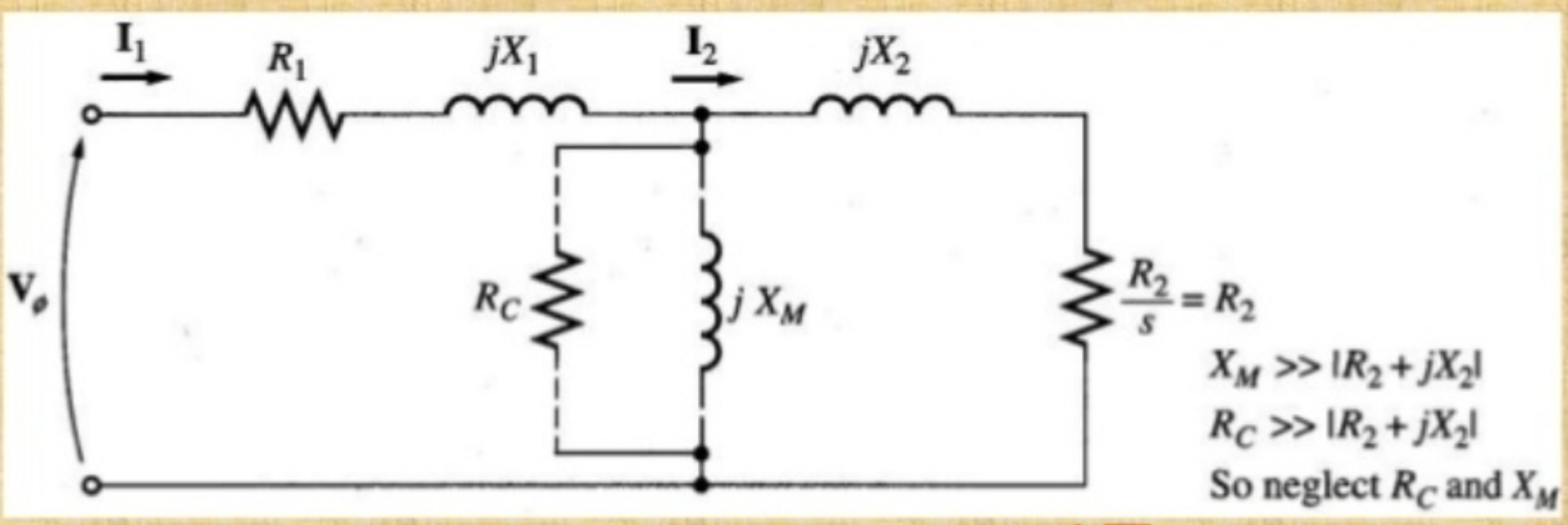
Blocked Rotor Test

- In this test, the rotor is **locked** or **blocked** so that it cannot move, a voltage is applied to the motor, and the resulting voltage, current and power are measured.



