CAPITULO 5

Interfaz hombre-máquina

5.1 Introducción a Process Portal A

A continuación vamos a describir la herramienta Process Portal A, que sirve como complemento a CB. Process Portal A es la herramienta, mediante la cual, se lleva a cabo de creación, configuración y mantenimiento del sistema de control. Es decir, es la interfaz gráfica hombre-máquina que nos muestra por pantalla el estado del sistema. Entre las funciones del PPA destacan:

- Gestión de BBDD para elementos tales como tendencias, presentación de alarmas, eventos, etc.
- Gestión de la aplicación a través de la cual se controla la estación
- Definición de los elementos a representar en el panel de operación de la estación
- Configuración de usuarios
- Servicios del sistema:
 - o OPC
 - o BackUp
 - o Históricos

5.2 Estructuras creadas

El PPA se divide en una serie de estructuras cada una de ellas, a su vez, se dividen en objetos que, a su vez, se dividen en aspectos.

Aunque PPA posea un número estructuras mayor al aquí representado, las que se comentan a continuación son las más importantes:

Library Structure:

- Contiene patrones de:
 - o Alarmas y eventos
 - o Históricos
 - Representación de tendencias
- Plantillas XML Workplace Panel



FIGURA 5.1

Como vemos se divide en cuatro bloques importantes:

1.-Podemos escoger entre las distintas estructuras. En este caso Library Structure.

2.-Tenemos el árbol de las carpetas que forman esta estructura, de entre ellos lo más importantes son:

- Alarm & Event Configurations: Podemos configuran todos los parámetros de las alarmas y eventos (lista de alarmas y eventos, línea de alarmas y eventos, lista de alarmas y eventos audibles, etc.).
- History Log Templates: Plantillas para generar Templates. Nosotros creamos dos: recoger datos cada minuto durante una semana y recoger datos cada 20 segundos durante una semana.
- Trend Templates: Nos permite crear las tendencias. Creamos dos: una para el analizador y otra para la pantalla general.
- Workplace Panels: Nos define las distintas formas es que se presenta la pantalla principal. En nuestro proyecto utilizamos Operador Panel para la configuración como Puesto de Operación y Plant Explorer Panel para el Puesto de Ingeniería.

3.-Nos muestra los aspectos que posee un elemento. En este caso los aspectos de Log_1min_1week.

4.-Nos enseña la información de un aspecto. En la figura se puede ver la información que tiene el aspecto History Log Template Type Reference

> Object Type Structure:

Contiene:

- Objetos sistema 800M
- Librerías
- Controladores y HW
- Estructura de aplicaciones

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FIGURA 5.2

La carpeta más importante y que nos interesa explicar es Object Types/Control System/AC 800 M/C/ Libraries. Esta carpeta contiene todas las librerías utilizadas en CB. Posteriormente, podemos insertar en un Control Module Types los aspectos que deseemos como Faceplate, Trend, Graphic element, etc... y que serán exportados automáticamente a todos los Control Modules.

Control Structure:

Contiene:

- Aplicación
- Definición de servidores OPC
- Para ello, recoge librerías
- Genera aplicaciones con patrones definidos
- Define estructura y configuración de controladores



FIGURA 5.3

En esta estructura tenemos los Control Modules exportados de CB. Tenemos toda la información generada en CB y, además, podemos añadir los aspectos que necesitemos. En este ejemplo vemos que hemos insertado un faceplate que es específico para este Control Module (PLC_Status para el área ABSP). A diferencia de los aspectos de la estructura anterior (Object Type Structure) aquí solo afecta a un bloque funcional, mientras antes afectaban a todos los bloques funcionales que sean de un mismo Control Module Types.

> Functional Structure:

Representación gráfica de sinópticos de operación. Para ello inserta instancias de elementos de la aplicación que han de ser representados.



FIGURA 5.4

Como vemos, aquí creamos la estructura final en la que se dividirá el proyecto en la interfase hombre-máquina. Toda esta información nos permitirá dibujar las pantallas. Como vemos en la figura en el área Auxiliar Boiler(ABSS) están insertados todos los Control Modules que deseamos que aparezcan, de manera idéntica se actuará sobre las otras áreas.

> Workplace Structure:

Contiene la configuración de elementos que forman parte de la interfase de operación de planta para representar los sinópticos.

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FIGURA 5.5

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Como observamos en el árbol tenemos definidos dos Workplaces: Operador Workplace y Plant Explorer Workplace. El primero se utiliza para el Puesto de Operación y el segundo para el Puesto de Ingeniería. Si comparamos el aspecto AfwWebWPlayout entre la figura 5.5 y la figura 5.6 vemos que la última columna del aspecto difiere entre una y otra, además habilitamos distintos ítem (primera columna) según sea necesario en el Puesto de Operación o Ingeniería.

Service Structure:

Contiene configuración de los servicios:

- Alarmas y eventos
- OPC

- Servidor de aspectos
- Servidor de archivos
- Impresión de alarmas

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FIGURA 5.7

Una gran utilidad que tiene esta estructura es el aspecto System Status Viewer que se encuentra en la carpeta principal Services. Con este aspecto podemos ver si existe algún tipo de problemas en los servicios activos que tenemos como Alarmas y Eventos, Históricos, OPC, etc.

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FIGURA 5.8

User Structure:

Contiene configuración de los usuarios:

- Modos de pantalla
- Derechos
- Pantalla inicial

| System : PRUEBA - Workplace : Plant Explorer Workpla | ace | | | | |
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En este caso tenemos dos usuarios importantes configurados: Administrador y User. El primero será el utilizado para el Puesto de Ingeniería y el segundo para el Puesto de Operación. Si nos fijamos atentamente vemos que Administrador posee licencia en aplicaciones de ingeniería, Everyone(Windows), operador y sistemas de ingeniería, sin embargo, User solo tiene licencia para Everyone(Windows) y operador.

5.3 Herramienta para crear pantallas (Visual Basic)

Para generar las pantallas (Graphic display), Faceplate, Graphic Element, etc... utilizaremos el Visual Basic Net 6.0.





Esta es la pantalla principal de VB:

1.- Contiene las principales herramientas: compilar, propiedades del objeto, árbol de elementos que se pueden insertar, etc.

2.- Son las librerías que se pueden utilizar: insertar texto, elementos (válvulas, motores, tuberías, etc) ya diseñados, etc.

3.-Pantalla principal donde dibujamos

4.- Propiedades del objeto seleccionado





En esta otra pantalla podemos ver, el árbol de elementos que se pueden insertar (Element Browser). Este árbol se genera a partir de los Control Modules incluidos, en este caso, en la carpeta Auxilar Boiler de la estructura Fuctional Structure.

En la figura 5.12 vemos la herramienta Expresión Builder que nos permite generar el código necesario en los objetos incluidos. En este caso estamos diciéndole al recuadro que rodea al botón PLC Status, las condiciones para que cambie de color y para que sea visible o no.

| 🍖 Auxiliary | yBoi859B8 F Mew A | OC787BE415 - Mic | rosoft Visua | l Basic [design] - [AUXILIAR v. Diagram, Add-Inc, Window | Y (UserControl)] | | | | | X |
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FIGURA 5.12