Single Phase Meter Lab

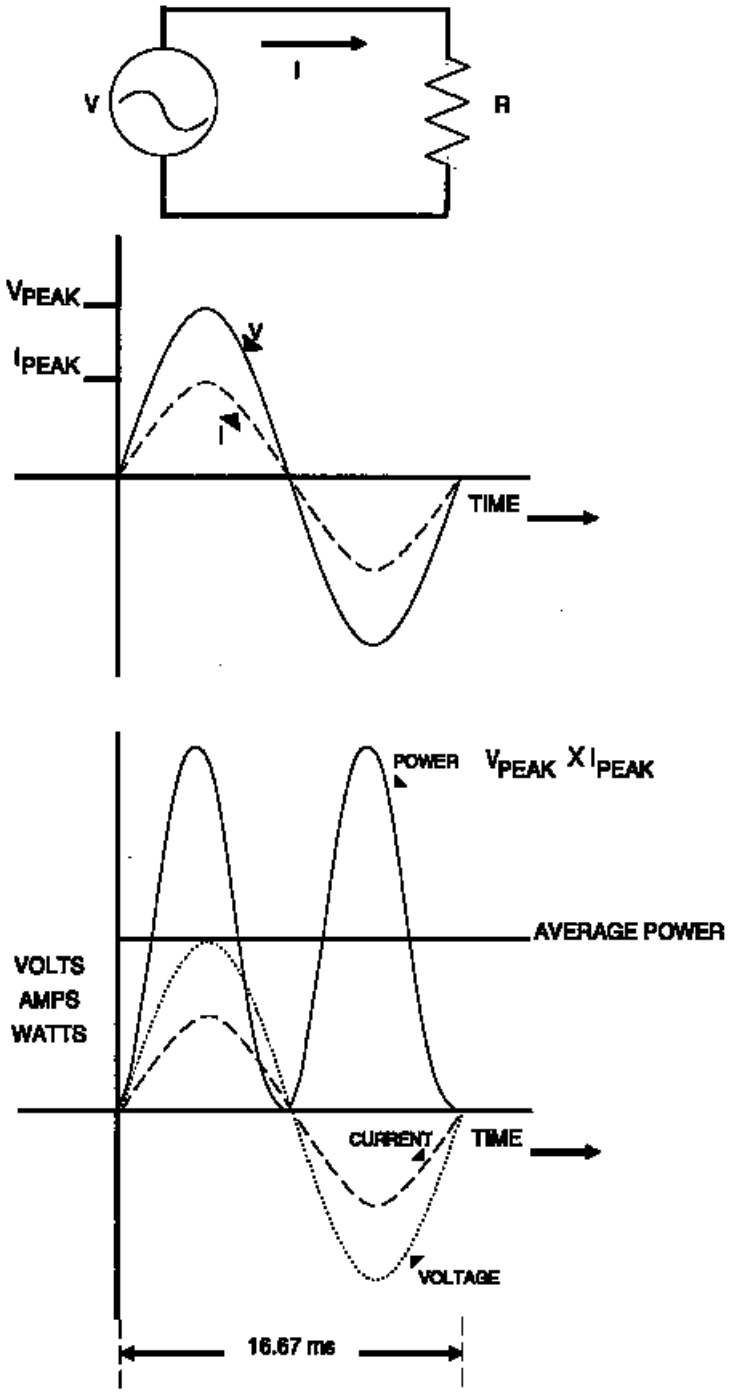
Purpose: To demonstrate the operation of a single phase watt-hour meter under different loading conditions.

Equipment used in the experiments:

1. Single Phase Two Wire Watt-Hour Meter – Form 1S
2. 52 Watt Light Bulbs
3. Digital Multi-Meter
4. Clamp Ammeter
5. Inductor
6. Capacitor

EXPERIMENT #1

(Using One 52 Watt Light Bulb)



EXPERIMENT #1

(Using One 52 Watt Light Bulb)

1. **Determine voltage across the load.**

2. **Determine current drawn by the load.**

3. **Calculate VA by Ohms Law.**

4. **Calculate power by watt load check.**

5. **Calculate load power factor and phase angle.**

Formulas you may want to use.

