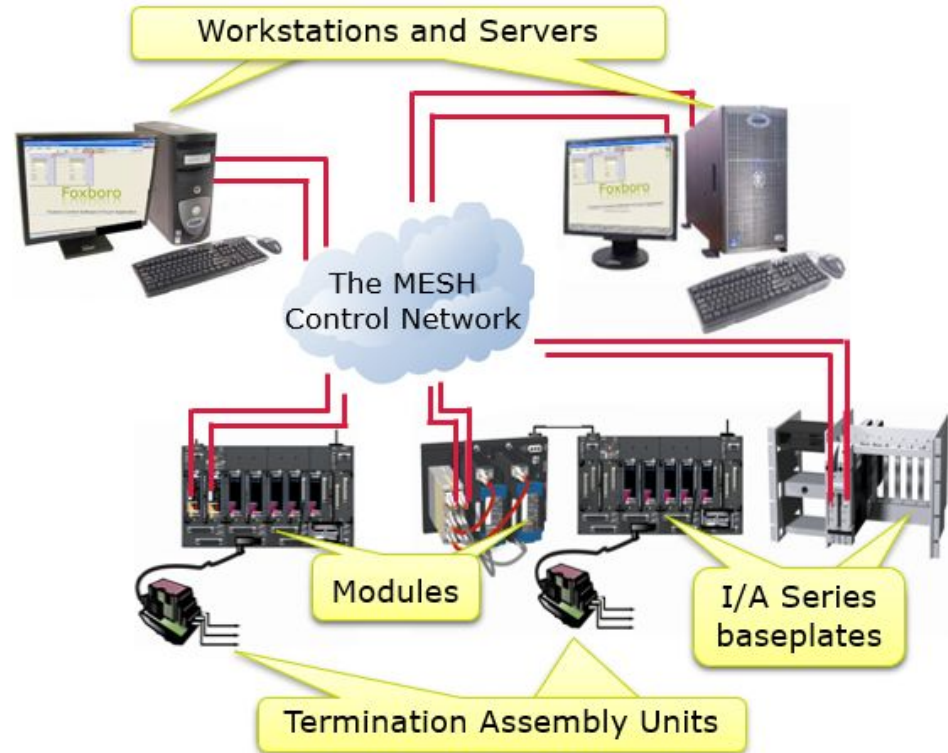
- Alta disponibilidad 99.9%
- Redundancia de Controladores
- Redundancia de modulos de comunicacion y campo IO
- Redundancia de Red de comunicaciones
- Redundancia de Fuentes de alimentación
- Salas de control centralizadas
- Muchas estaciones de control u Operacion
- Gestion de alarmas
- Conectividad con ERP, CMMS, Sistemas Documentacion.
- Historicos
- Sistemas Instrumentados de Seguridad
- Autodiagnóstico y centralizados
- Time stamp en todos los equipos (servidores, estaciones, controladores, etc)
- Base de datos de configuración centralizada
- Altamente escalable.

Modulo 2: Hardware en un DCS

Hardware

- Procesadores
- Estaciones de Operación
- Servidores
- Baseplates o racks
- Termination Assembly (TA)
- MESH Control Network

En otras marcas de DCS, prácticamente cambia el nombre de los equipos



Estaciones y Servidores

- Estacion de Operación y Workstations
 - Terminal grafico para uso Operacional.
 - Monitorea y controla las variables de la Planta
 - Recibe notificacion de alarmas del sistema y proceso
 - Es la interfaza hombre maquina (HMI) entre el Operador y el Proceso.
 - Usa otros equipos como
 - Monitores
 - Teclados y Anunciadores
 - Mouse o trackball
 - Touchscreens, etc

Servidores V90

- Intel Xeon-Silver 4110 (2.1GZ/8Core)
- 02 Procesadores, hasta 8 cores.
- Hasta 384 GB RAM
- Hasta 8 discos internos RAID 5.
- Fuentes de alimentacion redundante
- Hasta 14 maquinas virtuales. Windows Server 2016
- Hasta 30 clientes Remote desktop.



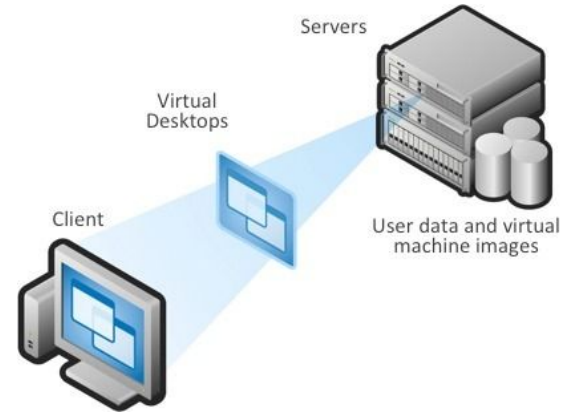
Estacion H92

- Intel Xeon
- 4 GB Ram DDR4.
- 4 Pantalla de video DVI / DisplayPort.
- 750GB SATA
- GCIO e Impresora
- Ethernet 10/100/1000BaseT

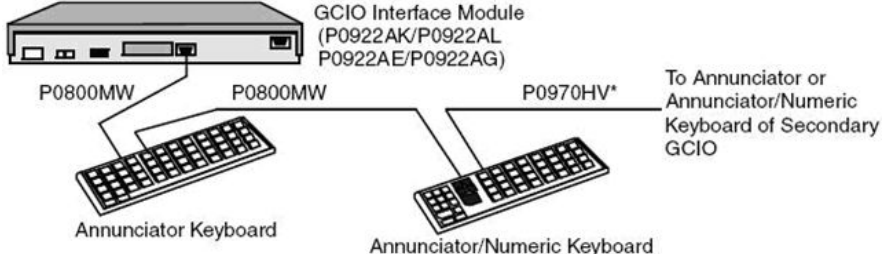
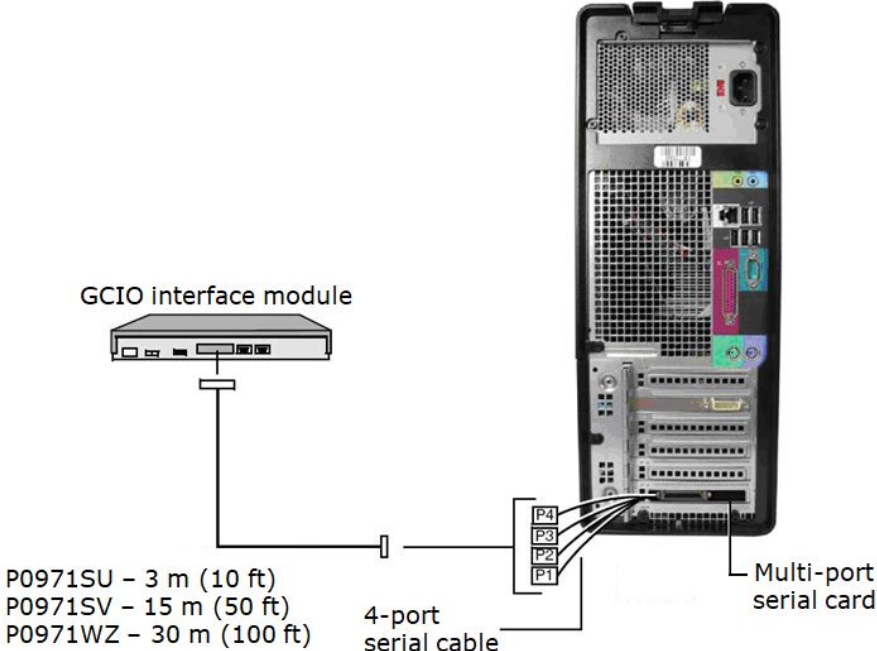


Thin Client

- Conexion de maquina virtual (en servidor)
- Provee entorno de Operacion o Ingenieria.



GCIO Conexion



Modulos de Procesamiento



FCP280



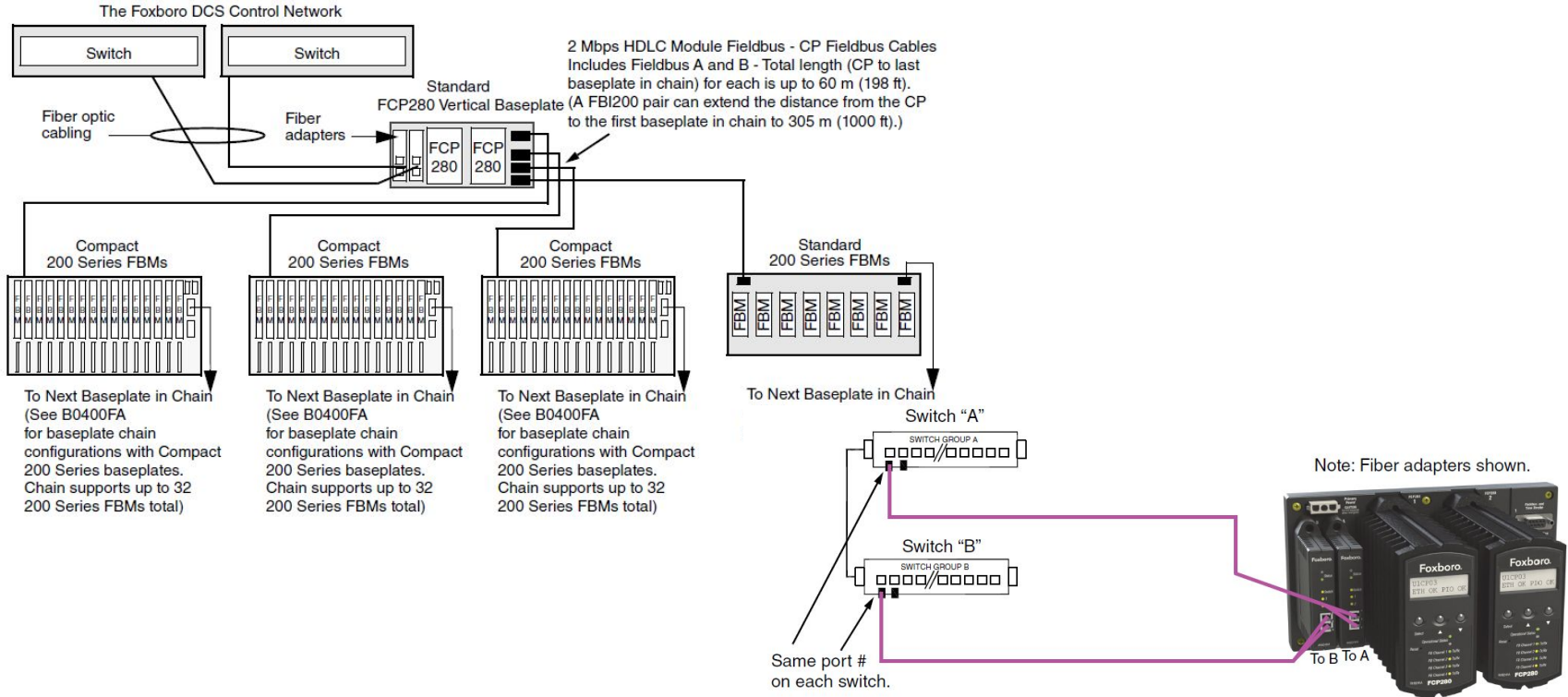
ZCP270

Módulos de Procesamiento - Características

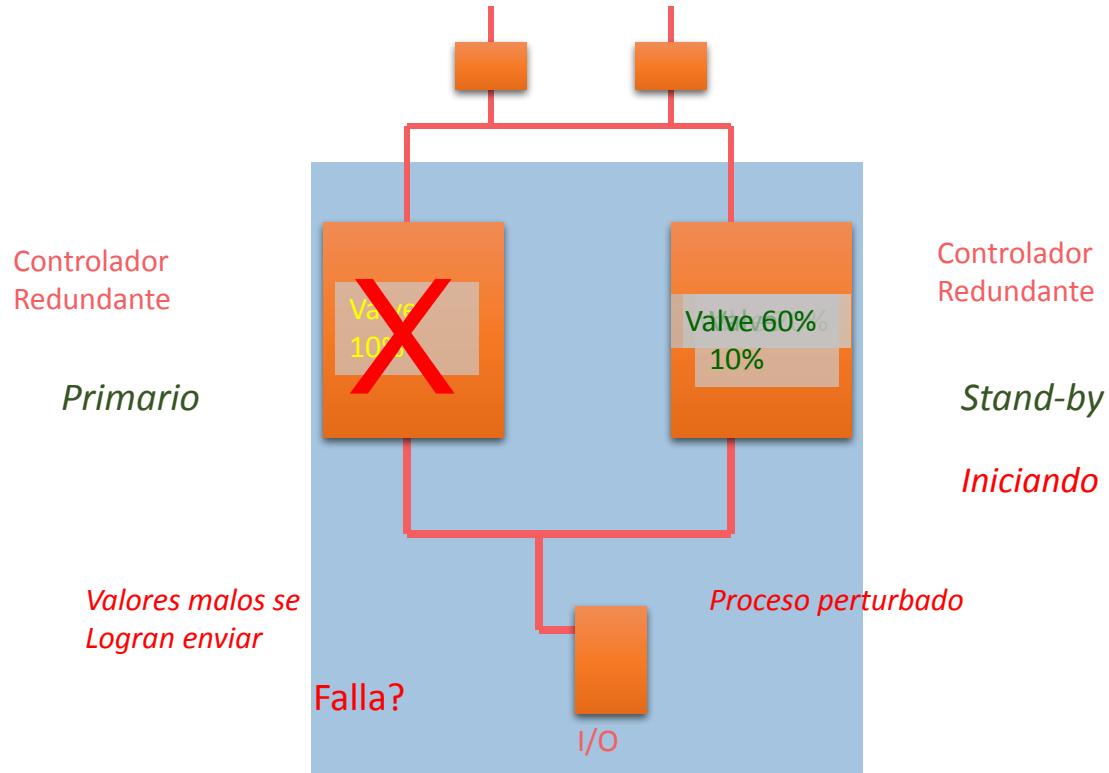
- Ejecuta lógica de control regulatoria, discreta, temporización y secuencias.
- Realizar la adquisición de datos, detección de alarmas y notificación
- Soporta hasta 128 módulos FBM.
- Fault Tolerant (02 módulos)
- Online-upgrade de software. Con proceso trabajando
- 2 Mbps para comunicación fieldbus.
- Sintonización con GPS
- Ethernet via cobre o fibra optica.
- Hasta 8000 bloques.
- 16 000 bloques x segundo.



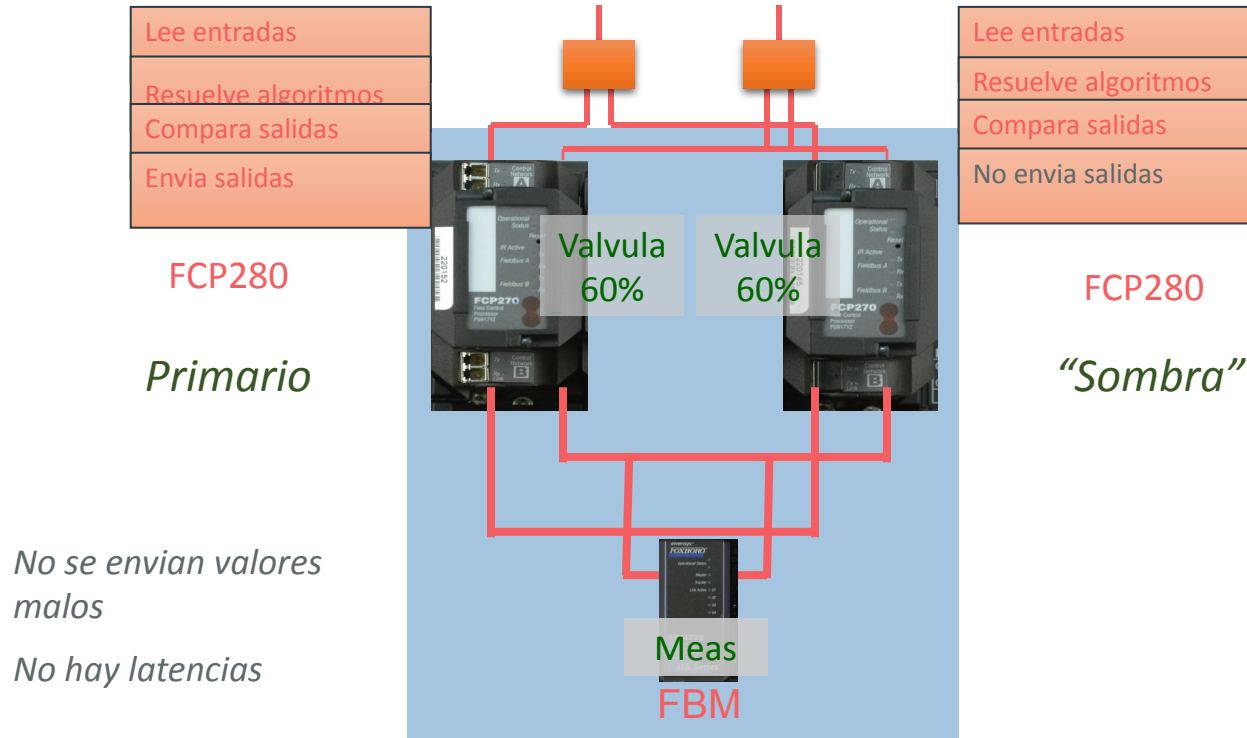
Módulos de Procesamiento - Características



Fault-Tolerance vs Redundancia



Fault-Tolerance vs Redundancia



No se envían valores malos

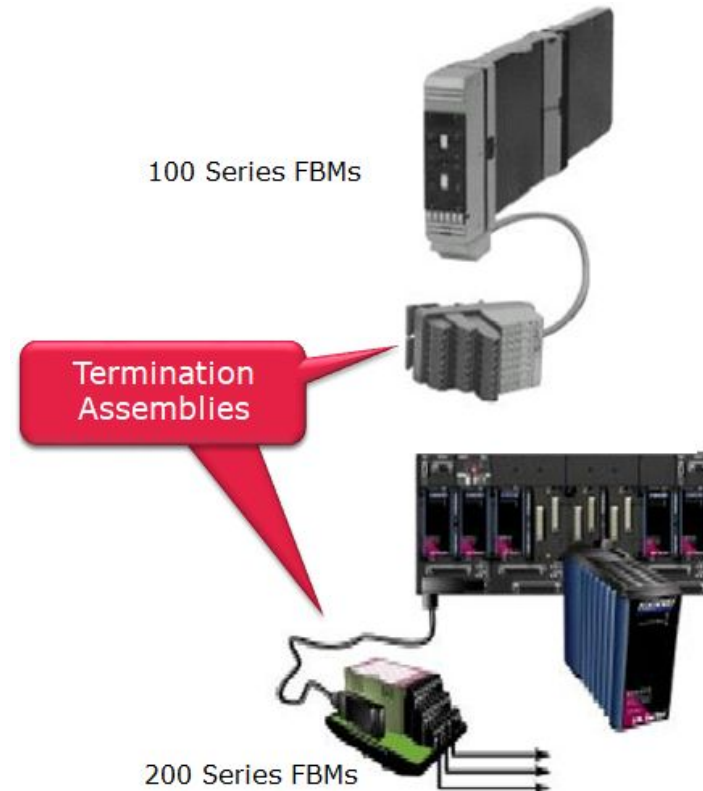
No hay latencias

Modulos de Entradas / Salidas

Tipos:

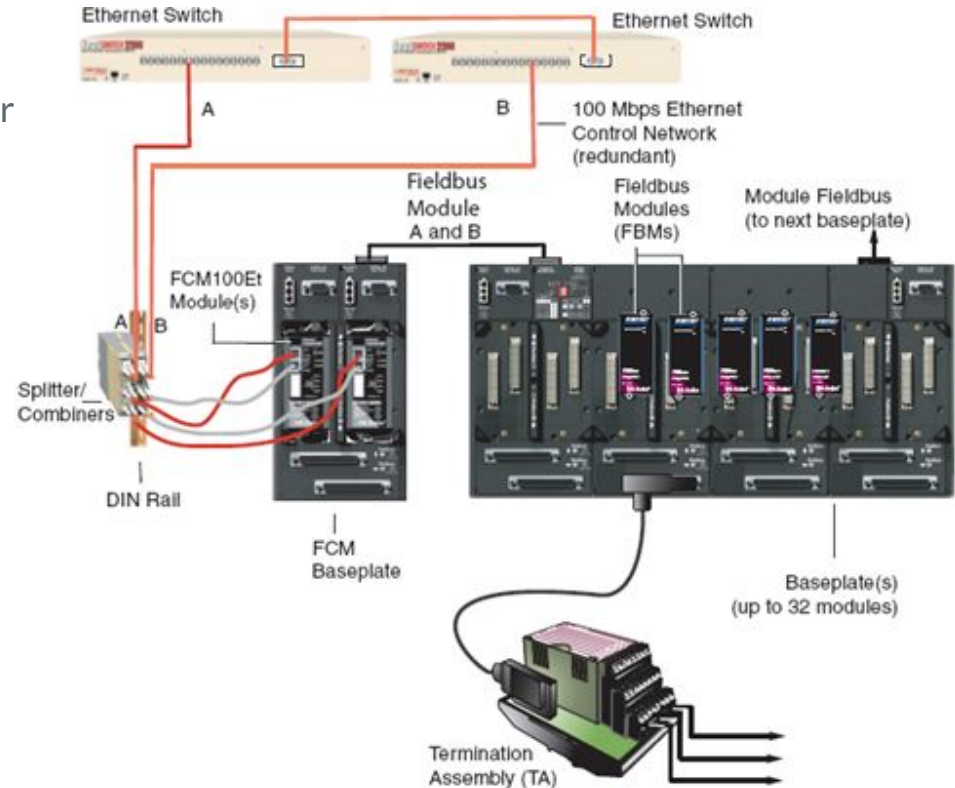
- Analogicas
- Discretas
- Comunicacion bus de campo

Instalacion via rail DIN

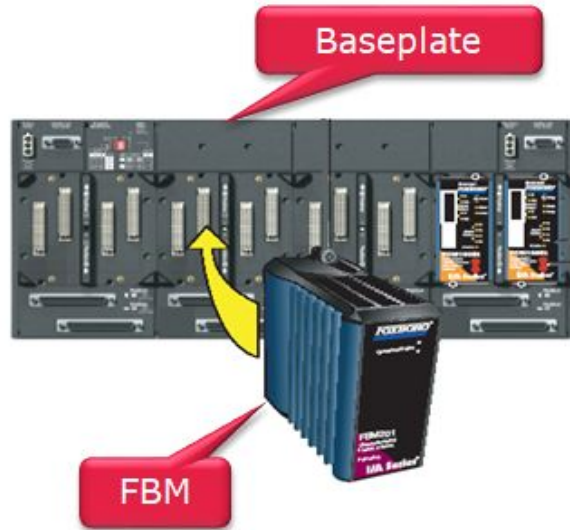


Modulos de Entradas / Salidas

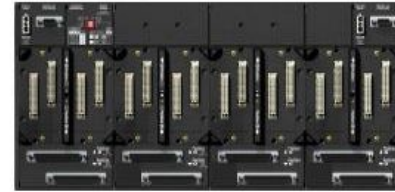
1. Convierte señales digitales de entrada o salida para integrarlas al DCS (Procesador)
2. Pueden ejecutar logica ladder y SoE (Sequence of Events)
3. Usa a las TA (Terminal Assembly) para integrar fisicamente a la señal.



Modulos de Entradas / Salidas - Instalacion



Horizontal configuration



Vertical configuration



FBM Analogicas

FBM Type	Description
FBM201	Eight Analog In (0-20 mA dc)
FBM201b	Eight Analog In (0-100 mV dc)
FBM201c	Eight Analog In (0-5 V dc)
FBM201d	Eight Analog In (0-10 V dc)
FBM202	Eight Thermocouple/mV In (-10.5 to 69.5 mV dc)
FBM203	Eight RTD In (0-320 ohms)
FBM203b	Eight RTD In (0-640 ohms)
FBM203c	Eight RTD In (0-30 ohms)
FBM204	Four In (0-20 mA dc) and four Out (0-20 mA dc)
FBM205	Four In (0-20 mA dc) and four Out (0-20 mA dc), redundant ready
FBM206	Eight Pulse In (10 Hz to 25 kHz)
FBM208	Redundant with readback; four In and four Out (0-20 mA dc)
FBM211	16 Analog In (0-20 mA dc)
FBM212	14 Thermocouple/mV In and -10.5 to 69.5 mV dc
FBM237	Eight Analog Out (0-20 mA dc), redundant ready

FBM Discretas

FBM Type	Description
FBM207	16 In and 0-80 V dc
FBM207b	16 In and 24 V dc contact sense
FBM207c	16 In and 48 V dc contact sense
FBM217	32 Discrete Input
FBM219	24 Inputs and 8 outputs voltage monitor/contact sense
FBM240	Eight discrete inputs and eight discrete outputs (redundant)
FBM241	Eight discrete inputs and eight discrete outputs
FBM242	16 discrete outputs

FBM Comunicacion

FBM Type	Description
FBM214/215	HART
FBM216	HART redundant ready
FBM220/221	FOUNDATION Fieldbus H1
FBM223	Profibus
FBM224	Modbus interface
FBM228	FOUNDATION Fieldbus H1
FBM243/246	FoxCom (246 is redundant)

FBM FDSI (Field Device System Integrator)

FBM Type	Description
FBM230/231	RS232/422/485: Modbus, AB, and so on (231 is redundant)
FBM232/233	Ethernet: Modbus, OPC, and so on (233 is redundant)

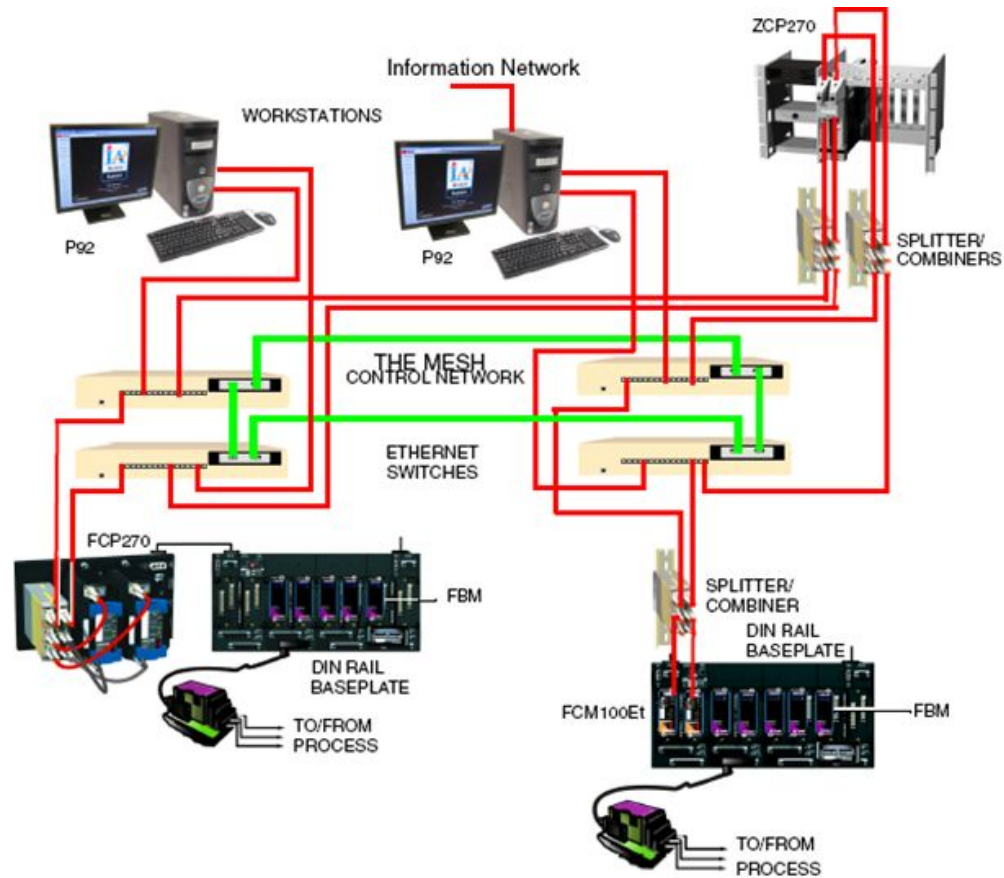
FBM Universal



- HART Entrada Analógica
- HART Salida Analógica
- 4-20mA Entrada y Salida
- 0-20mA Entrada y Salida
- 0-10V y 0-5V Entradas
- Contacto Seco entrada 24 VDC
- NAMUR entrada discreta
- Contador de pulsos, frecuencia-
- Salida Discreta 24 V,

Red de Control y Arquitecturas

Red de Control

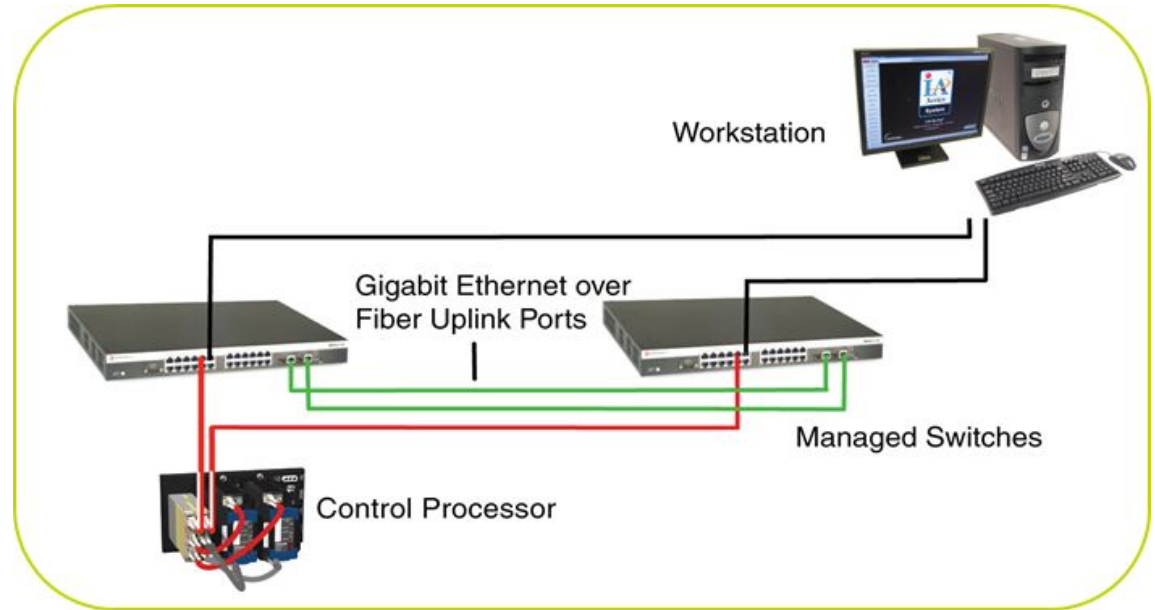


Red de Control

- Provee alta disponibilidad, proveyendo multiples caminos de datos, eliminando puntos de falla
- Integracion a 100 mb / 1 GB.
- Uso de procolos como Rapid Spannin Tree Protocol (RSTP)
- Soporte de topologias: Lineal, Anillo, Estrella, Arbol Invertido
- Hasta 1920 estaciones.
- Hasta 250 switches
- Hasta 10000 direcciones IP
-
- Uso de cableado de cobre y fibra optica (monomodo y multimodo)
- Distancias de hasta 70 KM
- Delay en la red menor a 100 ms.

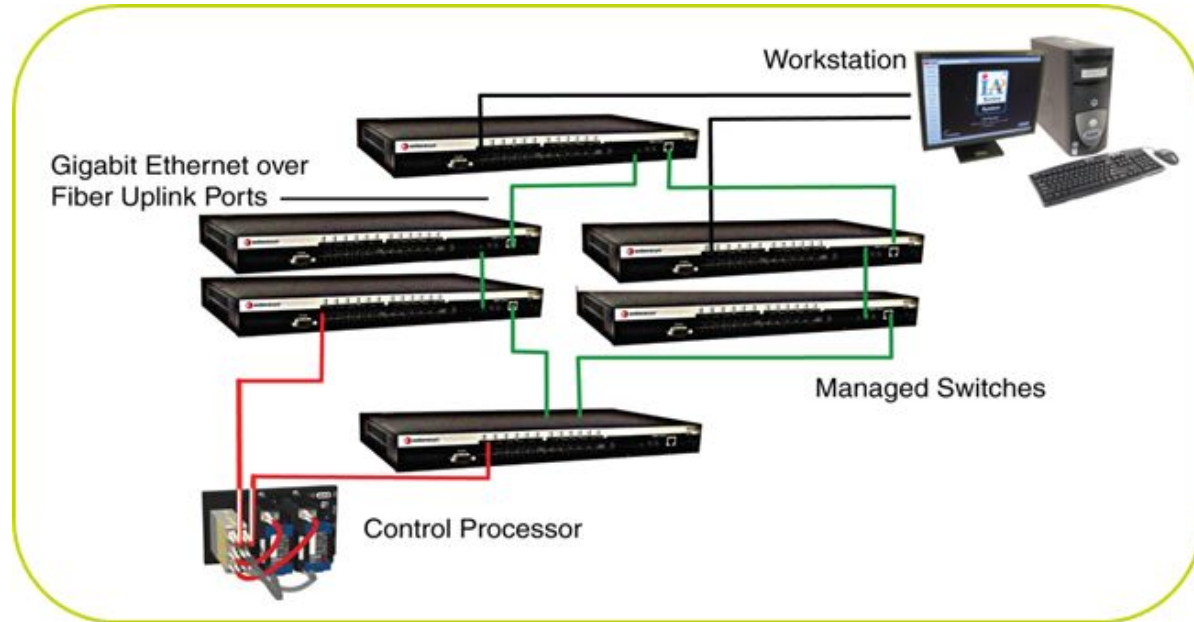
Red de Control - Topologia Lineal

- Red de 2 switches
- Falla en un componente no afecta al resto.



