

'2000

Image Processing System for Dimensional Measurement of Spent Fuels

, , , , 가

150

R93 3

± 0.5 mm

3

3000 mm

10.66 mm

(10.72 mm)

0.6 %

Abstract

The image processing system, which enables R93 camera to control the location of 3 axes automatically, was developed in order to measure dimensional measurement of spent fuel rods using image processing method. The performance test of this system was performed and analyzed. Its measuring accuracy was about ±0.5 mm. The diameters of fuel rods at 3,000 mm from the upper face of bottom nozzle of 3-cycle-fuel assembly were about 10.66 mm and the contraction rate of fuel rods, (D/D_0 ; D_0 : 10.72 mm, design value of diameter in fuel rods), was about 0.6 %.

1.

swelling densification

가

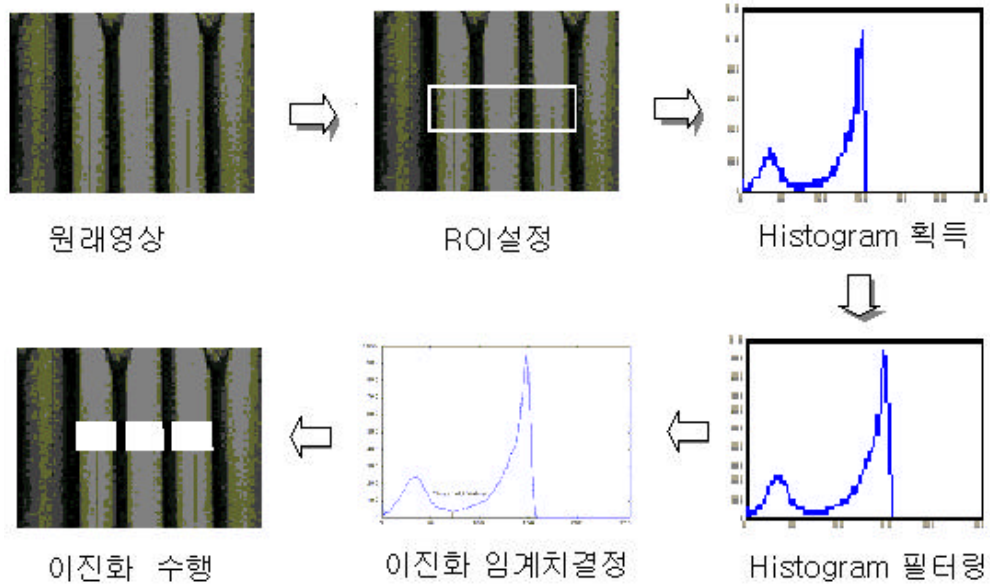
[1 4].

X, Y, Z

25 mm/sec, 2 mm/sec 83 mm/sec
, R93 25 mm , FGAX 2250 halogen light, Matrox

2.