VA = E • I **P = E • I • cos** **WATTS = $\frac{K_h \bullet Rev. \bullet 3600}{time\ (sec.)}$**

$\frac{Watts}{VA}$ = cos **COS x 100 = % Power Factor**

EXPERIMENT #2

(Using Two 52 Watt Light Bulbs)

1. **Determine voltage across the load.**

2. **Determine current drawn by the load.**

3. **Calculate VA by Ohms Law.**

5. **Calculate power by watt load check.**

5. **Calculate load power factor and phase angle.**

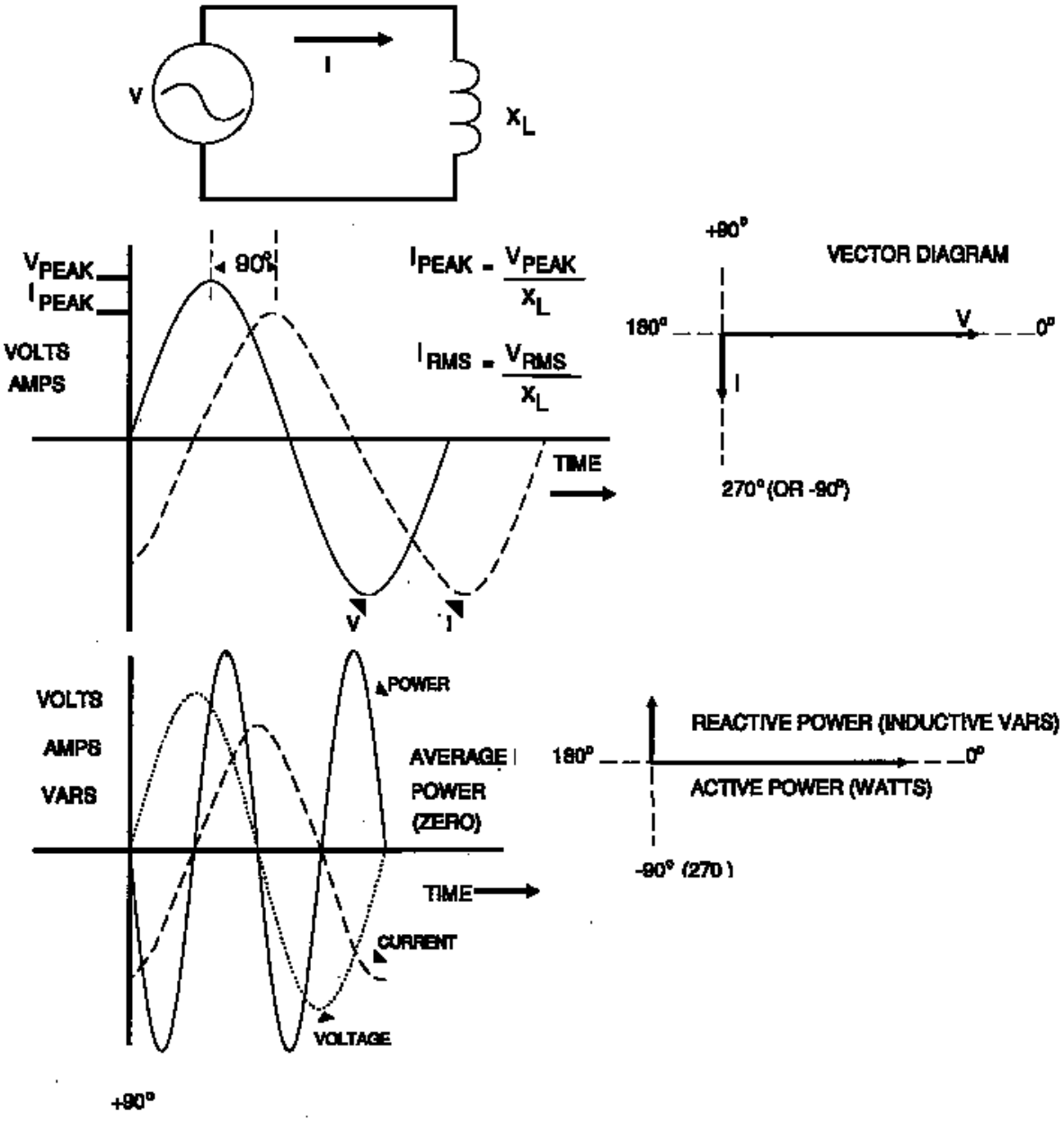
Formulas you may want to use.

