

4.5 PWM CONTROL: Multiple pulse width modulation (MPWM)

Pulse width modulation is the most commonly used technique to control the output voltage of inverter. In pulse Width Modulation method, a fixed dc input voltage is given to the inverters and a controlled ac output voltage is obtained by adjusting the on and off periods of the inverter components. PWM is a technique that is used to reduce the overall harmonic distortion THD in a load current. It uses a pulse wave in square form that results in a variable average waveform value, after its pulse width has been modulated.

DIFFERENT TYPES OF PWM CONTROL TECHNIQUE

1. Single pulse width modulation (Single PWM)
2. Multiple pulse width modulation (MPWM)
3. Sinusoidal pulse width modulation (SPWM)
4. Modified Sinusoidal pulse width modulation (MSPWM)
5. Phase displacement control

Multiple Pulse Width Modulation (MPWM)

- ✿ The main drawback of single PWM technique is high harmonic content. In order to reduce the harmonic content, the multiple PWM technique is used, in which several pulses are given in each half cycle of output voltage. The generation of gating signal is achieved by comparing the reference signal of the amplitude (A_r) with a triangular carrier wave (A_c) as shown Figure below.

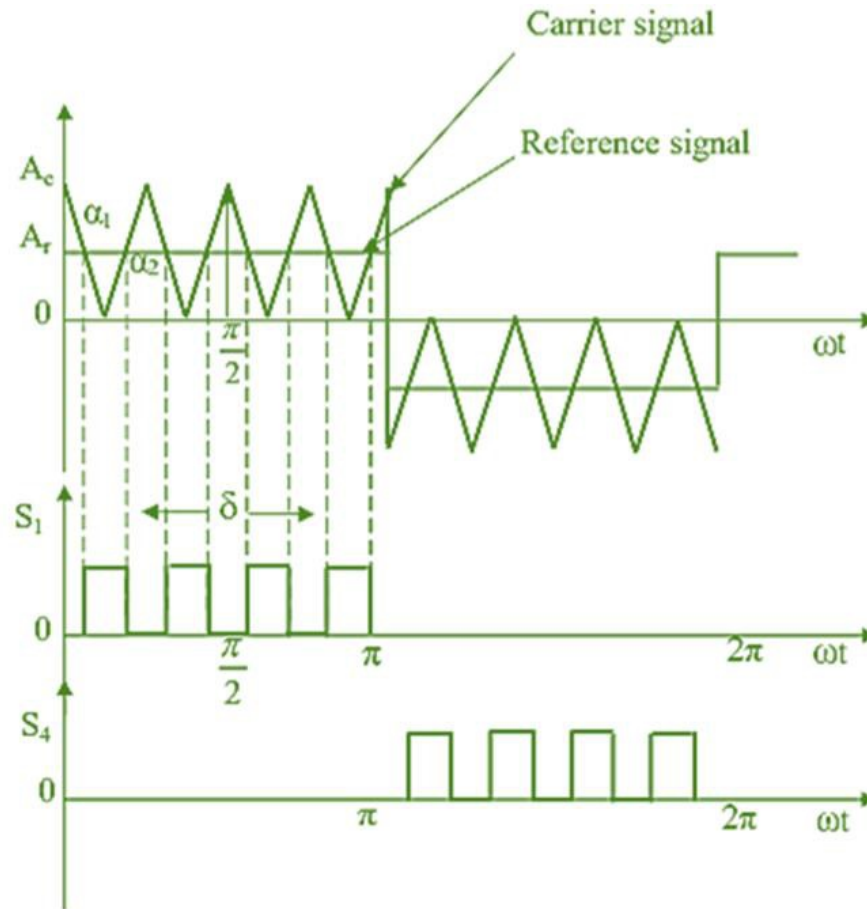


Figure 4.5.1 Multiple pulse width modulation

[Source: "Power Electronics" by P.S.Bimbra, Khanna Publishers Page: 352]

- ✿ The output frequency (f_o) is determined by the frequency of the reference signal. The output voltage can be controlled by modulation index.