Eastern Mediterranean University
Department of Mechanical Engineering
Laboratory Handout

COURSE: Thermodynamics II (MENG246)

Semester: Fall 2017-2018

Name of Experiment: Air Conditioning

Instructor: Assist. Prof. Dr. Murat Özdenefe
Assistant: Mohamed Alibar

Submitted by:

Student No:

Group No:

Date of experiment:

Date of submission:

EVALUATION

Activity During Experiment & Procedure	**30 %**	
Data &Results	**35 %**	
Discussion, Conclusion & Answer to the Questions	**30 %**	
Neat and tidy report writing	**5 %**	
Overall Mark		

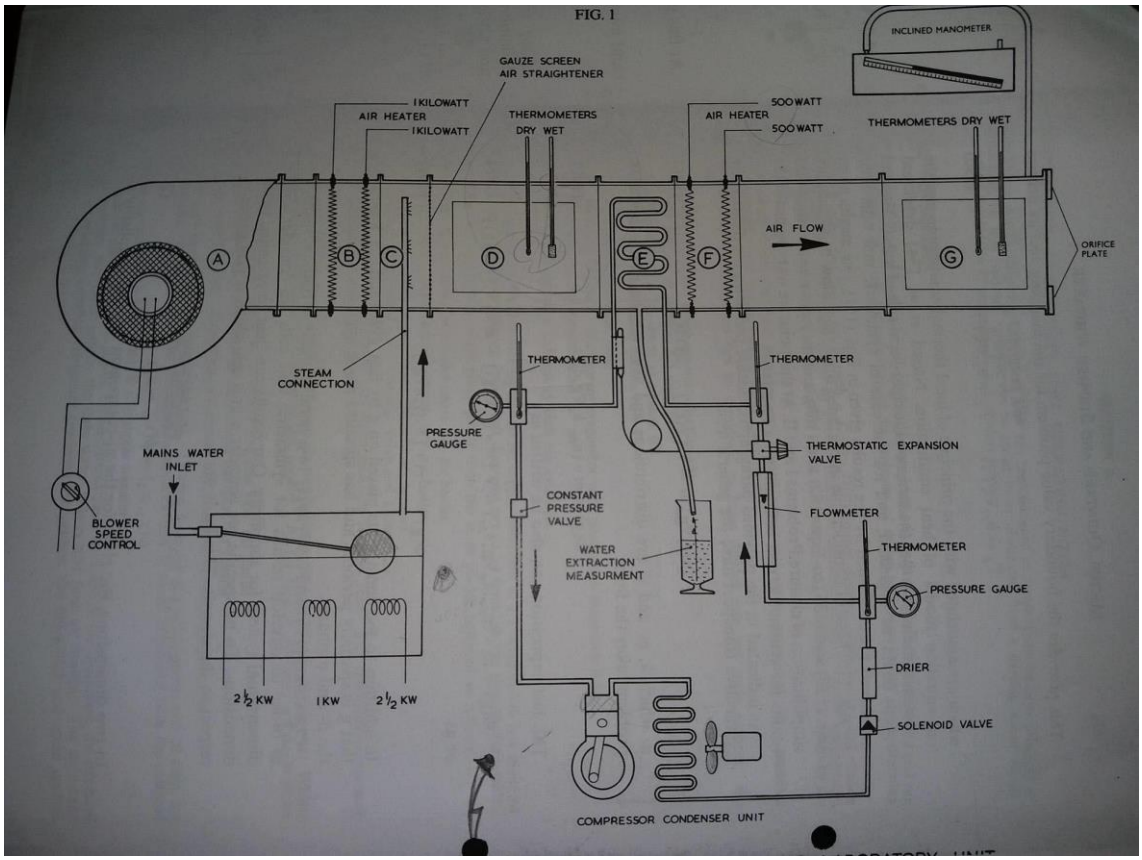
OBJECTIVE:

Find the change in the relative humidity of air with simple heating.

GENERAL DESCRIPTION:

The Hilton Air Conditioning Laboratory Unit has been designed to demonstrate the basic principle of Air Conditioning, i.e. how heat and moisture can be added to or abstracted from a moving stream of air and hence allow the control of environment and comfort levels.

A variable speed fan blows air through a 254mm square ducting. Both heating and cooling sections are incorporated. Heat being added by electric resistance elements whilst a vapour compression refrigerant circuit abstracts heat and, within certain limits, moisture as well. Moisture can be added by the injection of steam.