VA = E • I **P = E • I • cos** **WATTS = $\frac{K_h \bullet Rev. \bullet 3600}{time\ (sec.)}$**

$\frac{Watts}{VA}$ = cos **COS x 100 = % Power Factor**

EXPERIMENT #3

(Using one Inductor)



EXPERIMENT #3

(Using the Inductor)

1. **Determine voltage across the load.**

2. **Determine current drawn by the load.**

3. **Calculate VA by Ohms Law.**

6. **Calculate power by watt load check.**

5. **Calculate load power factor and phase angle.**

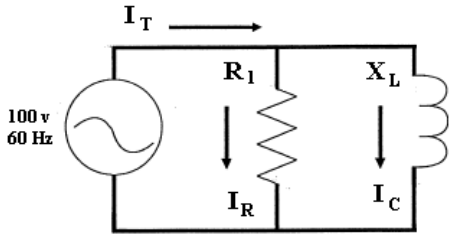
Formulas you may want to use.

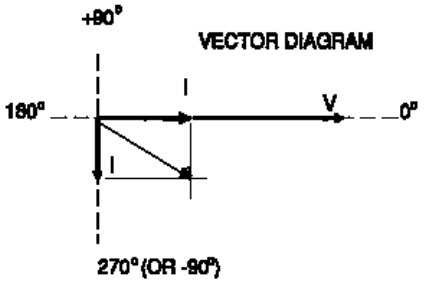
VA = E • I **P = E • I • cos** **WATTS = $\frac{K_h \bullet Rev. \bullet 3600}{time\ (sec.)}$**

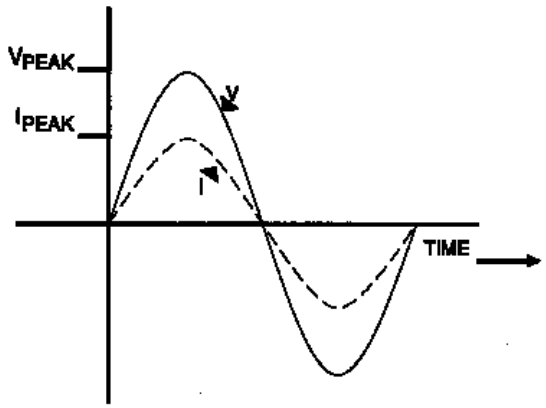
$\frac{Watts}{VA}$ = cos **COS x 100 = % Power Factor**

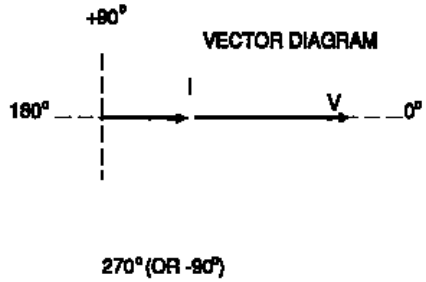
EXPERIMENT #4

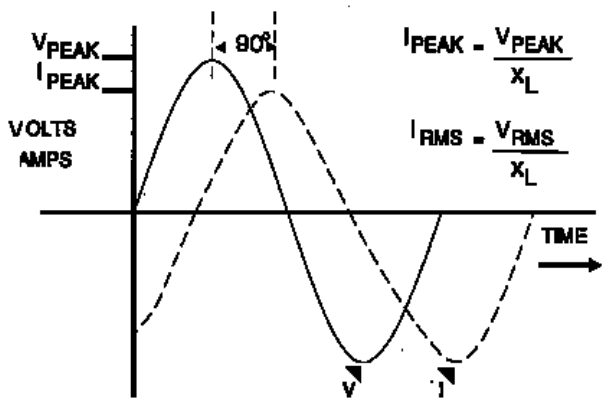
(Using the Inductor and Two 52 Watt Light Bulbs