2.1. process

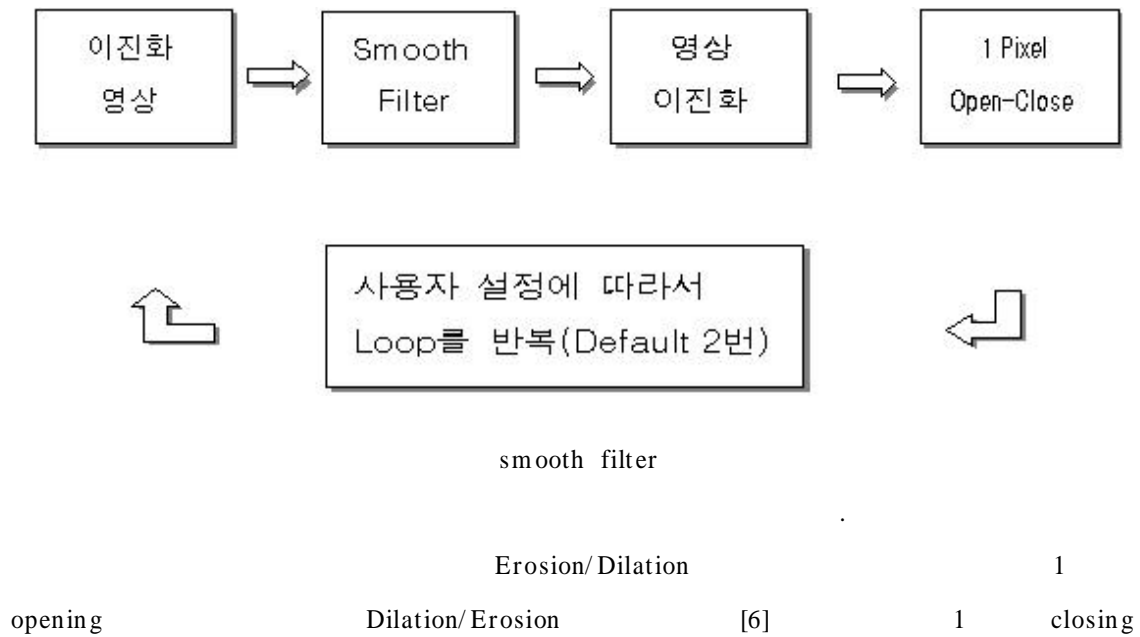


ROI(region of interest)

ROI
mean filter

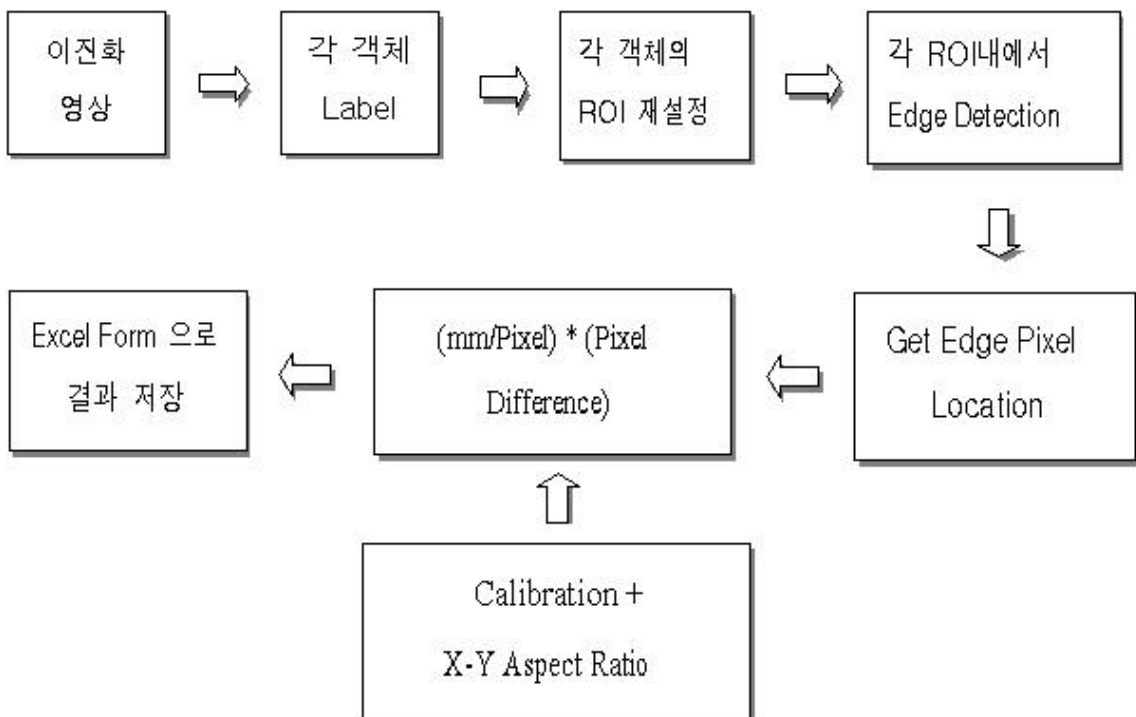
[5].

2.2.



