Nondestructive Evaluations of Crack in Metal Plates by using SQUID Gradiometer

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We have detected cracks inside multi-layer metal sheets with nondestructive evaluation system consisting of SQUID gradiometer. Double D-shape coil was carefully designed with computer simulation for spatial distribution of magnetic field. It was aligned and placed in between SQUID and metal sheets in order to reduce the field effect to SQUID and to maximize eddy current in the sheets. The metal plate in bottom of the metal stack contained artificial cracks which were scanned by X-Y scanning system. The information of crack position and size could be estimated by analysis of SQUID signal. SQUID gradiometer is used to detect cracks. Details of the results will be discussed.

keywords : nondestructive evaluation, SQUID gradiometer , D-shape coil, eddy current