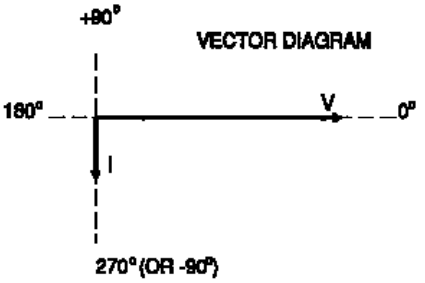












EXPERIMENT #4

(Using the Inductor and Two 52 Watt Light Bulbs)

1. **Determine voltage across the load.**

2. **Determine current drawn by the load.**

3. **Calculate VA by Ohms Law.**

7. **Calculate power by watt load check.**

5. **Calculate load power factor and phase angle.**

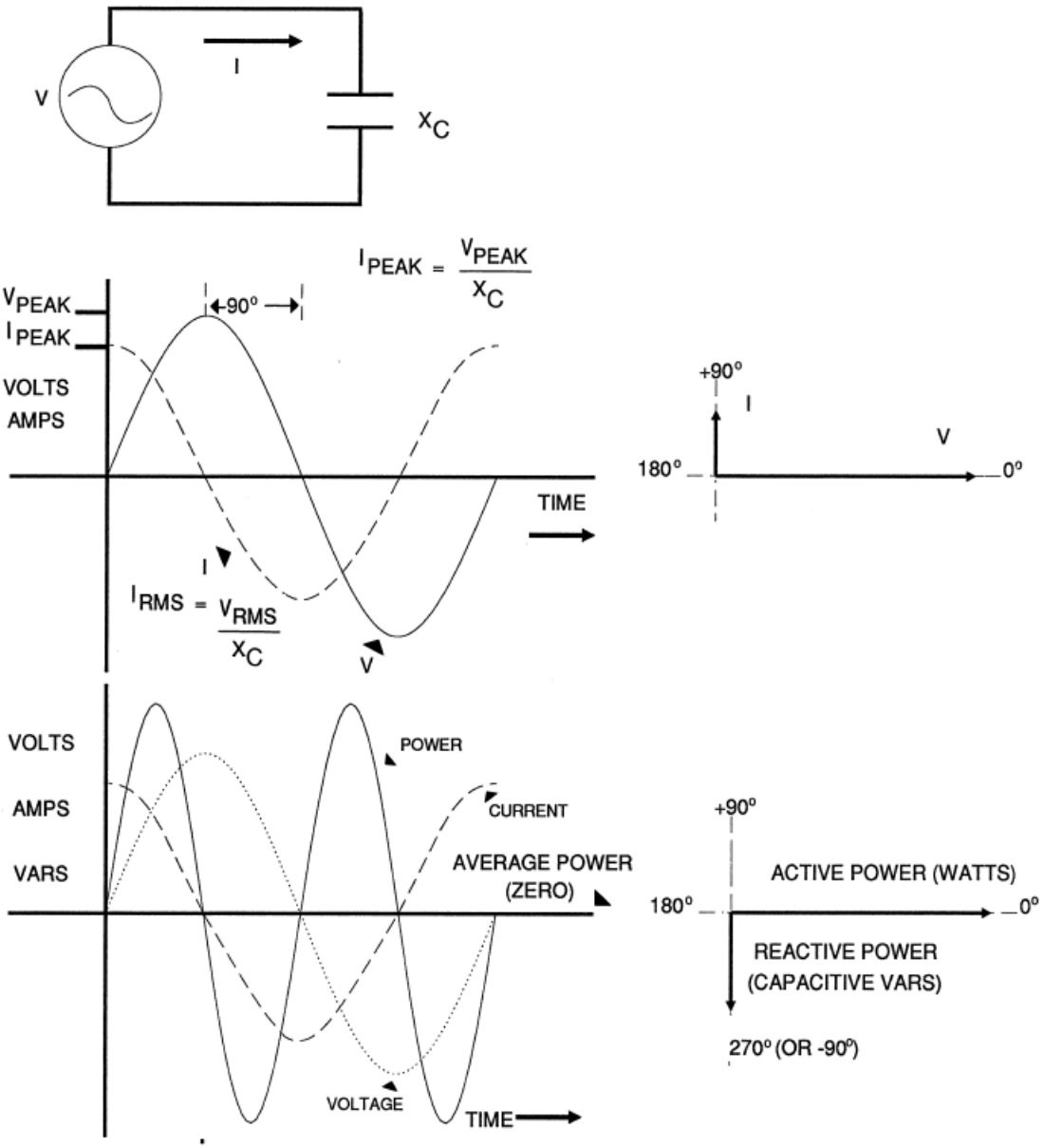
Formulas you may want to use.

