

C115882 : MAJOR ELECTRICAL ENGINEERING

KEY WORD : TRI-STATE INVERTER/SKIN EFFECT/SKIN DEPTH

TANAKORN SUPAJINTAKUL : A HIGH FREQUENCY INDUCTION HEATER
USING TRI-STATE INVERTER. THESIS ADVISOR : ASSO.PROF. DR.
GOTHOM ARYA, 173 pp. ISBN 974-581-486-5

A prototype of an induction heating system was designed and constructed. The prototype comprised a rectifier, a tri-state inverter using power MOSFET, a high frequency transformer and an induction coil. The working frequency of the prototype can be varied from 125 kHz to 140 kHz. It is capable of receiving an apparent input power of 14 kVA depending on the work piece loading. When used to heat a 0.5% carbon steel bar of 2 - cm diameter, the prototype receives an apparent input power of 13.5 kVA, and the power received by the work piece is estimated to be 6.3 kW. The prototype was tested as a surface hardening equipment. In case of the 0.5% carbon steel, before hardening the hardness is 226 Hv, but after hardening the hardness is 701 Hv.