

# Technical Bulletin

## **SYNC-GUARD™**

### **REDUCES POWER DEMAND VARIATIONS**

#### **MODELS:**

**1027, 3027, 3327**

**1037, 1047**

**3037, 3337**

In Zero-Cross control, full power is applied for a period of time and removed for a period of time to achieve the desired load power. Installations using multiple Zero-Cross SCR power controllers can experience system supply power demand variations that result when these power controllers fire in unison, or synchronously. These power demand variations, and the resulting line voltage variations, can create performance and stability problems for other operating systems connected to the supply.

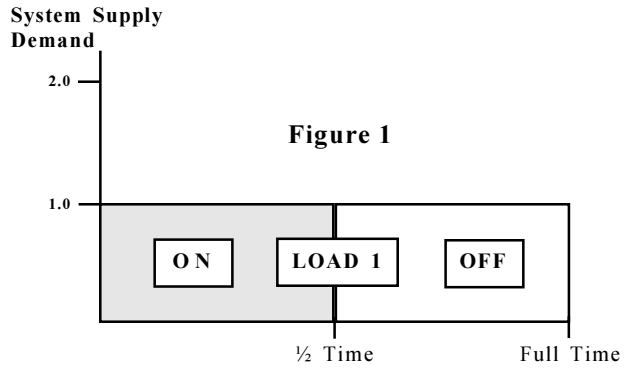
Sync-Guard™ reduces the power demand variations by reducing the synchronous operation of the power controllers.

Sync-Guard™ does not alter the amount of power applied to each load, it simply adjusts the time when power is applied to each load, reducing the possibility of two or more controllers being ON & OFF in unison. A controller with a 50% command signal, with Sync-Guard™ operating, will still deliver 50%.

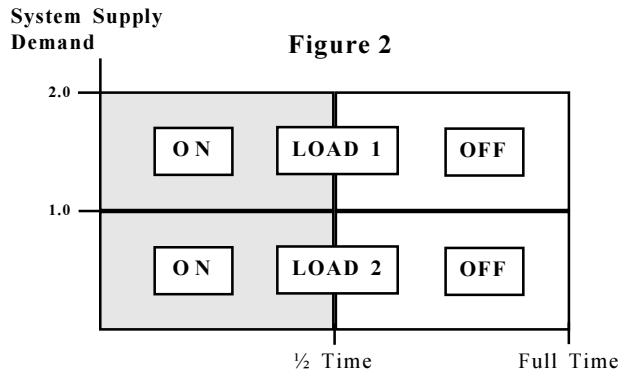
An example would be a case where two Zero-Cross SCR power controllers were controlling equal loads at 50% power. It would be possible for the two controllers to be operating in unison. Both controllers could be ON & OFF at the same time. This situation would cause the demand on the system supply to be high for half of the time, both loads full on, and low the other half of the time, both loads full off. In this example, Sync-Guard™ would adjust the timing of the operation of the two controllers to be exactly opposite each other, resulting in a continuous demand for power. The two controllers would still be delivering 50% power to their loads according to their individual command signals. In this case, Sync-Guard™ has timed the operation of two ON & OFF controllers to be opposite of each other. The demand on the system supply appears as one continuous load.

Sync-Guard™ is simply implemented by interconnecting the controllers with two low voltage signal wires. The controllers need not be controlling equal loads or equal power to realize the benefits that Sync-Guard™ provides.

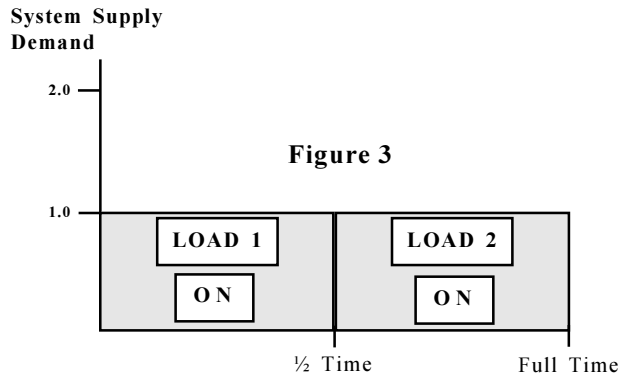
**Figure 1. A single Zero-Cross SCR power controller operating at 50% command. Sync-Guard™ provides no benefit to single controller installations.**



**Figure 2. Synchronous firing of two Zero-Cross SCR power controllers controlling equal loads at 50% command without Sync-Guard™. Double the demand on the system supply for half the time.**



**Figure 3. Sync-Guard™ implemented on two Zero-Cross SCR power controllers controlling equal loads at 50% command. Demand on the system supply appears as one continuous load.**



**Figure 4. Sync-Guard™ implemented on three Zero-Cross SCR power controllers controlling equal loads at 50% command. Demand on the system supply never appears as three loads in unison. Sync-Guard™ adjusts the timing of the operation of the individual controllers to provide as steady of a demand on the system supply as possible.**

