The American Society of Mechanical Engineers (ASME)
Water Arabia Conference and Exhibition 2017

October 17-19, 2017

ASME - PMU Chapter participated in the Water Arabia exhibition and conference at Le Meridian Hotel, Alkhobar, (Oct 17-19, 2017), were ASME students competed in the presentations competition with two presentations:

i) **"Design of Solar Powered Water Distillation Device", prepared by Abdulwahab Aladdani, Mujahed Alansari, Monther Hassan, Abdulrhman Alarfaj, Yazed Almoqbas,** Faris Mahamid

ii) **"Solar Water Purification System", prepared by Masoud Alghamdi, Khalil Alsubae, Fahad Aldossary, Manna Alharbi, Anes Alabdulqader,** Khlaid Alhamimi

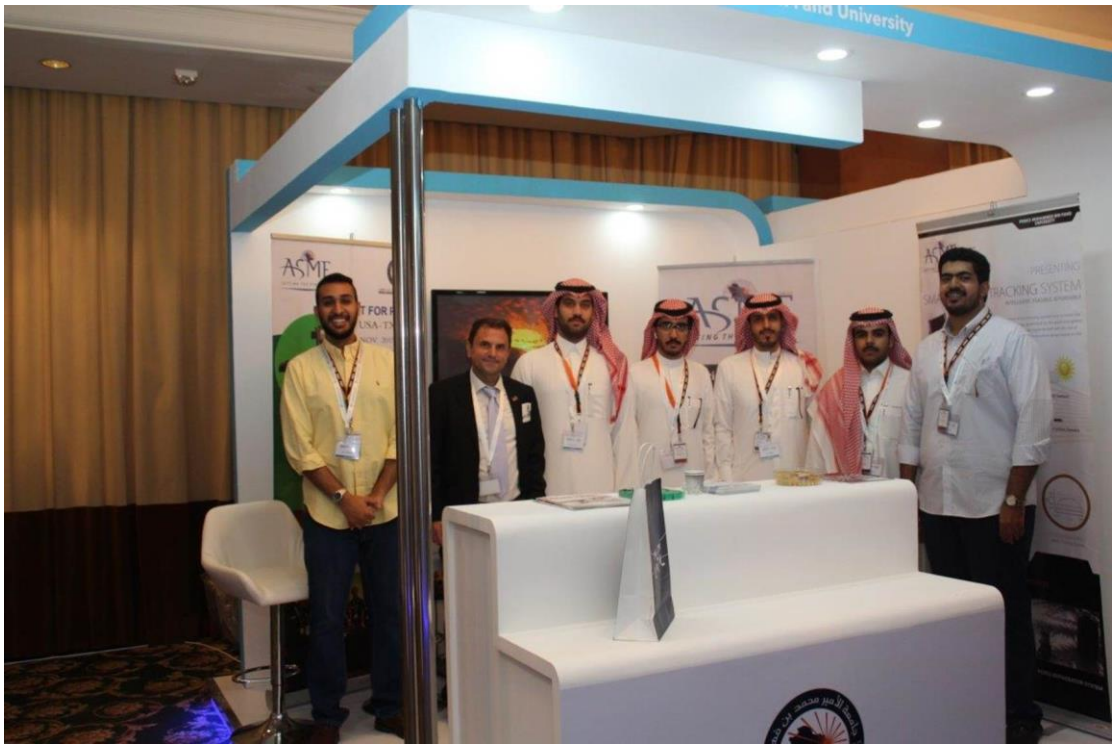
Those papers presentation were under supervision of Professor Ali Chamkha and Dr. Nader Nader; **The solar Water Purification system got the second place!**

ASME had a booth offered by the organizers and was entirely managed and setup by the members in coordination with the Campus Life Department and under the supervision of ASME advisor, Dr. Nader Nader. Students - Members displayed, discussed and presented projects and activities achieved by ASME to the exhibition's professional visitors.

The booth was visited by their excellences Engineer Mansour Almushaiti, vice minister of environmental water and agriculture and Saudi Aramco VP, Eng. Abdullah Albaiz

Finally, certificates were issued to the members followed by special thanks for their efforts and participation.


Water Arabia 2017 Poster Contest


ASME

Solar Powered Water Distillation Device

Students: Abdulwahab Aladdani, Mujahed Alansari, Monther Hassan, Abdulrhman Alarfaj, Yazed Almoqbas
Advisors: Prof. Ali Chamka, Dr. Nader A. Nader

Abstract:
The main objective is to design a water distillation system which can effectively purify water from any available sources in a cost-competitive manner using solar energy. The region has abundant supply source of seawater and many parts in the region have inadequate and unsatisfactory supply of potable water. The focus is on portable water production using hi-tech solar energy conversion. Distillation, which is most useful for water purification, relies on energy inputs covering heat, electricity and solar radiation. Solar Distillation directly evaporates water inside "*Solar Still*", which is a hi-tech device. Application of solar thermal energy in seawater desalination currently remains confined to small-scale systems, which have been installed in rural areas due to their relatively low productivity rate compared to high financial resource investment costs. Energy insecurity of fossil fuel reserves, steadily increasing population, demand for increased supply of fresh water, growing agricultural irrigation requirements of both government and private farms have made water desalination and purification by renewable energies most useful and attractive. The experimental analysis have indicated that increasing ambient temperature from 32°C to 47°C leads to the enhancement of productivity by approximately 12% to 23%. The system can deliver and maintain higher distillation performance at increased or elevated higher ambient temperatures. The use of inverted type absorber plate has indicated that thermal efficiency of single slope solar still can be increased by 7 %. Moreover, the results showed that increasing water depth from 0.01m to 0.03m can help, facilitate and deliver productivity decrease by 5%. Solar radiation increases from 0 MJ/m2 /h to 6 MJ/m2 /h leads to solar still's productivity by 15% to 32%. It has been observed, however, that increase of solar radiation parameter will result in an increase of the solar energy which is absorbed by the basin liner.

Solar Water Purification System

Students:
Masoud Alghamdi
Khalil Alsubae
Fahad Aldossary
Manna Alharbi
Anes Alabdulqader
Advisors: Prof. Ali Chamka, Dr. Ali Nader

Abstract:
Solar Water Purification System is the use of one of many processes available for water purification. Sunlight is one of several forms of heat energy that can be used to power that process. It has the advantage of zero fuel cost but it requires more space (for its collection) and generally more costly equipment. In this study water is boiled by using electric heater. The expected amount of production using the solar energy is half to three gallons of drinking water daily. To achieve these results, solar powered water purification system was designed and built. A single lm x 2m solar panel collects energy from sunlight and charges a 12V battery. The stored electricity is used to power a hotplate. The hotplate conduction to disrupts the bacteria and produces a source of potable water. The results shows that maximum power generated at 200 watts will produce 1.8 Liters of water. Furthermore, the purification of water using this system proven to be cheaper and dependable in many locations in the desert that are off the grid and don't have constant sources of clean water.