

Thesis Title	The Radio Frequency Signal Generator for the Surface Hardening Applications
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Abstract

In this thesis, we have presented our research on the radio frequency signal generator. The function of it is to convert DC power to the high frequency power in order to apply it as the surface hardening equipment. This radio frequency signal generator composes of two main parts. The first is the oscillating part and the second is the power amplifier. The oscillating part employed the tank circuit as the oscillator to oscillate the radio frequency signal which will be transferred to the heating coil via the air-core transformer of which its function is as the matching device. The result of this, the power will be confined on to the heating coil, in order for the surface hardening purpose. In the power amplifier part, the triodes will be operated base on the class C power amplifier. The high frequency power from the triodes will be drawn by the tank circuit to compensate the losses in the tank circuit ,of which besides the stray loss in the conductor. One part of these losses occur due to the power loading. So, both of these losses must be compensated in order to maintain the tank circuit go on oscillating. In order for the system to go on stability, the oscillating signal will be divided by the tank coils and then fed back via the exciting transformer to drive grid on the base of "Grid-leak Bias" which the grid bias can be obtained from the current flow through grid in the peak portion of the driving signal. From this point, we see, one part of the power supplied by the power amplifier will be fed back on the base of "Self-sustained Oscillation" in order for the system to go on.