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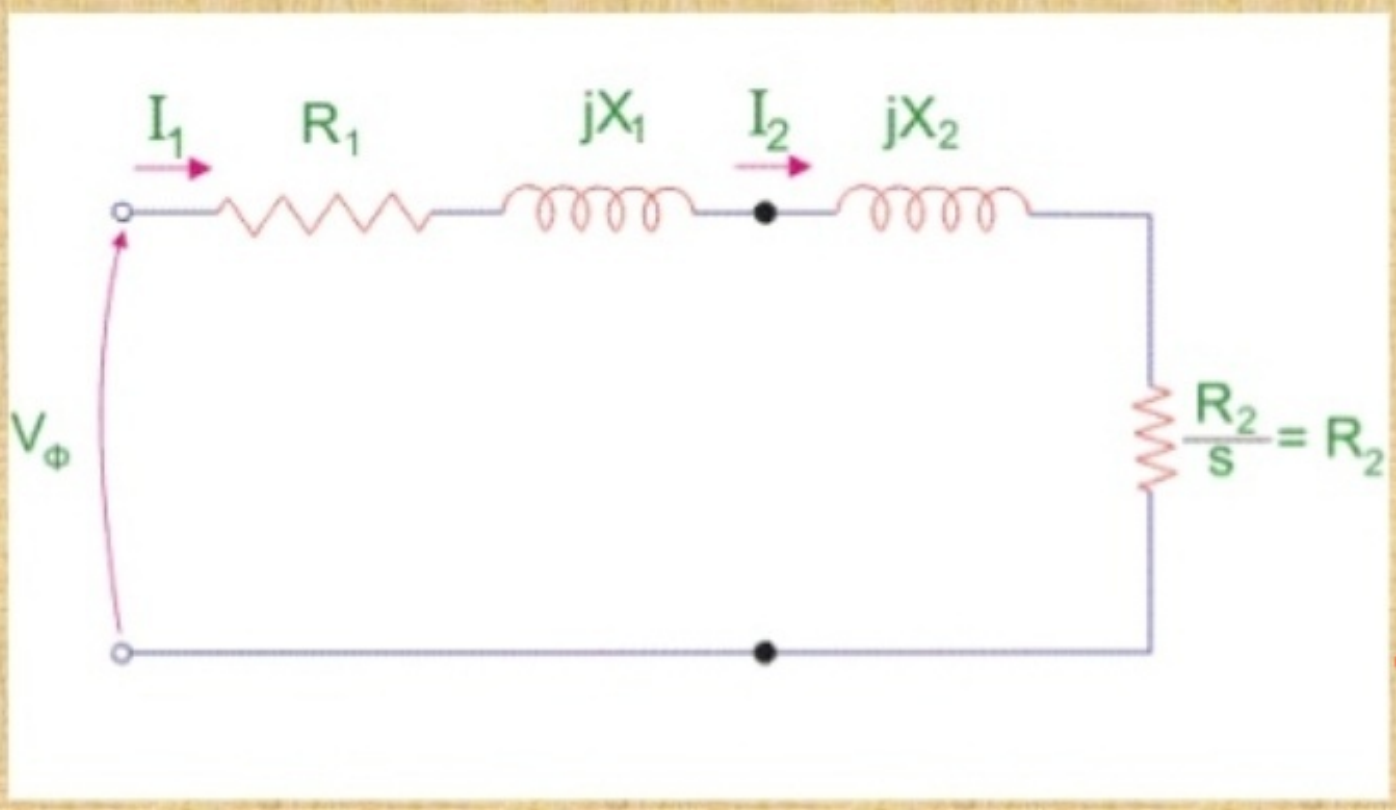
- Now, as the rotor is blocked, the slip s = 1 hence the magnetizing reactance is much higher than the rotor impedance and hence it can be neglected.
- Hence the equivalent circuit reduce to,



- The blocked rotor power factor can be found as,

$$PF = \cos \emptyset = \frac{P_{in}}{\sqrt{3} V_1 I_1}$$

- The magnitude of total impedance is,

$$|Z_{in}| = \frac{V_\emptyset}{I}$$

Now,

$$R_{eq} = \frac{P_{in}}{3I^2}$$

$$R_{eq} = R_1 + R_2$$

$$R_2 = R_{eq} - R_1$$

And,

$$X_{eq} = \sqrt{Z^2{}_{eq} - R^2{}_{eq}}$$

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Equivalent circuit with phasor diagram

