

# A Study on the Surface Defect Detection on Weld Bead by Using a Laser Ultrasound

\*S. H. Lee<sup>1</sup>, #S. K. Park(skpark4@kaeri.re.kr)<sup>2</sup>, S. H. Baik<sup>2</sup>, Y. J. Kang<sup>3</sup>, S. J. Kim<sup>4</sup>, W. S. Shim<sup>4</sup>

Key words : Laser Ultrasound, Non-Contact Inspection, Surface Defect of Weld Bead

1.  
(Laser Ultrasound)

[1,2].

[1].

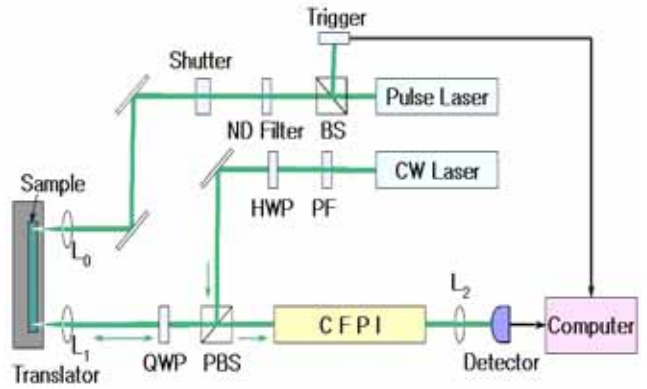


Fig.1 Configuration of the laser ultrasonic inspection system

MHz  
가  
가

가가

가가

3.

50 mm, 100 mm, 2 mm  
 1 mm  
 sus306  
 0.5 mm, 10 mm, 0.5 mm  
 (grain size)

Fig.2

가,

[3-6].

CW

CFPI

Fabry-Perot

Dewhurst

Shan

30 mm  
100

30 mm 0.3 mm  
40

[7].

CW

Fabry-Perot

가

2.

Fig.1

Beam Splitter

가

$\mu s$

CW

(CFPI: Confocal Fabry-Perot Interferometer)

CW

CFPI

Detector

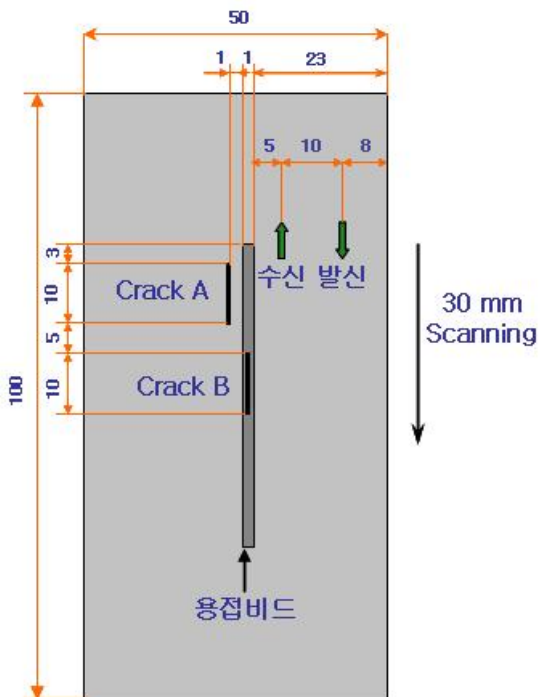


Fig.2 Configuration of the specimen and the scanning method

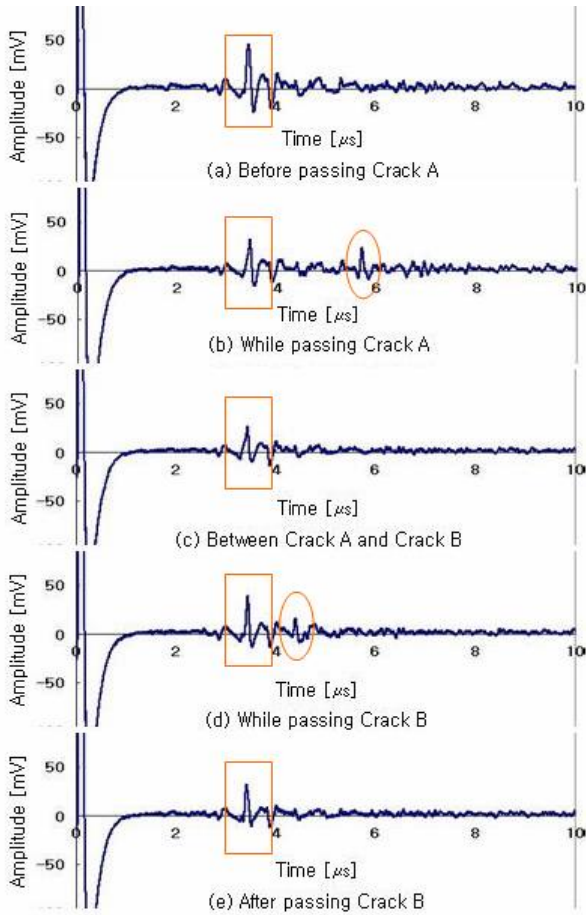


Fig.3 Received laser ultrasonic signals

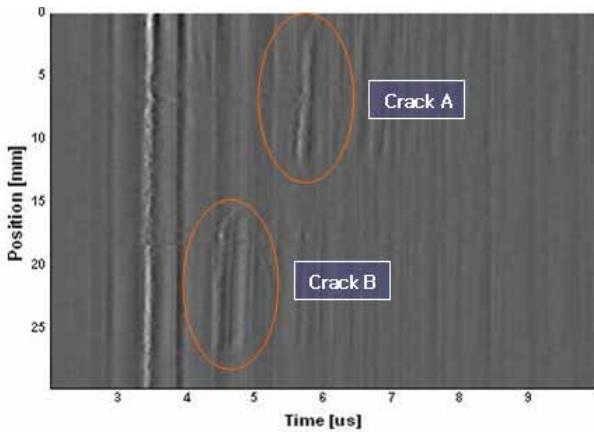


Fig.4 B-scan image

. Fig.3

3.5  $\mu$ s  
 A Fig.3-(b)  
 5.7  $\mu$ s, B Fig.3-(d)  
 4.5  $\mu$ s  
 Fig.4 0.3 mm 100  
 B-scan data . X  
 2  $\mu$ s ~ 10  $\mu$ s , Y  
 0 mm ~ 30 mm

4.

CFPI 가 , CW

가 , 가

1. , “ ” , Vol. 22, No. 1, 74-87, 2002
2. C. B. Scruby and L. E. Drain, "Laser ultrasonics : technique and applications," Adam-Hilger, New York, 1990
3. , “ ” , 59-63, 2002
4. , “ ” 가 46-54, 2002
5. , D. Ceringglia, B. Djordjevic, " ” , Vol. 21, No. 2, 163-168, 2001
6. T. Miura, H. Kuroda, M. Ochiai and K. Naruse, " Applications of laser-ultrasonic technique for nuclear power plants," J. of JSNDI, Vol. 51, No. 4, 194-199, 2002
7. S. B. Palmer and S. Dixon, "Industrially viable non-contact ultrasound," Insight, Vol. 45, No. 3, 211-217, 2003
8. , “ ” , Vol. 25, No. 5, 391-399, 2005
9. , “ ” , Vol. 26, No. 2, 84-89, 2006