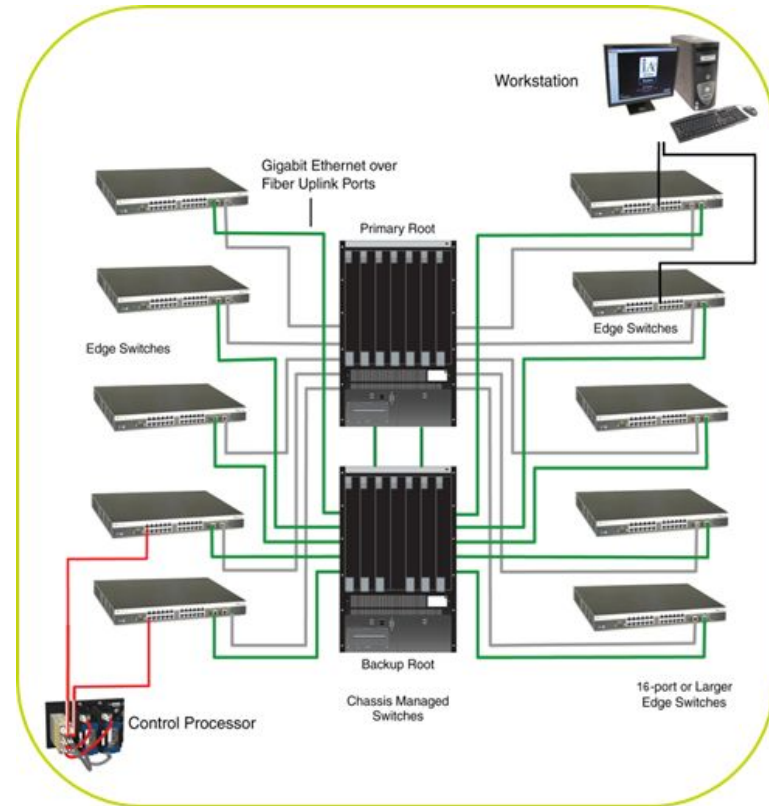
Red de Control - Topología Anillo

- De 3 a 7 switches
- Falla en algun switch da lugar a una topologia lineal.
- Falla en algun componente no afecta al resto



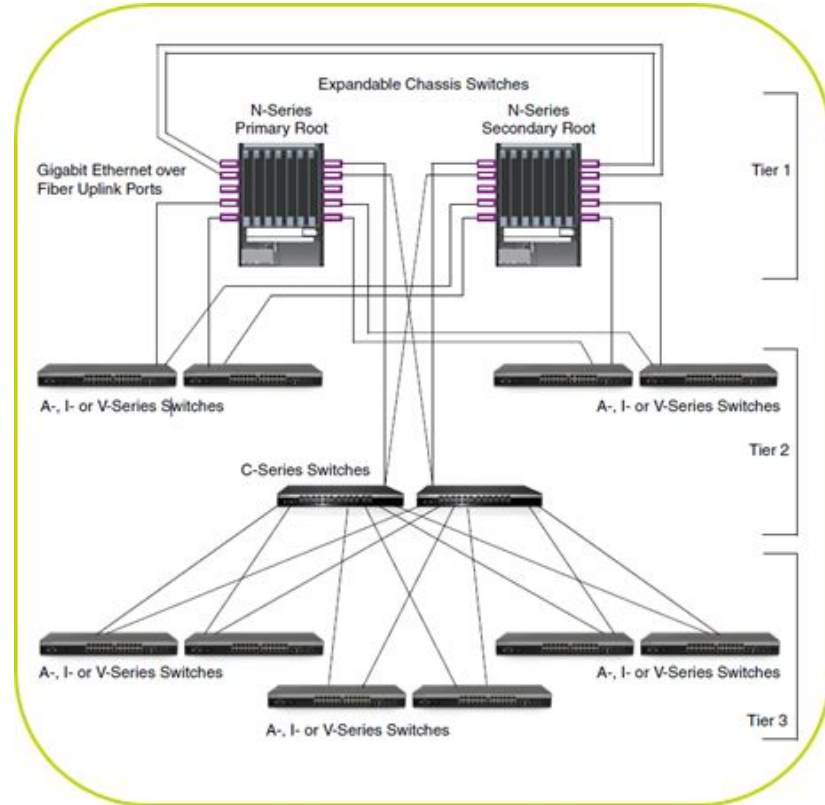
Red de Control - Topología Anillo

- Para redes medias y grandes
- Switches “edge” se conectan a “root”
- Múltiples caminos para redundancia



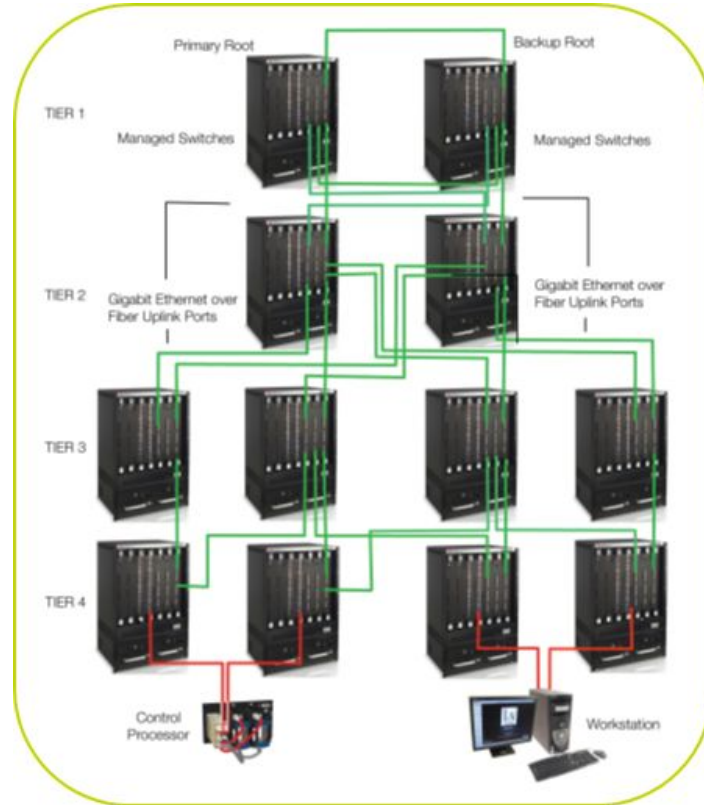
Red de Control - Topología Doble Estrella

- Para redes medias y grandes
- Switches “edge” se conectan a “root”
- Múltiples caminos para redundancia

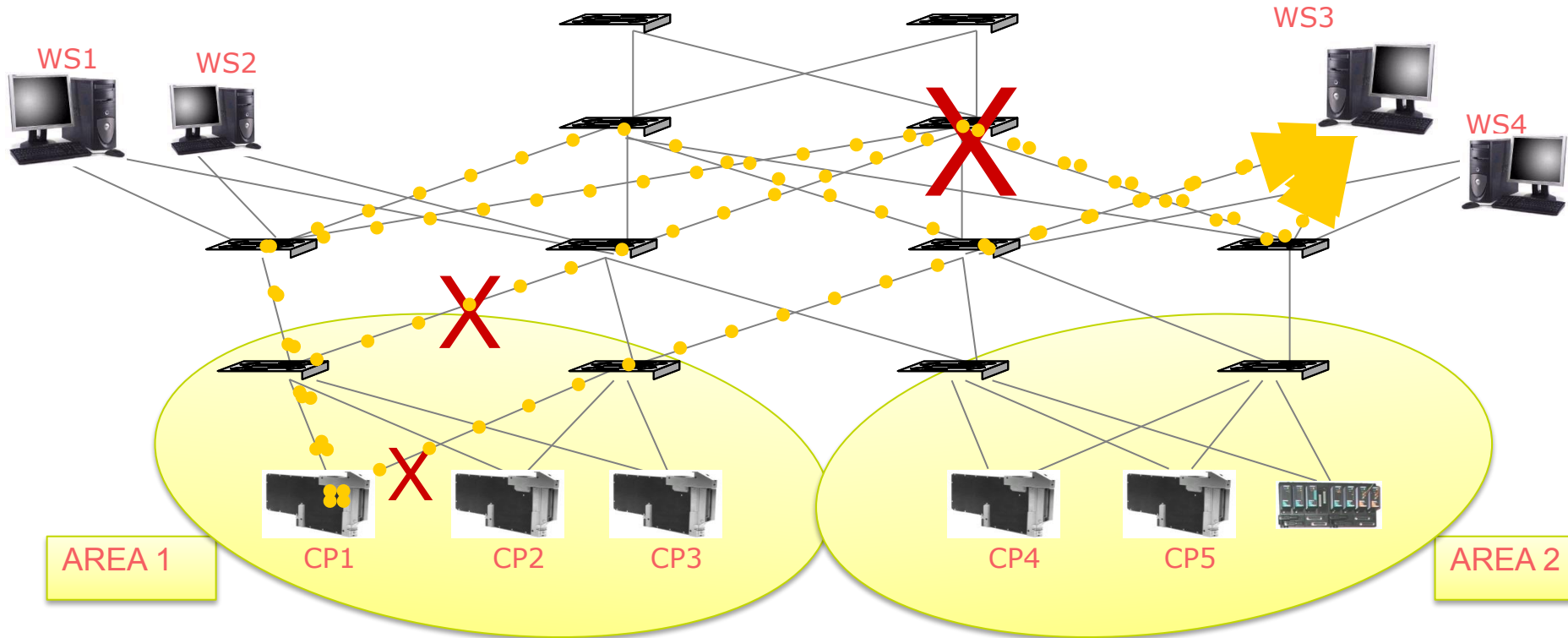


Red de Control - Topología Arbol Invertido

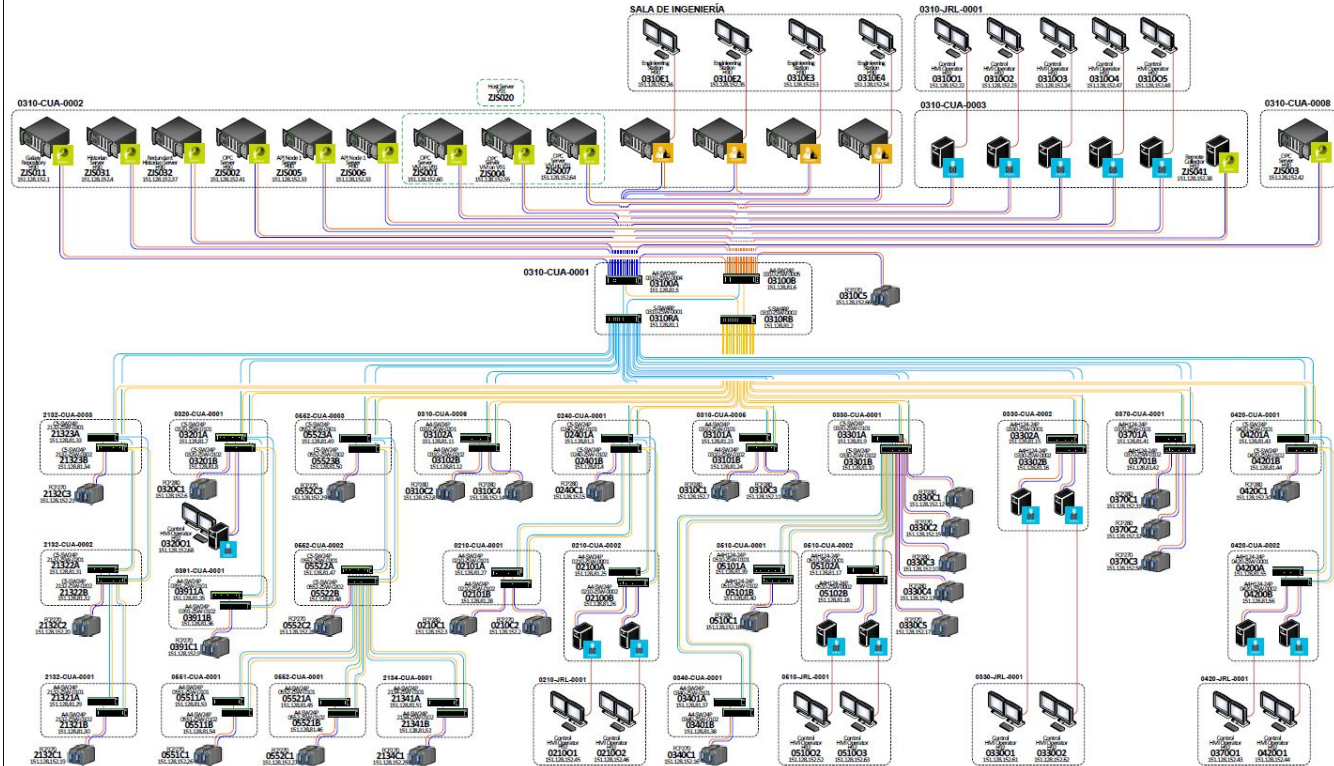
- Para redes grandes
- Switches “edge” se conectan a “root”
- Múltiples caminos para redundancia



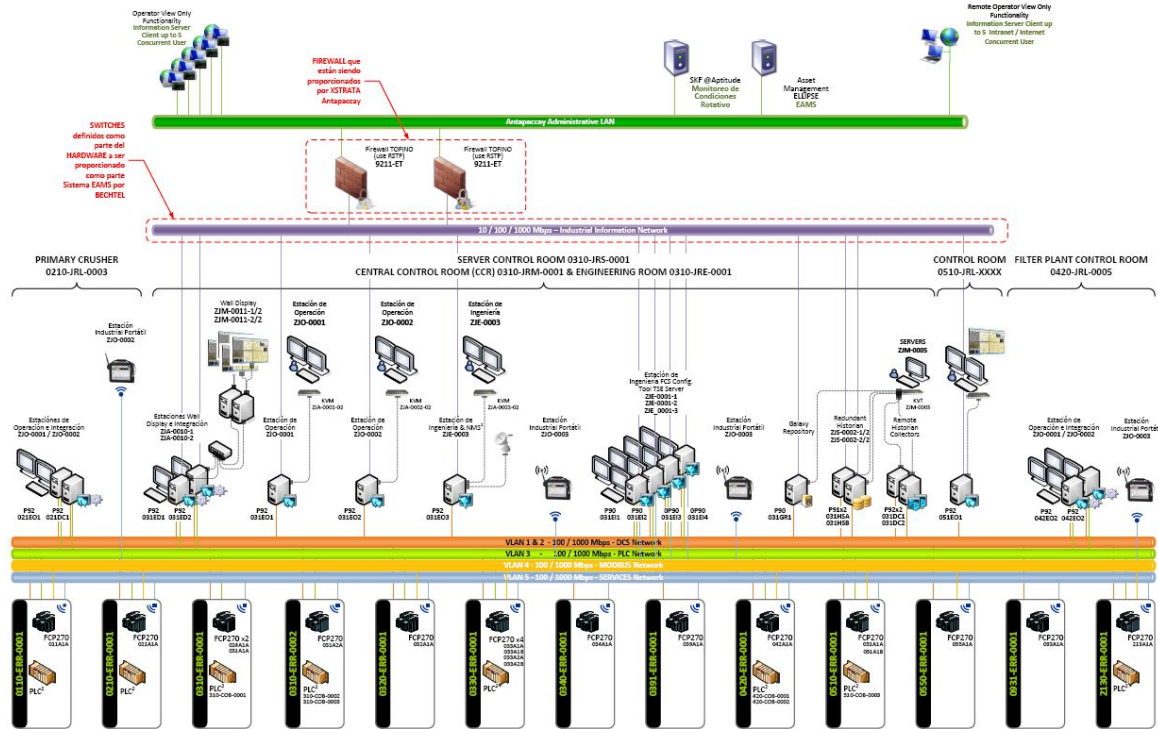
MESH Control Network – Ejemplo



Red de Control - Ejemplos Reales



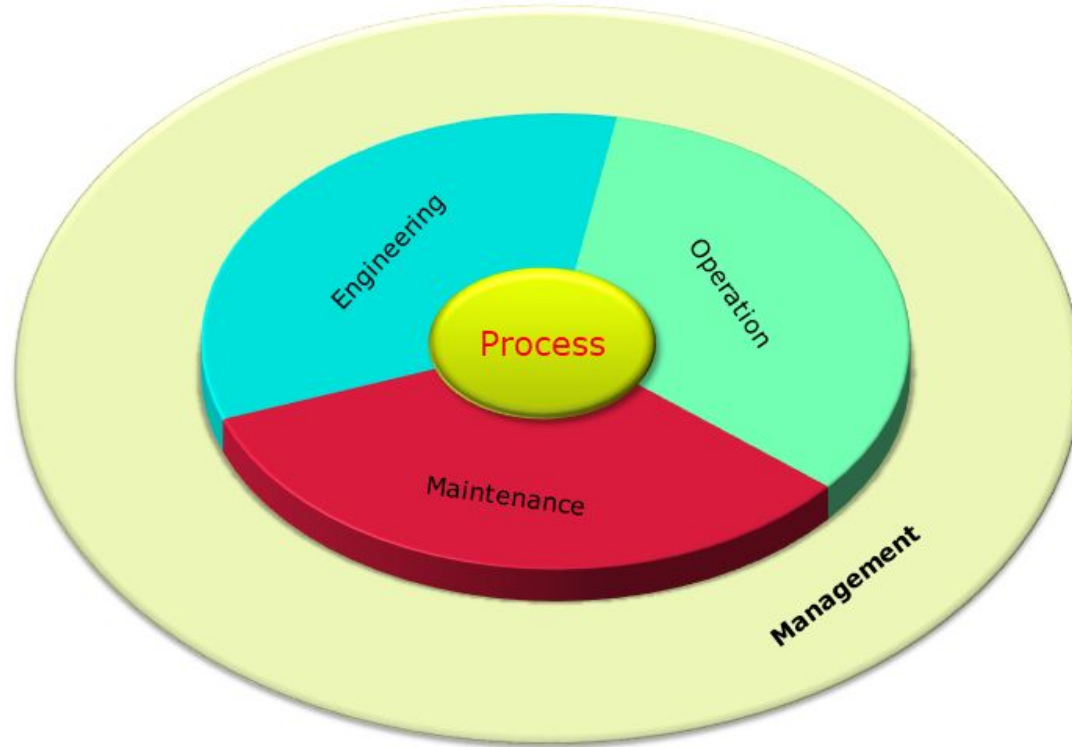
Red de Control - Ejemplos Reales



1) HMI Network Management System - HMIsoft Console for the HMI Control Network, está siendo proveída por ISTRATA junto con FIREWALL.
2) La central, el nombre y la ubicación de los PLC del proyecto serán pendientes de ser definidos por BECHTEL.

Modulo 3: Componentes de Software

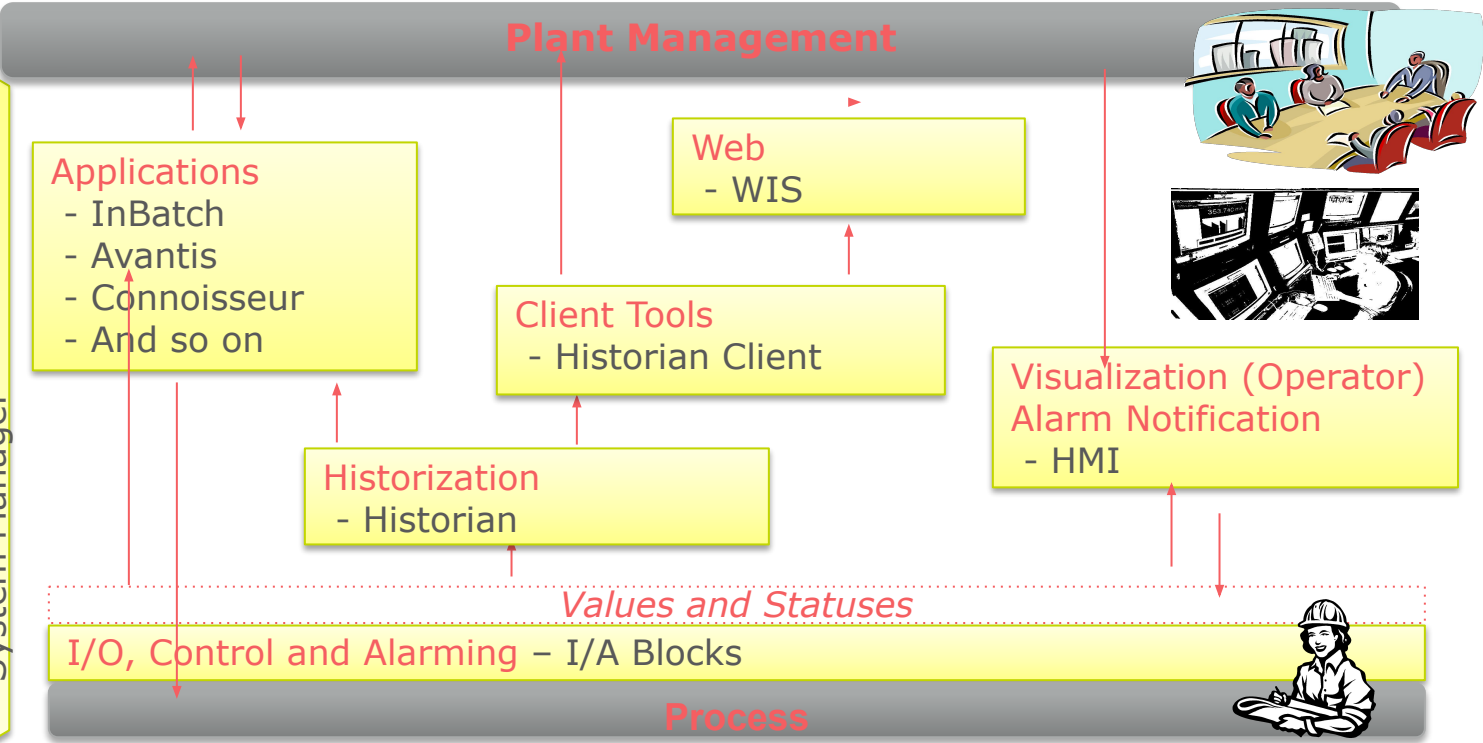
Componentes de Software



Paquetes de software

Engineering and Configuration
using tools incl:
- FCS Configuration Components

Device & Communications
Management
- System Manager



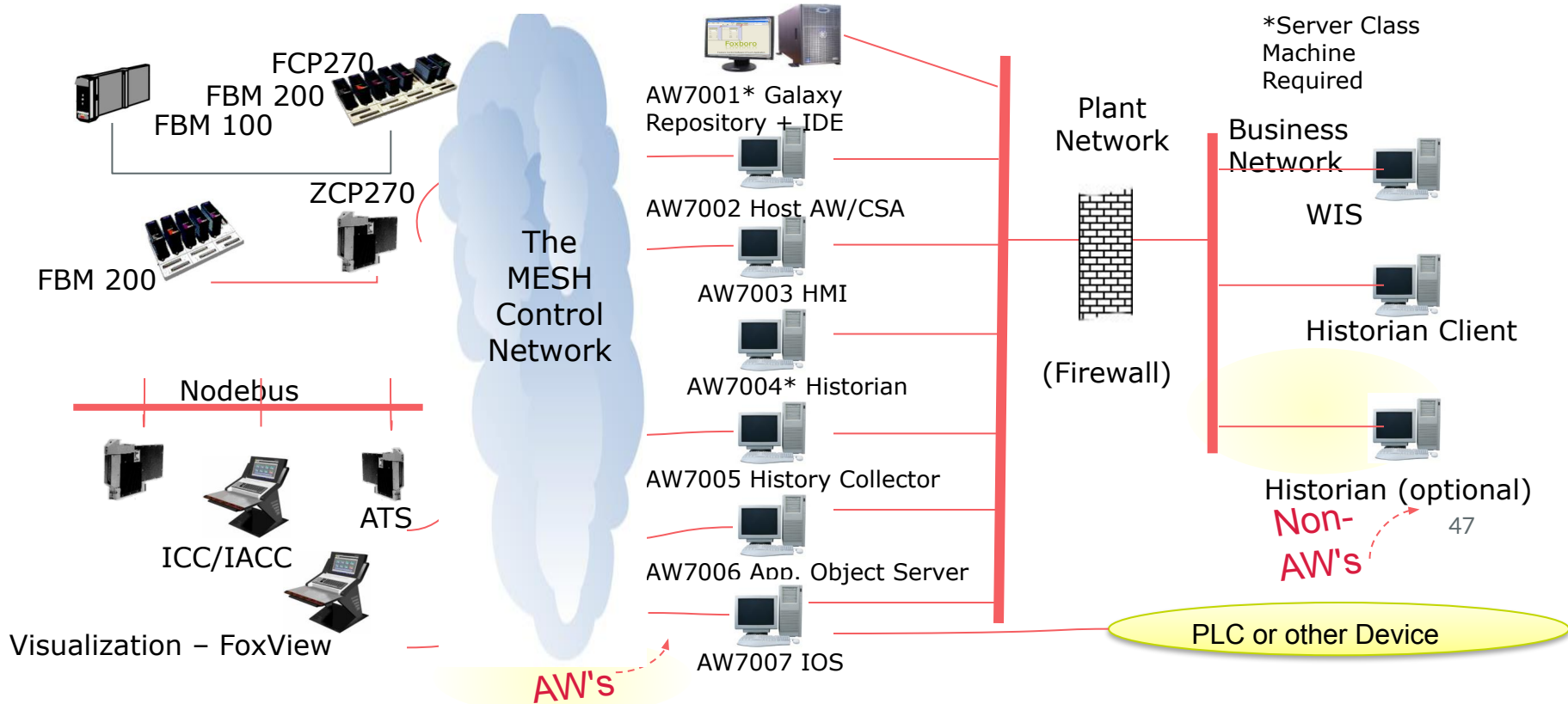
Hardware vs Areas Funcionales

- Funciones de software
- Servidores en la red (nodos):
 - Galaxy Repository
 - FCS Configuration (IDE)
 - Visualization (InTouch/FoxView)
 - Historian (Wonderware/AIM*)
 - History Collector
 - I/O Server
 - Application Object Server
 - Web Server

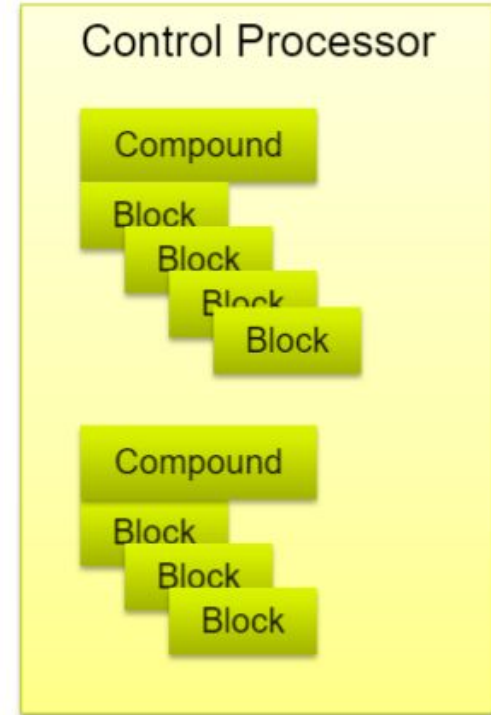
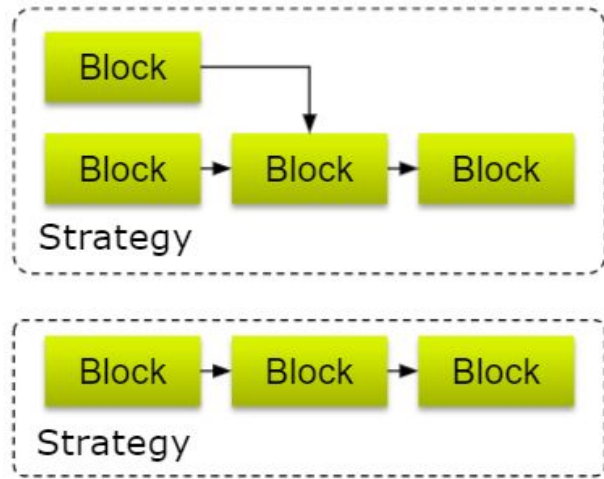


Pueden ser combinadas en un solo servidor

Hardware vs Areas Funcionales



Configurando con Bloques



En Archestra IDE
(Software de
Configuración Integrado=

Editor de Estrategias

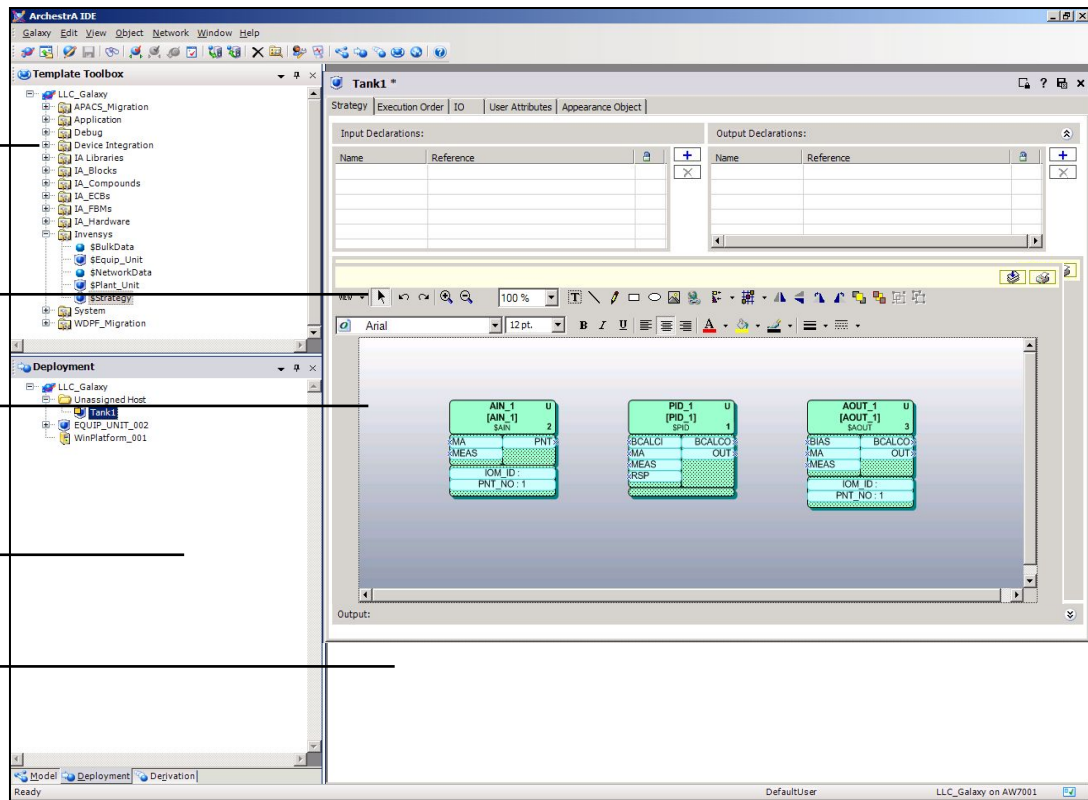
Toolbox con Plantillas

Herramientas Edición

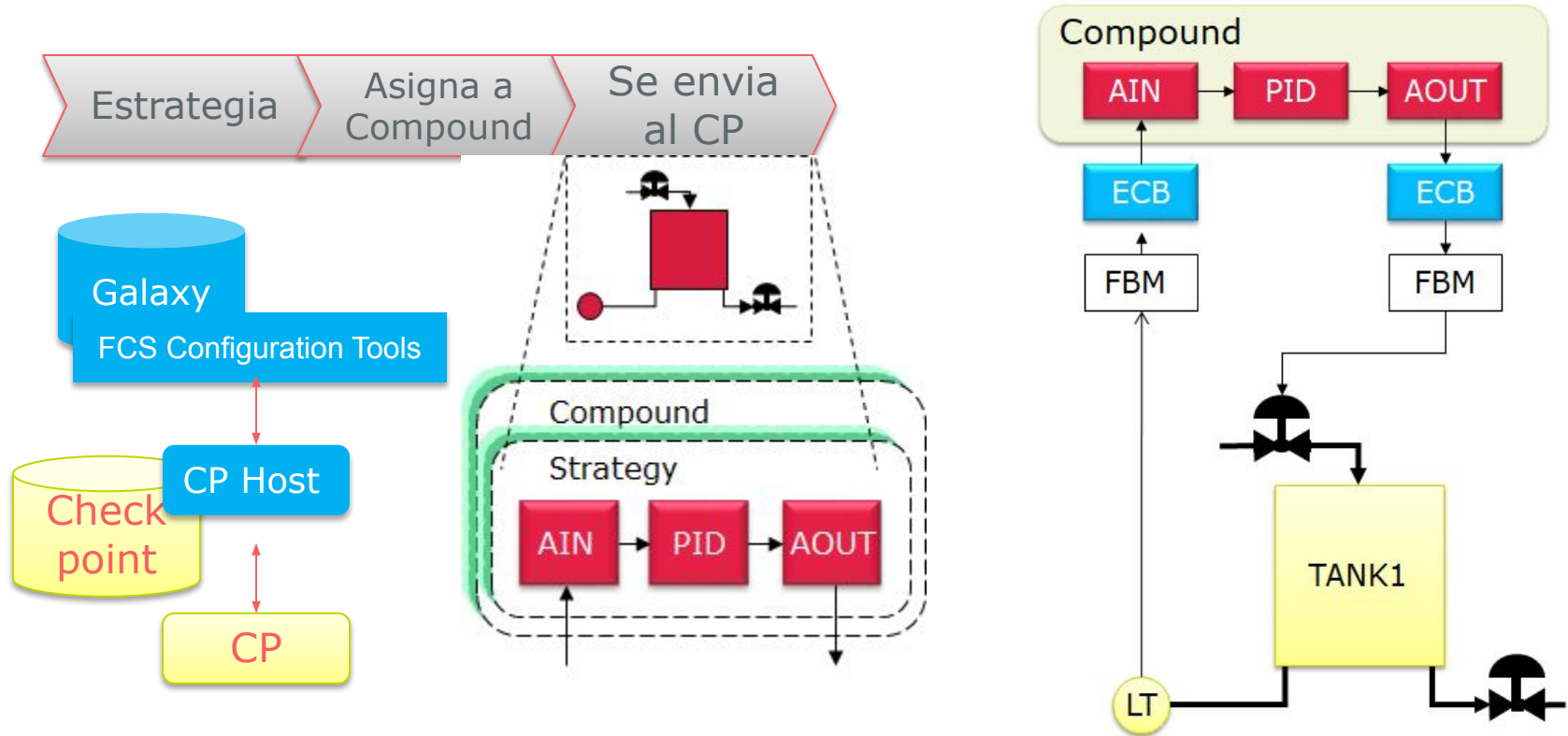
Editor de Estrategias

Ventana de Desarrollo

Ventana de Salida



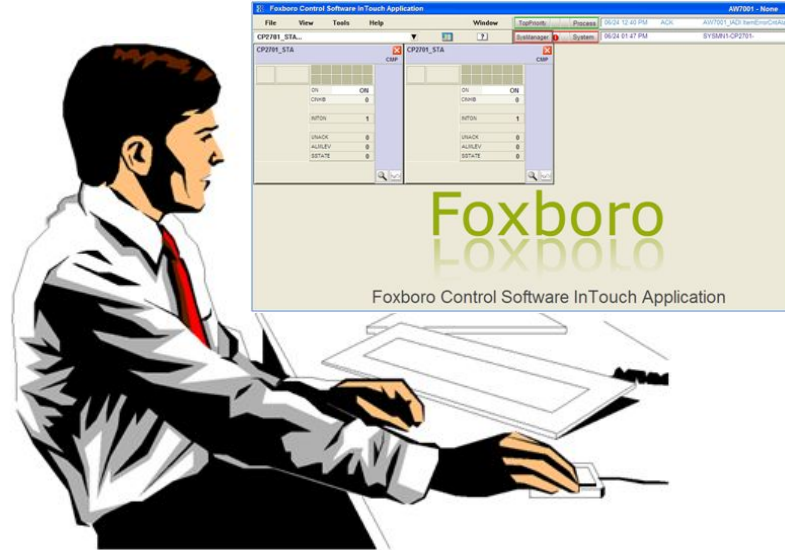
FCS Configuration Tools Process Strategy



Visualizacion

Human-Machine Interface

- Interface tools:
 - Workstation
 - Mouse
 - Keyboards
- Visualization:
 - FCS InTouch Application Viewer
 - FoxView
- Graphic development:
 - WindowMaker
 - FoxDraw