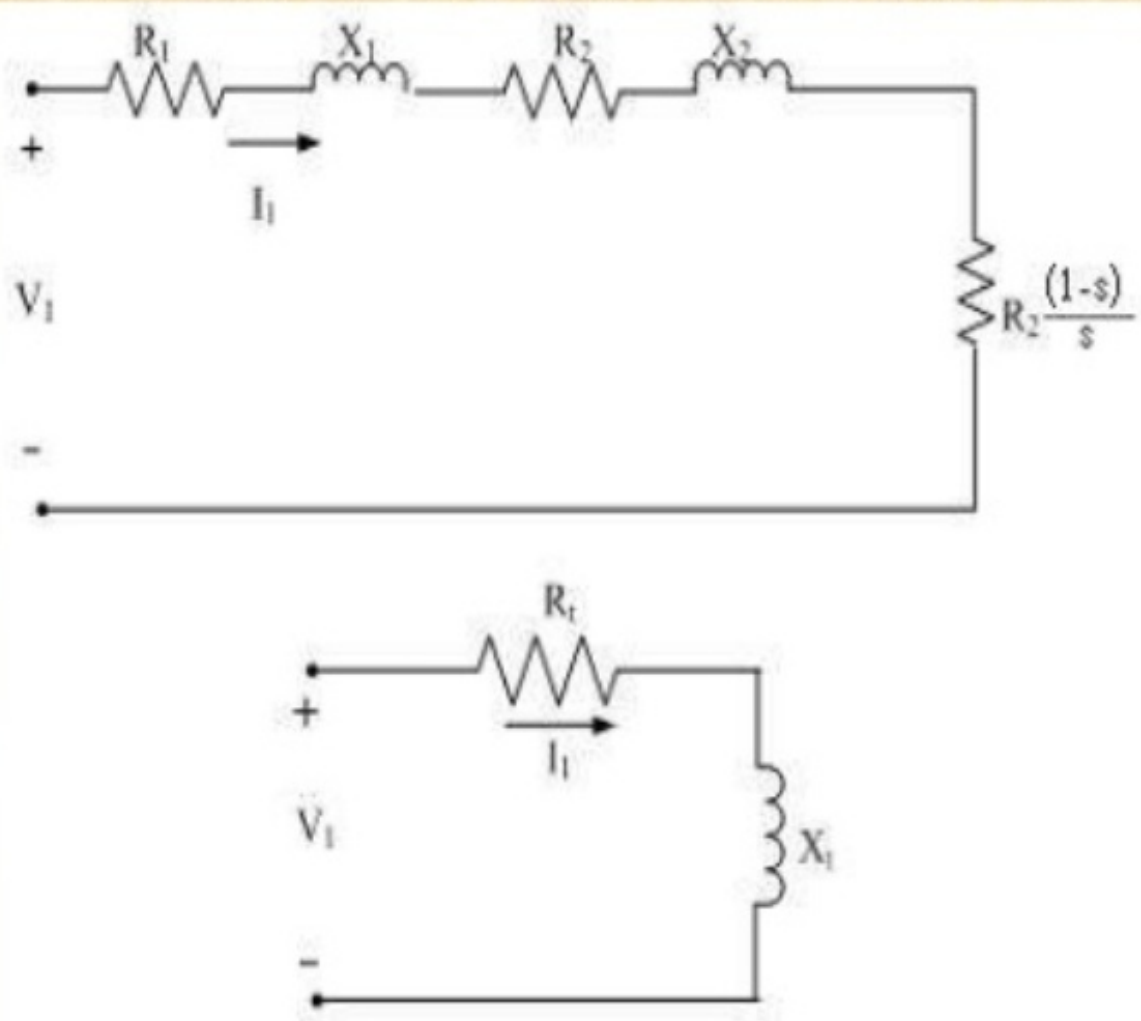

Fig. 2 : Equivalent Circuit for Blocked Rotor Test

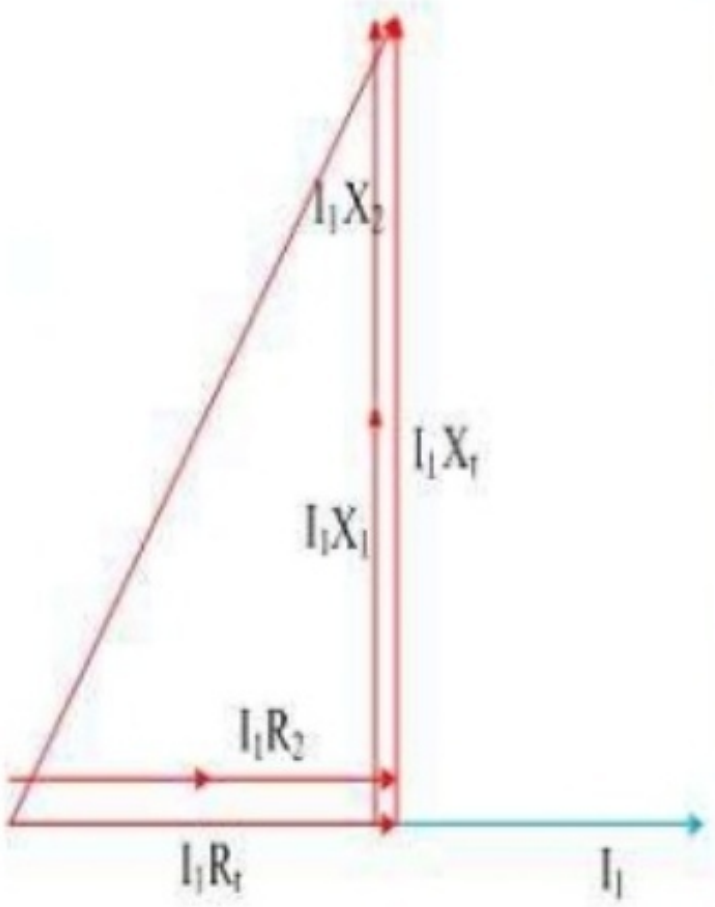

Fig. 2(a) : Phasor Diagram

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