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About the Performance of Non-Multiplication Magnetization Method in a Magnetic Paricle Testing

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In the magnetic particle testing, it's required to improve detection performance of surface defect. Recently, it's required to detect it without contact. In the magnetic particle testing without contact, a coil method is useful. A magnetization power supply generally adopts a phase control method using thyristors. In this case, frequency of a magnetization electric current are 50Hz or 60Hz. But the frequency which is a magnetization electric current by using of an inverter system as a magnetization power supply, easily, change possible. We recommend more than 100 Hz. Therefore when using the coil method, a problem of a spark doesn't generate, and can be checked without contact. For the magnetic flux to concentrate at a surface part by skin effect by making the frequency of a magnetization electric current expensive, there is a

possibility that defect detection of the surface becomes with good performance record. WE confirmed by magnetic field analysis that detection performance of surface defect improves by using a magnetization electric current of a high frequency. We developed the magnetization power supply using inverter technology and performed a magnetic particle testing. We confirmed about its effect and will report the results. Next to detect the defect of the various directions, magnetization of various directions is possible to combine a coil at 3 direction. When using three-phase alternating current, there is a possibility that the dead zone occurs. But it was found that the dead zone dies to turn a magnetization electric current of a frequency of non-multiplication on in each coil. By to turn a magnetization electric current of a frequency of non-multiplication on and to turn a magnetization electric current of a high frequency on. Detection performance improved dramatically. We

confirmed in simulations and experiments that enough defect detection performance is also obtained to surface defect of multi-directions. We'll report the results.