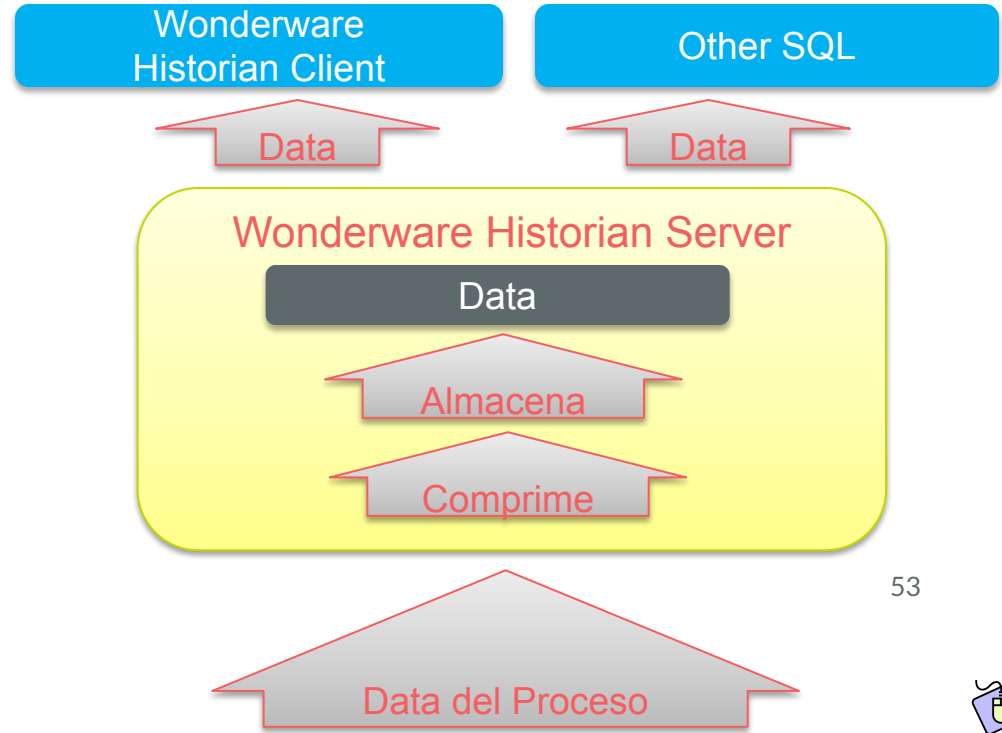
Visualizacion

FCS InTouch Application



Wonderware Historian

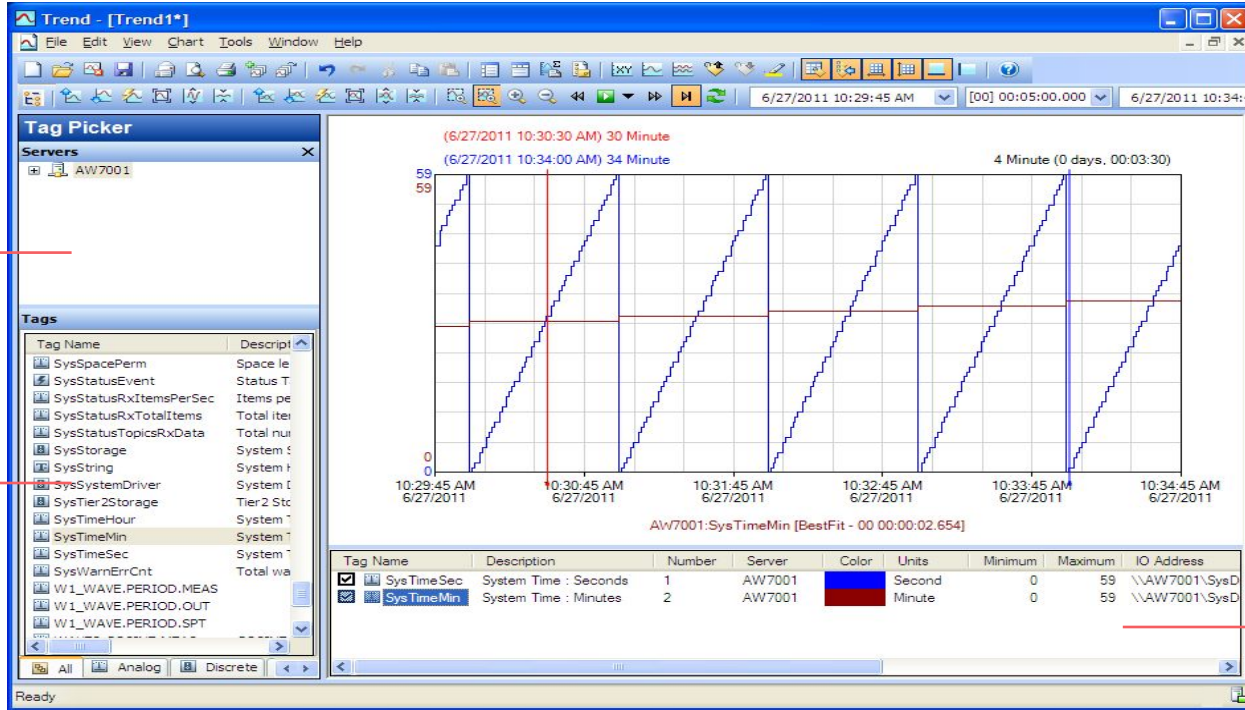
- Recibe información
- Comprime y almacena datos
- Responde a consulta de clientes



Wonderware Historian Clients

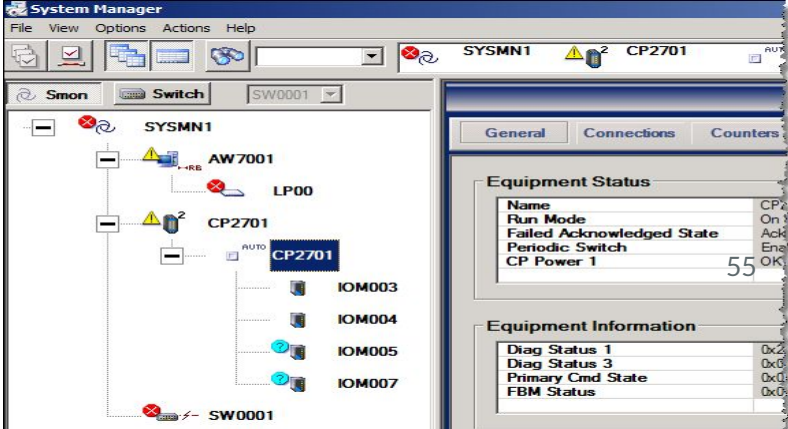
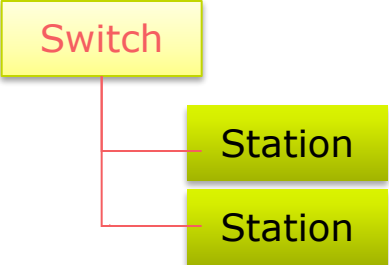
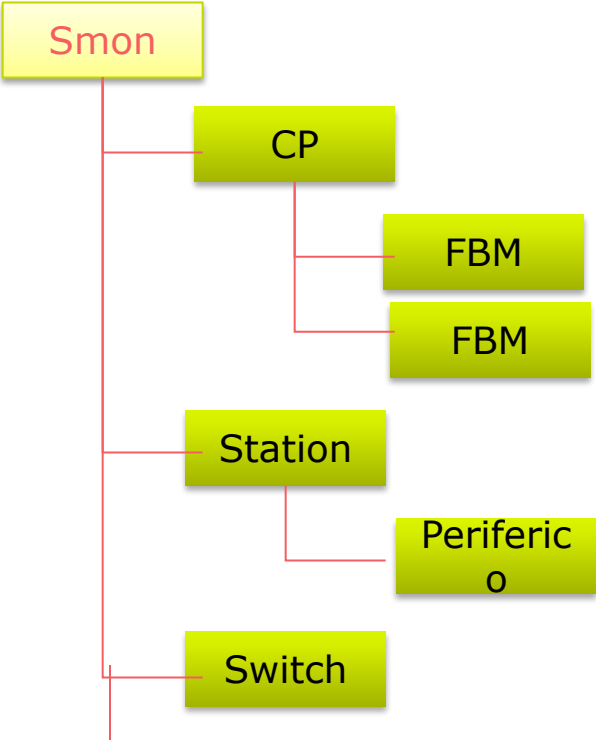
Tag Picker

Tags



Tags being trended

System Manager



System Manager

- Monitor del sistema integrado

The screenshot displays the System Manager interface. On the left, a network diagram shows a central node labeled 'SYSTEM1' connected to three other nodes: 'AW7001' (with a warning icon), 'CP2701' (with a plus icon), and 'SW0001' (with a plus icon). A label 'LP00' is also visible near the connections.

On the right, a detailed view of the 'CP2701' device is shown. The interface includes tabs for 'General', 'Connections', and 'Counters'. The 'General' tab is active, displaying the following information:

Equipment Status

Name	CP2701	Run Mode	
Type	Field Control Processor 270	Failed State	
Fault Tolerant	True	Alarming State	
Boot Host	AW7001	Failed Acknowledgment	
IP Address	151.128.152.1	Failed Devices	
Switch Connections	1	Failed Devices	
SMON	SYSTEM1	Fault Tolerant State	
SMON Host	AW7001	Diagnostics State	
		Image Update State	
		Download State	

Equipment Information

Reporting State	Report All	Primary Hardware	
Cable State	Both Cables Okay	Primary Hardware	
Station Address	00006CC0000E	Primary Hardware	
Master Timekeeper Reporting	Sync_Not_Config	Primary Image File	
Primary Mode	Mamed Prim	Shadow Hardware	
Primary ROM Address	00006C2205B3	Shadow Hardware	
Shadow Mode	Mamed Shad	Shadow Hardware	
Shadow ROM Address	00006C2205C0	Shadow Image File	

Switch Connections

SW0001	
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Sistema de Alarmado

Proveedor Alarmas

Proveedor Externo

DCS Proveedor Alarmas



Se Distribuye a todos los nodos o maquinas

- Alarms
- Events

Consumidor de Alarmas

FCS InTouch Application Active-X

Alarm Panel

Annunciator Alarm Server (AAS) Task



Process/System Buttons

GCIO



CP



Alarm Print Utility



Alarm DB Logger

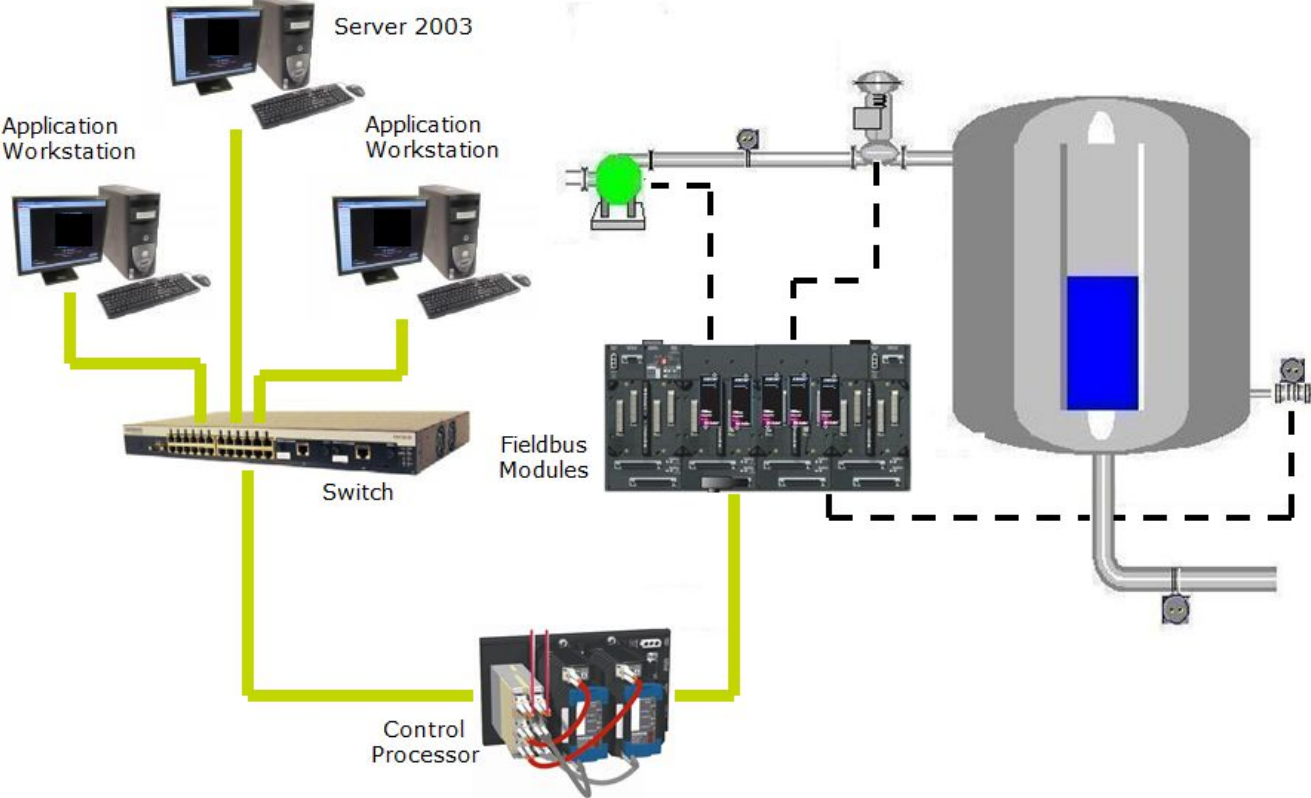
SQL DB

Laboratorio 1 - Usando el entorno HMI



Modulo 4: Conceptos de Control Continuo aplicado a un DCS

Flujo tipo de la señal de control



Bloques disponibles en un DCS

CONTINUOUS

INPUT/OUTPUT

AIN	Analog In
AINR	Analog In Redundant
MAIN	Multiple Analog In
AOUT	Analog Out
AOUTR	Analog Out Redundant
CIN	Contact In
CINR	Contact In Redundant
MCIN	Multiple Contact In
COUT	Contact Out
COUTr	Contact Out Redundant
MCOUTr	Multiple Contact Out
VLV	Valve On/Off
MOVLV	Motor-Operated Valve
MTR	Motor Controller
GDEV	General Device Block
MDACT	Motor Driven Actuator
EVENT	Sequence of Events
BIN	Binary In
BINR	Binary In Redundant
BOUT	Binary Out
BOUTr	Binary Out Redundant
IIN	Integer In
IOUT	Integer Out
PAKIN	Packed Boolean In
PAKOUT	Packed Boolean Out
PLSOUT	Pulse Out
RIN	Real In
RINR	Real In Redundant
STRIN	String In
STROUT	String Out

CONTROL

PID	PID Controller
PIDE	PID with EXACT
PIDX	PID Extended
PIDXE	PIDX with EXACT
PIDA	PID Adaptive
DPIDA	Distributed PID Adaptive
FBTUNE	Feedback Self-tuner
FFTUNE	Feedforward Self-tuner
DGAP	Differential Gap
PTC	Proportional Time
RATIO	Ratio
BIAS	Bias

DYNAMIC EFFECT

DTIME	Dead Time
LLAG	Lead/Lag
RAMP	Ramp Generator
LIM	Limiter

STORAGE

LONG	Long Integer Variable
PACK	Packed Long Boolean Var
REAL	Real Variable
STRING	String Variable
BOOL	Boolean Variable

FUNCTION

DSI	Display Station I/F
PATT	Pattern Block
STATE	State Block

ALARMS

REALM	Real Alarm
BLNALM	Boolean Alarm
PATALM	Pattern Alarm
ALMPRI	Alarm Priority
MEALM	Measurement Alarm
MSG	Message
STALM	State Alarm

COMPUTATIONAL

SWCH	Switch Selector
ACCUM	Accumulator
SIGSEL	Signal Selector
OUTSEL	Output Selector
CALC	Calculator
CALCA	Advanced Calculator
MATH	Mathematics
LOGIC	Boolean Logic

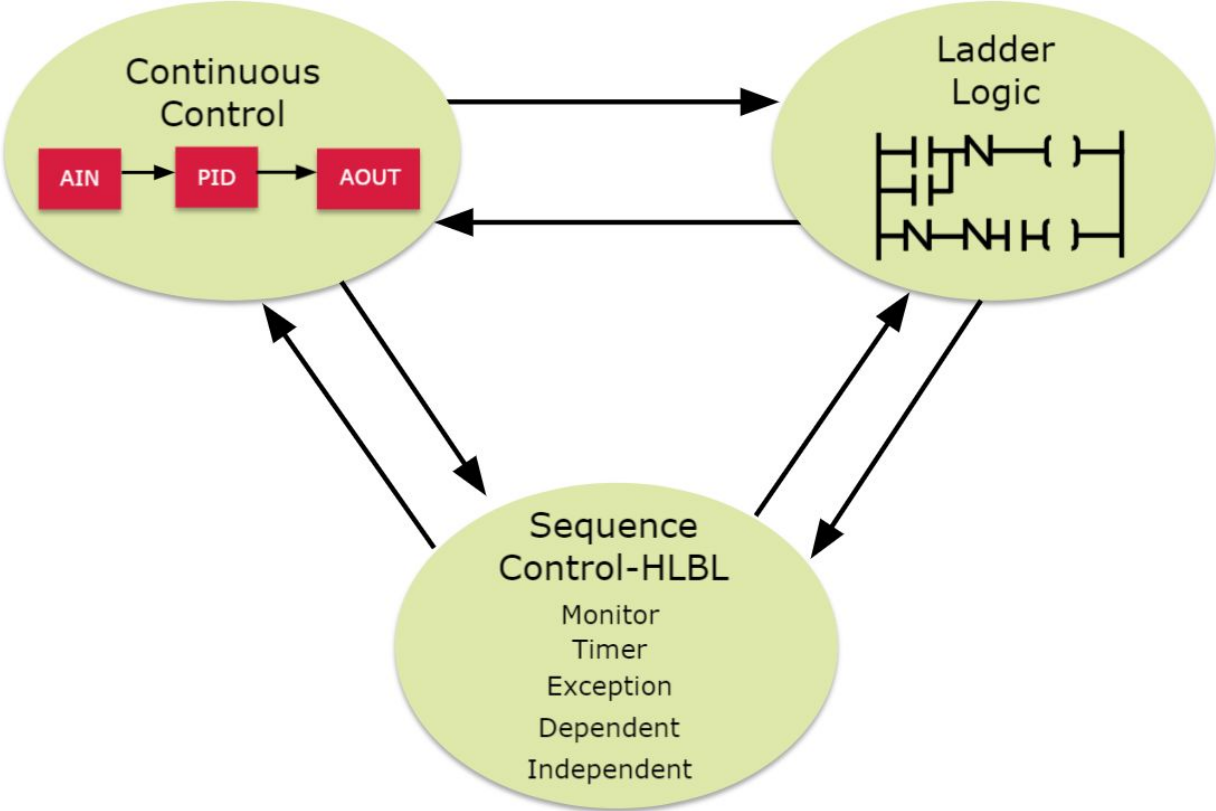
SEQUENCE LOGIC

MON	Monitor
TIM	Timer
EXC	Exception
IND	Independent
DEP	Dependent

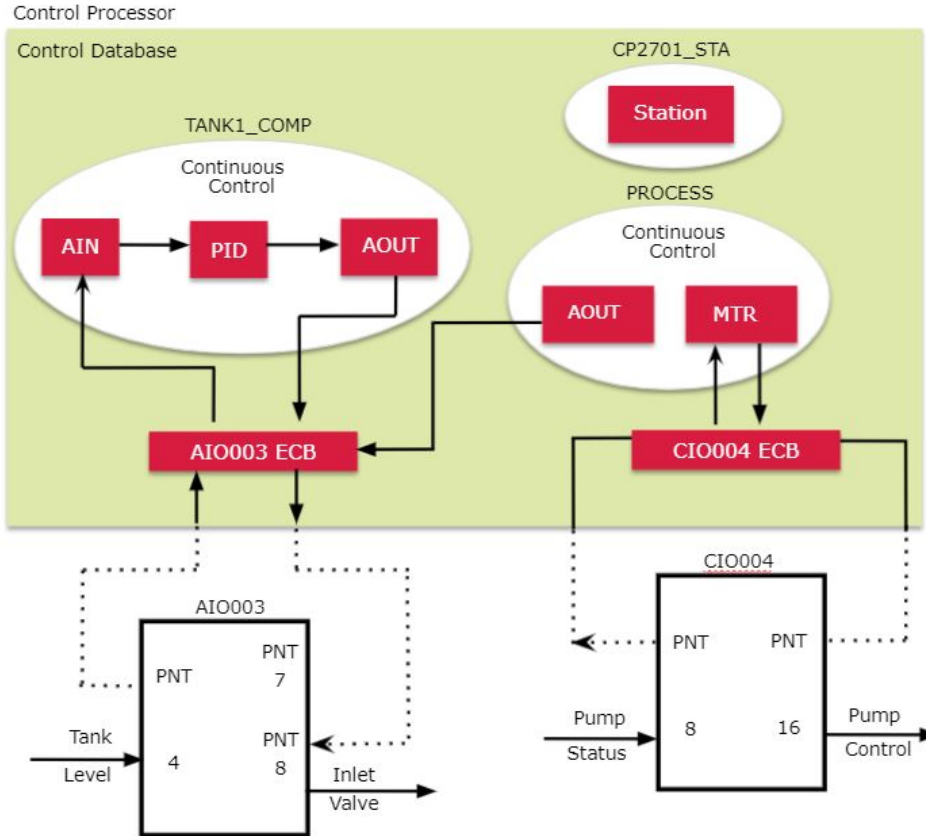
LADDER LOGIC

PLB	Programmable Logic
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Construyendo con bloques



Arquitectura de Configuración

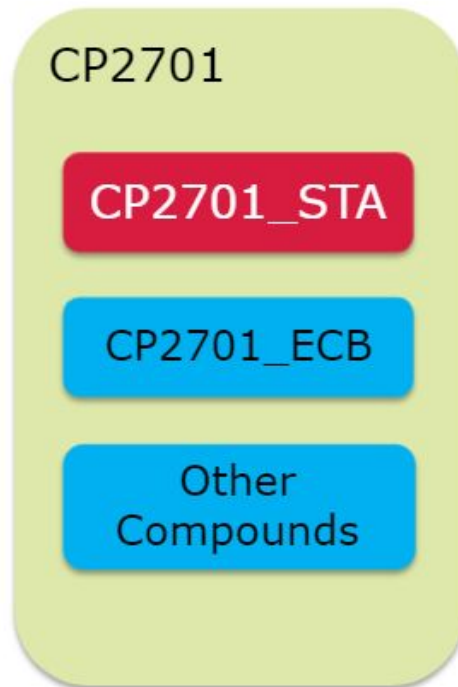


Que son los Compounds?

- Dentro del Procesador, los bloques son organizados o contenidos en “Compounds”
- No mas 12 digitos
- Se ejecuta en un orden especifico
- Envia señales de alarmado a dispositivos de alarmado
- Existen dos compound por defecto:
 - Station Compound (STA)
 - Equipment Control Block Compound (ECB)

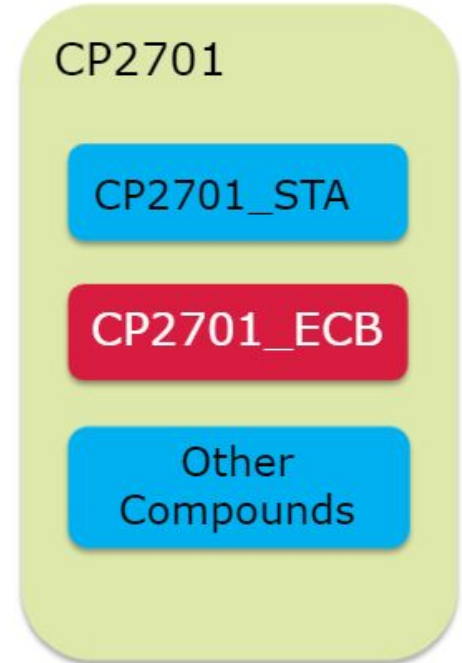
Compound Station (STA)

- Todos los CPs tienen un compound STA
- Cada compound Station contiene un bloque STA.
No se puede agregar mas bloques.
- Bloque Station (STA)
 - Bloque STA no se puede eliminar.
 - Algunos parametros son modificables.
- Principales características bloque STA
 - Carga del CP (CPU, Memoria, uso de I/O)
 - Version del software
 - Informacion del Checkpoint file

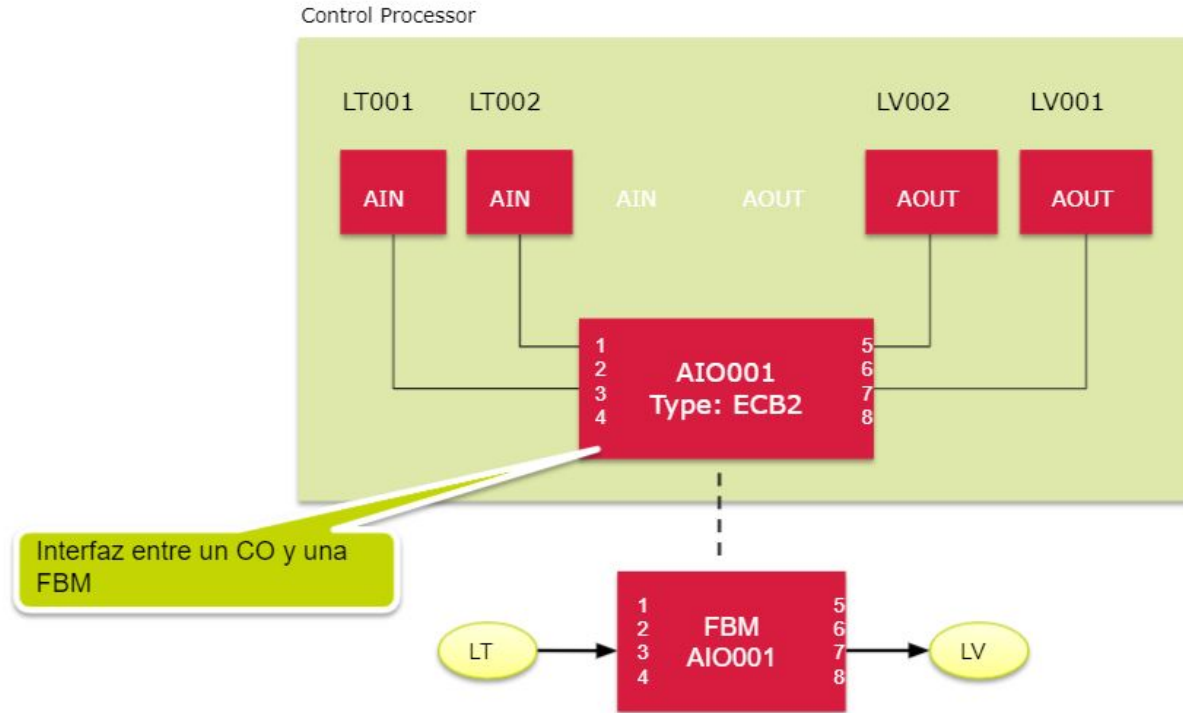


Compound ECB (Equipment Control Block)

- Todos los CPs tienen un compound ECB
- Cada compound ECB contiene al menos un bloque (PRIMARY_ECB), se agrega un bloque ECB por cada FBM agregada .
- PRIMARY_ECB actua como software (driver) entre el CP y el Fieldbus.
- Otros ECB son software (driver) entre las FBM y el CP (Procesador)
 - Principales características bloque STA
 - Carga del CP (CPU, Memoria, uso de I/O)
 - Version del software
 - Información del Checkpoint file

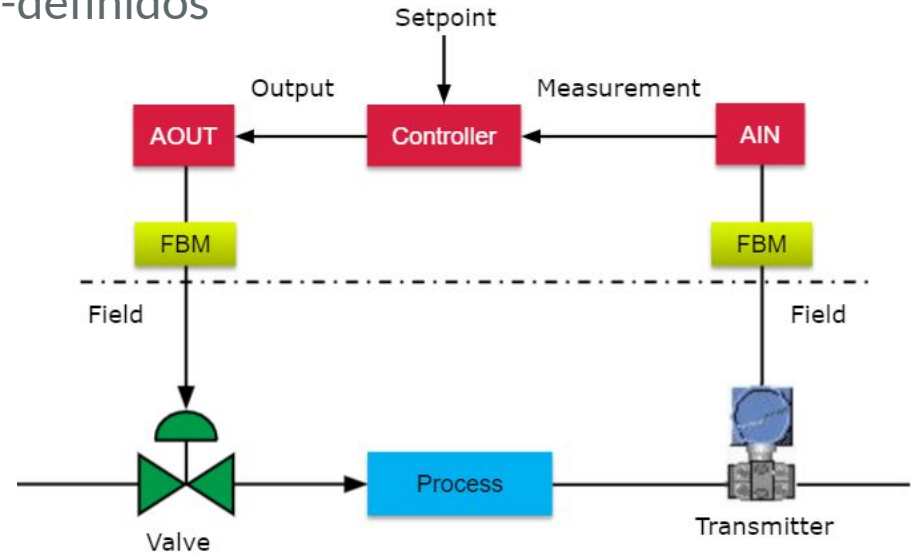


Compound ECB (Equipment Control Block)



Entendiendo a los Bloques

- Un bloque es un algoritmo que ejecuta una funcion
- Cada bloque contiene parametros pre-definidos (entradas o salidas al bloque)
- Para un lazo de control simple
 - Bloque AIN
 - Bloque Controlador (PID)
 - Bloque AOUT



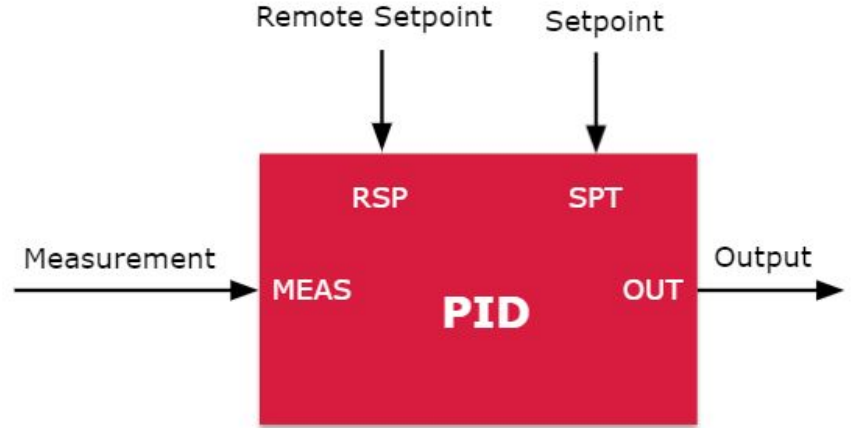
Bloque AIN

- Lee señal digital de la FBM (raw o cuentas) o de otro bloque
- Acondiciona la señal
- Convierte la señal raw a unidades de ingeniería
- Monitorea condiciones de alarmado (absoluta, BAD, Out of range, etc)



Bloque PID

- Contiene algoritmos basicos y avanzados PID
- Monitorea condiciones de alarmado (absoluta, BAD, desviacion de SP, salida)



Bloque AOUT

- Envía señal de salida analógica a FBM u otros bloques.
- Monitorea condiciones de alarmado (BAD quality)



Reglas para un bloque

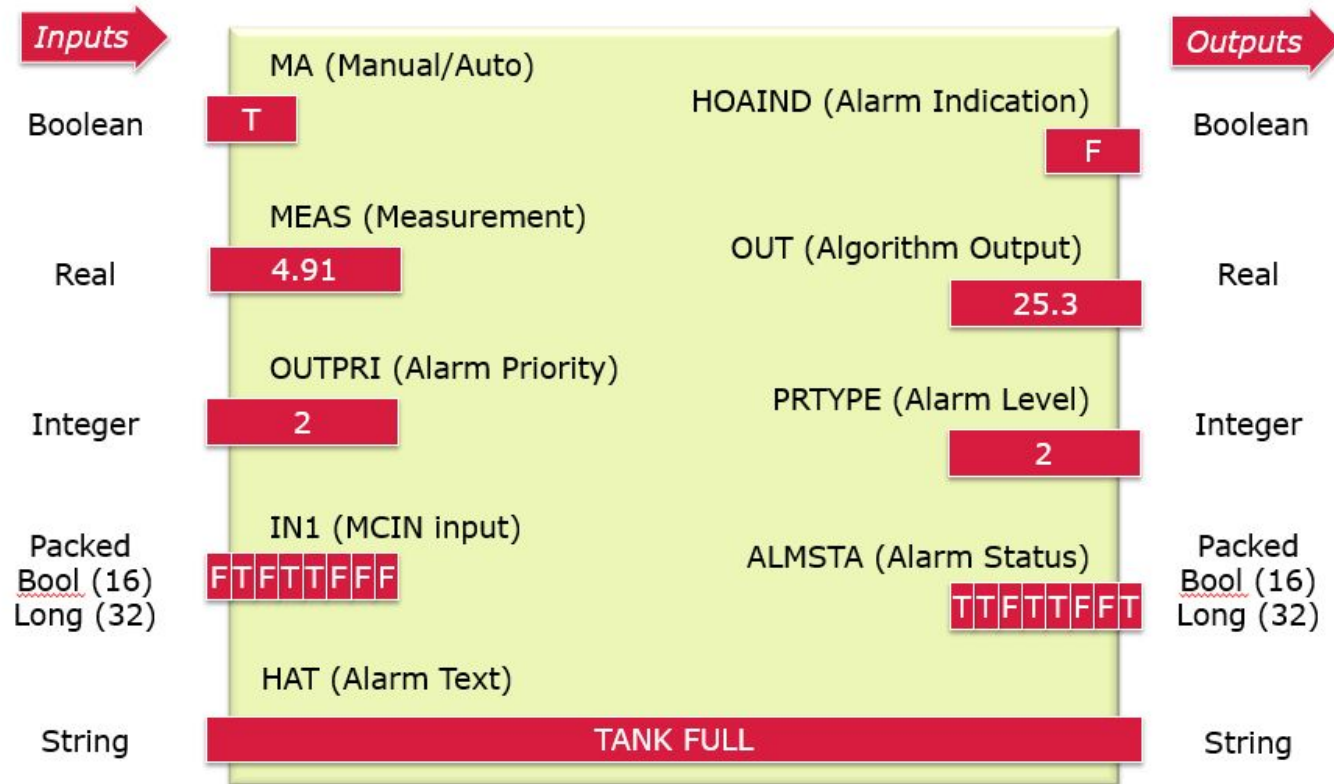
- Nombre debe ser unico
- Maximo 12 caracteres (no espacios)
- Puede recibir señales de una FBM o de otros bloques del sistema.
- El periodo de ejecucion es configurable.
- El orden de ejecucion del bloque es configurabe dentro del compound.