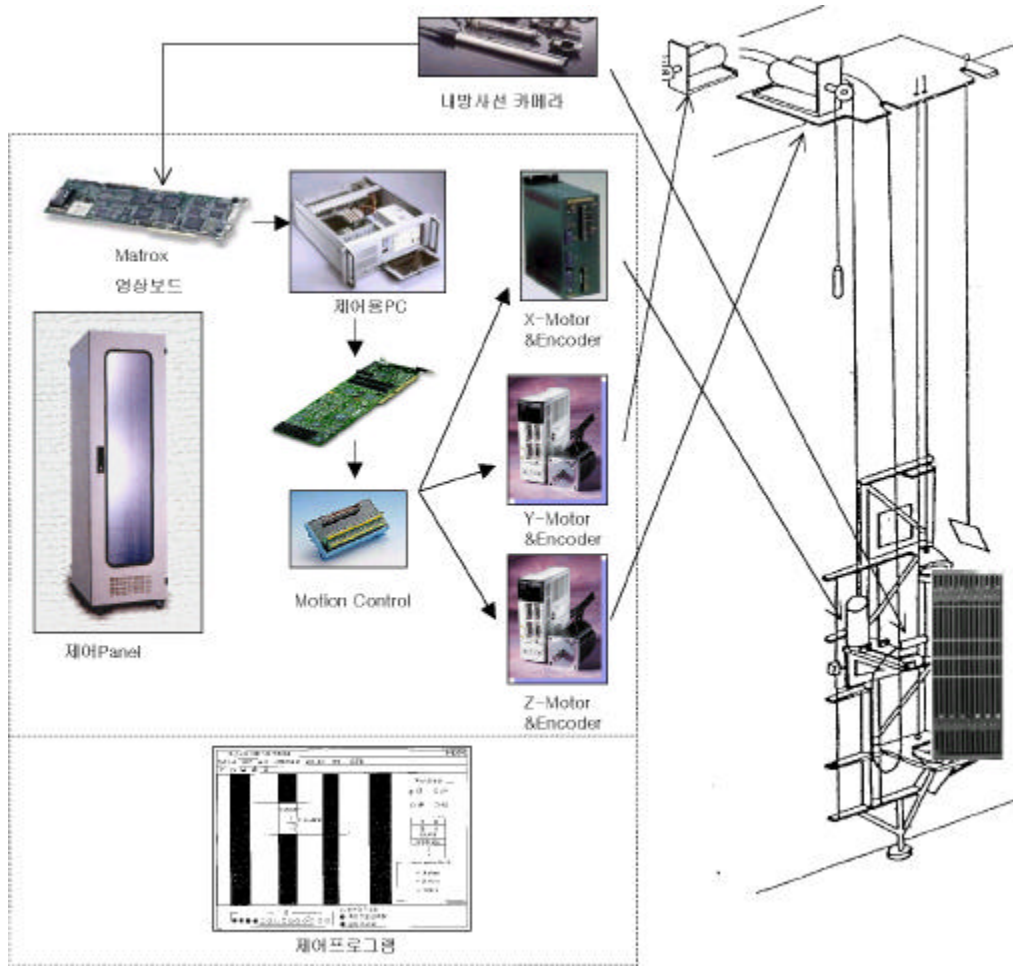
2.3.

process



detection [7] ROI ROI edge

3.



1.

/

1

/

(motion engineering incorporation)

