

## **MODERN SOLID STATE SWITCHES AND ITS APPLICATION IN ENERGY EFFICIENT HIGH FREQUENCY POWER SYSTEM**

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### **Abstract**

This paper describes the application of solid state switches in the high frequency power system. The high frequency power system has many advantages like higher efficiency, less space and less weight of the equipments. Semiconductor advances in power electronics have generated interest in replacing the mechanical circuit breakers with solid state equivalents. The modern semiconductor switches can be turned on and off within a few microseconds could be operated as fast acting switches to replace mechanical and electromechanical circuit breakers. Advantages of solid state circuit breakers may include faster fault interrupting, fault current limiting, increased repeatability and reliability, no arc to contain or extinguish, and intelligent power control. The paper describes the application of solid state switches in *extinction angle* power factor improvement. *Extinction angle* control is similar to those with *phase angle* control, except the *P.F.* is unity where as it is lagging in phase angle control. Output voltage  $V_{DC}$  of the converter could be varied from  $2V_m/\pi$  to 0 volts by varying  $\beta$  from 0 to  $\pi$  in the extinction angle control. The extinction angle power factor control circuit is simulated using matlab simulink software. The output waveform of the simulated circuit is checked with theoretical wave form and found OK.

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**Keywords:** Semiconductor devices, on-off time, power factor, extinction angle, simulation,