Power Measurement in 3 Phase AC Systems (11:12)

Determine the rated torque of a 180W motor with a rated speed of 1719rpm.

Illustrate how the 3 wattmeter method would be used to measure the electrical power consumed by a Y configured motor. Identify advantages and disadvantages of this method.

Given this voltage and current data from the 3 wattmeter method determine the total power consumed by the motor, the power factor, and efficiency.

$\bar{V}_1 = 120V\angle 0°$ $\bar{V}_2 = 120V\angle -120°$ $\bar{V}_3 = 120V\angle 120°$

$\bar{I}_1 = 1A\angle -49°$ $\bar{I}_2 = 1A\angle -169°$ $\bar{I}_3 = 1A\angle 71°$

Illustrate how the single wattmeter method would be used to measure the electrical power consumed by a Y configured motor. Identify how to calculate total power using the single wattmeter method. Identify the two properties measured by the single wattmeter. Identify advantages and disadvantages of this method.

Given voltage and current data from the single wattmeter method determine the total power consumed by the motor: V = 208V
I = 1A
PF = .66

Illustrate how the 2 wattmeter method would be used to measure the electrical power consumed by a Y configured motor. Identify how to calculate total power using the two wattmeter method. Identify the two properties measured by both wattmeters. Identify advantages and disadvantages of this method.

Given voltage and current data from the two wattmeter method determine the total power consumed by the motor: wattmeter 1:

L_1 line current = $1A\angle -79°$
L_1-L_2 line to line voltage = $208V\angle 0°$

wattmeter 2:

L_3 line current = $1A\angle 41°$
L_3-L_2 line to line voltage = $208V\angle 60°$