V. B. Amin, Design and implementation of a surgical diathermy unit for closed chest catheter ablation, M. Tech. Thesis, Department of Electrical Engineering, Indian Institute of Technology Bombay, 1995.

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Abstract **-** Closed chest catheter ablation is one of the surgical interventions for removing disorders in conduction pathways in the endocardium. The aim of this project is to develop a system for (a) delivering regulated power to the surgical site, (b) monitoring endocardium surface electrograms before and after the ablation, and (c) monitoring electrode-tissue interface temperature for controlling the lesion size created by ablation.

The core of the system is a power modulator with output power of 50 W. A carrier frequency of 500 KHz is amplitude modulated to provide waveforms for three different surgical activities namely: cut, coagulation and blending. The modulating waveforms are generated through a D/A port of a PC add-on data acquisition card. The output of this power modulator is monitored and three different tones are generated for facilitating in identification of the different activities. For finding out the exact site of ablation, the endocardium electrogram amplified by an ECG amplifier is sampled through A/D port of the data acquisition card and monitored on the PC screen. Electrode-tissue interface temperature is monitored through a temperature sensor AD 590 and A/D port of the data acquisition card. This temperature can be used to control the power delivered to the ablation site and thereby to control the size of lesion created. A switched mode power supply has also been developed as required for the power modulator. The power modulator output is isolated from the system ground through a ferrite core transformer.