Monitoring and Control

15:20 – 15:40   **D-TE03-1**

Development of Precise Deflection Measurement System for Civil Structures and its Application

Kim Sang Bong, Shin Seung Mok, Jeon Yang Bae, Kim Choon Sik and Yoon Soo Ho
(Pukyong National University)

This paper introduces a real time precise deflection measurement system for civil structures by using one chip microprocessor based communication system. The communication system is developed by using 80c196kc microprocessor and it has data acquisition function for several kinds of sensors such as load cell, tilt-meter, strain gauge, tension meter and so on. The data acquisited by communication system is sent to a main server which is located at central monitoring office. The server has a function supervising several data points located at civil structures, it analyzes the data and shows the data graphically. The effectiveness of the developed system is proven through …

15:40 – 16:00   **D-TE03-2**

Development of Low Price Digital Endoscope with Database System

Kim Sang Bong, Lee Young Hwan, Kim Sung Wook, Kim Suk Yoel and Jeong Nam Soo
(Pukyong National Univ.)

The availability of endoscope has been increased not only for observing inner parts of body but also for operating. Nowdays, the market of the endoscope has been widely extended and we presume that the value of marketability will reach to wide. Most of the endoscope equipment is very expensive and as well, it costs a lot to repair or change the specific parts of equipment when it's out of order on account of carelessness. About 90 persent of the endoscope equipment in the world is made in Japan. Therefore, to buy or repair the equipment, we can't help outflowing foreign currency. In domestic, the efforts for localization and manufacturing the endoscope equipment are short. This paper shows that captured image from a CCD miniature carema is managed…

16:00 – 16:20   **D-TE03-3**

Nonlinear Adaptive Control of Fermentation Process in Stirred Tank Bioreactor

Sang Bong Kim, Hak Kyeong Kim, Jeong Nam Soo, Tan Tien Nguyen
(Pukyong National University)

This paper proposes a nonlinear adaptive controller based on back-stepping method for tracking reference substrate concentration by manipulating dilution rate in a continuous baker's yeast cultivating process in stirred tank bioreactor. Control law is obtained from Lyapunov control function to ensure asymptotical stability of the system. The Haldane model for the specific growth rate depending on only substrate concentration is used in this paper. Due to the uncertainty of specific growth rate, it has been modified as a function including the unknown parameter with known bounded values. The substrate concentration in the bioreactor and feed line are measured. The deviation from the reference is observed when the external disturbance such as the change of the feed is introduced to the system…

16:20 – 16:40   **D-TE03-4**

A Study on the Introduction of Warehouse Type CY in Container Terminal

Kim Hwan-Seong, Ryu Ki-Suck, Kim Sung-Hun, Hong Su-Sik and Chu Bong-Sung
(Korea Maritime Univ.)

In this paper, we propose a new warehouse type container yard (WTCY) which deal with the excess of port's container capacity in 2004 instead of using the Yangsan inland container depot (ICD) in Pusan container terminals. Because the off dock container yard (ODCY) which located in Pusan port around exceeds the port's capacity in 2004, the Yansan ICD will be used for handling an overflowed amount of containers. But there are need an amount of extra expense includes social overhead capital (SOC) to transports containers to Yangsan ICD. To overcome this problem, a WTCY which can be handled the container in each floors is proposed. The proposed WTCY can be located in container terminal…

16:40 – 17:00   **D-TE03-5**

Allocation Model of Container Yard for Effectiveness of ATC Work in Automated Container Terminal

Kim Hwan-Seong, Lee Sang-Hun, You Myong-Suk and Kwak Kyu-Seok
(Korea Maritime Univ.)

In this paper, we deal with an allocation model of vertical type container yard for minimizing the total ATC work time and the equivalence of ATC work's load in each block on automated container terminal. Firstly, a layout of automated container terminal yard is shown. The characteristic of equipment which is operated in the terminal and basic assumption are given. Next, an allocation model which concerns with minimizing the total work time and the equivalence of work's load is proposed for the effectiveness of ATC work in automated container terminal. Also, a weight values on critical function are suggested to adjust the critical values by evaluating the obtained allocation plan. To find the solution of allocation model in given terminal yard situation, a GA is applied, where the real information of container is used…

17:00 – 17:20   **D-TE03-6**

Development of an Unmanned Control System of Induction Generator for a Wave Power Plant

Jeon Bong-Hwan, Yong-Kon Lim and Seok-Won Hong
(KRISO, KORDI)

The wave power plant is a generating system to convert the wave energy resources to electric energy. 'CHUJEON A', which is a prototype of wave power plant developed by KORDI(Korea Ocean Research and Development Institute), has been launched for its performance test. A wound rotor induction machine is adopted as a generator for the power plant to acquire constant frequency and voltage over wide range of rotor speed. Because the generator of 'CHUJEON A' has no connection to the power grid line on land, all of the processes to generate and consume the electricity have to be conducted on the floating plant. This paper deals with the design and implementation of the unmanned control system for 'CHUJEON A'. The system includes generator control system, power conversion and charging system, data acquisition and wireless communication system…