Index	Frequency
0	0.1 sec
1	0.5 sec (Default)
2	1 sec
3	2 sec
4	10 sec
5	30 sec
6	60 sec (1 min)
7	600 sec (10 min)
8	3600 Sec (1 hr)
9	0.2 sec
10	5 sec
11	0.6 sec (0.2 sec BPC)
12	6 sec (2 sec BPC)
13	0.05 sec

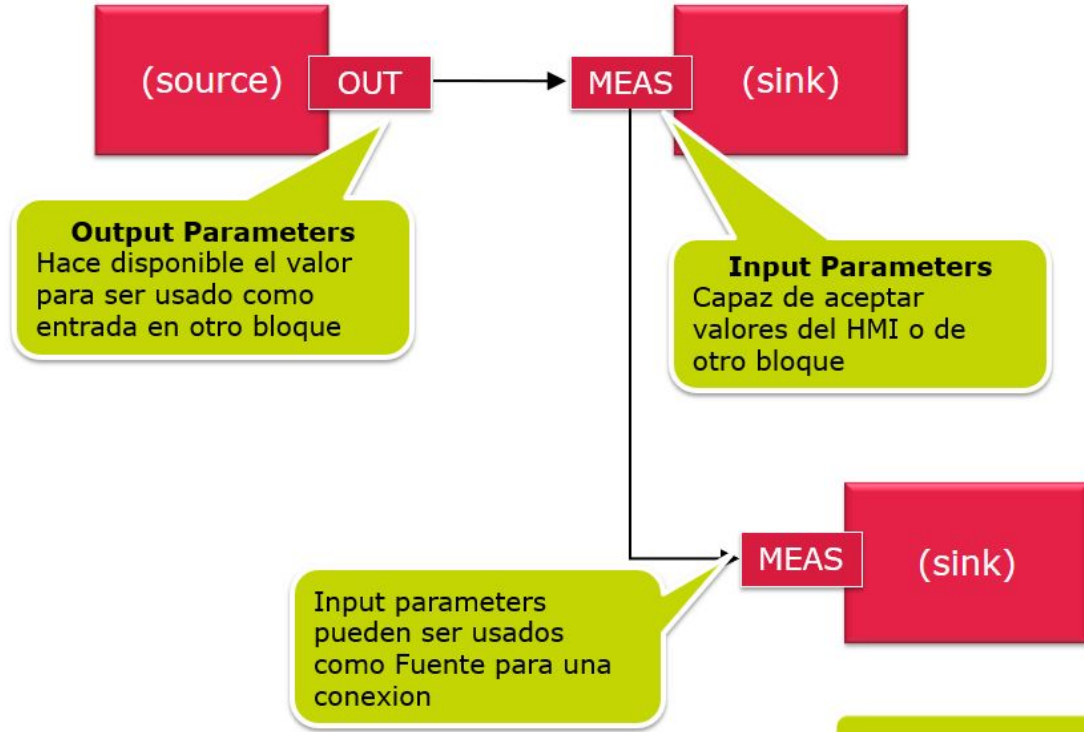
Orden de procesamiento de bloques



Parametros - Tipos de Datos

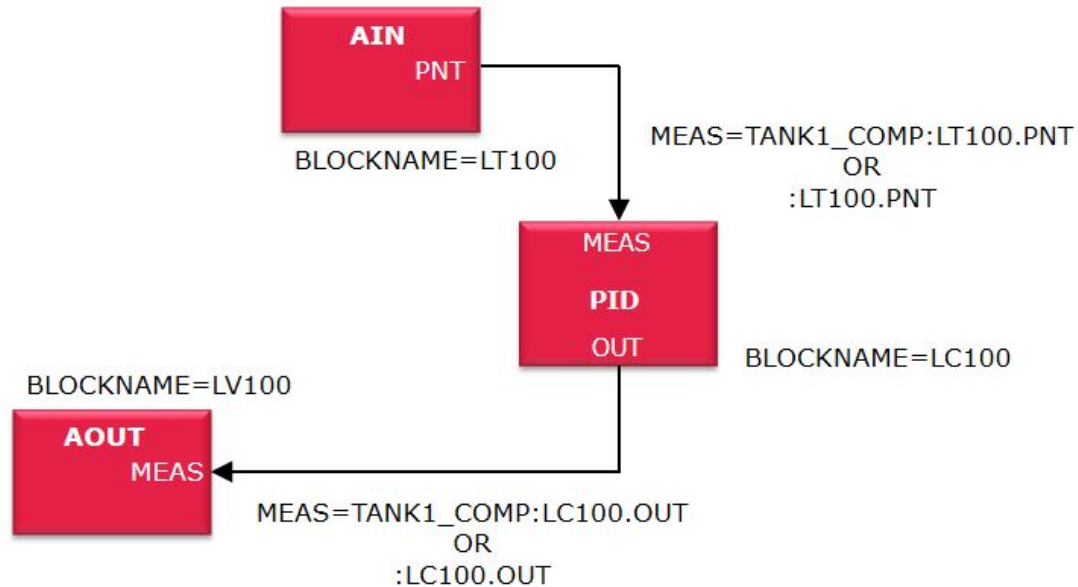


Parametros



Sintaxis de direccionamiento o conexiones

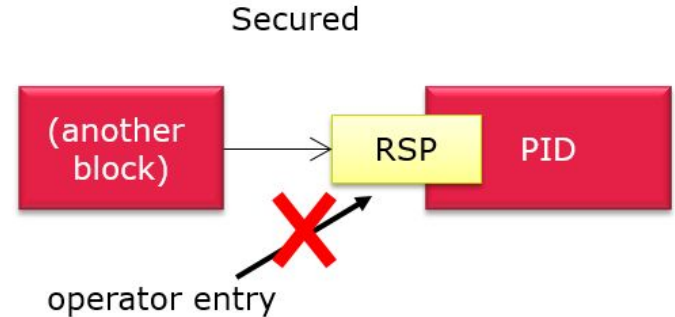
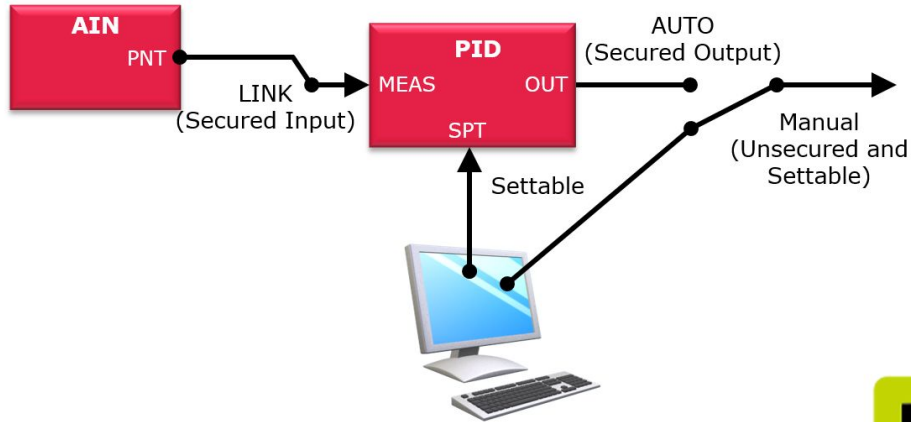
COMPOUND:BLOCK.PARAMETER
also known as (C:B.P or CB.P)



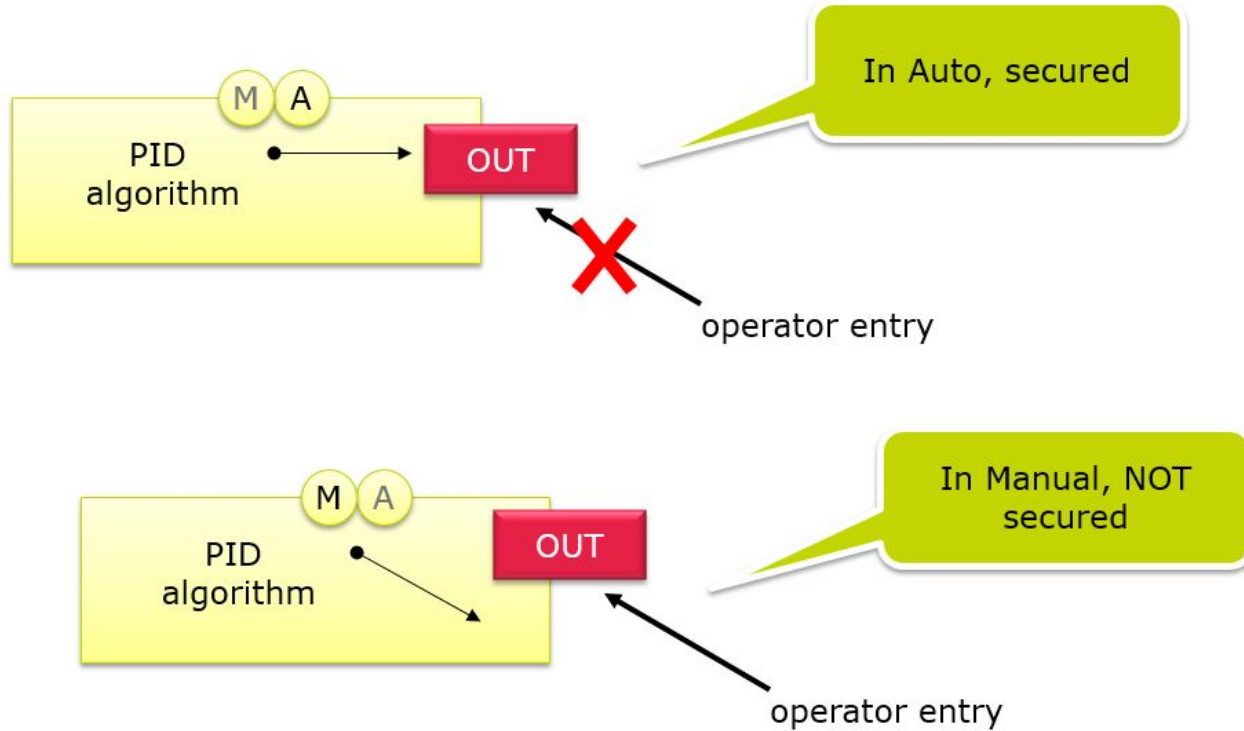
Parámetros seteables y no seteables

Parametros Seteables: pueden ser cambiados desde el HMI, faceplate.

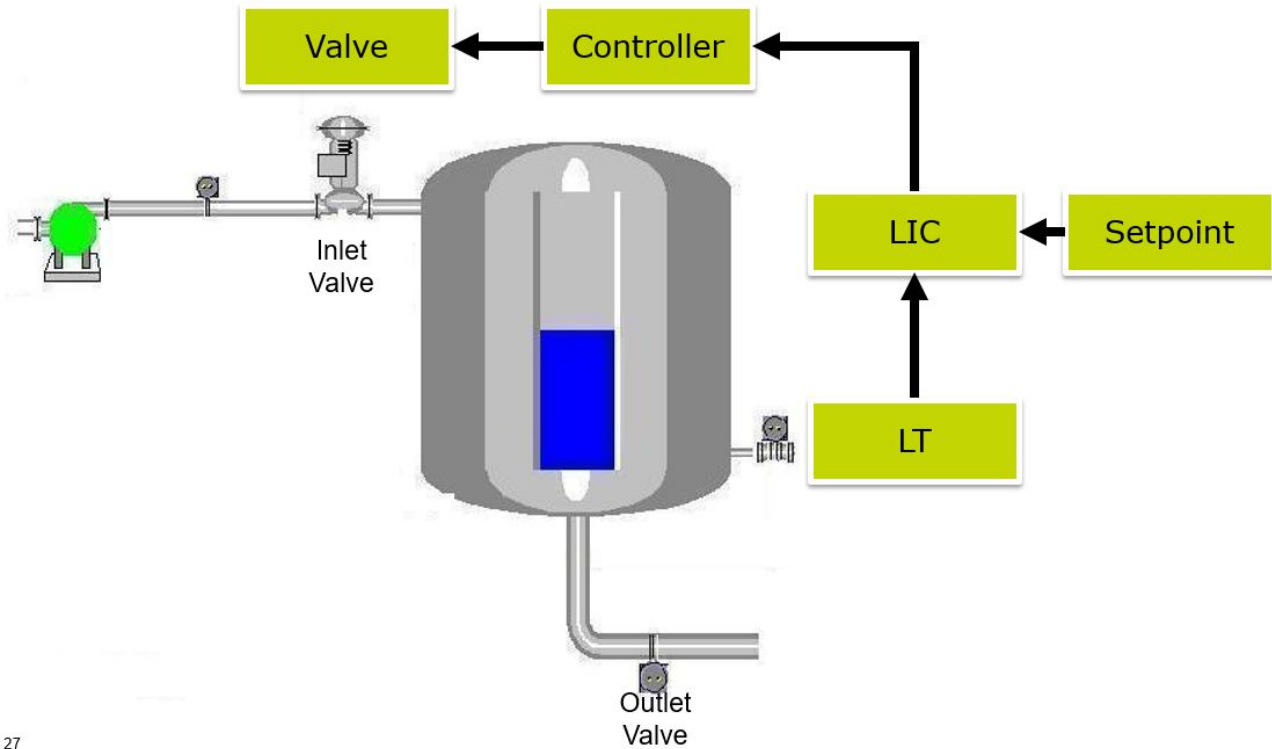
Parametros no seteables: no pueden ser cambiados desde el HMI. Solo puede ser cambiado desde el Archestra IDE (Entorno de Configuración).



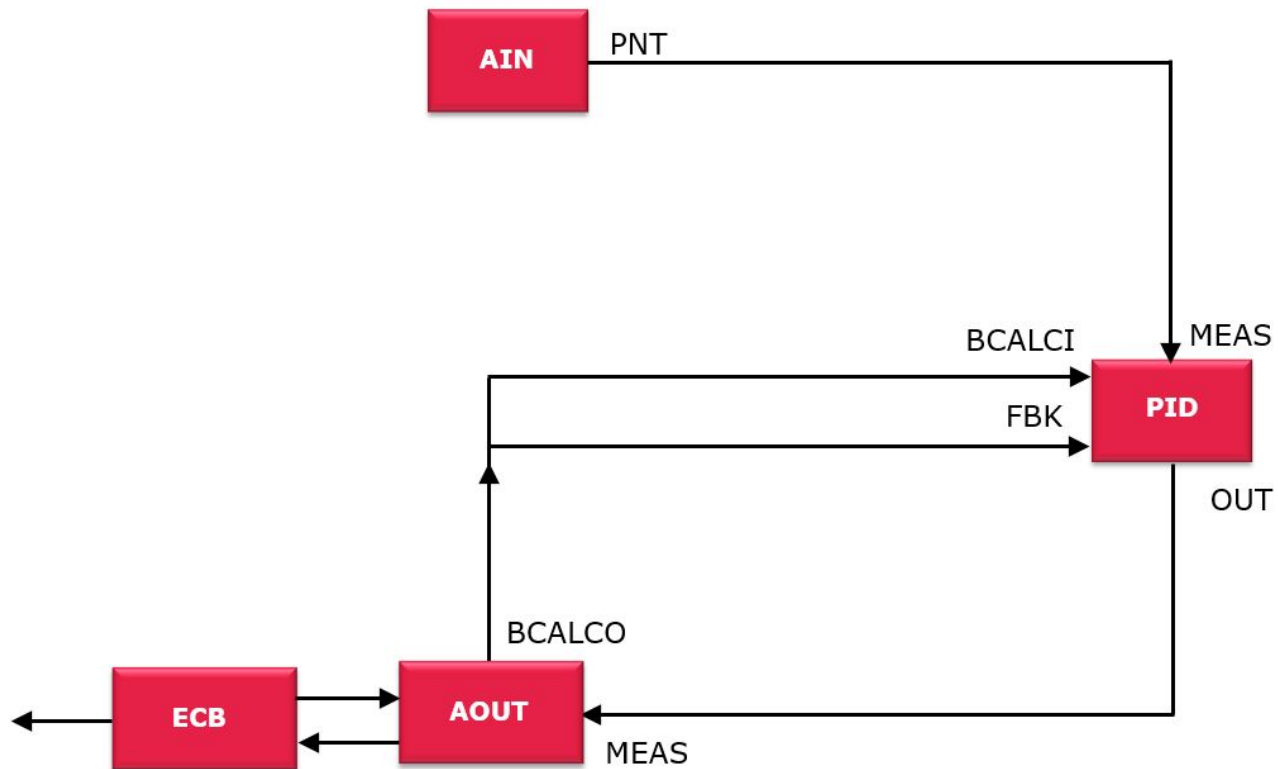
Parámetros seteables y no seteables



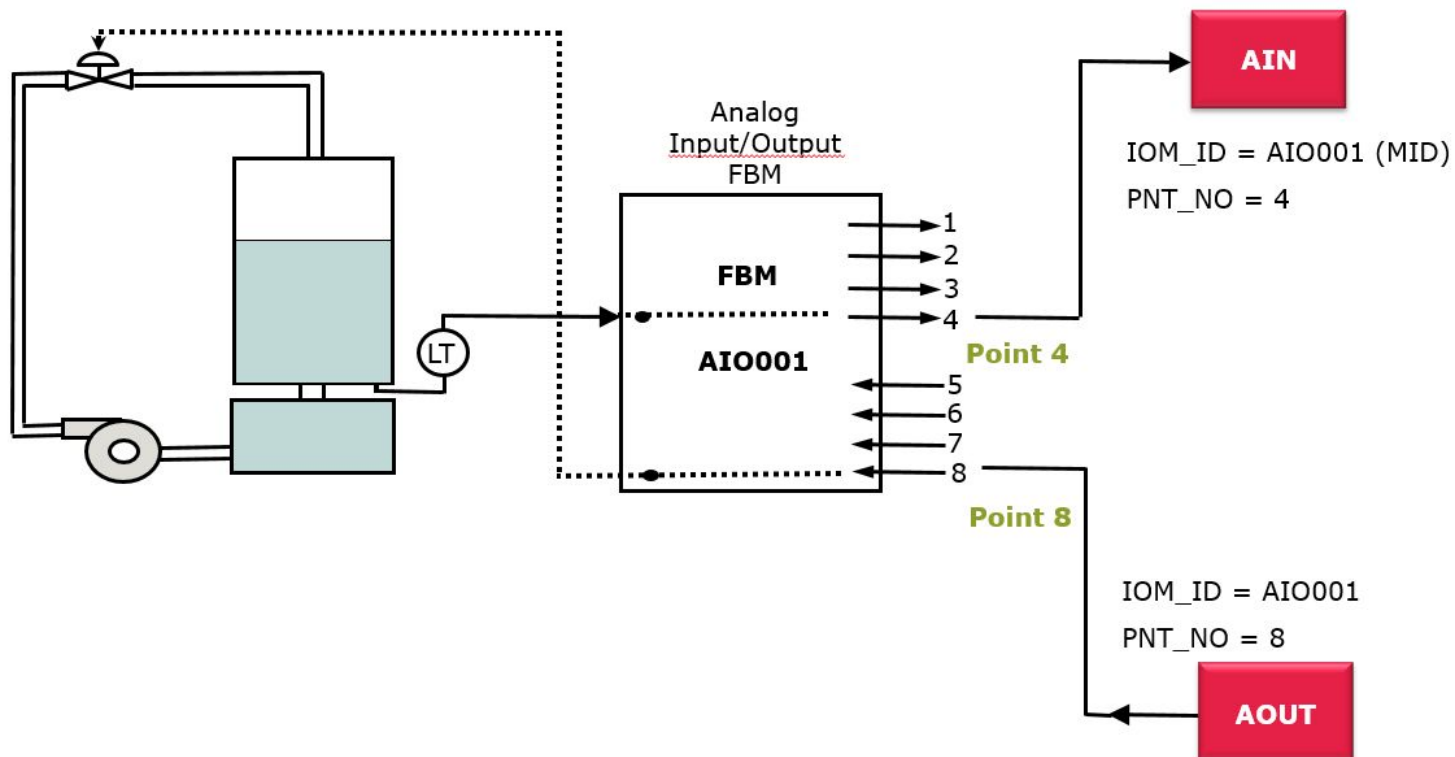
Lazo de Control de Procesos



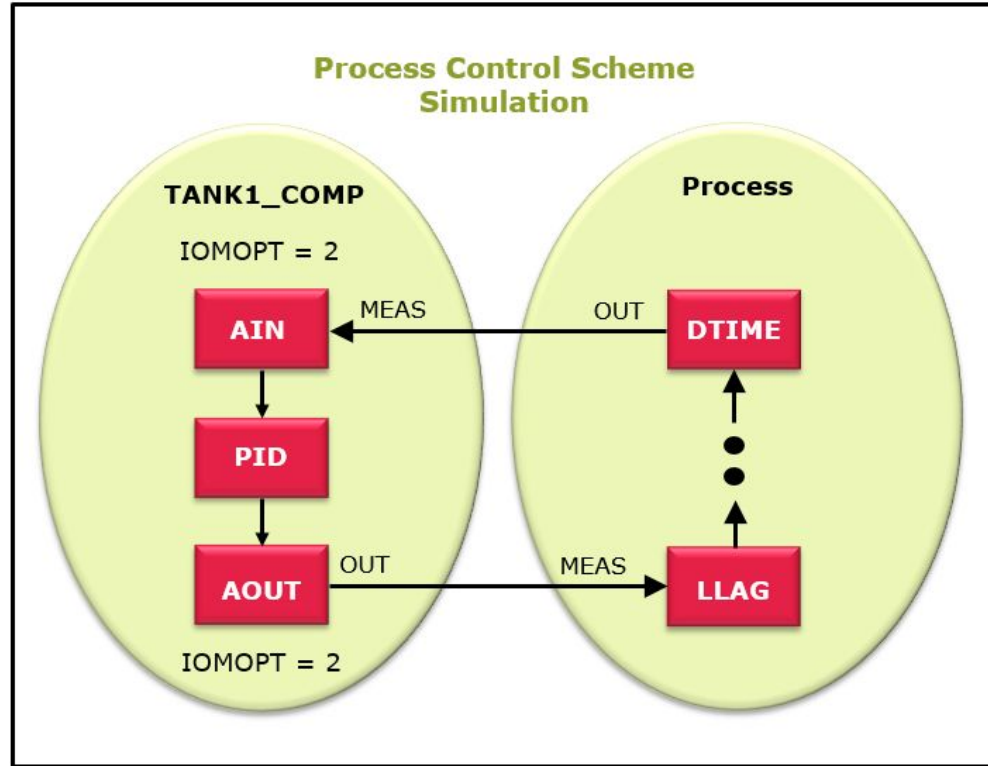
Feedback en un PID



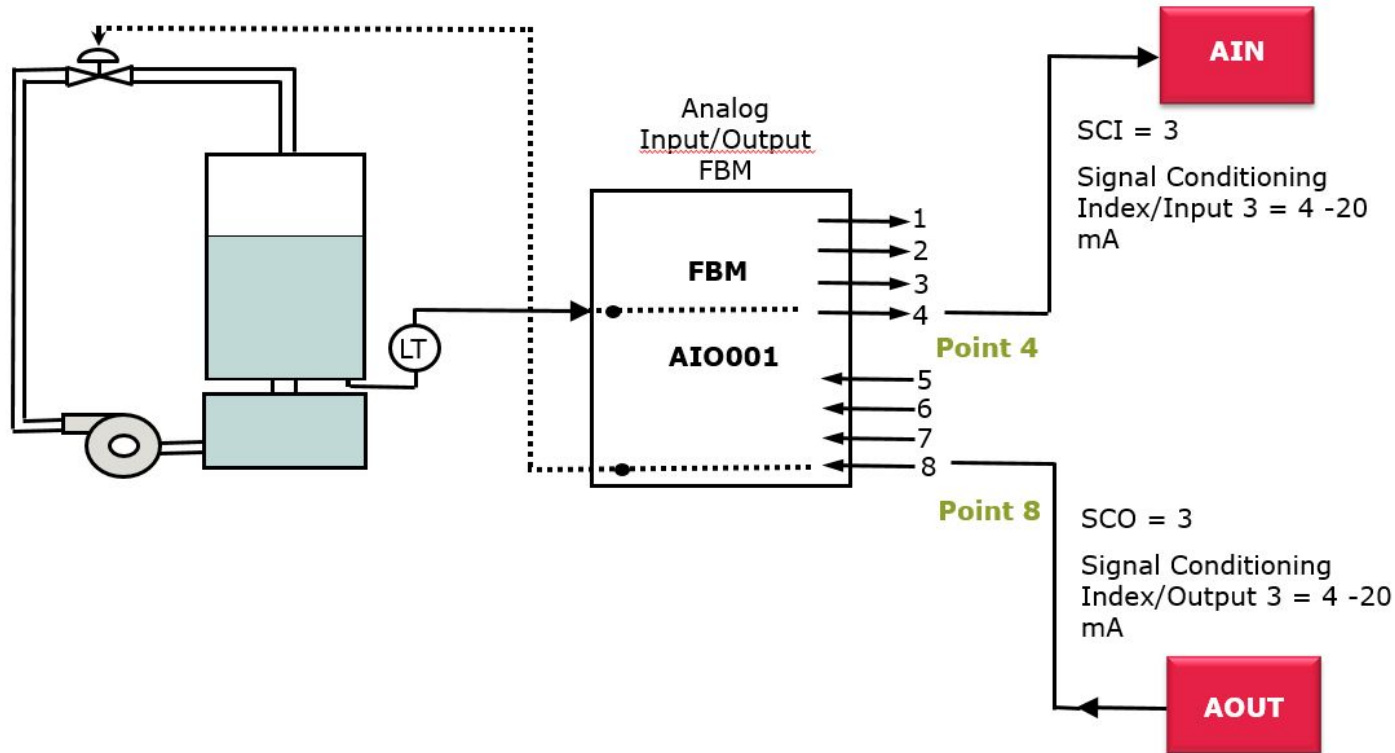
Accediendo a la FBM



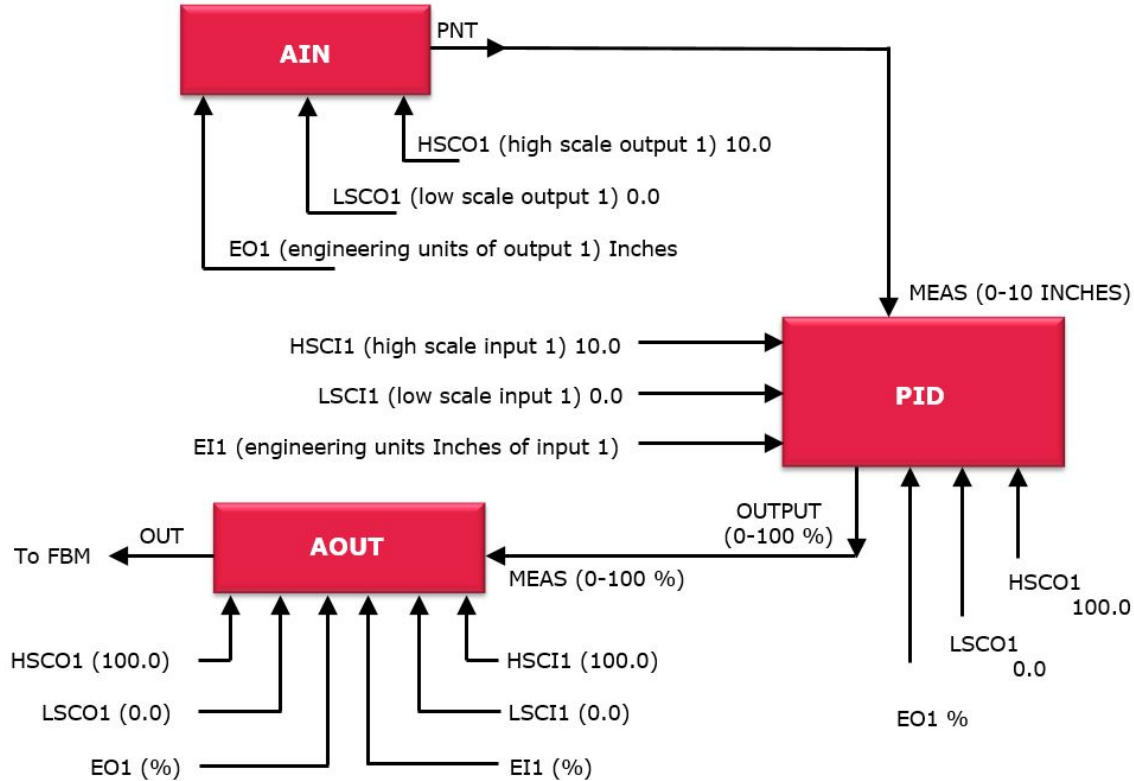
Accediendo a la FBM



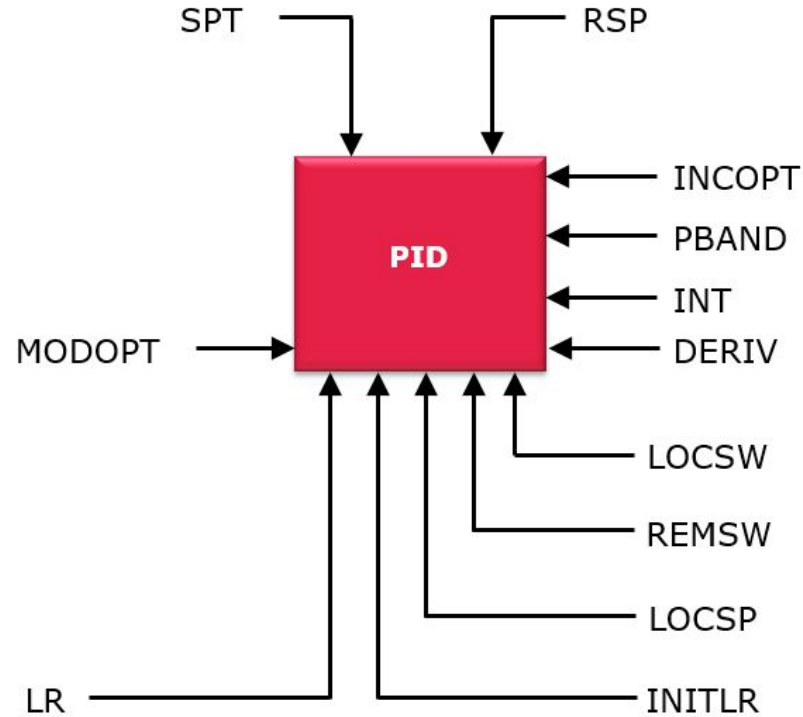
Acondicionamiento de señales



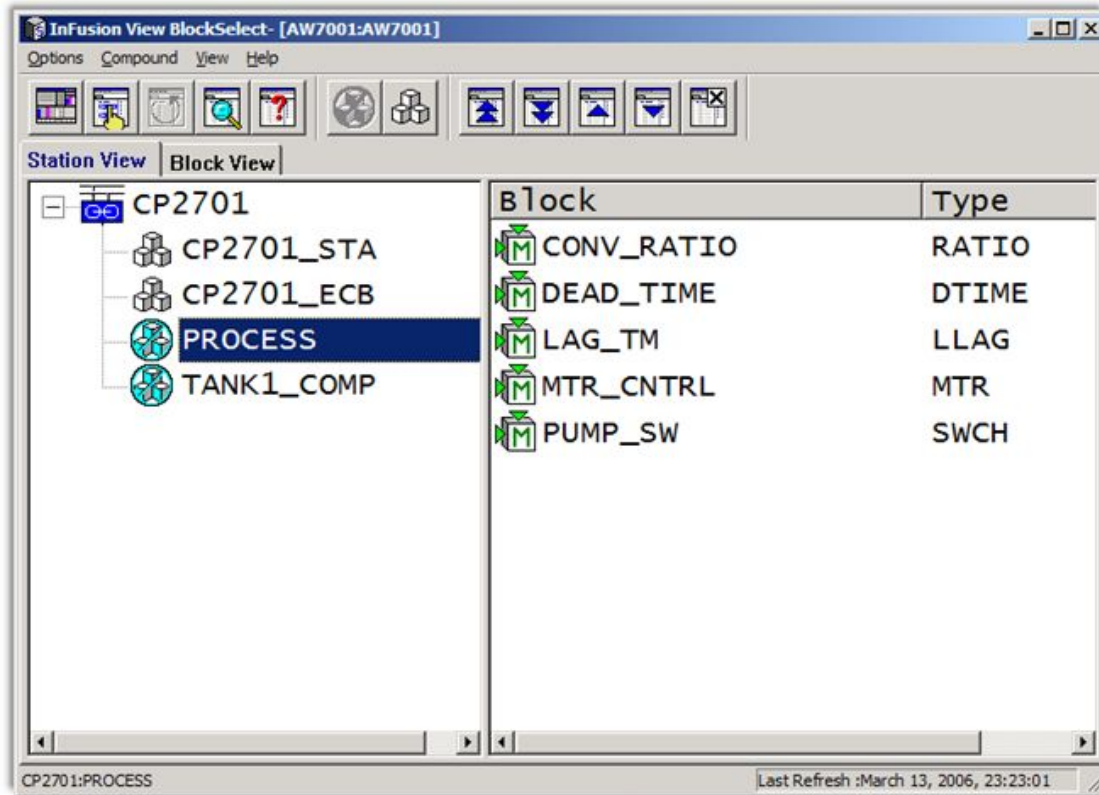
Parametros para Rango



Parametros para Control PID



Trabajar con Block Select



The screenshot displays the InFusion View BlockSelect software interface. The window title is "InFusion View BlockSelect- [AW7001:AW7001]". The menu bar includes "Options", "Compound", "View", and "Help". The toolbar contains various icons for navigation and editing. The interface is split into two main panes: "Station View" and "Block View".

In the "Station View" pane, a tree structure shows the following components under "CP2701":

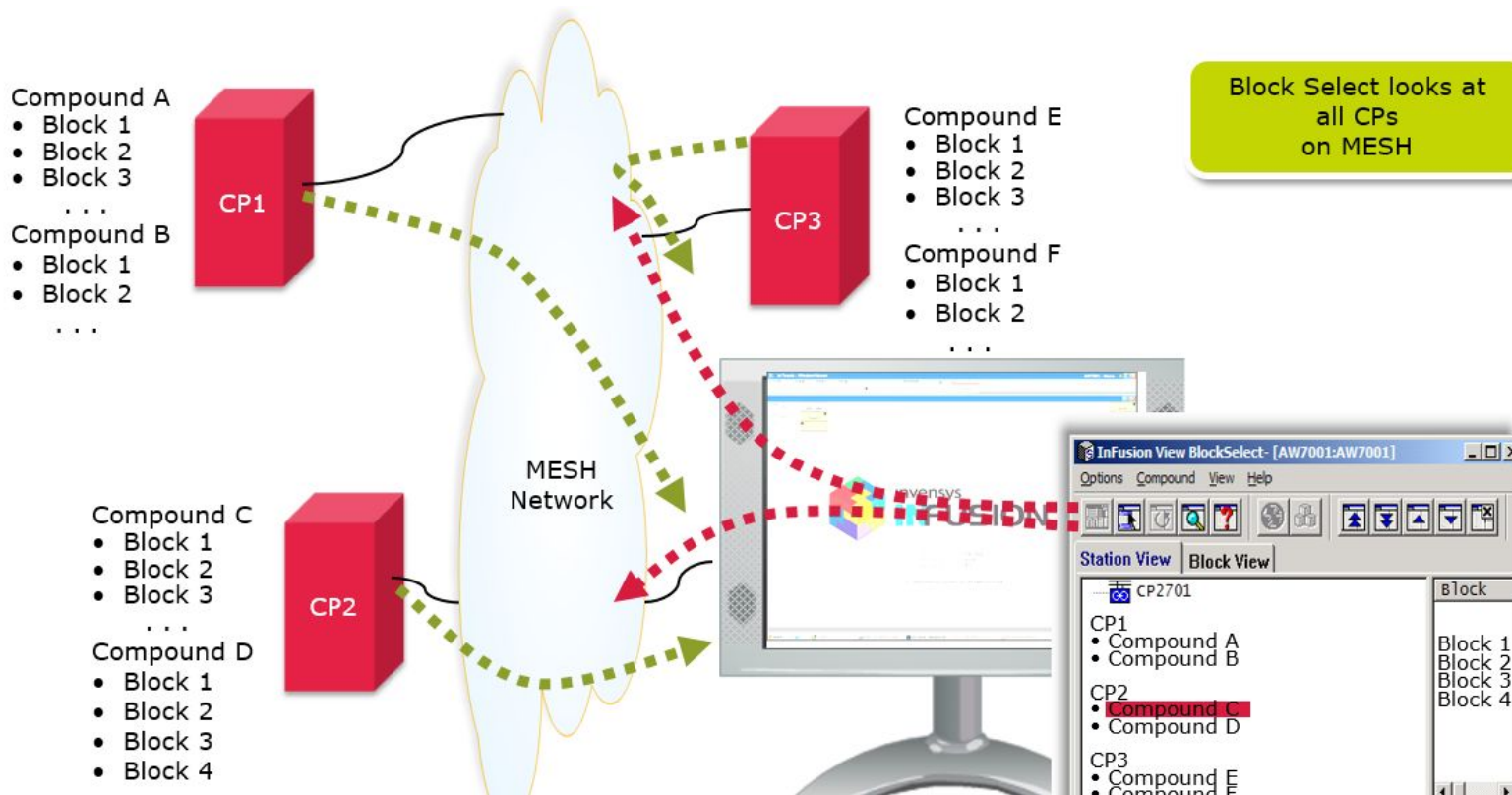
- CP2701_STA
- CP2701_ECB
- PROCESS** (highlighted)
- TANK1_COMP

The "Block View" pane displays a table of parameters for the selected "PROCESS" block:

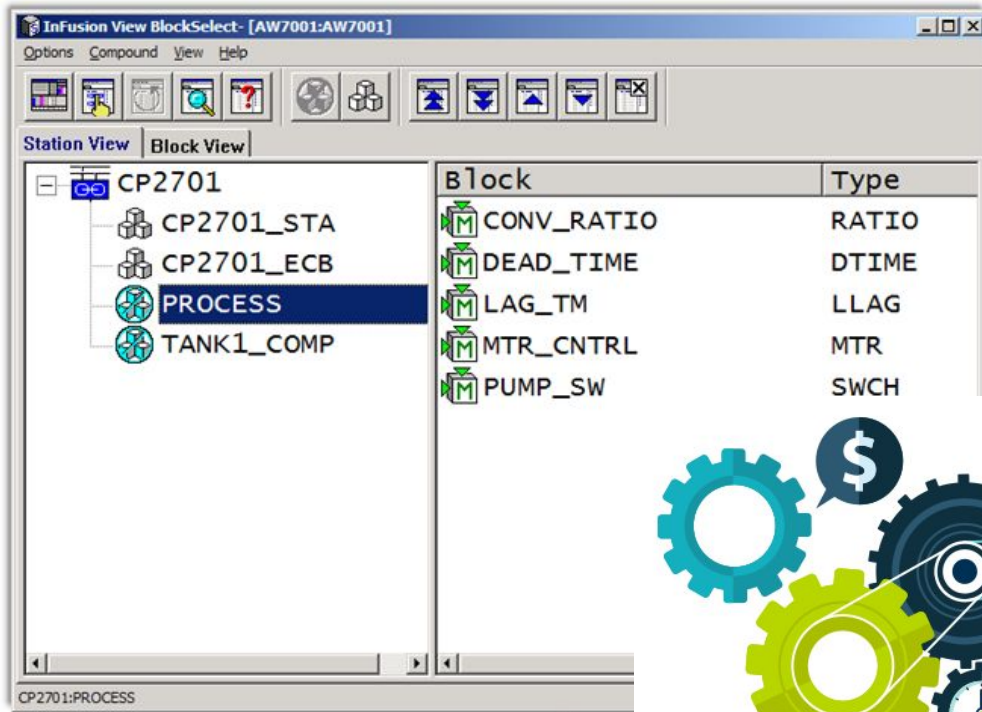
Block	Type
CONV_RATIO	RATIO
DEAD_TIME	DTIME
LAG_TM	LLAG
MTR_CNTRL	MTR
PUMP_SW	SWCH

At the bottom of the window, the status bar shows "CP2701:PROCESS" on the left and "Last Refresh :March 13, 2006, 23:23:01" on the right.

