

# D-TA04

## Sensors and Measurements 1

08:30-10:30  
Room : 4133

Chair : Lee Jang Myung (Pusan National Univ.)  
Co-Chair : Ryu young kee (Sunmoon Univ.)

08:30 – 08:50

D-TA04-1

### The Development of Rugged Embedded Measurement System by Using PXI Bus

Yu Jae Taeg, Kim Dae Won, Goo Sang Haw(ADD)  
Lee Jang Myung(Pusan Univ.)

We have used many Instrumentations to acquire the performance data of vehicles for many years. but these could not satisfied with environment specifications (vibration, shock, temperature) and data processing speed to applicate the performance test for armored military vehicles because of having developed as a common vehicles/fixed installation equipments. So new rugged embedded measurement system required to do large data acquisition and high processing speed ( Maximum sample rate :1.25MHz/ch) with rugged environment specifications. We have developed embedded measurement system by using PXI(PCI eXtension for Instrumentation)bus interface which were composed of stand alone controller and versatile data acquisition boards(analog, digital, vision...

09:10 – 09:30

D-TA04-3

### Development of a Shape Inspection System of the Light Guide Panel

Youn Sang Pil, Lee Young Chon and Ryu Young Kee  
(Sunmoon Univ.)

This paper deals with the development of a shape inspection system of the Light Guide Panel(LGP), and the study for the performance of the system. The conventional contact-sensing methods have been used to inspect the shape. However the contact-sensing methods have some problems. The contact between a tip of the sensor and the surface of objects make a sensor tip abraded and generate a defect on the surface of objects. In this paper, we employed the Non-Contact Optical Sensor[1] to measure the shape inspection system of LGPs. The Sensor composed of Hologram laser[3] unit used for CD Optical Pickup[2] is low cost and has a good performance to measure a transparent objects. From the results of experiments for LGP shape inspection...

09:50 – 10:10

D-TA04-5

### Development of Gap Measuring System Between Strip and Air Knife in Continuous Galvanizing Line

Shin Kitae , Chae Hongkuk  
(RIST)

In continuous galvanizing process at steel making plant, coating weight on the surface of strip that pass through air knife is controlled by the pressure at the chamber of air knife and the gap between the nozzle of air knife and strip. The pressure can be easily measured and controlled. But it is difficult to measure the distance between Air knife nozzle and strip, and also difficult to decide how much distance air knife move. Because, the gap between nozzle and strip varies with the height of air knife, intermesh of stabilizing roll and welding of strips that have different thickness. In this research, we developed a gap sensor that can measure the relative distance between Air knife nozzle and strip. And several tests are performed to find optimal condition for application at real plant. We performed test in which the possibility of the sensor to apply ...

08:50 – 09:10

D-TA04-2

### Measurement of a Shape of Glass Using the Hologram Optical System

Lee Young Chon, Youn Sang Pil and Ryu Young Kee  
(Sunmoon Univ.)

The Non-Contact Optical Sensor using the Hologram Laser for CD Pickup was developed to measure a shape of transparent objects and shown a good performance. Therefore the problems caused by the contact sensor are solved by using the Non-Contact Sensor. The Non-Contact Sensor has to move toward the objects and obtain the Focus Error Signal to measure a position of transparent objects. However, if the distance between the sensor and the object is shorter than the working distance of the objective lens, the sensor will be collided against the objects. In this paper we proposed a new algorithm to estimate the start position of the Focus Error Signal to solve the problems of collision between the sensor and the objects. In addition, we verified that the algorithm is free from the collision in the real time measurement.

09:30 – 09:50

D-TA04-4

### Development of On-Line Work Roll Surface Monitoring System At Hot Strip Mill

Bae Ho Moon  
(POSCO)

This paper described about the system which can be inspect work roll surface for deciding a milling schedule and roll changing at hot strip mill in POSCO. Developed system consists of CCD camera, Xenon lamp with fiberbundle and mechanical control part. The water probe build up water pole between head of probe and roll surface to acquire a good image from a work roll surface under the bad environment with steam, cooling water and high temperature. This system is possible to monitor a work roll surface of about 12x9mm. We have shown the validation of the developed system which can monitor the evolution of degradation on work roll surface.

10:10 – 10:30

D-TA04-6

### Maneuvering Target Tracking with the Modified VDIE Filter

Ahn Byeong Wan, Whang Tae Hyun, Choi Jae Won  
(Pusan National University)  
Song Taek Lyul (Hanyang Univ.)

In this paper, we are concerned with a tracking filter algorithm which can track a maneuvering target. Among the novel tracking filter algorithms, the input estimation (IE) filter can be summarized as estimating the unknown maneuver input and compensating the state according to the estimated input, and the variable dimension filter (VDF) can be summarized as detecting the maneuver of target and changing the dimension of the target dynamics to accommodate the maneuver of target. They have some goods and bads with respect to each other. The variable dimension filter with input estimation (VDIEF) is constructed by combining the two filtering algorithms. However, it requires too much computational burden while it has good performance. We propose another variable dimension with input estimation...