•Reiterate the research question/problem
•Highlight the novel or important findings. Explain the meaning of the findings and why they are significant.

CYPRUS INTERNATIONAL UNIVERSITY

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SUSTAINABLE CAPSTONE PROJECTS (SCAP)

SOLAR DISTILLATION

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INTRODUCTION

Water and health

Figure 1. Drinking clean water for health

Drinking water does more than just quench your thirst. It's essential to keeping your body functioning properly and feeling healthy.

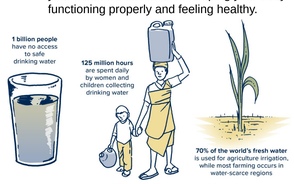


Figure 2. Clean water crisis

Many countries are facing water shortages and/or have residents who use and drink contaminated water. Contaminated water can is linked to the transmission of diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid, and polio.

Finding ways to obtain clean or pure water is then very important.

WHAT IS SOLAR WATER DISTILLATION?

Solar distillation is the process of removing salt and other impurities from salty or contaminated water using the energy of the sun to get pure water for drinking.

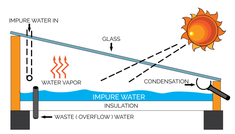


Figure 3. Water still

OBJECTIVES

- The goal of this project was to get pure water from salty or contaminated water. We had to design and construct a water still.
- The common problem with solar distillers is the time they take so one of our objectives was to accelerate this process.
- This project can help people who do not have access to clean or pure water.

FINAL PRODUCT

Figure 4. Stainless steel can fixed on the focal area of the parabola

This was the version of the solar distiller as it was seen in the video presentation.

The principle is quite simple sunlight gets reflected from the parabolic dish To a focal point where we placed a tin can filled with salty water.

The vapor from the evaporation of water will condense on the surface of a piece of glass that is fixed just above the stainless steel can. The clean or pure water that condensed on the piece of glass will slide on the surface of the piece of glass and will be collected in a jar.

RESULTS AND DISCUSSION

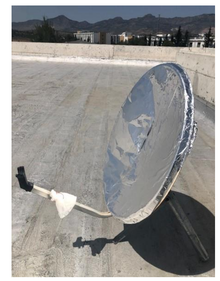


Figure 5. Parabolic antenna covered with aluminum foil

We first started this project using aluminum foil as reflective material. We were able to get heat and reflection. The reflectivity of bright aluminum foil is about 80%. While the reflectivity of mirror is A very complex dielectric mirror can reflect up to 99.999% of the light incident upon it, for a narrow range of wavelengths and angles. A simpler mirror may reflect 99.9% of the light but may cover a broader range of wavelengths. This is why we opted for mirrors.

Figure 7. Water bubbles after 5 minutes of exposure on a cloudy day. Stainless steel is a good heat retainer

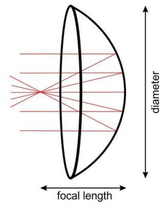


Figure 6. The more the U-shaped curve is pronounced the better is the focal point.

Having better reflective material can improve our system, also a larger dish, curved enough to obtain more heat and therefore more vapor that we can condense.

MATERIALS USED IN CONSTRUCTION

Figure 8. Old parabolic antenna (re-used)

Figure 9. 50 × 108 cm piece of mirror (re-used)

Figure 10. Stainless steel can

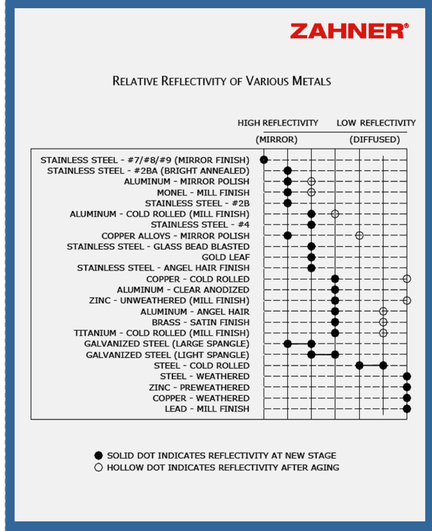
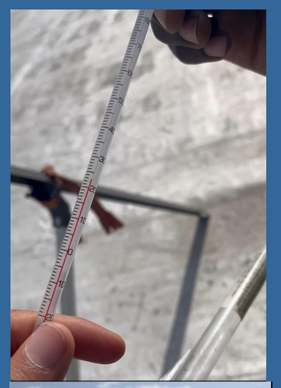


Figure 11. The reflectivity of various metals



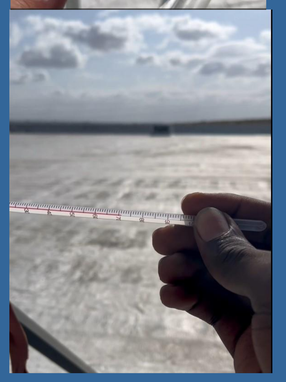


Figure 12. From 25C to 70° C in 6 Seconds

CONCLUSIONS

- Using solar reflection is a sustainable method for solar distillation.
- Better reflective materials improve our system.
- our system works best on sunny days mostly when the sun is at its peak.

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