Trabajar con Block Select



Laboratorio 2 - Trabajar con BlockSelect

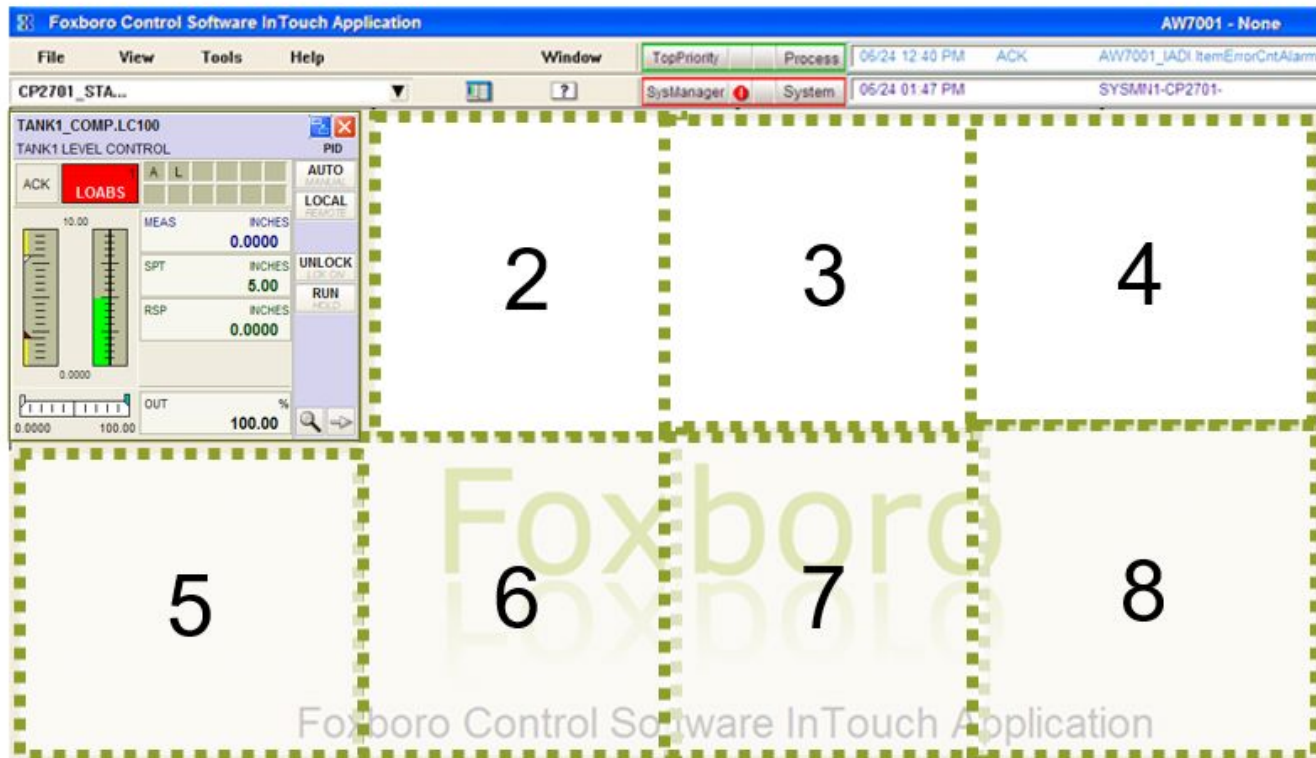


Modulo 5: Interfaz HMI en un DCS (faceplates)

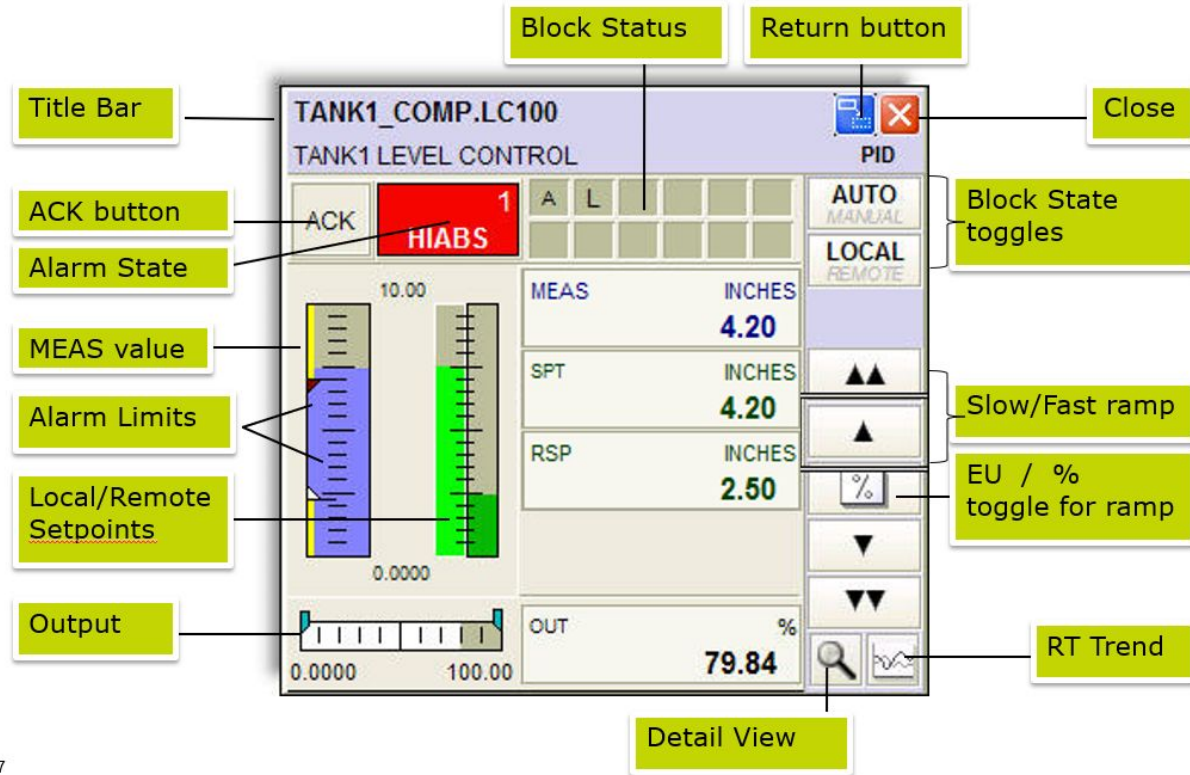
Faceplates

- Provee información del control del Proceso con faceplates (overlays)
- Estos faceplates vienen ya configurados por defectos en los DCS, usualmente por cada bloque.
- Podemos llamar a los faceplates desde:
 - Block Select
 - Plantillas de Proceso
 - Panel de Alarmado
 - Tag Bar del HMI

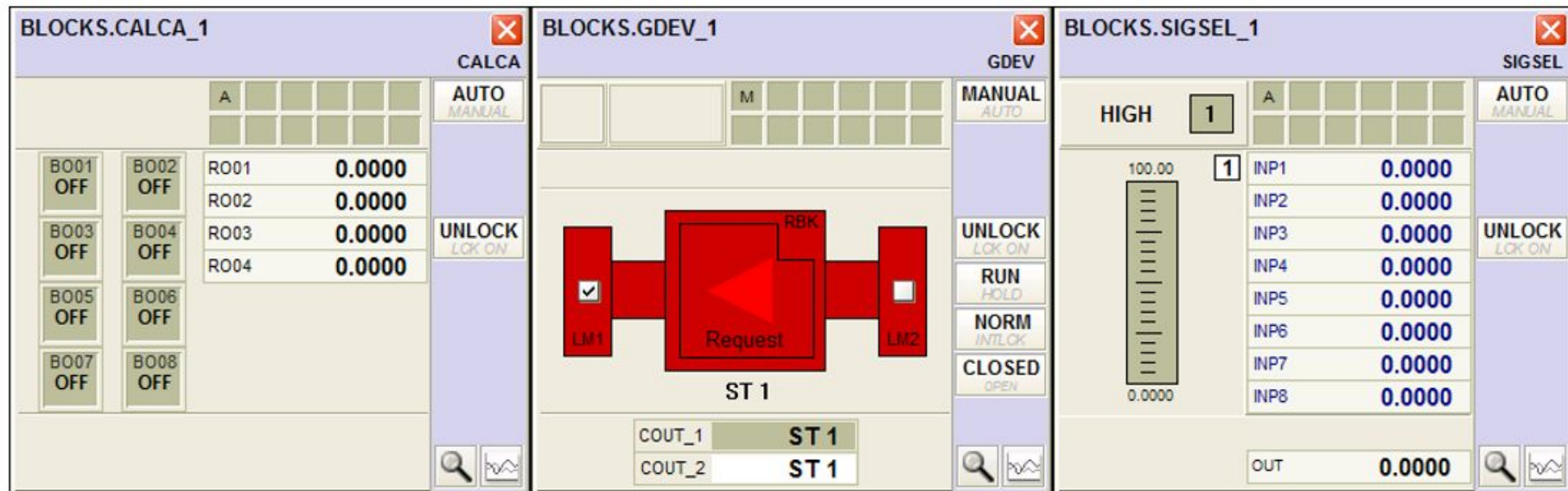
Faceplates - Posiciones



Faceplates - Opciones



Faceplates - Bloques



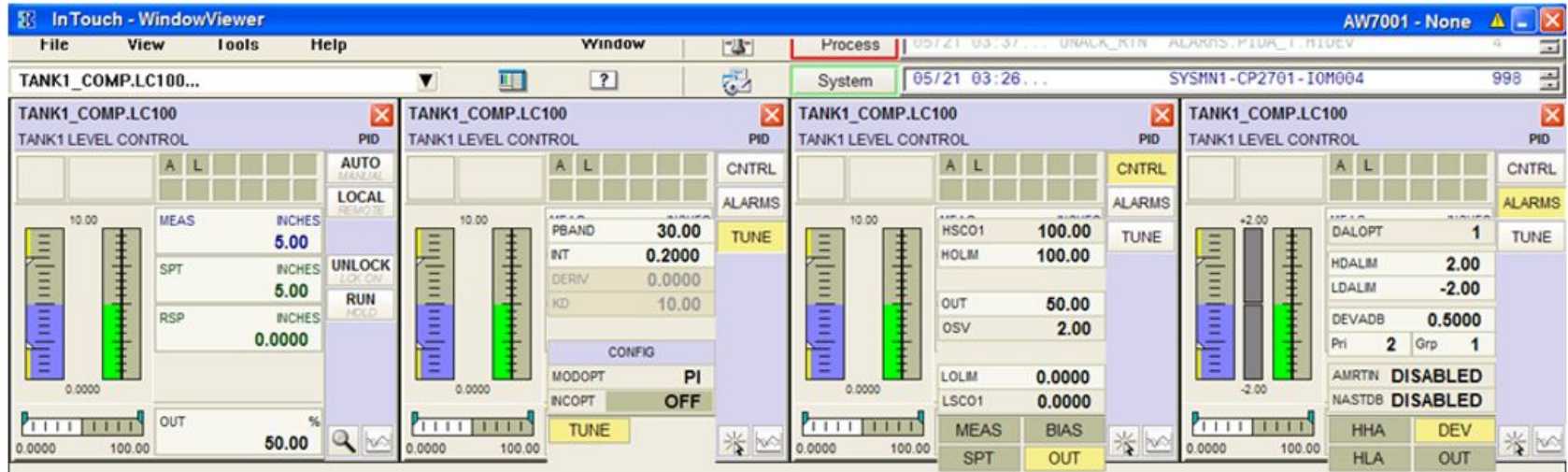
CALCA

GDEV

SIGSEL

Faceplates - Bloques

Podemos usar múltiples Details para un bloque



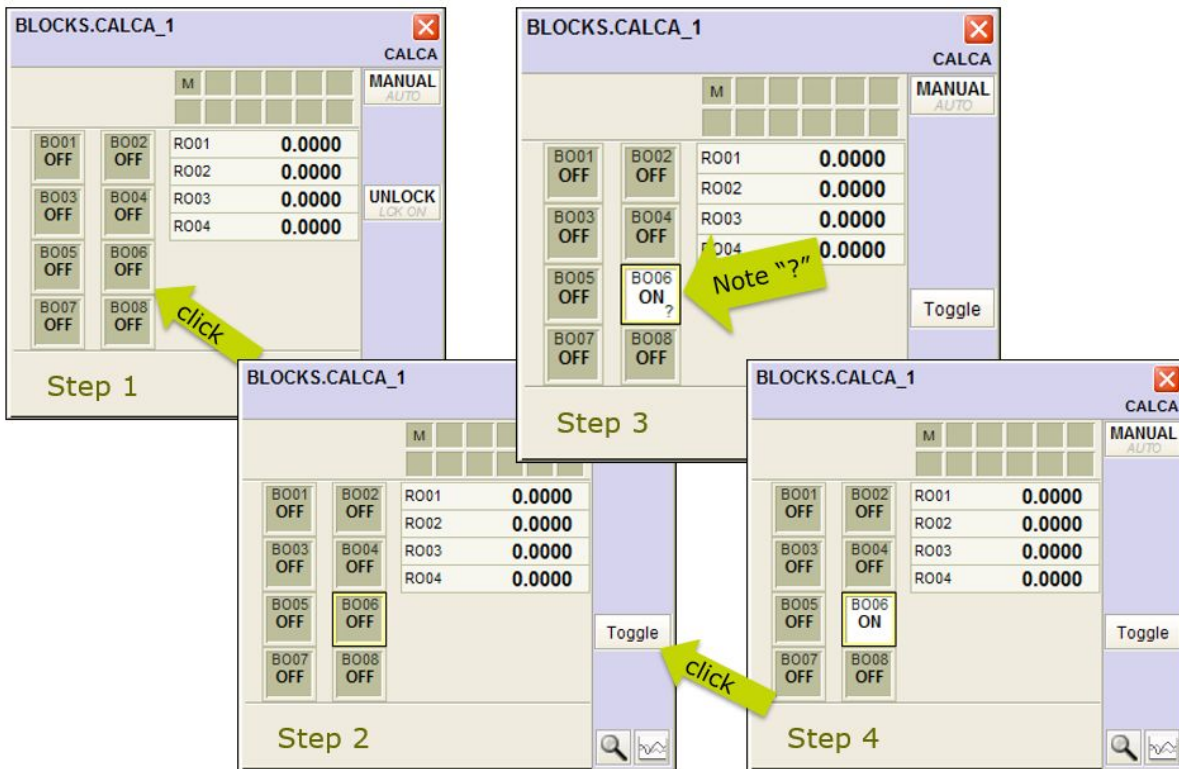
Base display

TUNE





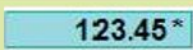
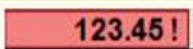


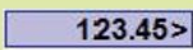

CNTRL → Output

ALARMS →
Deviation

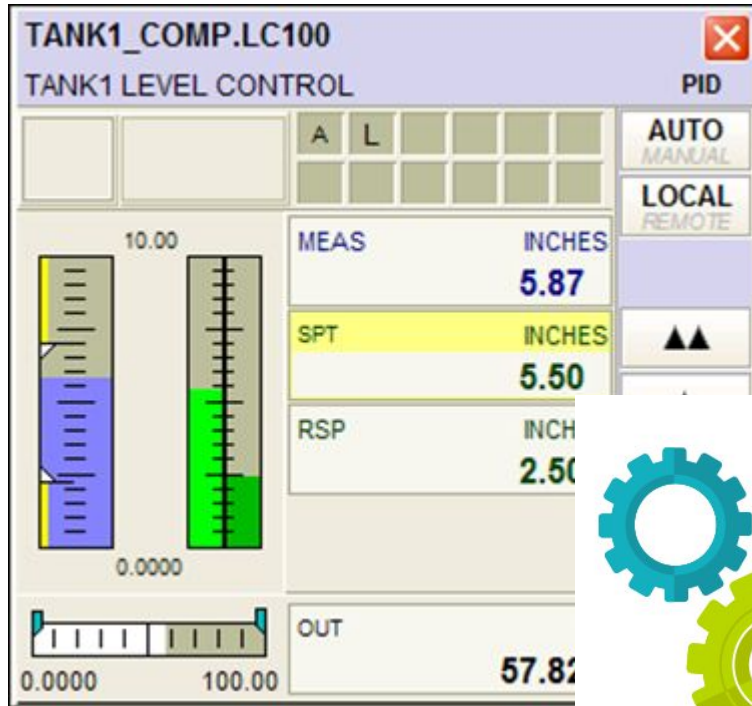
Faceplates - Cambiando parametros Bool



Faceplates - Calidad de los Datos

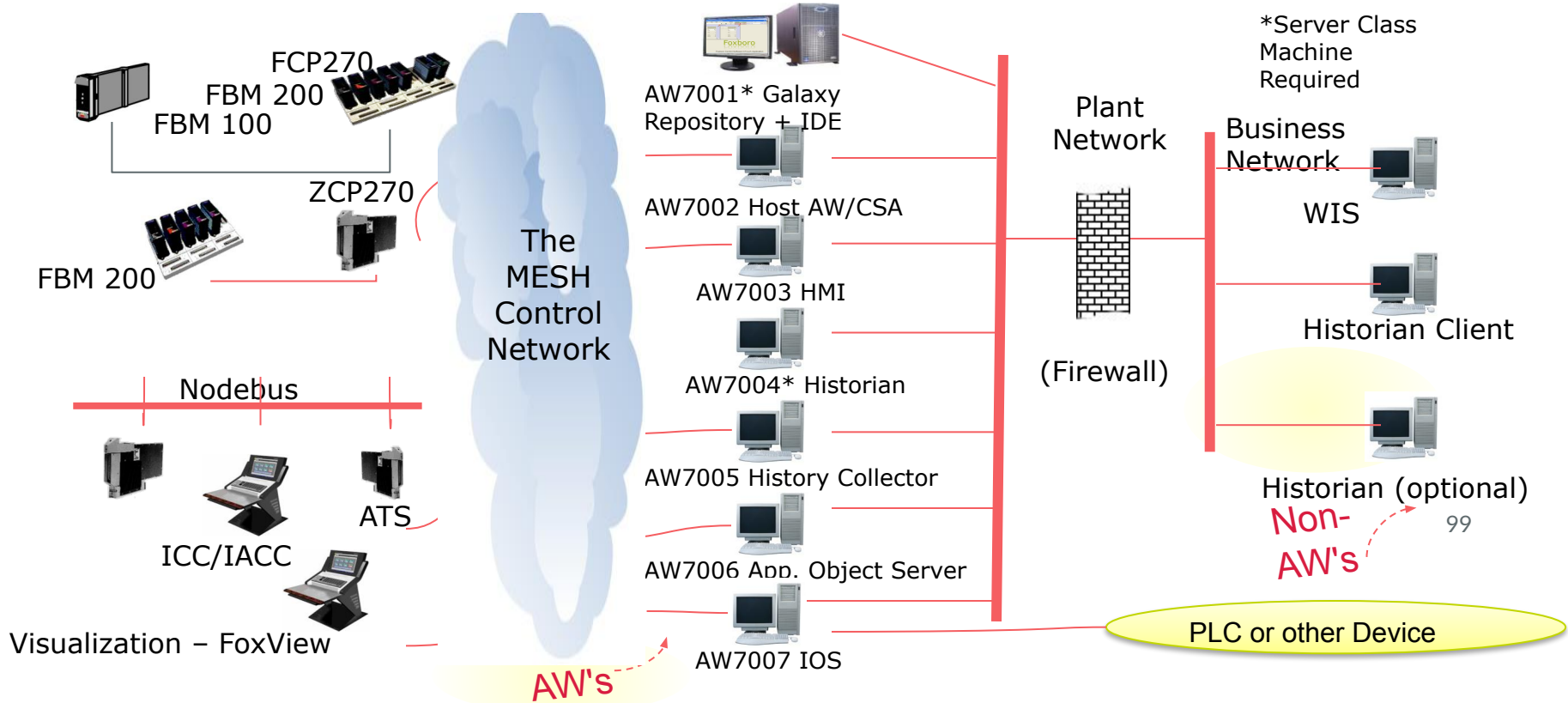
Text Indicator	Character	Colour	Example	Description
***,**	^	Cyan		Data value unavailable; DAServer unavailable
***,**	~	Cyan		Data value unavailable; no data from I/A
123.45	?	White		Write is pending
123.45	\$	White		Security prevented write
123.45	*	Cyan		Out-of-service or transition to unavailable on I/A
123.45	!	Red		I/A status = BAD
123.45	#	Green		I/A status = ERROR
123.45	<	Light Blue		Value limited low
123.45	>	Light Blue		Value limited high
123.45	=	Light Blue		Data value is a constant

Laboratorio 3 - Trabajar con Faceplates

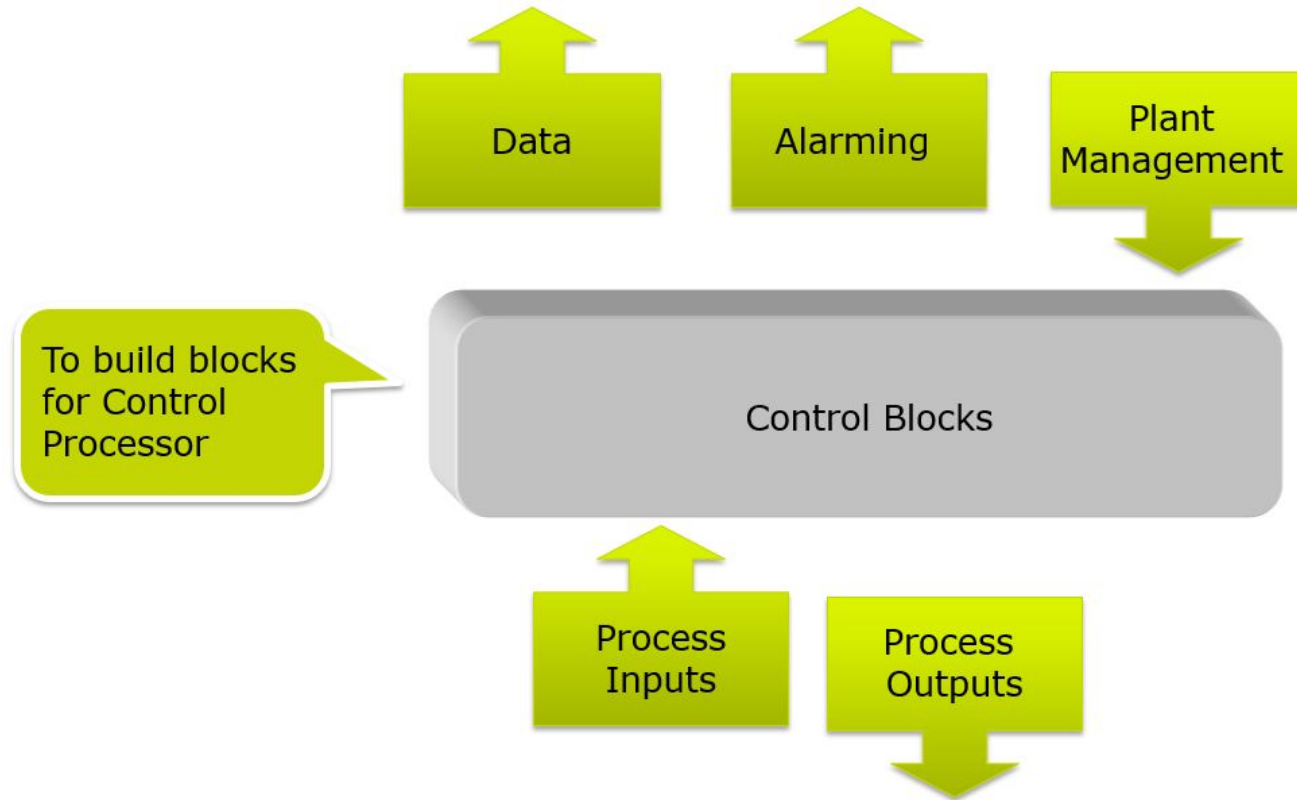


Modulo 6: Configuración y Programación de Bloques

Arquitectura de Hardware



Objetivos de la Configuración para Control



Nuevos Términos

- Object (Objeto)
- Template (Plantilla)
- Instance (Instancia)
- Inheritance (Herencia)
- Derived (Derivacion)

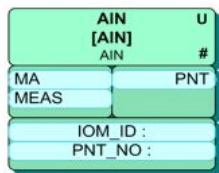
Toda nuestra configuración sera basado en las plantillas por defecto, o plantillas que tu crearas



Plantilla!!!

Plantillas e Instancias

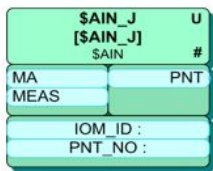
Plantilla
estandar
(no editable)



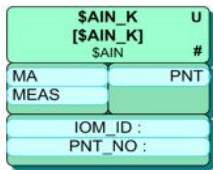
\$AIN

Nota: \$ = template
pero no en plantillas
estandares

Plantilla
derivada
Parametros
per T/C Type

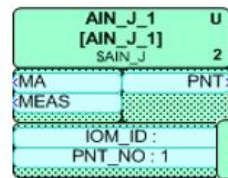


\$AIN_J



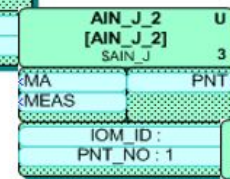
\$AIN_K

Instancias



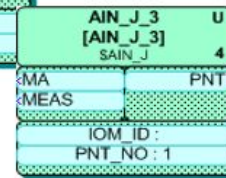
AIN_J_1

TT100



AIN_J_2

TT101



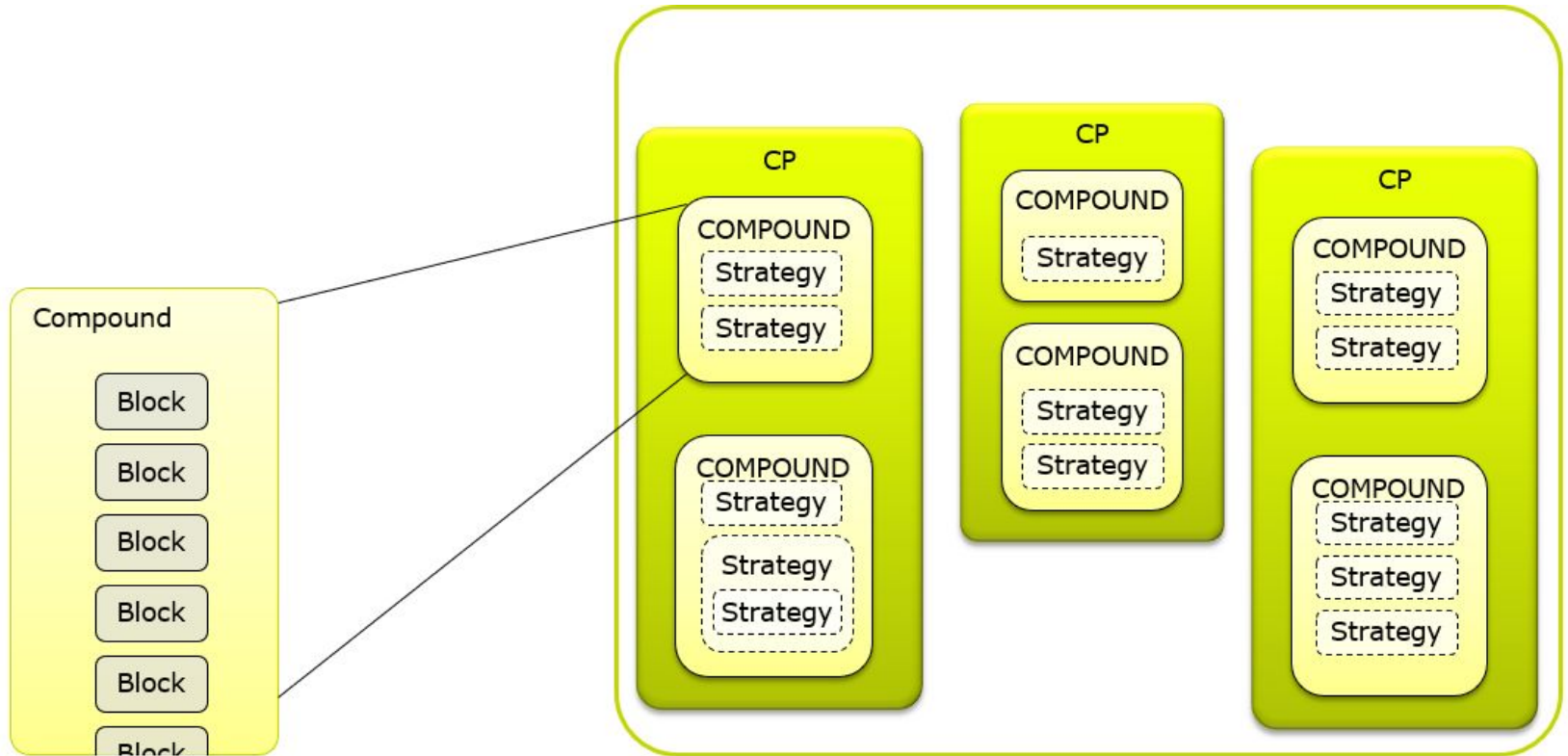
AIN_J_3

TT117A

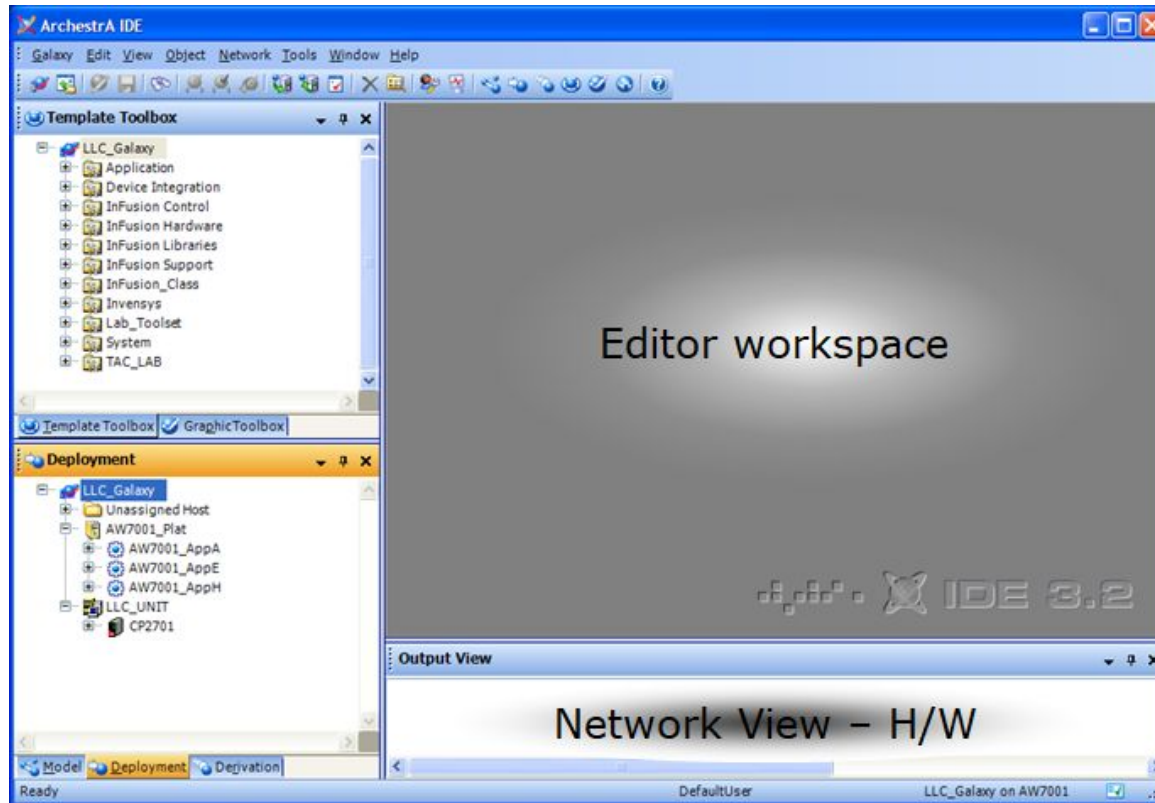
Jerarquía de objetos en la base de datos

Galaxy	
Foxboro	Wonderware
Equipment Units	Platforms
Control Processor	App. Engineers
Compound/Strategy	Areas
Blocks	App. Objects
Parameters	Attributes

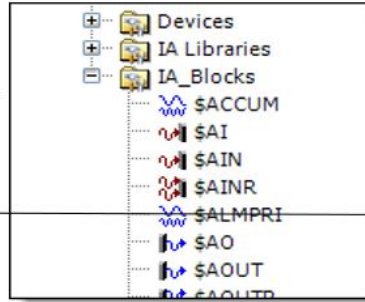
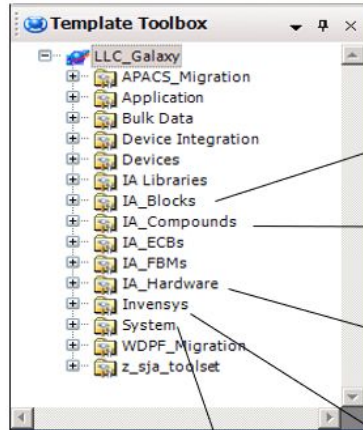
Compound (solo en base de datos o Galaxy)



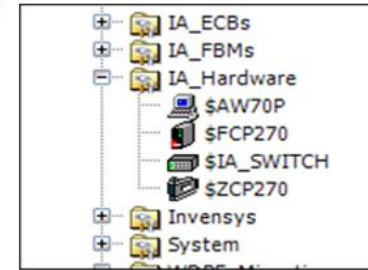
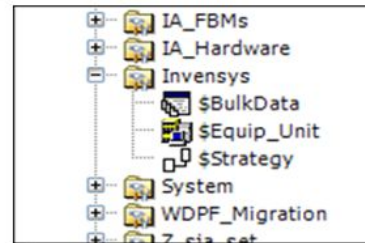
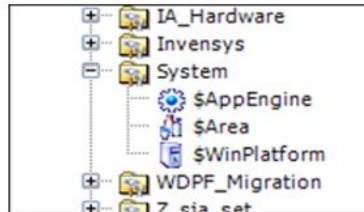
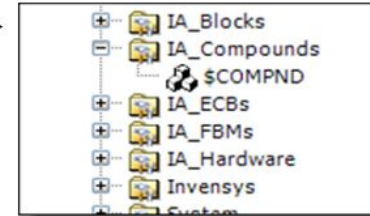
Software de Cofiguracion (Archestra IDE)



Toolbox de Plantillas



- \$name
- \$ indicates template



Construyendo una estrategia de control

(Compound)
TANK1_COMP

(strategy) tank1

AIN

PID

AOUT

(Compound) PROCESS
(process simulator)

(strategy) tank1_process

DTIME

RATIO

SWCH

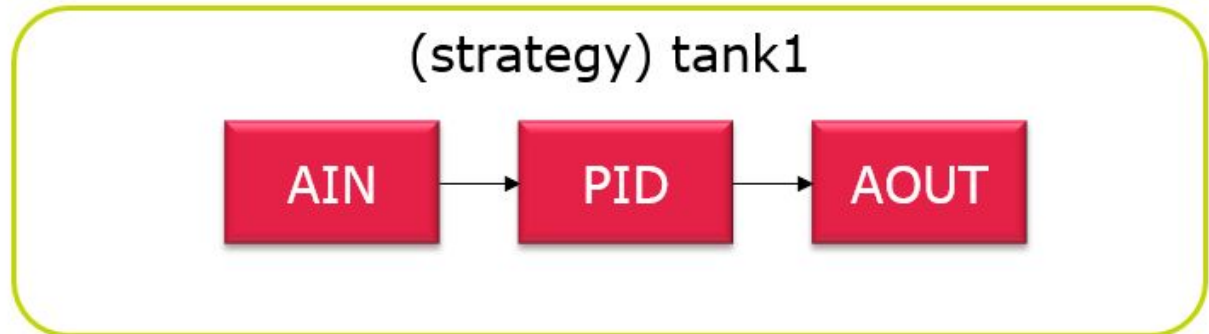
LLAG

MTR

Construyendo una estrategia de control

1. Que compound y estrategia contendran los bloques?
2. Cuales son los valores para los parametros de los bloques?
3. Que conexiones hacia otros bloque se hara?
4. Que parametros seran historizados?
5. Que parametros tendran configuracion de seguridad?
6. Cual sera la apariencia de los bloques?

