5.4 AC VOLTAGE CONTROL STRATEGY

There are two different types of thyristor control used in practice to control the flow ac power

1. Phase control

2.On-Off control

PHASE CONTROL TECHNIQUE

In phase control, the Thyristors are used as switches to connect the load circuit to the input ac supply, for a part of every input cycle. That is the ac supply voltage is chopped using thyristors during a part of each input cycle. The thyristor switch is turned on for a part of every half cycle, so that input supply voltage appears across the load and then turned off during the remaining part of input half cycle to disconnect the ac supply from the load. By controlling the phase angle or the trigger angle 'α' (delay angle), the output RMS voltage across the load can be controlled.

INTEGRAL CYCLE CONTROL

Integral cycle control consists of switching on the supply to load for an integral number of cycles and then switching off the supply for a further number of integral cycles.

The principle of integral cycle control can be explained by referring to the above Figure for a single phase voltage controller with resistive load. Gate pulses ig1 turn on the thyristors Tl, T2 respectively at zero-voltage crossing of the supply voltage.

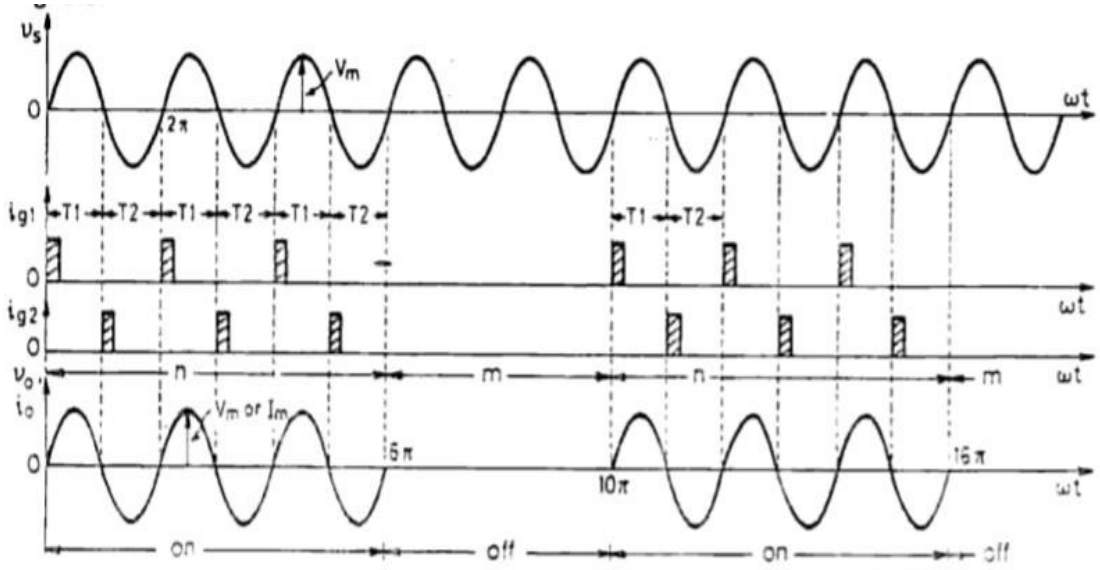

Figure 5.4.1 Integral cycle control

[Source: "Power Electronics" *by* P.S.Bimbra*,* Khanna Publishers *Page: 393]*

The source energises the load for n (= 3) cycles. When gate pulses are withdrawn, load remains off for m (= 2) cycles. In this manner, process of turn on and turn off is repeated for the control of load power. By varying the number of n and m cycles, power delivered to load can be regulated as desired.

For n = 3 and m = 2. Power is delivered to load for n cycles. No power is delivered to load for m cycles. It is the average power in the load that is controlled.

Integral cycle control is also known as on-off control, burst firing, zero- voltage switching, cycle selection cycle syncopation.