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**Sistema de Control Basado en la Web utilizando el
Java y el Servidor OPC
Aplicada en la Sistema de Los Cuatro Tanques**

*Web-based Control System using Java and OPC
Server
Applied on the Quadruple Tanks Systems*

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A mis padres
A mis profesores
A Sevilla
A Palestina

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ABSTRACT

Tremendous advances in computer technology and the evolution of the Internet have led to new approaches in integrating the information technology into the control theory fields. This work will show how Java programming language could be used successfully to build a web-based control system side by side with the OPC (Ole for Process Control) protocol.

The solution provided in this work overcomes all the problems that could be encountered during building such that projects such that DCOM configurations problems and the problem of connecting the remote client PC to the server PC.

The Quadruple Tanks Plant has been taken as an example to verify the proposed solution, and has been updated by building a web based control to be able to do the followings remotely:

- Monitoring the systems variables, the water inside each tank and the valves value.
- Design a monitoring program that enables the client to visualize the current actions of the system.
- Implement a controller that controls the bottom water tanks levels.
- Integrate an online video broadcasting program that transmits the current actions directly.

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RESUMEN

Los enormes avances en la tecnología de la información y la evolución de Internet han dado lugar a nuevos enfoques en la integración de las tecnologías de la información en los campos de la teoría del control.

En este trabajo se mostrará cómo podemos evitar los problemas que normalmente se encuentran cuando se quiere construir una sistema de control basado en la web.

La solución mostrada usa por un lado el lenguaje de programación Java y por otro lado el protocolo OPC (OLE for Process Control) para construir un sistema de control remoto al cual se accede mediante la web.

La solución proporcionada en este trabajo supera todas las dificultades que aparecen en la práctica como la configuración del protocolo DCOM, la conexión del PC cliente al servidor OPC, etc...

Se ha tomado como proceso ejemplo la planta de los cuatro tanques, la cual se encuentra en los laboratorios de la Universidad de Sevilla. Sobre ese proceso se ha programado, instalado y configurado software para poder realizar de manera remota:

1. Leer y escribir las variables del sistema en forma remota. Esas variables incluyen los niveles de agua en los cuatro tanques y los valores de apertura de las válvulas del sistema.
2. Monitoreo remoto de todas las acciones que ocurren en la planta.
3. Implementar un controlador que controla el nivel del agua de los tanques usando un PI.
4. Integrar un programa de vídeo online que permite ver el sistema en tiempo real.

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Thanks Ignacio

I hereby certify that the work presented in this report is my own and that work performed by others is appropriately cited.

Por la presente certifico que el trabajo presentado en este informe es el mío y que el trabajo realizado por los demás es claramete citada.

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