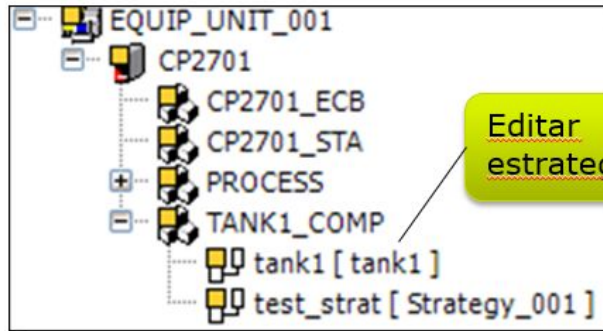
(Compound)
TANK1_COMP



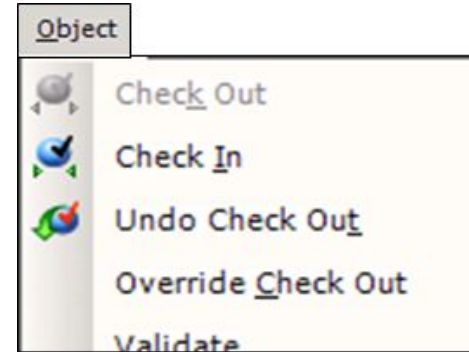
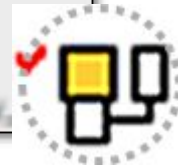
Check In - Check Out

Check Out - Accion para liberar de uso una estrategia

Check In - Estrategia está abierta en otro lugar u otro usuario



Editar
estrategia



Propiedades de un objeto

tank1 Properties

General | Attributes | References | Cross References | Change Log | Operational Limits | Errors/Warnings

Codebase: Invensys.Strategy.1
Derived from: \$Strategy
Host: CP2701
Area: N/A
Container: TANK1_COMP
Checked out by: DefaultUser
Errors: 0
Warnings: 0

Deployed state: Yes
Has pending changes: No

Close

En donde esta?

Quien lo usa?

tank1 Properties

General | Attributes | References | Cross References | Change Log | Operational Limits | Errors/Warnings

Name	User	Date/Time	Operation	Rev...	Comment
tank1	DefaultUser	8/1/2006 3:21:58 PM	ModifiedAutomationObjectOnly	17	Updated configuration.
tank1	DefaultUser	8/1/2006 3:21:58 PM	ModifiedAutomationObjectOnly	17	Updated configuration.
tank1	DefaultUser	8/1/2006 3:22:00 PM	DeploySuccess	17	Deploy successful
tank1	DefaultUser	8/1/2006 3:22:11 PM	CheckOutSuccess	17	Check out by user.
tank1	DefaultUser	8/1/2006 3:29:45 PM	ModifiedAutomationObjectOnly	17	Updated configuration.
tank1	DefaultUser	8/1/2006 3:29:46 PM	ModifiedAutomationObjectOnly	17	Updated configuration.
tank1	DefaultUser	8/1/2006 3:29:46 PM	CheckInSuccess	18	Check in by user.
tank1	DefaultUser	8/1/2006 3:29:46 PM	UnDeploySuccess	18	Undeploy successful
tank1	DefaultUser	8/1/2006 3:29:46 PM	DeploySuccess	18	Deploy successful
tank1	DefaultUser	8/1/2006 3:29:48 PM	CheckOutSuccess	18	Check out by user.
tank1	DefaultUser	8/1/2006 3:29:56 PM	UndoCheckOutSuccess	18	UndoCheckOut successful.
tank1	DefaultUser	8/1/2006 3:33:16 PM	CheckOutSuccess	18	Check out by user.
tank1	DefaultUser	8/1/2006 6:45:22 PM	ModifiedAutomationObjectOnly	18	Updated configuration.
tank1	DefaultUser	8/1/2006 6:45:47 PM	ModifiedAutomationObjectOnly	18	Updated configuration.
tank1	DefaultUser	8/1/2006 6:45:47 PM	CheckInSuccess	19	Wanted to make things right. Stan
tank1	DefaultUser	8/1/2006 6:45:47 PM	UnDeploySuccess	19	Undeploy successful
tank1	DefaultUser	8/1/2006 6:45:48 PM	DeploySuccess	19	Deploy successful
tank1	DefaultUser	8/1/2006 6:45:54 PM	CheckOutSuccess	19	Check out by user.

Note login comments

Close

Asignación de IO

The screenshot shows the CP2701 software interface with the following components:

- Hardware View:** CP2701 [FCP270] containing IOM003 [FBM204] and IOM004 [FBM241].
- Blocks View:** TANK1_COMP[COMPND] containing Tank1[Strategy1] with inputs AIN_1[AIN] (IOM003,1) and outputs AOUT_1[AOUT] (IOM003,5).
- FBM Details:** FBM204; HWTYPE: 204; SWTYPE: 2; 8. Name: IOM003. Type: FBM204; HWTYPE: 204. Input/Output Isolated. Blocks: AIN, AINR, AOUT, AO. ECBS: ECB2.
- Channels Table:**

Channel	Connection
01	TANK1_COMP.Tank1.AIN_1
02	
03	
04	
05	TANK1_COMP.Tank1.AOUT_1
06	
07	
08	

IO Assignment Instructions:

- Doble-click en CP
- Selecciona IO Assignment
- Selecciona la FBM
- Ver canales de FBM
- Selecciona y arrastra el bloque hacia el canal de la FBM

Nota: Tambien se puede hacer desde la misma estrategia

Descargando ade IO

The screenshot shows the CP2701 software interface with the IO Assignment tab selected. The left pane shows the FBM204 structure, and the right pane shows the TANK1_COMP structure. A yellow callout box provides instructions on how to assign IO channels. A table at the bottom shows the channel connections.

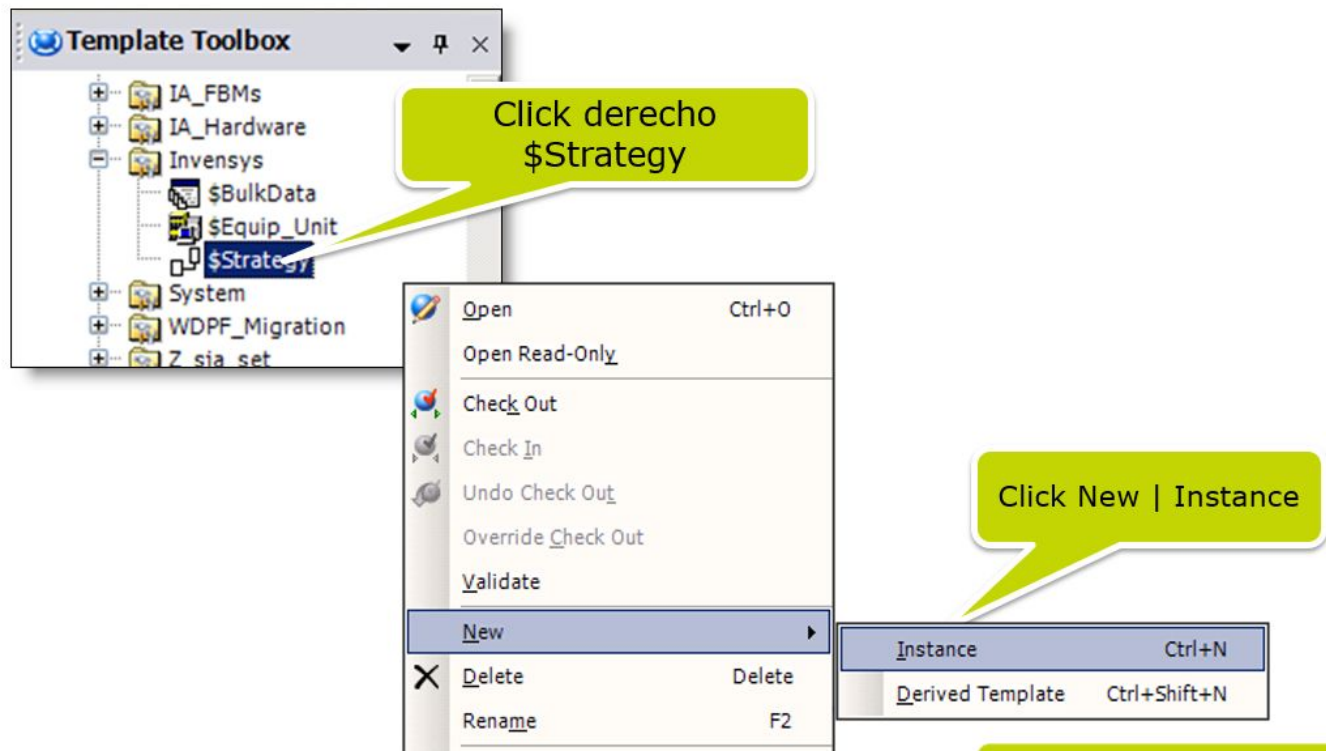
- Doble-click en CP
- Selecciona IO Assignment
- Selecciona la FBM
- Ver canales de FBM
- Selecciona y arrastra el bloque hacia el canal de la FBM

Nota: Tambien se puede hacer desde la misma estrategia

Channel	Connection
01	TANK1_COMP.Tank1.AIN_1
02	
03	
04	
05	TANK1_COMP.Tank1.AOUT_1
06	
07	
08	

Channel	Connection
01	AIN_1
02	
03	
04	
05	AOUT_1
--	

Instancias



Agregando bloques

Puedes renombrar los bloques ahora o despues

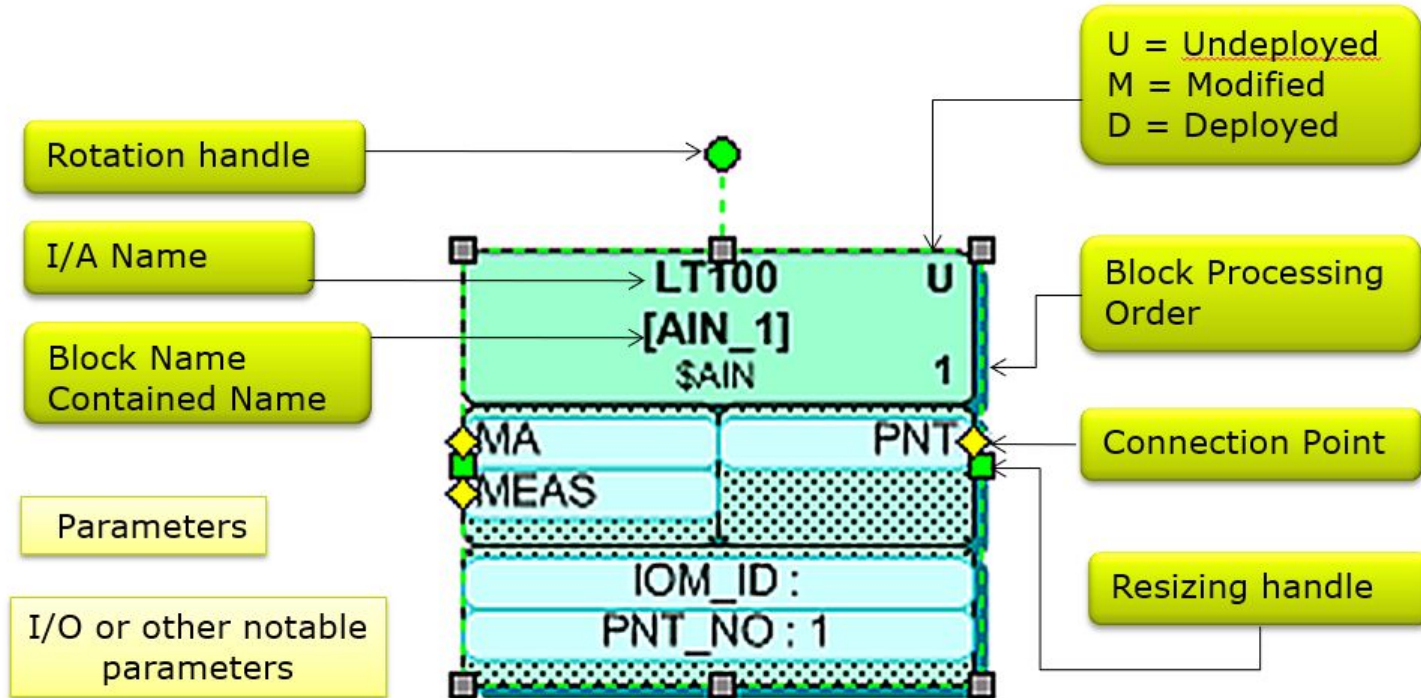
The image shows a software interface for adding and configuring blocks. On the left is a 'Template Toolbox' with a tree view under 'LLC_Galaxy' containing various block types like APACS_Migration, Application, Device Integration, Devices, IA Libraries, and IA_Blocks. Below these are numerous specific block names such as \$ACCUM, \$SAI, \$SAIN, \$SAINR, \$SALMPRI, \$SAO, \$SAOUT, \$SAOUTR, \$BIAS, \$BIN, \$BINR, \$BLNALM, \$BBOOL, \$BOUT, \$BOUTR, \$SCALC, \$SCALCA, and \$SCHADC.

The main workspace displays three blocks:

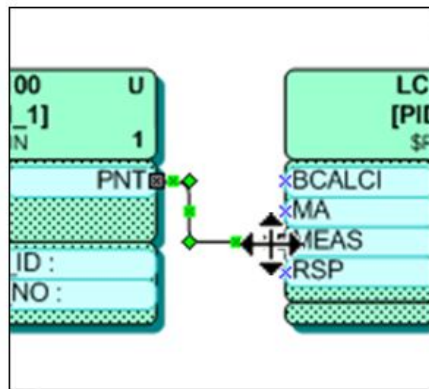
- AIN_1** (AIN_1) with parameters: [AIN_1], \$AIN, 1, MA, PNT, MEAS, IOM_ID, PNT_NO.
- PID_1** (PID_1) with parameters: [PID_1], \$PID, 3, BCALCI, BCALCO, MA, OUT, MEAS, RSP.
- AOUT_1** (AOUT_1) with parameters: [AOUT_1], \$AOUT, 2, BIAS, BCALCO, MA, OUT, MEAS, IOM_ID, PNT_NO.

A yellow callout box at the top center contains the text 'Puedes renombrar los bloques ahora o despues'. Dashed arrows point from the 'IA_Blocks' folder in the toolbox to the three blocks in the workspace.

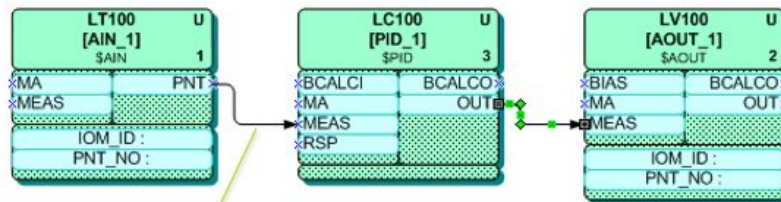
Apariencia de bloques



Conectando bloques

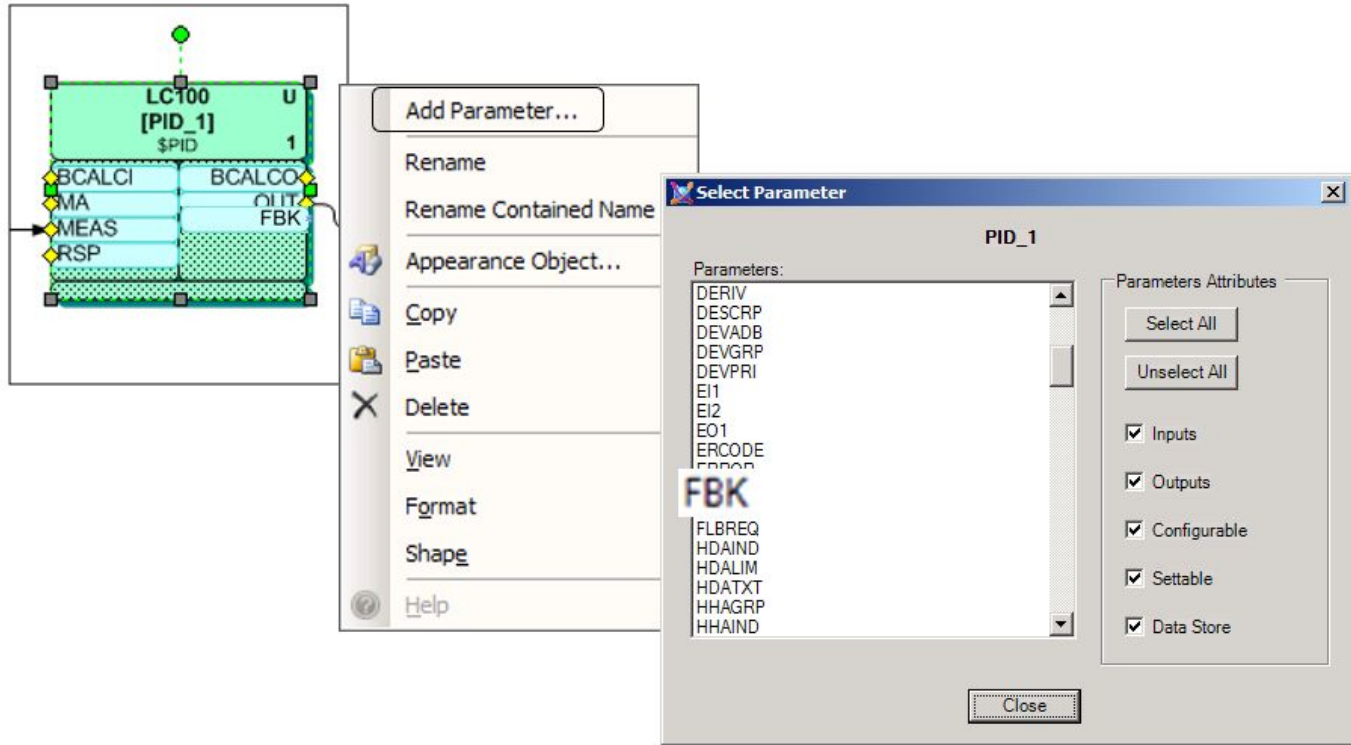


Arrastra la conexión desde la salida (SOURCE) hasta el parámetro de entrada (SINK).

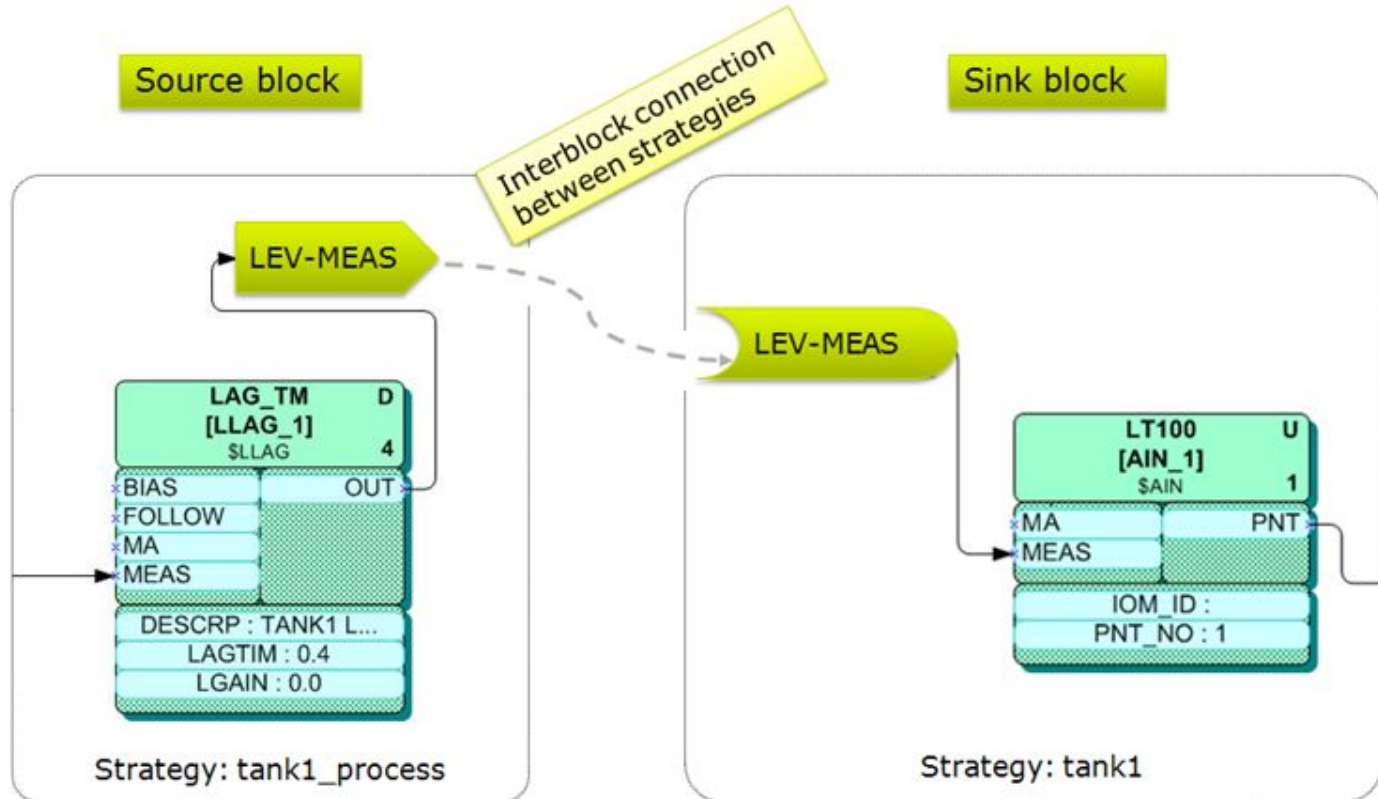


Nota: Las líneas de conexión se pueden modificar a conveniencia

Agregar parametro a bloques



Agregando conexion fuera de estrategia



Agregando conexion fuera de estrategia

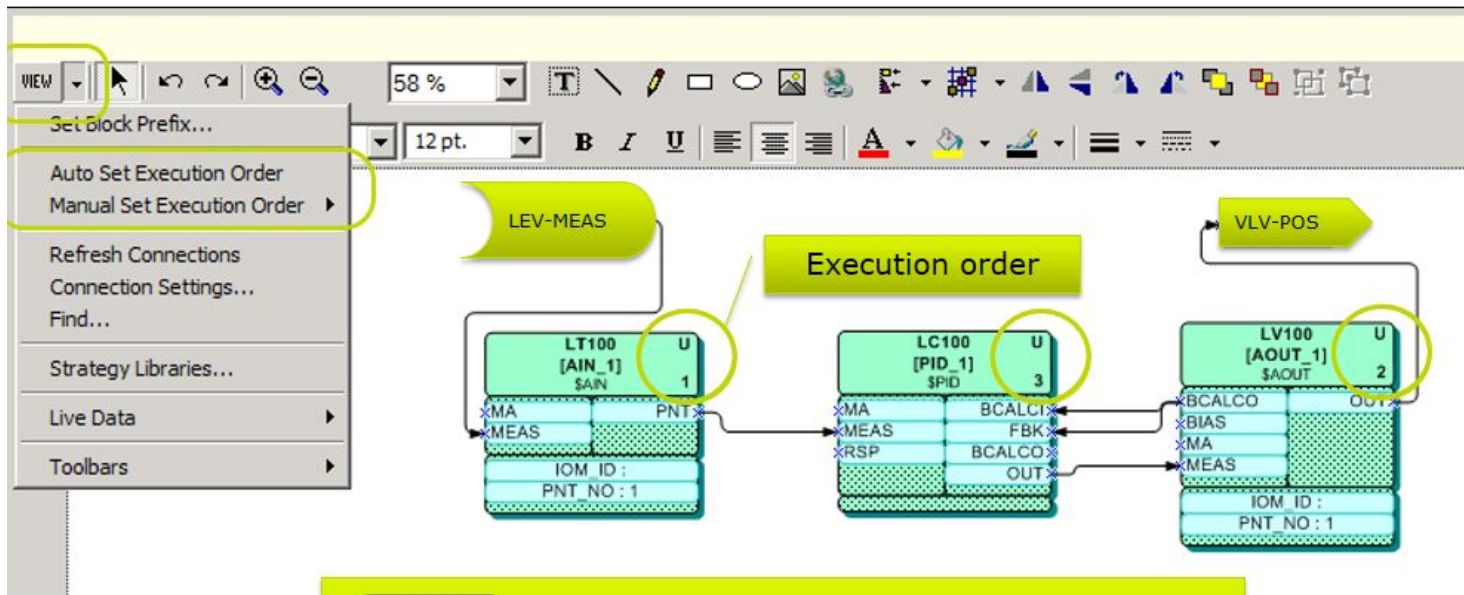
The image shows two overlapping windows from a software interface. The top window is titled "Output Declarations:" and contains a table with two columns: "Name" and "Reference". The first row of the table has "LEV_MEAS" in the "Name" column and "Me.LLAG_1.OUT" in the "Reference" column. A dashed black oval highlights this row. To the right of the table are two buttons: a blue "+" button and a grey "X" button. The bottom window is titled "Input Declarations:" and also has a table with "Name" and "Reference" columns. The first row has "LEV_MEAS" in the "Name" column and "PROCESS.tank1_process.LEV_MEAS" in the "Reference" column. A dashed black oval highlights this row. To the right of the table are two buttons: a blue "+" button and a grey "X" button.

Name	Reference
LEV_MEAS	Me.LLAG_1.OUT

Name	Reference
LEV_MEAS	PROCESS.tank1_process.LEV_MEAS

Input Declarations – Referencia a algun lugar
Output Declarations – Referencia a My Strategy

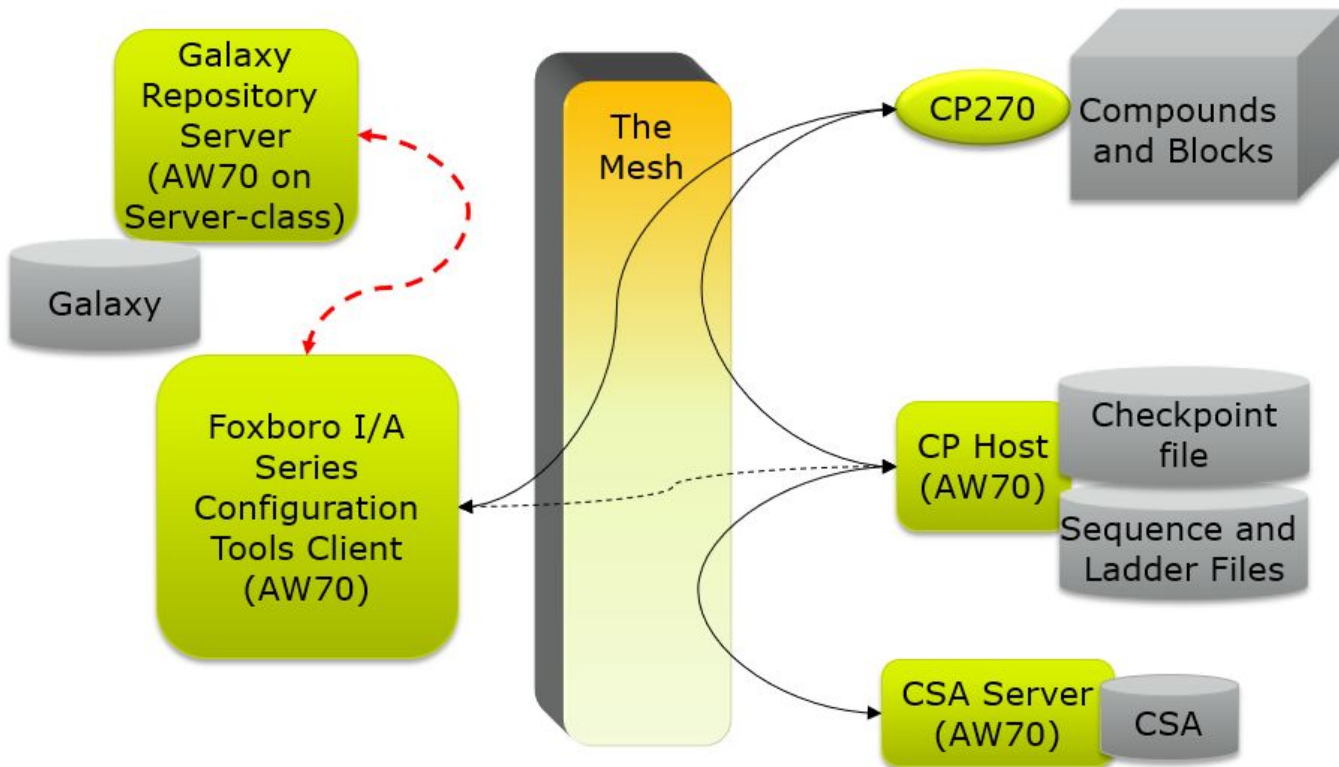
Cambiar orden de ejecución



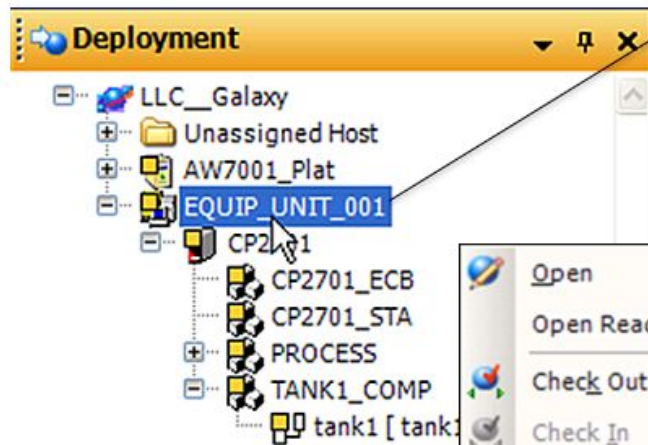
VIEW ▼

- AUTO – Ordenar del inicio hacia el final
- MANUAL – Tu decides el orden

Descarga el Controlador

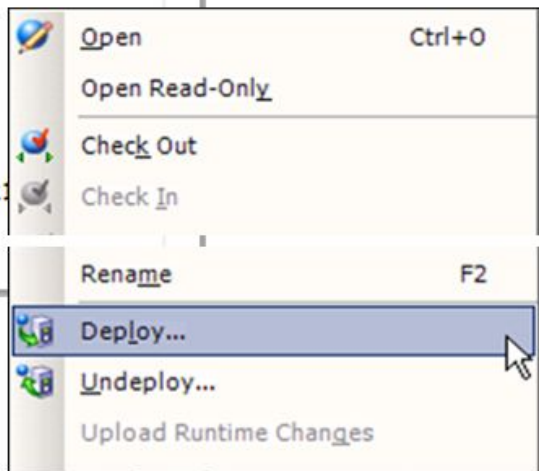


Descarga el Controlador

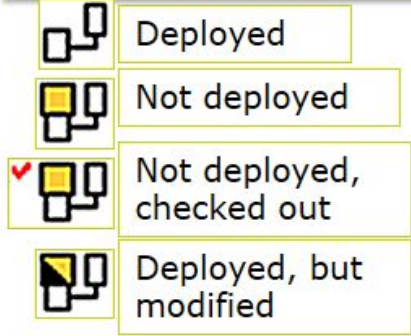


Selecciona el nivel a descargar

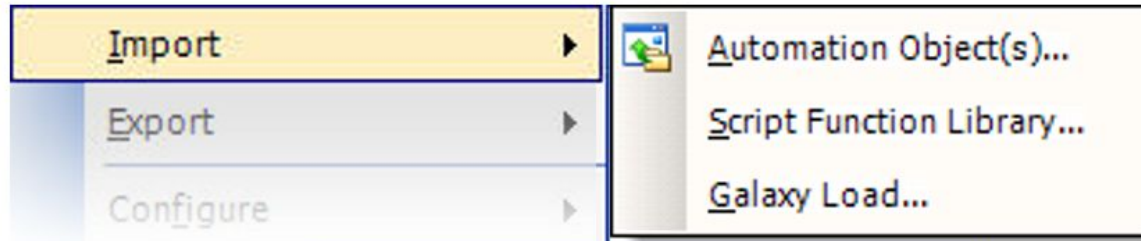
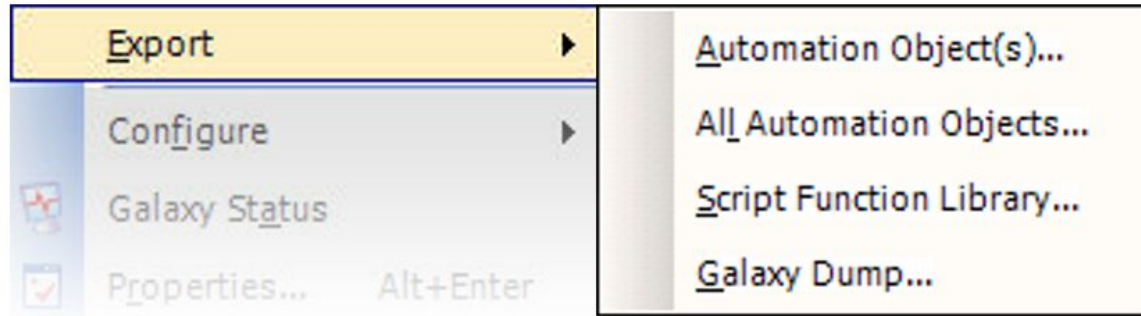
Descargara todo lo que esta abajo del objeto