X, Y, Z

X, Y, Z

camera

25 mm/sec, 2 mm/sec

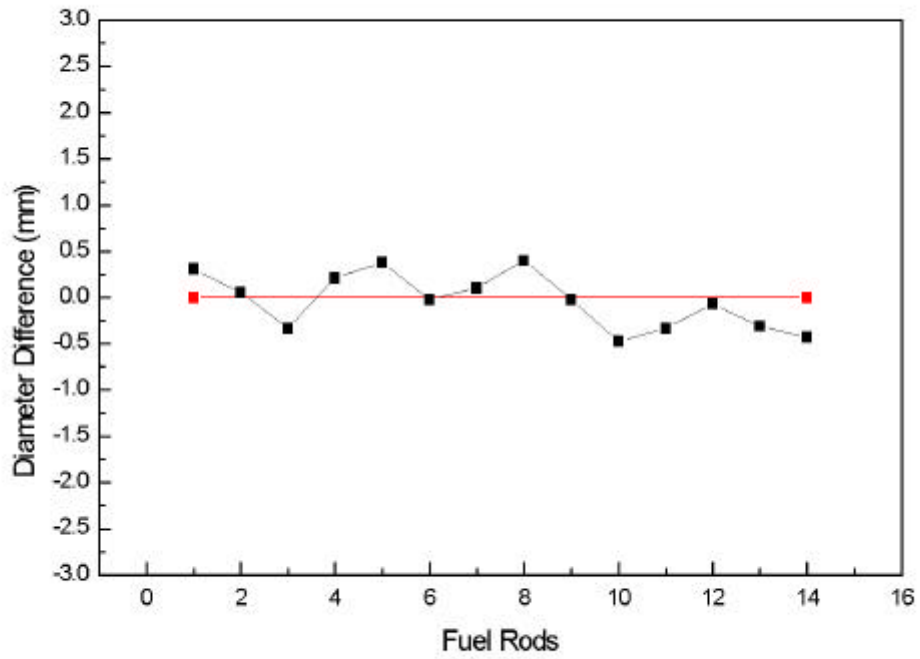
83 mm/sec

R93 25 mm

, FGAX 2250

halogen light, Matrox

MEI



2.

2

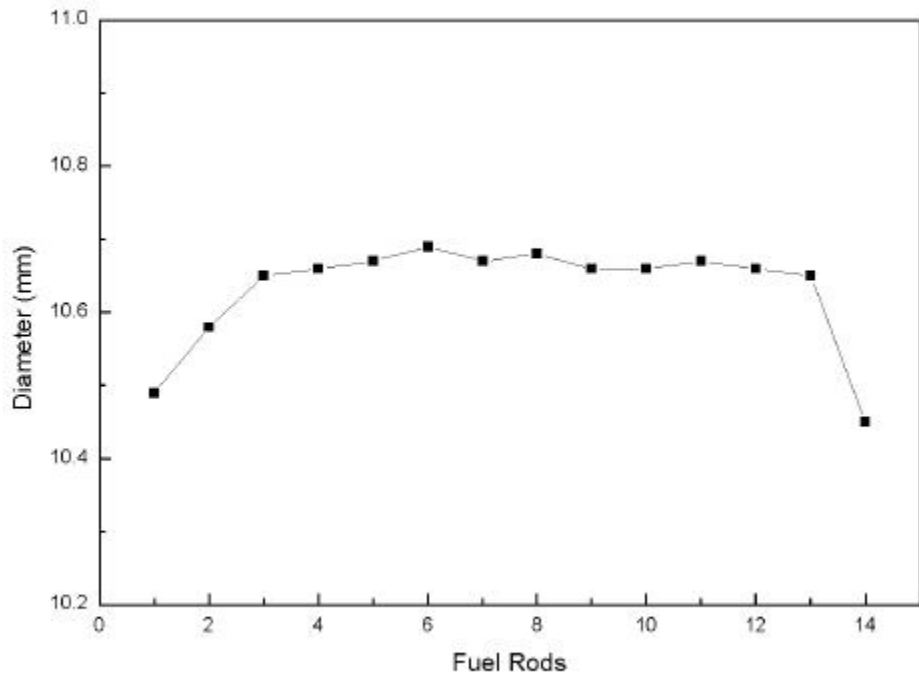
(bottom end plug)

(end plug)

(UO₂)가

(10.72 mm)

± 0.5 mm



3.

3

F02

3,000mm

/

가

.3

/

10.66 mm

(10.72 mm)

0.6 %

4.

1.

X, Y, Z

25 mm/sec, 2 mm/sec

83 mm/sec

가 가

2.

± 0.5mm

3.

3,000mm

3

10.66

mm

(10.72 mm)

0.6 %

가

- [1] W. K. Pratt, “ Digital Image Processing,” pp. 305-318, pp. 345-349, John Wiley & Sons, Inc., California(1978).
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