Understanding SCR and Digital Controllers

The use of SCR based control circuits has been popular in the electrical industry for a very long time. The fact that they have been used for several decades is testament to their usefulness in the industry. Primarily these rectifiers that are silicon controlled are known to have the ability to be able to control an electrical device's functions. These functions can be from a variety of aspects such as heat outflow, output temperature etc.

One of the limitations in their working is that SCR controllers are known to only be able to conduct electricity in a single direction, making them unidirectional. Hence current that passes through the gates can trigger SCR controllers. Much like other control panel proximities, the SCR controller can be divided into three major parts:

- Phase Locked Loops or Line Synchronization Circuit
- SCR Firing circuit
- Controller of Firing Angle

Firing Modes

SCR controllers are primarily designed to have three basic firing modes, the phase angle, the burst and the zero cross. All three of these voltages accept voltage of no more than 4-20mA. The use of SCR controllers is often made in high voltage devices or devices that are in need of effective control to be exerted on their power.

Commonly uses of the device include its use in:

- Regulators
- Motors
- Heaters
- Welding Machines

Technological Advancements

With the increase in the types of technology over the years, SCR devices have evolved into SCR based digital controllers. This has been the key in providing consistent and reliable synchronization of the input voltage. Dealing with the voltage has been one of the major tasks of the digital controllers. The digitalization of these controllers has brought upon a variety of changes, such as making the circuit and entity that is multi faceted.

The primary facets of the SCR based digital controllers are:

- Digital synchronization
- Product configuration

- Implementation of control law

As far as the implementation of the closed loop is concerned, it takes place inside the microprocessor, where the feedback of the controlled algorithms is possible. Much like other digital controls, the SCR based control converts the line voltage into digital signals using A/D converters. While the working of the digital controllers is relatively complex in comparison to the SCR controls, it is worth noting that high speed logic resources and micro processors play a vital role in it.

There are a variety of reasons that SCR based controllers are popular for use in the electronic industry, one of the leading reasons for it is its ease of use. Configuring of these controllers can be fairly simply and brisk, using a serial interface connected to the configuring device.

The configuring is the most important part in the proper functioning of the SCR based devices. The ease of configuration has meant that the users can once they have connected it to an interface, push a button to control:

- Zero crossing
- Voltage
- Phase angle
- Current