- No puedes descargar si:
- El contenedor no esta deployado
- Objeto esta Checked out



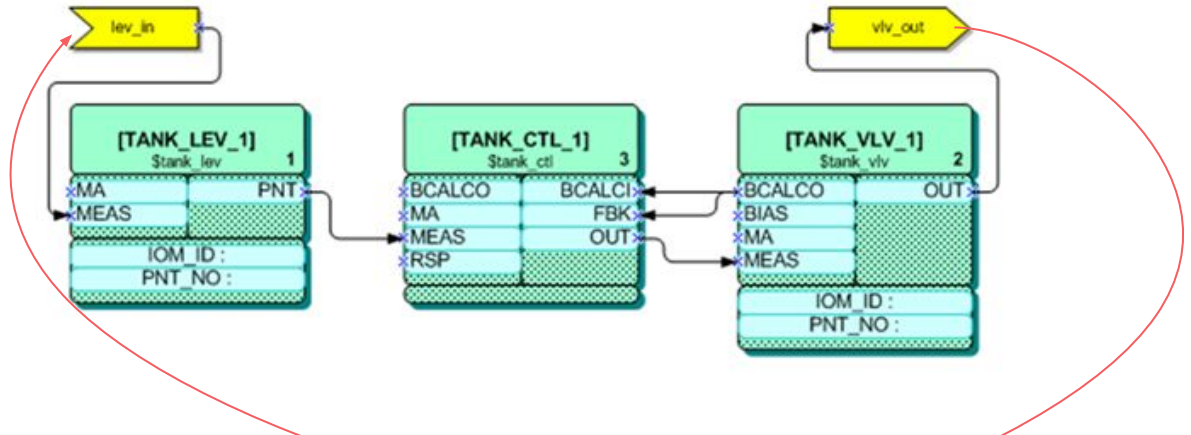
Importar/Exportar configuracion



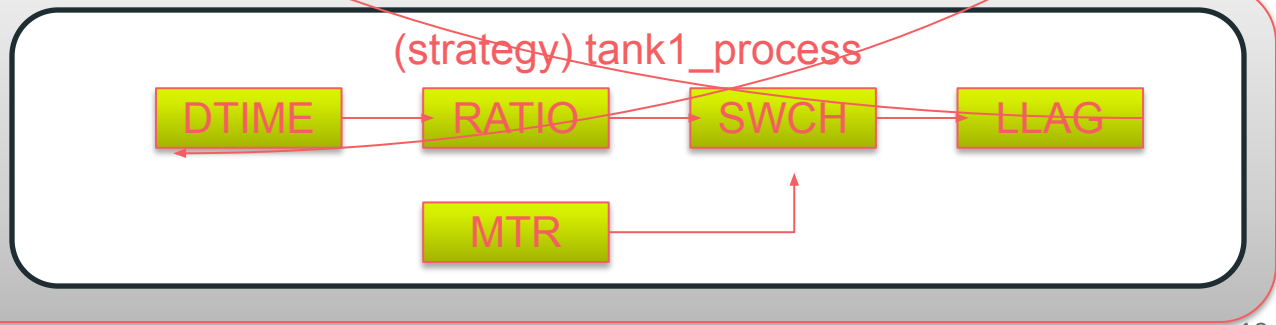
Automation Objects – includes parents
Galaxy Dump – just the objects

Estrategia de control y proceso simulado

(Compound)
TANK1_COMP

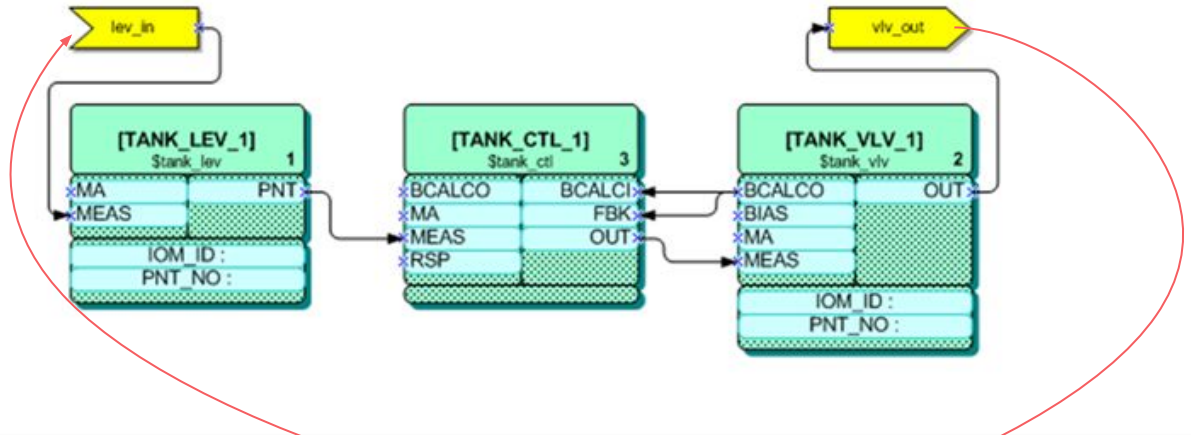


(Compound) PROCESS
(process simulator)

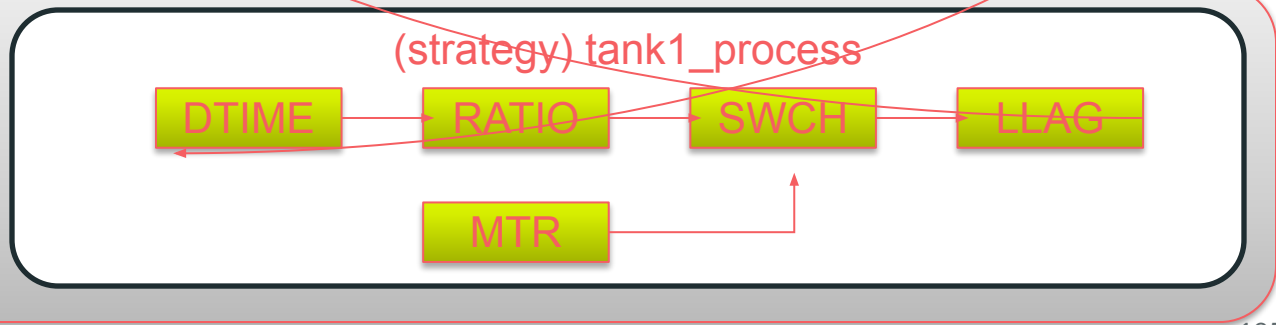


Estrategia de control y proceso simulado

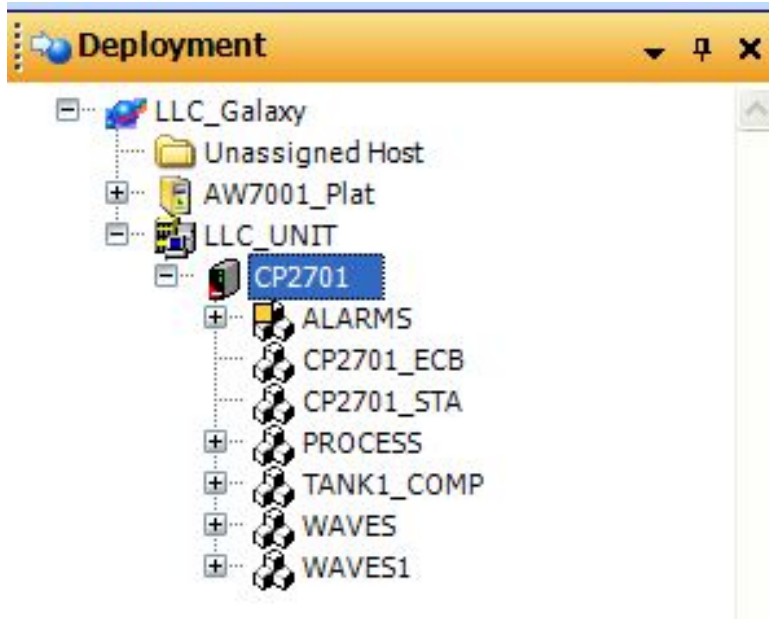
(Compound)
TANK1_COMP



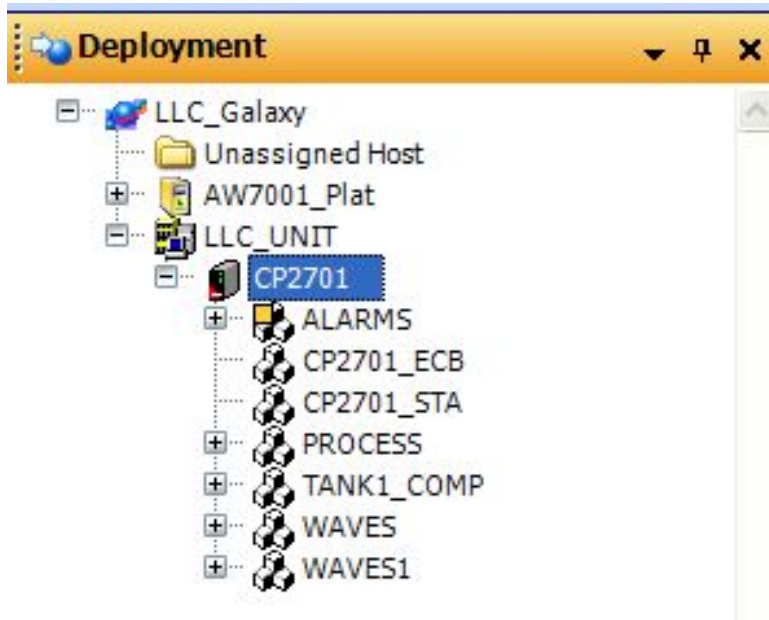
(Compound) PROCESS
(process simulator)



Laboratorio 4 - Creando Compounds



Laboratorio 5 - Creando Compounds de plantilla derivada



Laboratorio 6 - Crear bloques desde plantillas base



CALCA_001 U	
[CALCA_1]	
\$CALCA 1	
×BI01	BO01
×II01	IO01
×LI01	LO01
×RI01	RO01
TIMINI : 0	



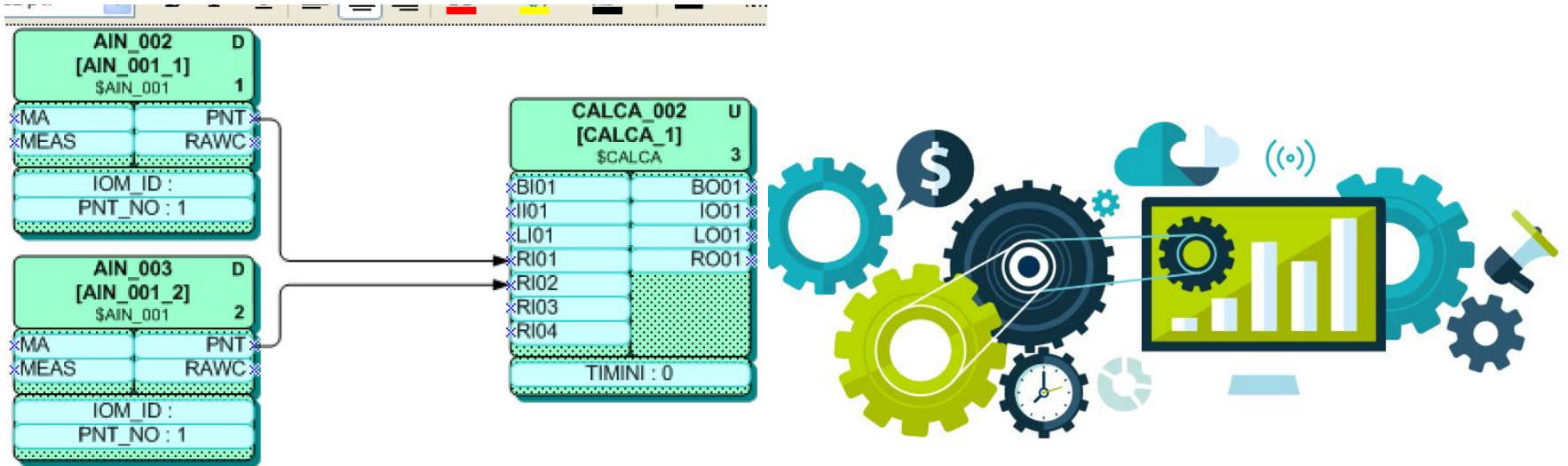
Laboratorio 7 - Crear bloques desde plantillas derivadas



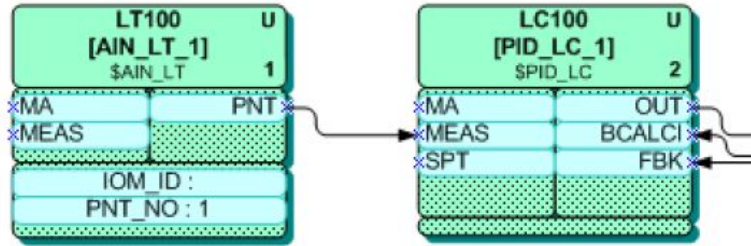
CALCA_001 U	
[CALCA_1]	
\$CALCA 1	
×BI01	BO01
×II01	IO01
×LI01	LO01
×RI01	RO01
TIMINI : 0	



Laboratorio 8 - Haciendo Conexiones



Laboratorio 9 - Creando un lazo PID



Modulo 7: Configuración de HMI en un DCS

Interfaz HMI por Defecto - Visualización



Interfaz HMI - Software de Edición

The screenshot displays the InTouch software environment for editing an HMI application. The main window shows a detailed process control interface for a "BATCH REACTOR".

Control Panel (Top):

- Four digital displays: BATCH NUMBER, REACTOR LEVEL (L), CONCENTRATE (%), and REACTOR TEMP (*C).
- Buttons for FILLING, C. INJECTION, and M.
- A table with columns: Time, Type, Name.

Time	Type	Name
06-20-20 P01	Alarm	Alarm
06-20-20 P01	Hi	Alarm
06-20-20 P01	Low	Alarm
06-20-20 P01	High	Alarm
06-20-20 P01	Minor	Alarm

Reactor Schematic (Bottom):

- Inputs: WATER, CONCENTRATE, STEAM.
- Central unit: REACTOR (LITRES).
- Outputs: TRANSFER, STORAGE (EngUnits).
- Control knob: MODE (AUTO, MAN).

Alarm Panel (Right):

Read Only

Enter Tagname here

Alarm Ack

#####

LoLo Lo Hi HiHi

#####

Value DB #####

Min% Max%

#####

Target Dev DB%

#####

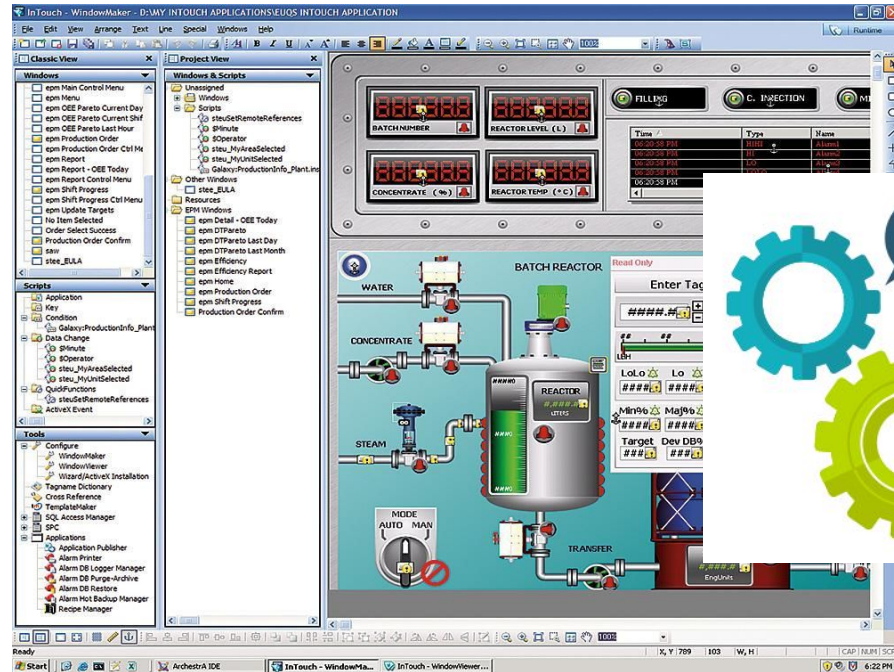
ROO%

#####

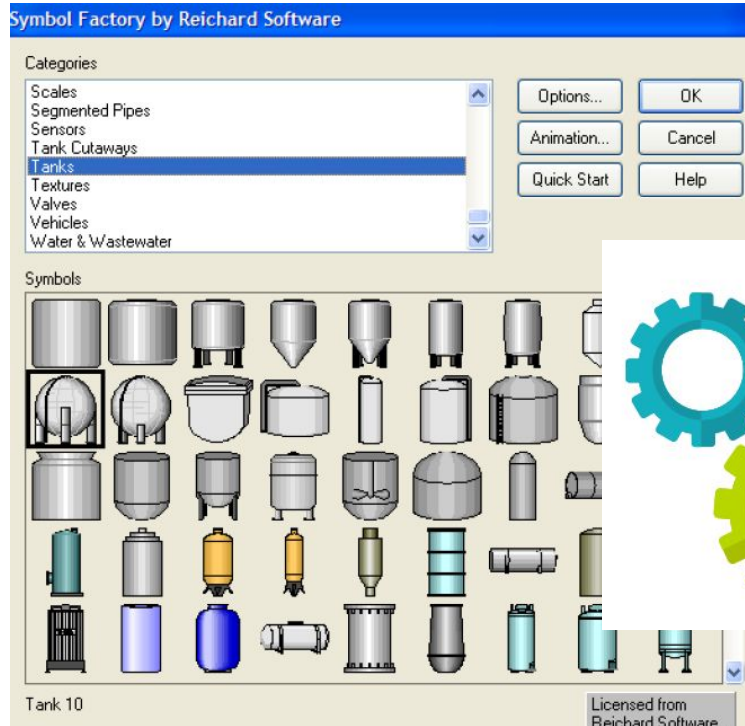
Left Panels:

- Windows:** epm Main Control Menu, epm Menu, epm OEE Pareto Current Day, epm OEE Pareto Current Shift, epm OEE Pareto Last Hour, epm Production Order, epm Production Order Ctrl M, epm Report, epm Report - OEE Today, epm Report Control Menu, epm Shift Progress, epm Shift Progress Ctrl Menu, epm Update Targets, No Item Selected, Order Select Success, Production Order Confirm, ssp, stee_BULA.
- Scripts:** Application, Key, Condition, Galaxy:ProductionInfo_Plant, Data Change, sMinute, steu_MyAreaSelected, steu_MyUnitSelected, QuicFunctions, steuSetRemoteReferences, Activek Event.
- Tools:** Configure, WindowMaker, WindowViewer, Wizard:Activek Installation, Tagname Dictionary, Cross Reference, TemplateMaker, SQL Access Manager, SPC, Applications, Application Publisher, Alarm Printer, Alarm DB Logger Manager, Alarm DB Purge-Archive, Alarm DB Restore, Alarm DB Backup Manager, Recipe Manager.

Laboratorio 10 - Creando Pantallas

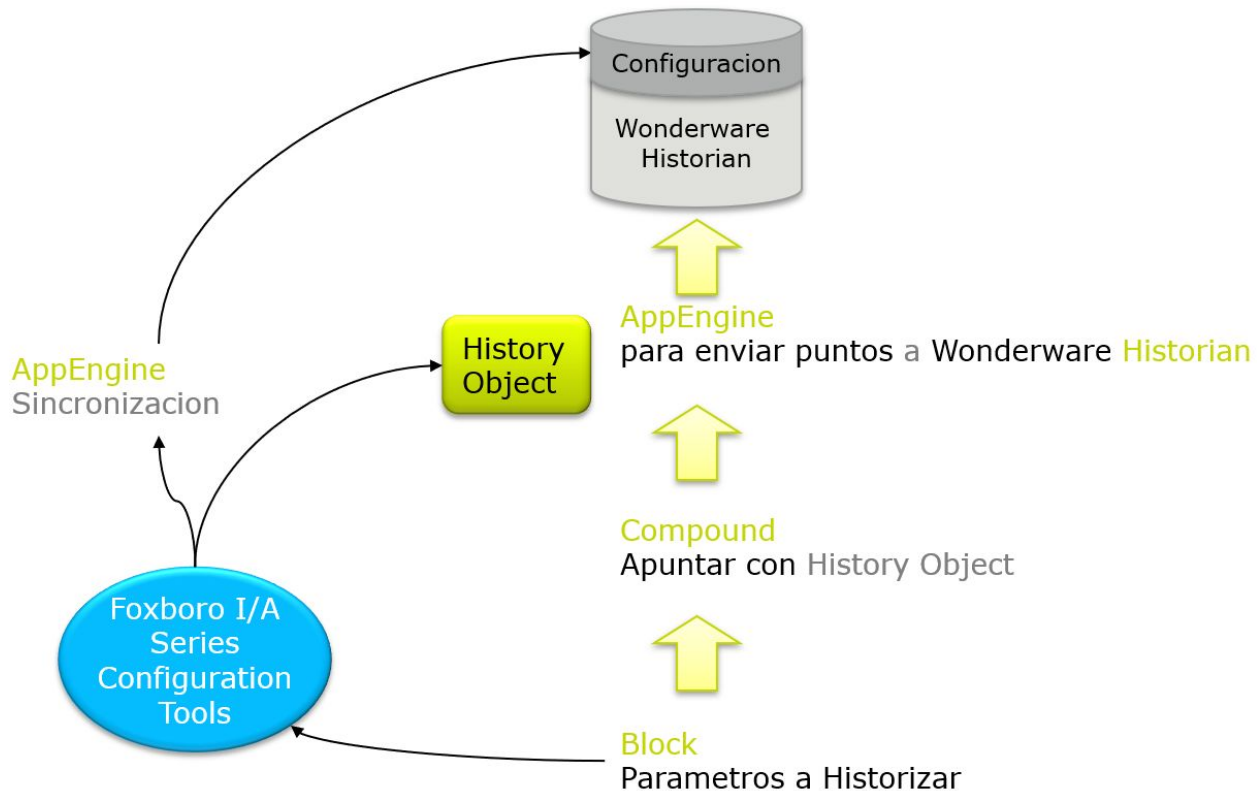


Laboratorio 11 - Creando Animaciones

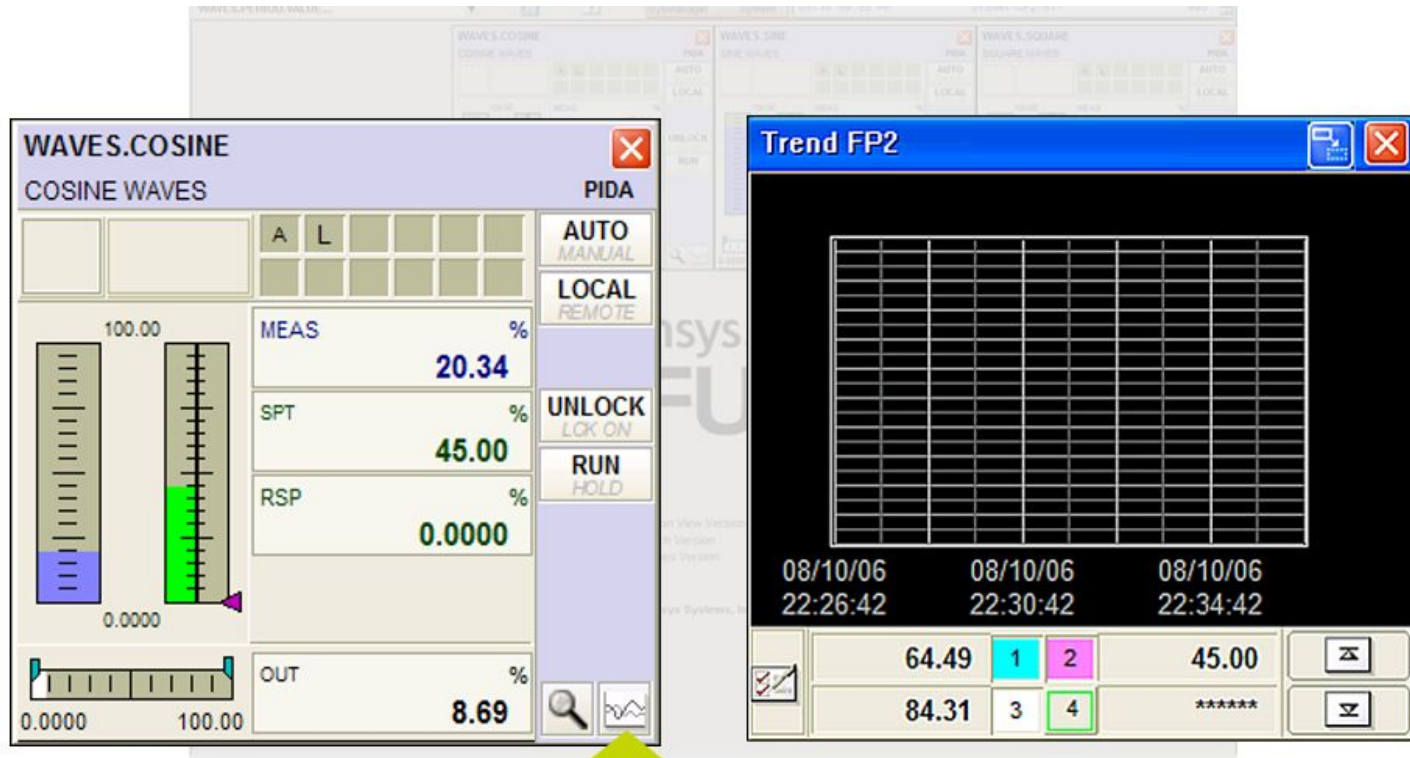


Modulo 8: Historiador y Tendencias

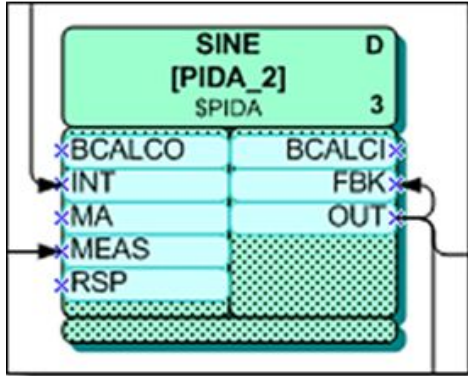
Como historizamos?



Tendencias desde Faceplates



Configurando bloques para historización



WAVES.waves_strat.PIDA_2

General | Inputs | Bias | Supervisory | Tuning | Outputs | Modems | **History** | Sec

Parameter	Description	EngUnit	ForceStoragePeriod	ScanRate	TrendHigh	TrendLow	DeadBand	OnMsg	OffMsg

ACHNGE History Enabled

Description:

Eng. Units:

Force Storage Period: ms

Scan Rate: ms

Trend High: %

Trend Low: %

Dead Band: %

On Message:

Off Message:

waves_strat * WAVES.waves_strat.PIDA_2

Configurando bloques para historizacion

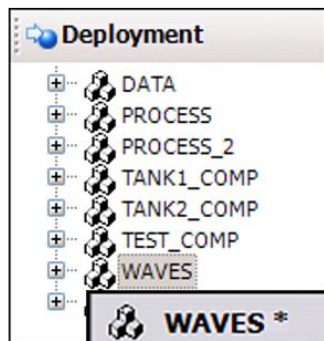
The image shows a configuration interface for a control system. It is divided into several sections:

- Parameter Selection:** A dropdown menu on the left shows a list of parameters: OF_INP, OSV, **OUT** (highlighted), OUTADB, OUTGRP, OUTNM, OUTPRI, and OWNER. Below this are fields for 'Scan Rate' (100) and 'Trend High' (100).
- History Configuration:** A central panel shows the selected parameter 'OUT' with a checked 'History Enabled' checkbox. Below this are fields for 'Description', 'Eng. Units', 'Force Storage Period' (0), 'Scan Rate' (1000), and 'Trend High' (100).
- Main Configuration Table:** A table titled 'WAVES.waves_strat.PIDA_2 *' with tabs for General, Inputs, Bias, Supervisory, Tuning, Outputs, Mode, Alarms, History, and Security. The 'History' tab is active, showing a table with columns: Parameter, Description, EngUnit, ForceStoragePeriod, ScanRate, TrendHigh, TrendLow, DeadBand, OnMsg, and OffMsg. The row for 'OUT' has values: 0, 1000, 100, 0, 0.1. A yellow double-headed arrow points from this row to the configuration panel below.
- Configuration Panel:** A detailed configuration panel for the 'OUT' parameter. It has a checked 'History Enabled' checkbox and fields for: Description, Eng. Units, Force Storage Period (0 ms), Scan Rate (1000 ms), Trend High (100), Trend Low (0), Dead Band (0.1), On Message, and Off Message.

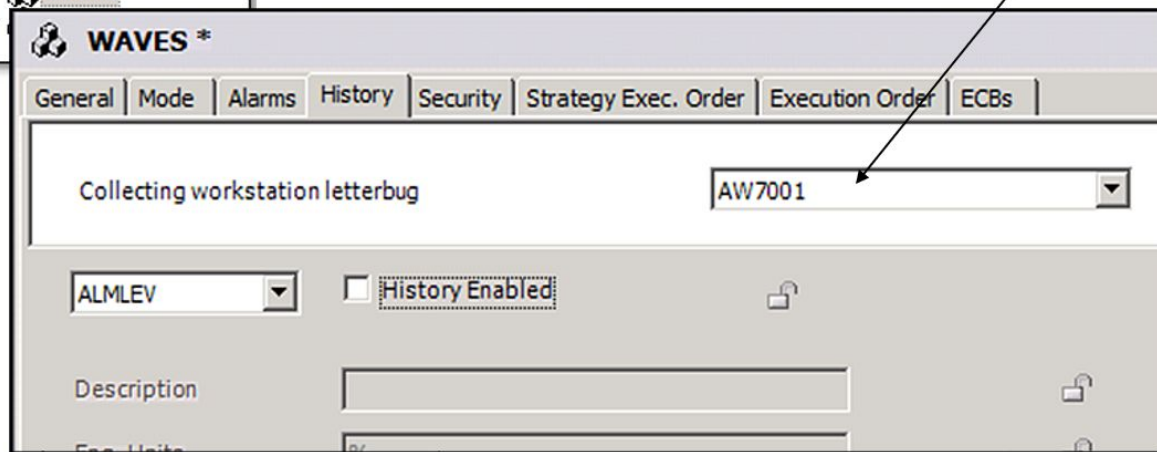
Annotations on the left side of the image:

- Selecciona parametro
- Check en History Enabled
- Configuras parametros
- Opciones no habilitadas

Configurando Compound para historizacion



Muestra el nodo donde el compound enviara la data



System Management Console (SMC)

SMC - [Archestra System Management Console (AW7001)] [IndustrialSQL Server] [IndustrialSQL Server Group (AW7001)] [Management Console (Status)]

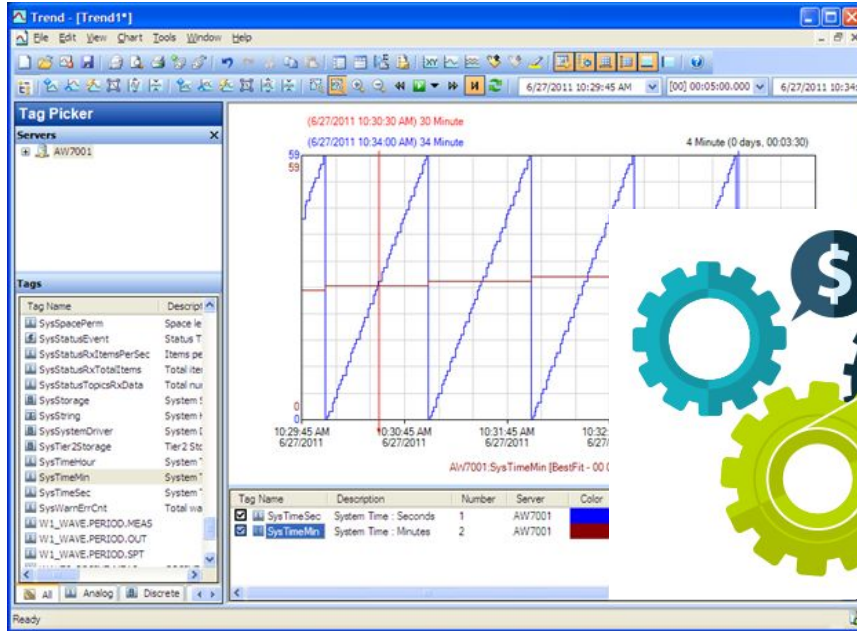
Item	Value	Module	Status
System time	3/30/2006 19:54:34	Storage	Stopped
Time of last start	3/30/2006 19:51:05	Manual storage	Stopped
Elapsed time since last start		Event system	Stopped
Time of last stop	3/30/2006 19:52:58	Retrieval	Started
Time of last reconfiguration	3/30/2006 19:32:50	OLE DB provider	Started
Configuration status	Normal	INQJ205	Stopped
System status	Stopped	System driver	Stopped
License status	Valid	Data acquisition on (AW7001)	Stopped
Total number of tags in database	117		
Number of licensed tags in database	0		
License tag count	900		
Total number of data values received	6,387		
Overall data rate (per sec.)	0.00		
Fatal errors	0		
Critical errors	0		
Errors	0		
Warnings	0		
Time of last error reset	3/30/2006 19:32:50		
Space available on origin path	119 GB		
Space available on alternative path	Undefined or invalid path		
Space available on buffer path	119 GB		
Space available on permanent path	119 GB		
System version	9.0.0.0391		

Archestra System Management Console (AW7001)

- IndustrialSQL Server
 - IndustrialSQL Server Group
 - AW 7001
 - Management Console
 - Status
 - Data Acquisition
 - Clients
 - History Blocks
 - Configuration Editor
 - System Configuration
 - Parameters

