

Thesis Title	A Comparison of Defect Size and Film Quality Obtained from Film Digitized Image and Digital Image Radiographs
Thesis Credits	12
Candidate	Mr. Poramate Kamlangkeng
Thesis Advisor	Assoc. Prof. Dr. Asa Prateepasen
Program	Master of Engineering
Field of Study	Welding Engineering
Department	Production Engineering
Faculty	Engineering
Academic Year	2013

Abstract

Digital radiographic testing is an acceptable premature nondestructive examination technique. Its performance and limitation comparing to the old technique are still not widely well known. In this paper conducted the study on the comparison of the accuracy of the defect size measurement and film quality obtained from film and digital radiograph techniques by testing in specimens and known size sample defect. Initially, one specimen was built with three types of internal defect; which are longitudinal cracking, lack of fusion, and porosity. For the known size sample defect, it was machined various geometrical size for comparing the accuracy of the measuring defect size to the real size in both film and digital images. To compare the image quality by considering at smallest detectable wire and the three defect images. In this research used Image Quality Indicator (IQI) of wire type 10/16 FE EN BS EN-462-1-1994. The radiographic films were produced by X-ray and gamma ray using Kodak AA400 size 3.5x8 inches, while the digital images were produced by Fuji image plate type ST-VI with 100 micrometers resolution. During the tests, a radiator GE model MF3 was implemented. The applied energy is varied from 120 to 220 kV and the current from 1.2 to 3.0 mA. The intensity of Iridium 192 gamma ray is in the range of 24-25 Curie. Under the mentioned conditions, the results showed that the deviation of the defect size measurement comparing to the real size obtained from the digital image radiographs is below than that of the film digitized, whereas the quality of film digitizer radiographs is higher in comparison.

Keywords: Film Digitized Image/ Digital Image Radiographs/ Sample Defect Comparison