



International Journal on Recent Researches In Science, Engineering & Technology

A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy.

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Research Paper

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ISSN (Print) : 2347-6729

ISSN (Online) : 2348-3105

Volume 2, Issue 3,

March 2014

DIIF IF :1.46

SJIF IF: 1.329

Concept of Integrating real time field images in computer.

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Abstract : Literature reported that process industries require supervisory control and data acquisition systems (SCADA) or disturbed control systems (DCS) depending upon geographic distribution of the plant instrumentation . Remote operation of the hazardous field needs quite a good amount of instrumentation support as well as monitoring purposes . The various parameters to be monitored are pressure, flow, level, displacement, speed etc . Sensors are to be installed at hundreds of locations to bring the details of signals to the operation station . Along with this signal remote field images are taken by analog cameras to be received at the TVs installed at operator station for field view . This separate arrangement of signal acquisition from sensors for signal conditioning , A/D conversion , Engineering unit conversion limit checking and report/control signal generation at computer as well as separator field images view at TV can be overcome with the latest technique Digital Image processing (DIP) . Separate TV image view and the computer monitors view may produce erroneous results for control signal generation . Only web (Digital) cameras are installed at various parameter measuring points . Let us consider a case of level measurement . A digital camera installed near the boiler drum in a thermal power station takes continuous photographs of water levels and forward the digital image signal to the computer at regular interval. These images are compared with standard image stored inside the computer with suitable algorithm. When received image matches the standard image, control action is initiated . The same procedure can be adopted with digital camera for speed measurement , vibration measurement and displacement measurement, etc

.This system gives real time display of various field images super imposing on the animated mimic diagrams in computer monitor, which is not possible in the old environment with analog sensors. MATLAB is extensively used . JEG images are file used .