

Mechanical-to-Electrical Energy Conversion

10. Power converters for variable speed operation

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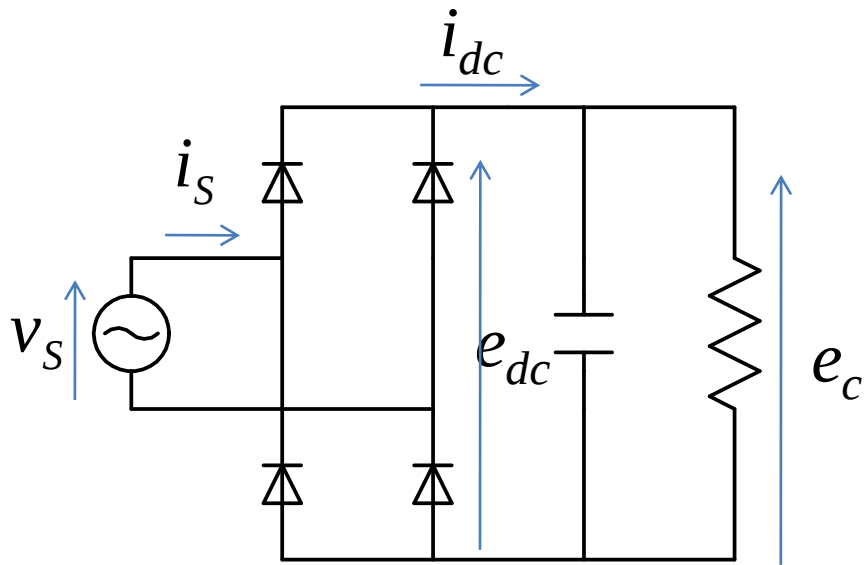


Contents of Today

1. AC-to-DC Power Conversion: Rectifiers
2. DC-to-DC Power Conversion: Boost Converters
3. DC-to-AC Power Conversion: Inverters
4. Indirect AC-to-AC Converters



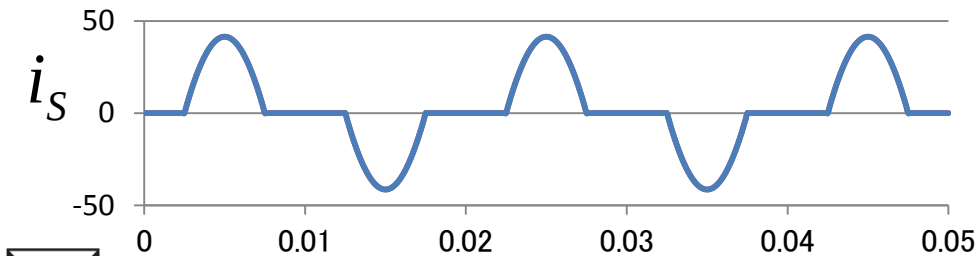
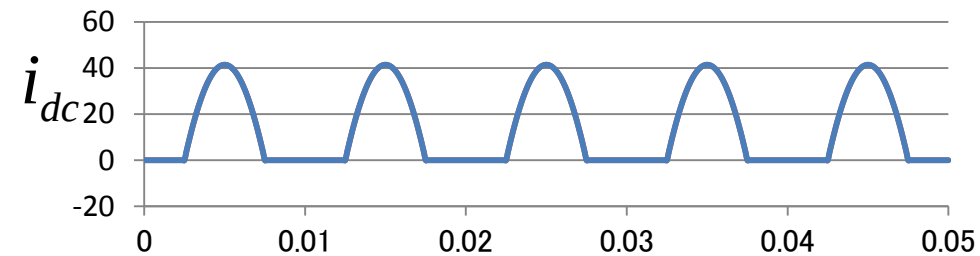
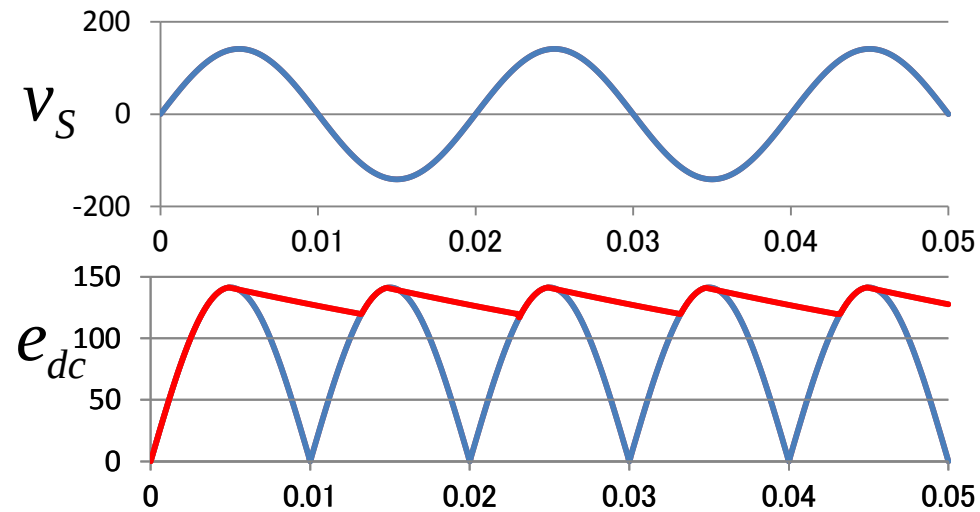
Rectifier with a Smoothing Capacitor



