

Abstract

Plates of mild steel, welded by arc-welding, had been tested using laser holography technique for inspecting the welding defects: cracks, porosity and inclusions in these plates. Also the same specimens had been inspected by x-rays for comparison between the two methods.

He-Ne laser with wavelength of 632.8 nm and output power of 10 mW was used to produce a real-time holographic interferometry and a double-exposure holographic interferometry which were recorded by the film PFG-01 for Butt welding joints. The thermal stress and the tension stress have been used for micro deformation at the joints.

The real-time holographic interferometry had been excluded because there was no possibility to reconstruct the welding joint image at the position of imaging.

The double-exposure holographic interferometry showed fringes that indicate the position of the welding defects by using the thermal stress. But when the tension stress was used, the fringes showed without indicating the welding defects positions.

The comparison between the two techniques, holography and x-rays, showed that the holography technique can detect the arc-welding joints defects and give information more than the information of x-rays testing technique for the joints.