VA = E • I **P = E • I • cos** **WATTS = $\frac{K_h \bullet Rev. \bullet 3600}{time\ (sec.)}$**

$\frac{Watts}{VA}$ = cos **COS x 100 = % Power Factor**

EXPERIMENT #5

(Using the Capacitor)



EXPERIMENT #5

(Using the Capacitor)

1. **Determine voltage across the load.**

2. **Determine current drawn by the load.**

3. **Calculate VA by Ohms Law.**

8. **Calculate power by watt load check.**

5. **Calculate load power factor and phase angle.**

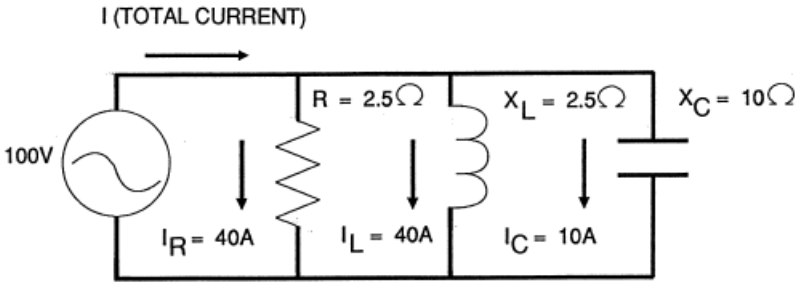
Formulas you may want to use.

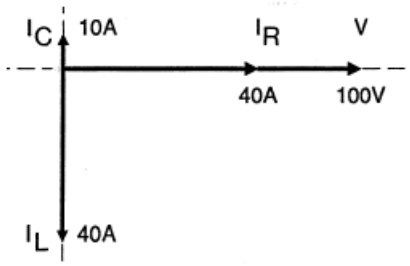
VA = E • I **P = E • I • cos** **WATTS = $\frac{K_h \bullet Rev. \bullet 3600}{time\ (sec.)}$**

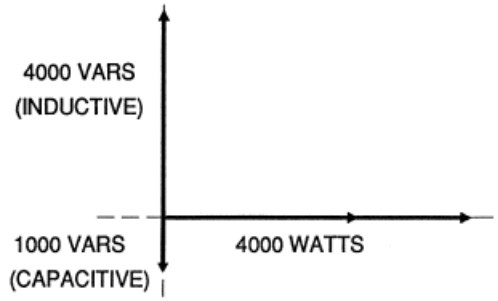
$\frac{Watts}{VA}$ = cos **COS x 100 = % Power Factor**

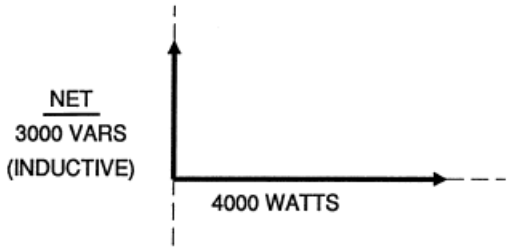
EXPERIMENT #6

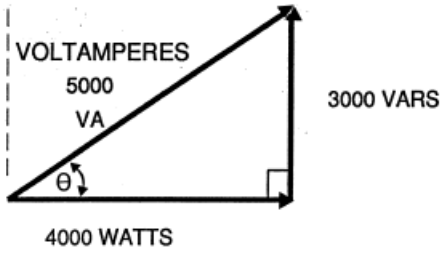
(Using the Capacitor, Inductor, and Two 52 Watt Light Bulbs)











$$\text{P.F.} = \frac{\text{WATTS}}{\text{VA}} = \cos\theta$$

EXPERIMENT #6

(Using the Capacitor, Inductor, and Two 52 Watt Light Bulbs)

1. **Determine voltage across the load.**

2. **Determine current drawn by the load.**

3. **Calculate VA by Ohms Law.**

9. **Calculate power by watt load check.**

5. **Calculate load power factor and phase angle.**

Formulas you may want to use.

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