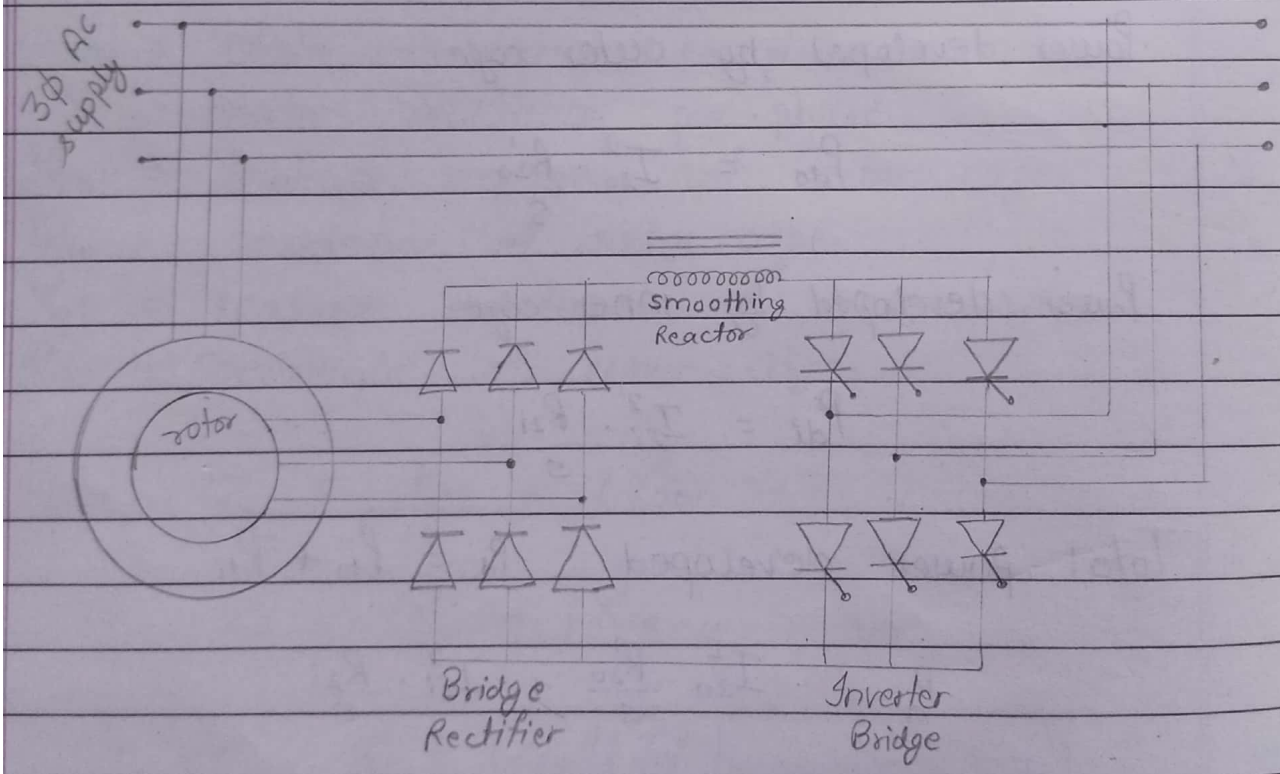
Slip-Energy Recovery of an I.M.-

Slip Energy recovery is one of the methods of controlling the speed of an I.M. This method is also known as Static Scherbius Drive.

In the rotor resistance control method, the slip power in the rotor circuit is wasted as I^2R losses during the low-speed operations. The efficiency is also reduced. The slip power from the rotor circuit can be recovered & fed back to the AC source so as to utilize it outside the motor. Thus the overall efficiency of the drive system can be increased.



Principle

The basic principle of the slip power recovery is to connect an external source of emf of the slip frequency of the rotor circuit. The slip energy recovery method provides the speed control of slip ring I.M. below its Ns.

- **Working** A portion of rotor AC power (slip power) is converted into DC by a diode bridge.
The smoothing reactor is provided to smoothen the rectified current. The output of the rectifier is then connected to the DC terminals of the inverter.
The inverter inverts the DC power to AC power and feeds it back to the AC source.
The inverter is a controlled rectifier operated in the inversion mode.

- **Applications** - This method of speed control is used in large power applications which require speed control in narrow range.

- **Merits** - (i) Efficiency increased
(ii) Slip power is utilized
(iii) Low cost.

- **Demerits** -
(i) Additional electronic ckt. is needed.
(ii) Speed control below synchronous speed only.