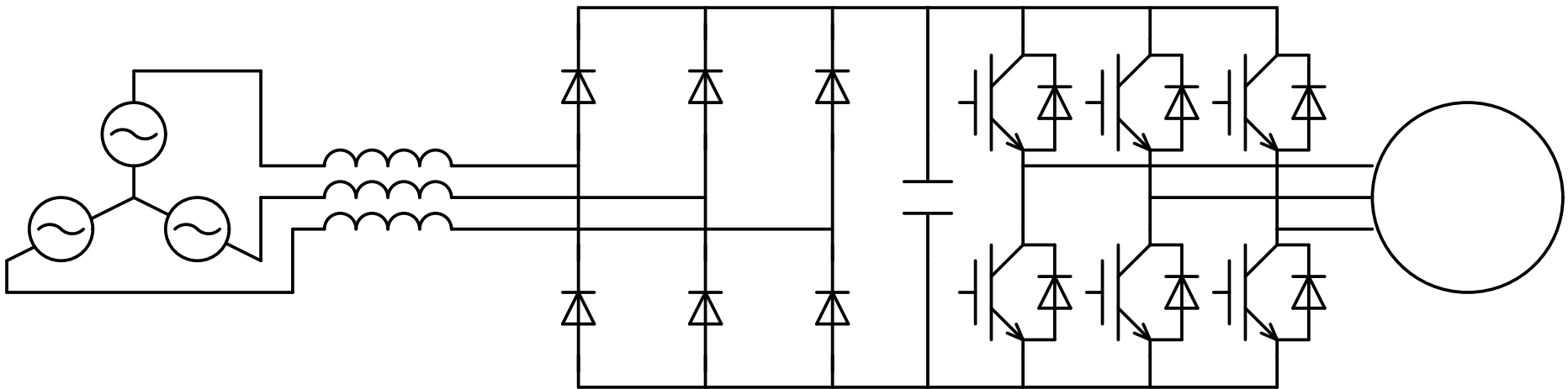
$$e_{dc} = \sqrt{2}V_S \cos \omega t$$

$$T_c = \frac{T}{2} = \frac{1}{2f} = \frac{2\pi}{\omega}$$

$$\tau = RC$$



Diode Rectifier/PWM Inverter



Today's Topic for Discussion

- What is the differences between two indirect ac-to-ac converters.
- Polarity and direction of the dc voltage/current.
- Control method of the dc voltage/current.