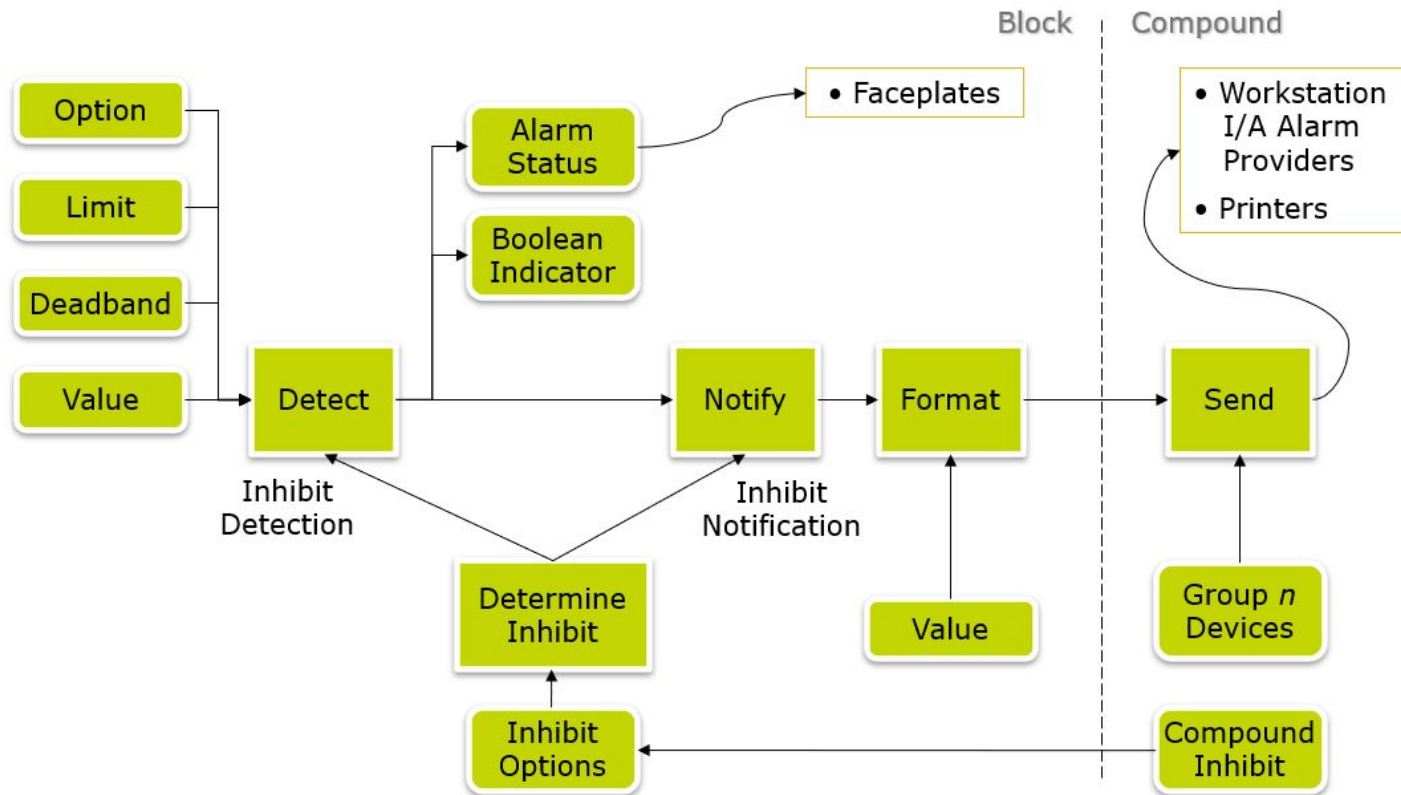
Item	Value
AW7001	AW7001
System	
Time of last start	Data\Circular\A060330_001
Elapsed time since last start	Acquisition
Time of last stop	in database
Time of last reconfiguration	AW7001 (AW7001)
Configuration status	License
System status	Total number of tags in database
License status	Number of licensed tags in database
Total number of tags in database	License tag count
Number of licensed tags in database	information
License tag count	in database
Total number of data values received	values received; (AW7001)

Laboratorio 12 - Historizando y Tendencias

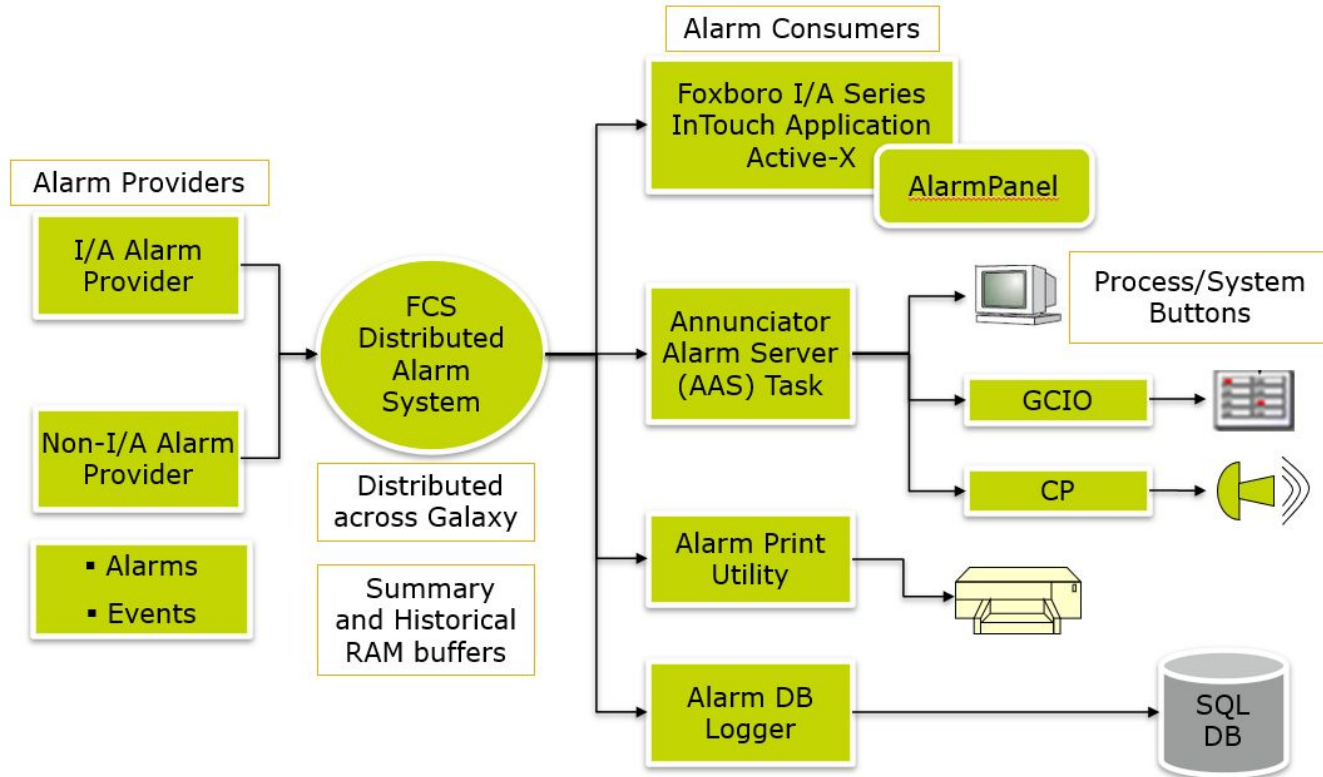


Modulo 9: Sistema de Alarmado

Flujo de datos para alarmas



Manejo de Alarmas



Tipos de Alarmas

Absolutas – Valor se compara con un límite absoluto

- High / Low:
- High-High / Low-Low:

Desviación - Diferencia en SP y PV

- High and/or Low:

Output – Valor de salida comparado con un limite

- High and/or Low:

Bad – Valor con error en FBM o punto I/O

Out-of-Range– Valor fuera de rango

- High / Low:

Rate of Change - Valor cambiando rapido

Target - Valor de Acumulacion en el limite

Mismatch - estado no deseado de un contacto dentro de un tiempo.

State - contacto entrada en alarma

Trip - condicion ocurrida (EVENT o MON Block)

Sequence - Error en logica de secuencia

Parametros de Alarmas

Option – activa o desactiva alarma

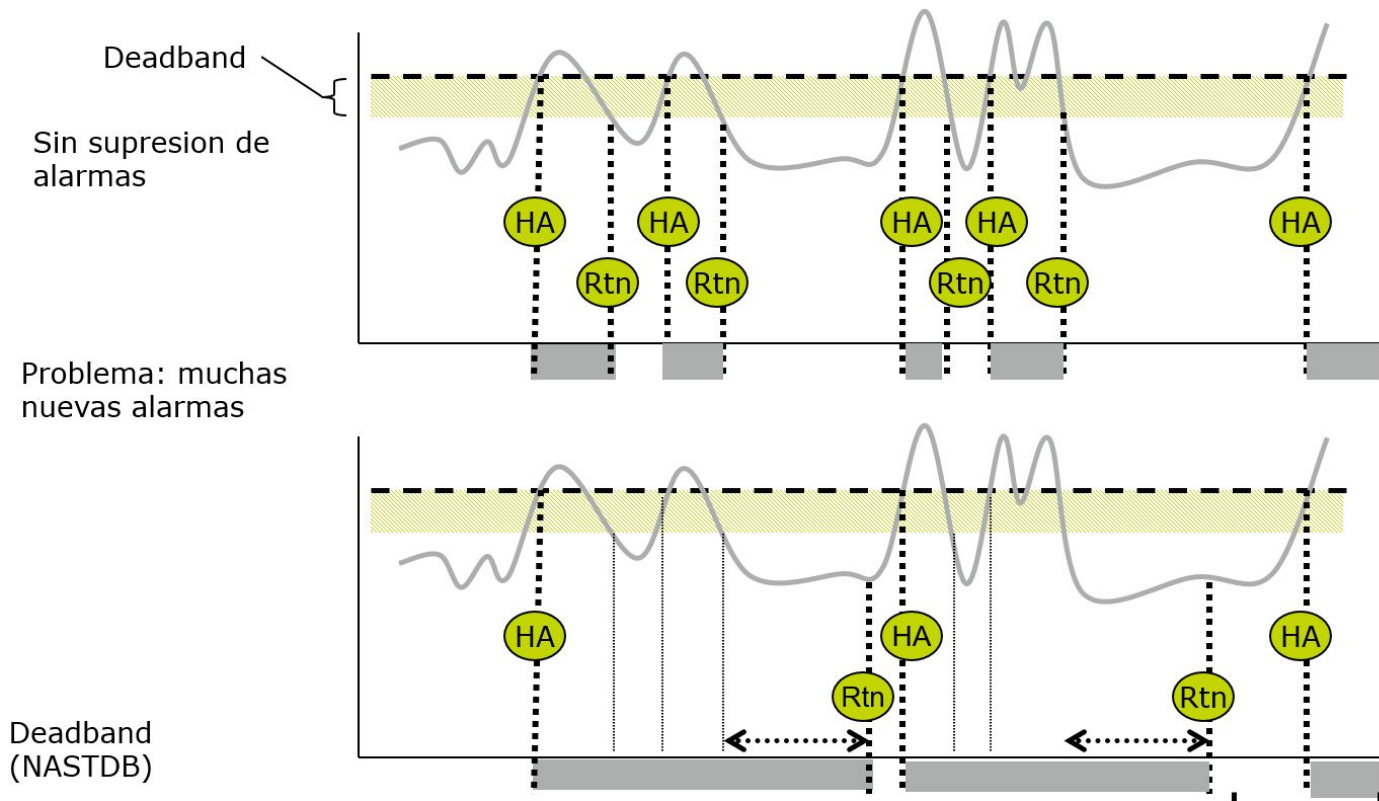
Limit - fija limites en unidades de ingenieria

Deadband: banda muerta antes que alarma se active

Priority - Prioridad de la alarma (1 a 5)

Group - Grupo de dispositivos donde se anunciara la alarma

Supresion de alarmas continuas (NASTDB)



Alarmas en Block Select

The screenshot shows the InFusion View BlockSelect interface for station [AW7001:AW7001]. The 'Block View' tab is active, showing a tree structure on the left and a table on the right. The 'ALARMS' block is highlighted, and a yellow callout box points to the number '3' next to it. The table on the right lists blocks with their types and alarm status.

Block	Type	Alarm
RAMP_1	RAMP	
PIDA_1	PIDA	3
AIN_1	AIN	

Alarma de mayor prioridad en compound

Alarmas en Faceplates

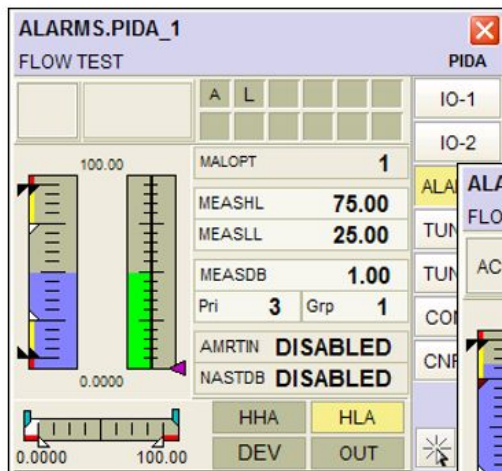
The diagram illustrates the components of an alarm faceplate. On the left, callout boxes identify: 'Priority' (pointing to the number 5), 'ACK Button' (pointing to the ACK button), 'HiHi Abs Alarm Limit' (pointing to the top red limit on the scale), 'Hi Abs Alarm Limit' (pointing to the top yellow limit on the scale), 'Measurement' (pointing to the green bar on the scale), and 'Deviation Limits' (pointing to the bottom blue bar on the scale).

The main interface, titled 'ALARMS.PIDA_1', displays the following information:

- Process Name: FLOW TEST
- Alarm Name: HIABS
- Priority: 5
- Measurement Value: 55.00
- Current Status: AL
- High Limit (HSC1): 100.00
- Low Limit (LSC1): 0.0000
- Deviation (ERROR): -5.00
- Buttons: MEAS, SPT, OUT, SPRAMP
- Navigation: IO-1, IO-2, ALARMS, TUNE-1, TUNE-2, CONFIG, CNFG-2

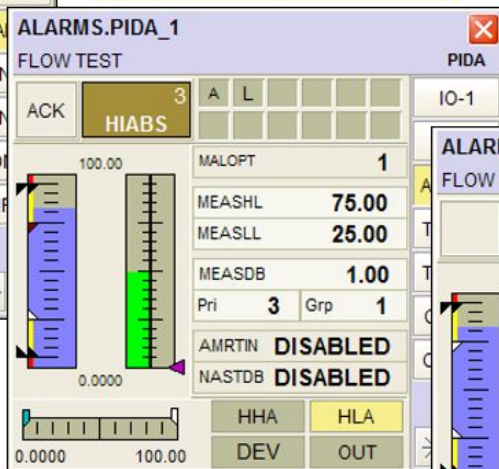
Parameter	Value
HSC1	100.00
MEAS	55.00
ERROR	-5.00
LSC1	0.0000

Reconociendo Alarmas

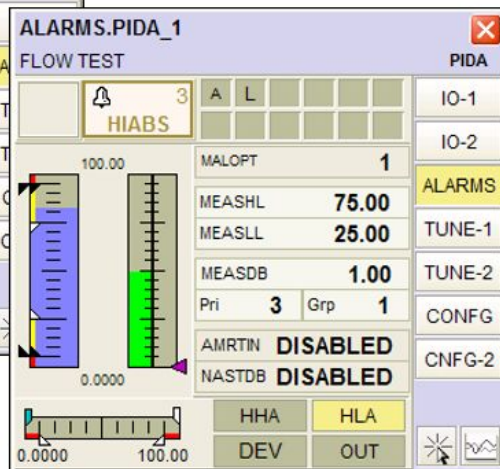


Ninguna Alarma

MEAS va hasta 83.0
Bloque en alarm no
reconocida



Alarma reconocida



Panel de Alarmas

Click para ordenas columnas

Mover columnas en el orden deseado

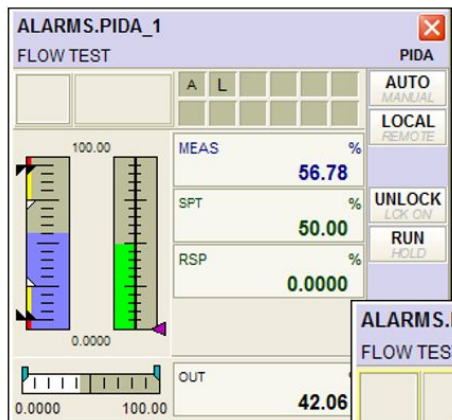
Time	State	Name	Pri	Value	Limit	Alarm Comment	Type	Group
03/24/2006 08:28:16 PM	ACK	ALARM_DEMO.AIN_3.HIABS	5	4.10	4.00	ia	HIABS	AWWP01
03/24/2006 08:28:02 PM	UNACK	ALARM_DEMO.AIN_2.HIABS	5	8.70	5.00	AIN WITH	HIABS	AWWP01
03/24/2006 08:23:43 PM	UNACK	ALARM_DEMO.PIDA_1.HIABS	3	8.10	8.00	PIDA ALARM TEST	HIABS	AWWP01
03/24/2006 08:23:29 PM	UNACK	ALARM_DEMO.PIDA_1.HIDEV	4	6.10	6.00	PIDA ALARM TEST	HIDEV	AWWP01
03/24/2006 08:23:14 PM	UNACK_RTN	ALARM_DEMO.PIDA_1.LODEV	4	2.90	3.00	PIDA ALARM TEST	LODEV	AWWP01

Colores conforme a prioridad de alarmas

Estado de reconocimiento de alarmas:

- Reconocida
- No reconocida
- No reconocida, pero retorno a normal
- Reconocida, y regreso a normal desaparecen

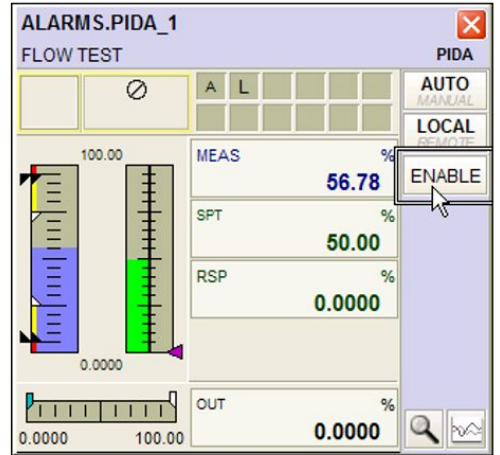
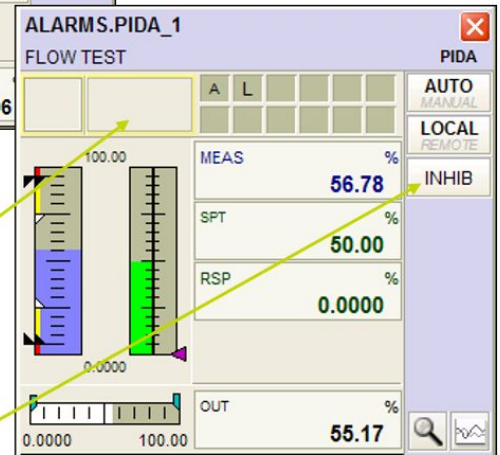
Inhibir Alarmas



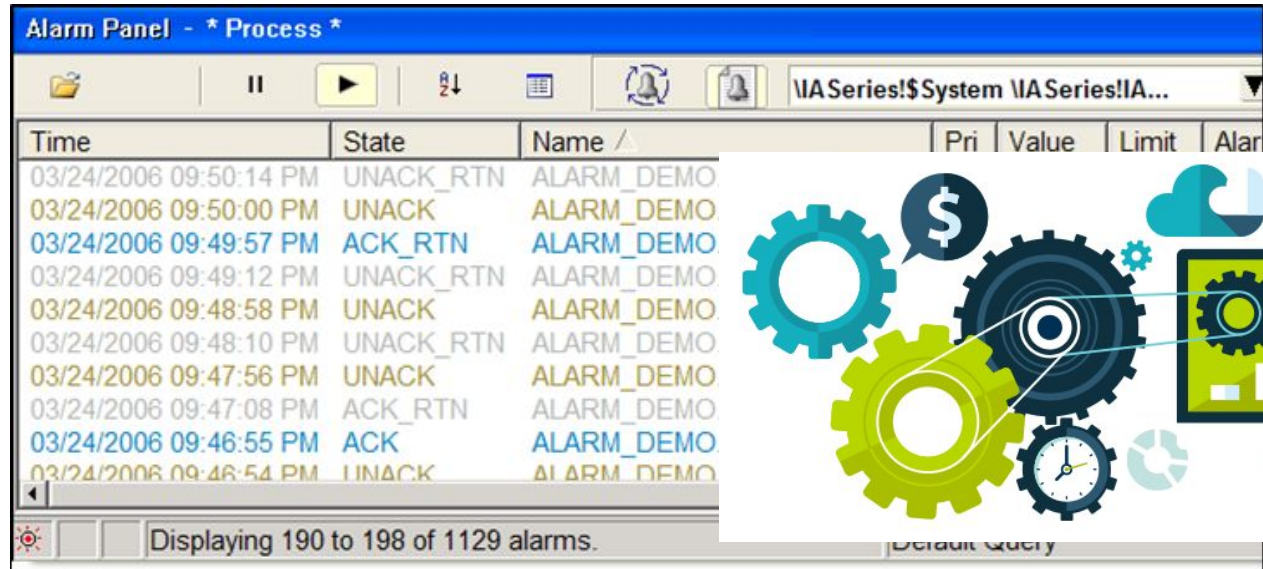
Indica que alguien inhibio alarmas

ACK [Bell Icon] [Crossed Bell Icon] 5
LOADS

Click para habilitar o deshabilitar



Laboratorio 13 - Trabajando con Alarmas




The screenshot shows a software window titled "Alarm Panel - * Process *". The window contains a table of alarm events and a status bar at the bottom.

Time	State	Name /	Pri	Value	Limit	Alar
03/24/2006 09:50:14 PM	UNACK_RTN	ALARM_DEMO				
03/24/2006 09:50:00 PM	UNACK	ALARM_DEMO				
03/24/2006 09:49:57 PM	ACK_RTN	ALARM_DEMO				
03/24/2006 09:49:12 PM	UNACK_RTN	ALARM_DEMO				
03/24/2006 09:48:58 PM	UNACK	ALARM_DEMO				
03/24/2006 09:48:10 PM	UNACK_RTN	ALARM_DEMO				
03/24/2006 09:47:56 PM	UNACK	ALARM_DEMO				
03/24/2006 09:47:08 PM	ACK_RTN	ALARM_DEMO				
03/24/2006 09:46:55 PM	ACK	ALARM_DEMO				
03/24/2006 09:46:54 PM	LINACK	ALARM_DEMO				

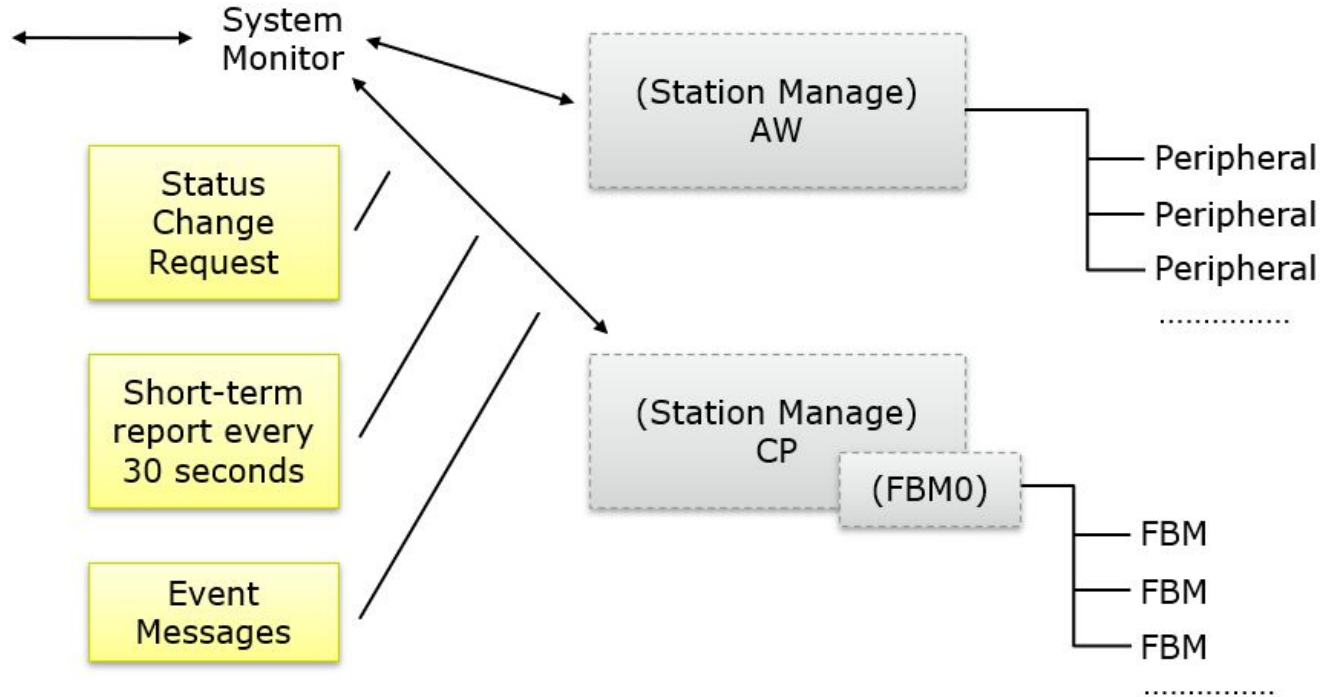
Displaying 190 to 198 of 1129 alarms.

Default Query



Modulo 10: Diagnóstico del Sistema (System Manager)

Arquitectura de System Manager




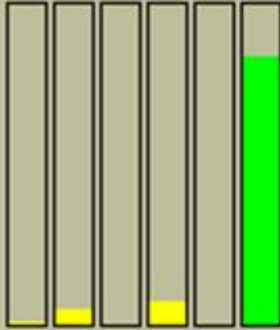

Arquitectura de System Manager



- Visualizar
 - Salud de equipamiento
 - Informacion de la configuracion de estaciones (CP, AW)
 - Contadores
 - Logs del sistema
- Alarmas
 - Condiciones de errores
 - Desabilitar notificacion de alarmas
 - Reportar alarmas
- Funciones como:
 - Reiniciar procesadores y FBMs
 - Cambiar bus activo
 - Actualizar la EEPROM
 - Cambiar fecha y hora del todo el sistema

Station Block

CP2701_STA.STATION ✕

STA

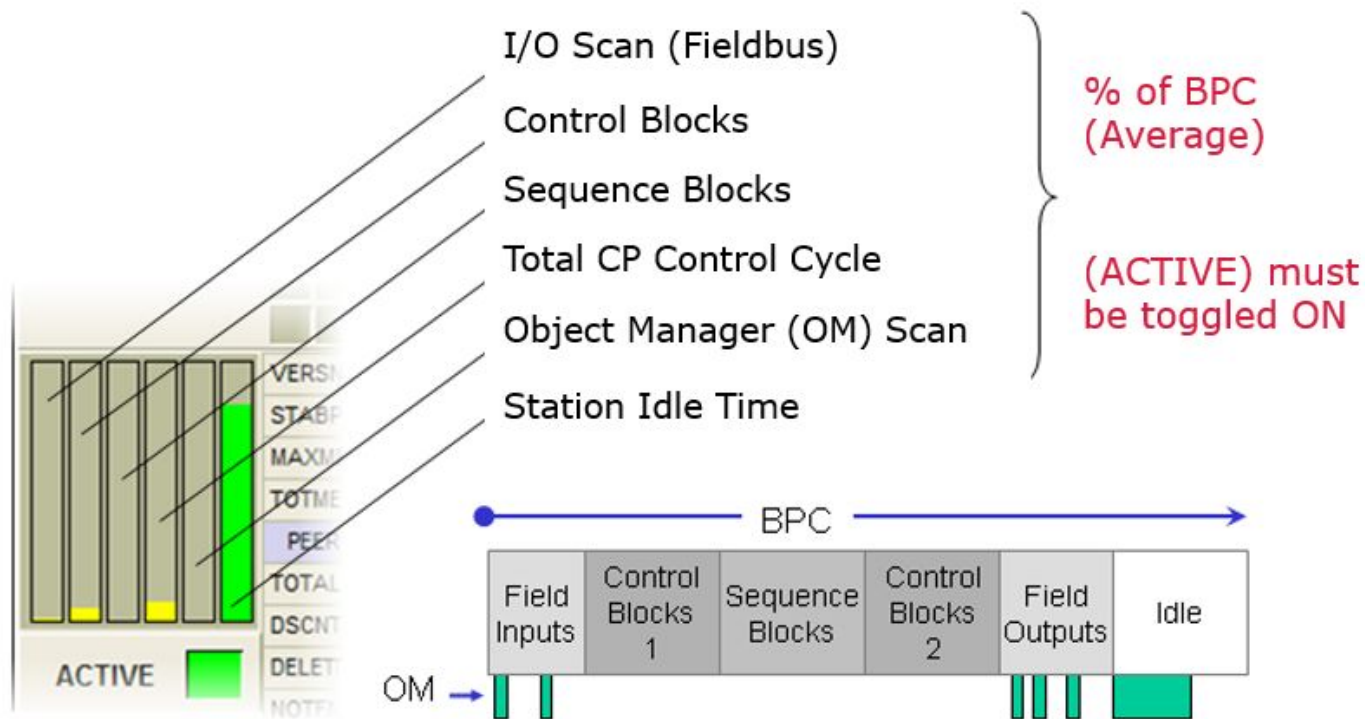
	
	VERSNO 1.0
	STABPC 0.5000
	MAXMEM 4096
	TOTMEM 5142224
	PEER TO PEER STATUS
	TOTAL 0
	DSCNTD 0
	DELETED 0
	NOTFND 0
ACTIVE 	
2006-08-20 18:20:03	AUTCKP 0.0000 Hrs

Station Block

Parameter	Description
VERSNO	CP Software version
STABPC	Basic Processing Cycle (sec)
MAXMEM	Max contiguous free memory available (n/a for CP270)
TOTMEM	Total free memory available (max for CP270 = 4.5 MB)
TOTAL	Total peer-to-peer sink connections in this station
DSCNTD	Source disconnected from sink
DELETED	Source has been deleted
NOTFND	Source never found
AUTCKP	Auto checkpoint option

Station Block



System Management Console

SMC - [ArcheStrA System Management Console (AW7001)\Log Viewer\LLC_Galaxy\AW7001_Plat\AW7001]

File Action View Help

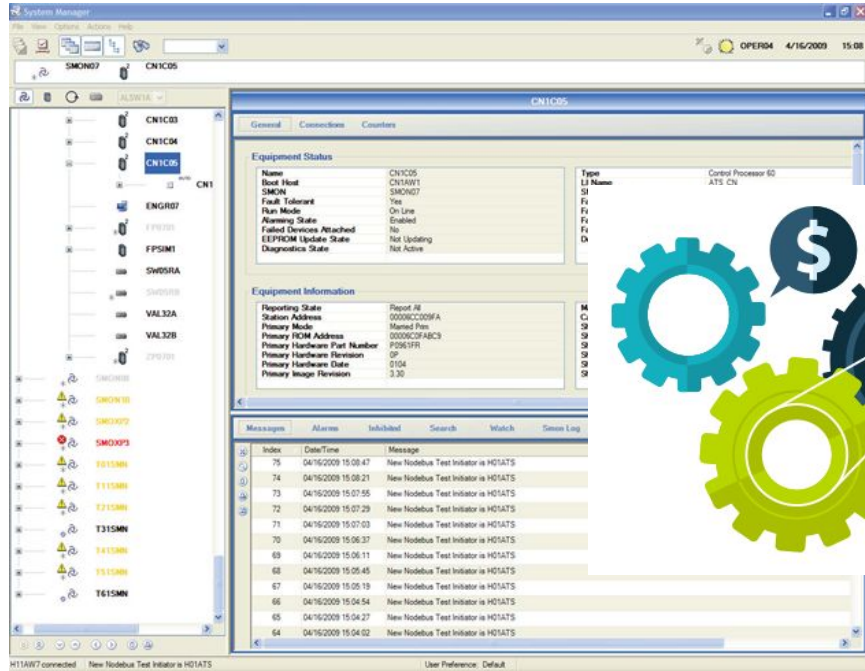
Start Time: 12/31/1900 11:59:59 PM End Time: 12/31/2100 11:59:59 PM

ArcheStrA System Management Console

- Historian
- Galaxy Database Manager
- DA Server Manager
- Log Viewer
 - LLC_Galaxy
 - AW7001_Plat(AW7001)
 - Default Group
 - Opened Log Files
 - Platform Manager

No:	Date	Time	Process ID	Thread ID	Log Flag	Component	Message
45867	3/5/2015	6:37:49 AM	8720	8464	Info	VIEW	Loading Script DLL: WWWVIEWEW\WINDOWV.DLL
45868	3/5/2015	6:37:49 AM	8720	8464	Info	WWSSCRIPT	Could not delete file 'C:\Users\Fox\AppData\Local\Temp\{n\Fusion-View\AW7001Done.txt'
45869	3/5/2015	6:37:51 AM	8720	8464	Info	WWSSCRIPT	Message: Initializing OM connections - Attempt 1
45870	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45871	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45872	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45873	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45874	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45875	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45876	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45877	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45878	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45879	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45880	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45881	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	No such window name: ""
45882	3/5/2015	6:37:51 AM	8720	8464	Info	view	Reading bitmap with length of 0.
45883	3/5/2015	6:37:51 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45884	3/5/2015	6:37:51 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45885	3/5/2015	6:37:51 AM	8720	8464	Info	VIEW	Loading Script DLL: HMGR.DLL
45886	3/5/2015	6:37:52 AM	8720	8464	Info	LNKNOWN	WINAL - using "AlarmLst.dll"
45887	3/5/2015	6:37:52 AM	8720	8464	Info	LNKNOWN	WINAL - Loaded AlarmLst.DLL "AlarmLst.dll" version "10.5"
45888	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45889	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45890	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45891	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45892	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45893	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45894	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45895	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45896	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45897	3/5/2015	6:37:52 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45898	3/5/2015	6:37:52 AM	8720	8464	Info	INTSP7	Node "NA" connected
45899	3/5/2015	6:37:52 AM	8616	7944	Info	AlarmMgr	Connected to Provider "\\\$AW7001\IASeries"
45900	3/5/2015	6:37:52 AM	8616	7944	Info	AlarmMgr	Connected to Provider "\\\$AW7001\Galaxy"
45901	3/5/2015	6:37:52 AM	8720	8464	Info	VIEW	Loading Script DLL: TSESCRIP.DLL
45902	3/5/2015	6:37:52 AM	8720	8464	Info	TSESCRIP	10.5
45903	3/5/2015	6:37:52 AM	8720	8464	Info	WWSSCRIPT	Message: Connected to OM. Creating required OM VARS
45904	3/5/2015	6:37:53 AM	8720	8464	Info	VIEW	Loading Script DLL: INTSP7.DLL
45905	3/5/2015	6:37:57 AM	8720	8464	Info	WWSSCRIPT	Message: Creating connections to required OM VARS
45906	3/5/2015	6:37:58 AM	8720	8464	Info	WWSSCRIPT	Message: Connections to required OM VARS successful
45907	3/5/2015	6:38:07 AM	8720	8464	Info	WWSSCRIPT	Message: Starting Alarm Server ...
45908	3/5/2015	6:38:08 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45909	3/5/2015	6:38:08 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45910	3/5/2015	6:38:08 AM	5108	1628	Info	InfAlarmServer	AlarmServer start up 6.0.846.0
45911	3/5/2015	6:38:08 AM	5108	1628	Info	InfAlarmServer	InitMxAccess
45912	3/5/2015	6:38:08 AM	5108	5960	Info	AlarmServer	License feature 'MxAccess_Runtime' of version 3.5 has been acquired, expiration date = 15-jan-20
45913	3/5/2015	6:38:08 AM	8720	8464	Info	WWTechSp71	Entered MoveWindow
45914	3/5/2015	6:38:08 AM	8720	8464	Info	WWTechSp71	Leaving MoveWindow
45915	3/5/2015	6:38:09 AM	5108	1628	Info	Lmx	(40) Starting LMX #1 at [03353408], Version 3148.0076.0000.0000, Signature @@@@LNX_033534
45916	3/5/2015	6:38:09 AM	7592	9120	Info	BlockSelect	License feature 'MxAccess_Runtime' of version 3.5 has been acquired, expiration date = 15-jan-20
45917	3/5/2015	6:38:09 AM	7592	6984	Info	Lmx	(40) Starting LMX #1 at [0313E048], Version 3148.0076.0000.0000, Signature @@@@LNX_0313E0
45918	3/5/2015	6:38:10 AM	5108	1628	Info	AlarmBuf	AlarmBuf - 10.5 Using Win32Heap
45919	3/5/2015	6:38:10 AM	5108	1628	Info	AlarmLst	AlarmLst - 10.5

Laboratorio 14 - Trabajando System Manager



Preguntas?