

Abstract

New power circuit topology for single-phase cycloconverter is proposed. The proposed power circuits use bi-directional switches as control switches in cycloconverters. As a result of using bi-directional switches, number of expensive controlling switches reduces to half than the conventional cycloconverters using unidirectional switches. Cost and complexity of power circuits are greatly alleviated due to the incorporation of bi-directional switches. In case of SCR cycloconverters, PWM switching will require forced commutation circuits in addition to the power switches of the original circuit. Delta modulation is a recent addition to the switching of PWM converters. The modulation is achieved by a simple closed loop network consisting of a feedforward quantizer / converter and a feedback filter. Thus, delta modulator consists of a comparator in the forward path, analog integrator in the feedback path and a summer. Delta modulation increases the correlation between adjacent samples, which results in small prediction error that can be encoded using only one bit. Delta modulation (dm) is simple to implement using analog devices.