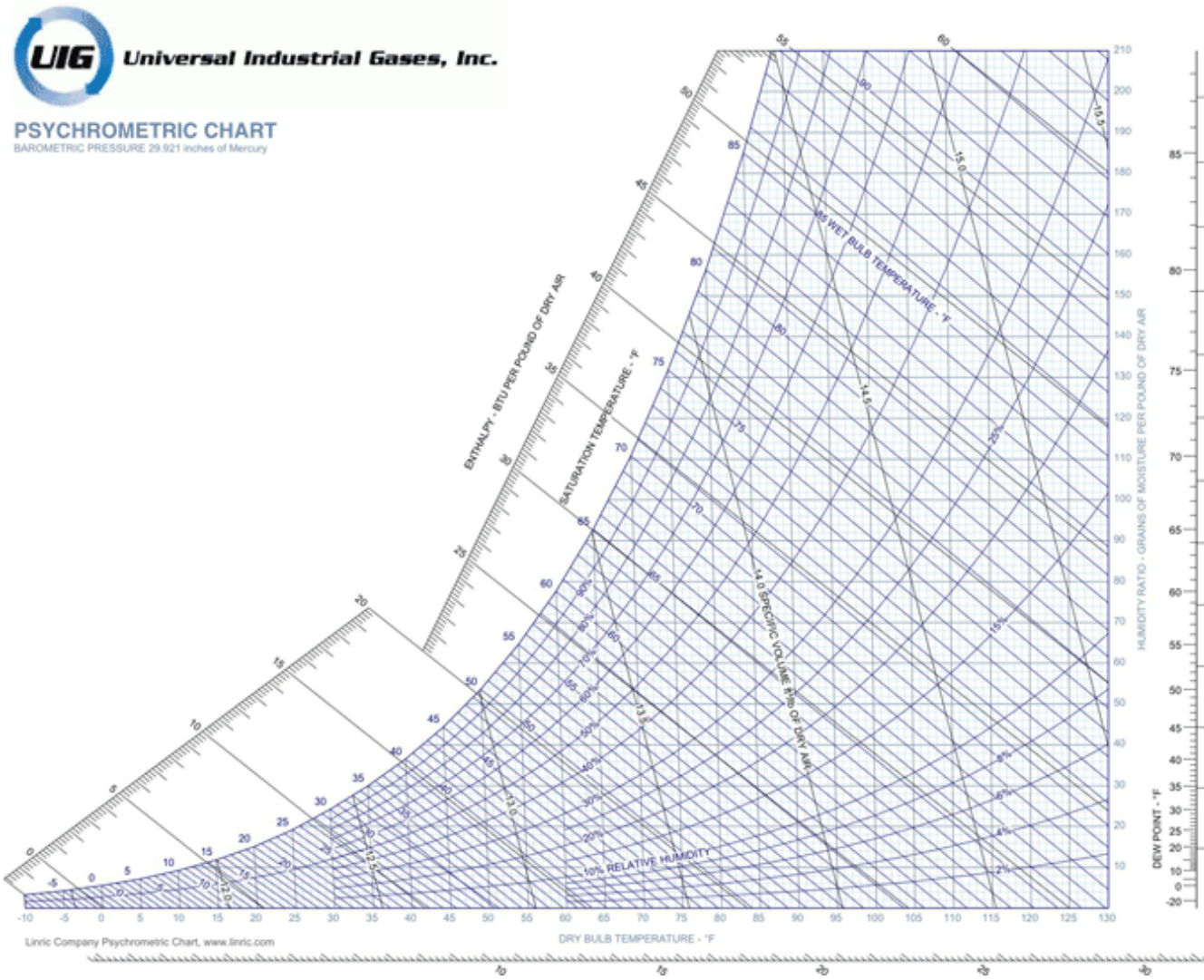


DISCUSSION AND CONCLUSION

The aim is to determine the change in relative humidity from psychrometric chart and compare it with the value which is evaluated from equation 1. Please denote the value of ω_1 on the attached psychrometric chart.

$$\omega_1 = \frac{0.622\phi P_g}{P - \phi P_g} \qquad (1)$$

In order to increase the accuracy of the experiment, please employ given data.
T_1=15ºC
T_2=40ºC
ϕ =60%


Universal Industrial Gases, Inc.
PSYCHROMETRIC CHART
BAROMETRIC PRESSURE 29.921 inches of Mercury
ENTHALPY - BTU PER POUND OF DRY AIR
SATURATION TEMPERATURE - °F
WET BULB TEMPERATURE - °F
SPECIFIC VOLUME - CU FT OF DRY AIR
RELATIVE HUMIDITY
HUMIDITY RATIO - GRAINS OF MOISTURE PER POUND OF DRY AIR
DEW POINT - °F
DRY BULB TEMPERATURE - °F
Linric Company Psychrometric Chart, www.linric.com