



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 19EEO305 /Renewable Energy Generation Technology

III YEAR / VI SEMESTER

UNIT 2- SOLAR ENERGY

Topic 4 – Solar desalination , Pond





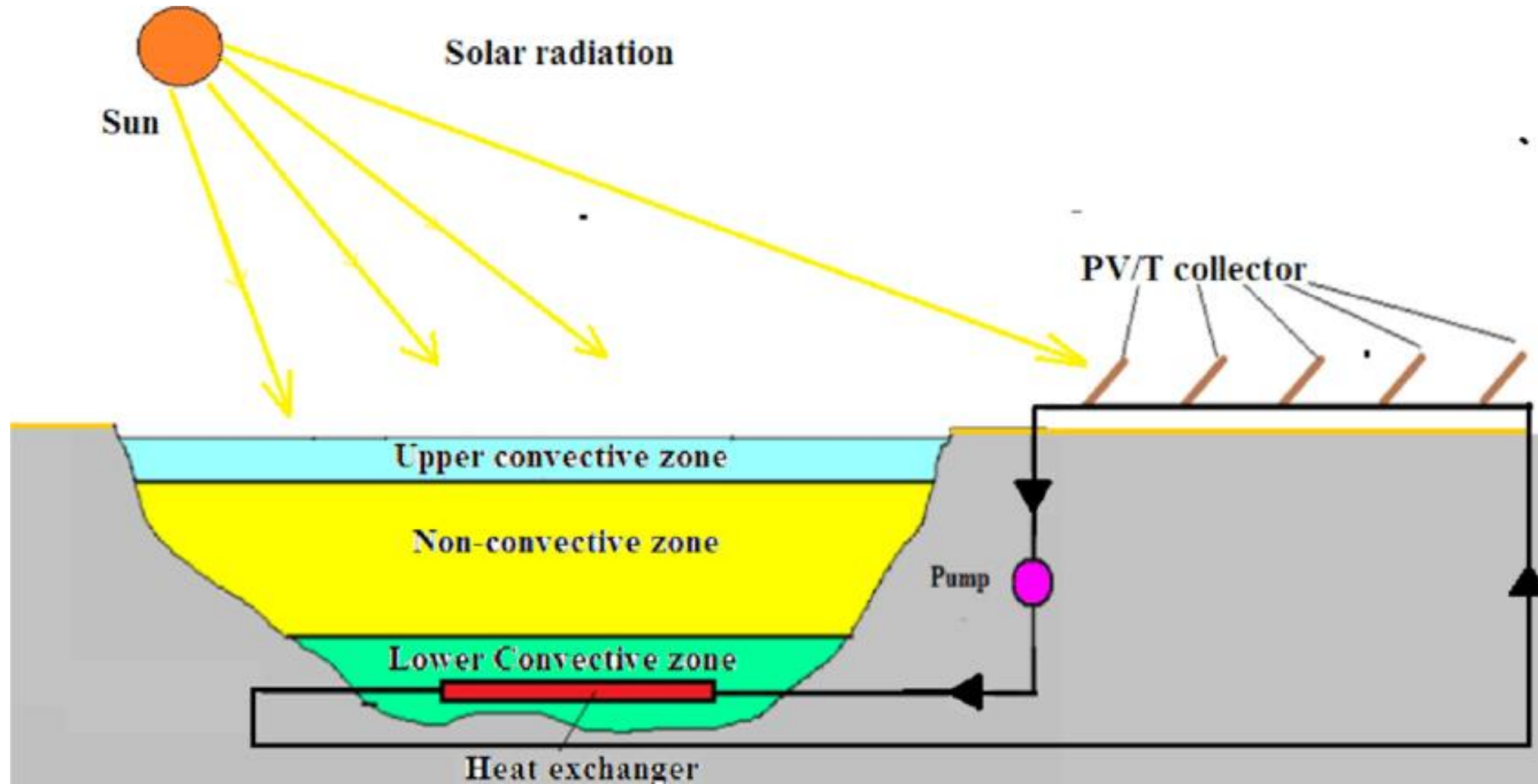
SUCCESSFUL STUDENT

Positive
Attitude

Professionally
Groomed

Socially
Interactive

Technically
Skillful





SOLAR ENERGY

1. Solar energy is an abundant and renewable energy source.
2. The use of solar energy in India has been very limited. This is because it is a dilute energy source.
3. Energy must be collected over a large area.
4. One way to overcome this problem is to trap solar energy through the use of SOLAR POND.



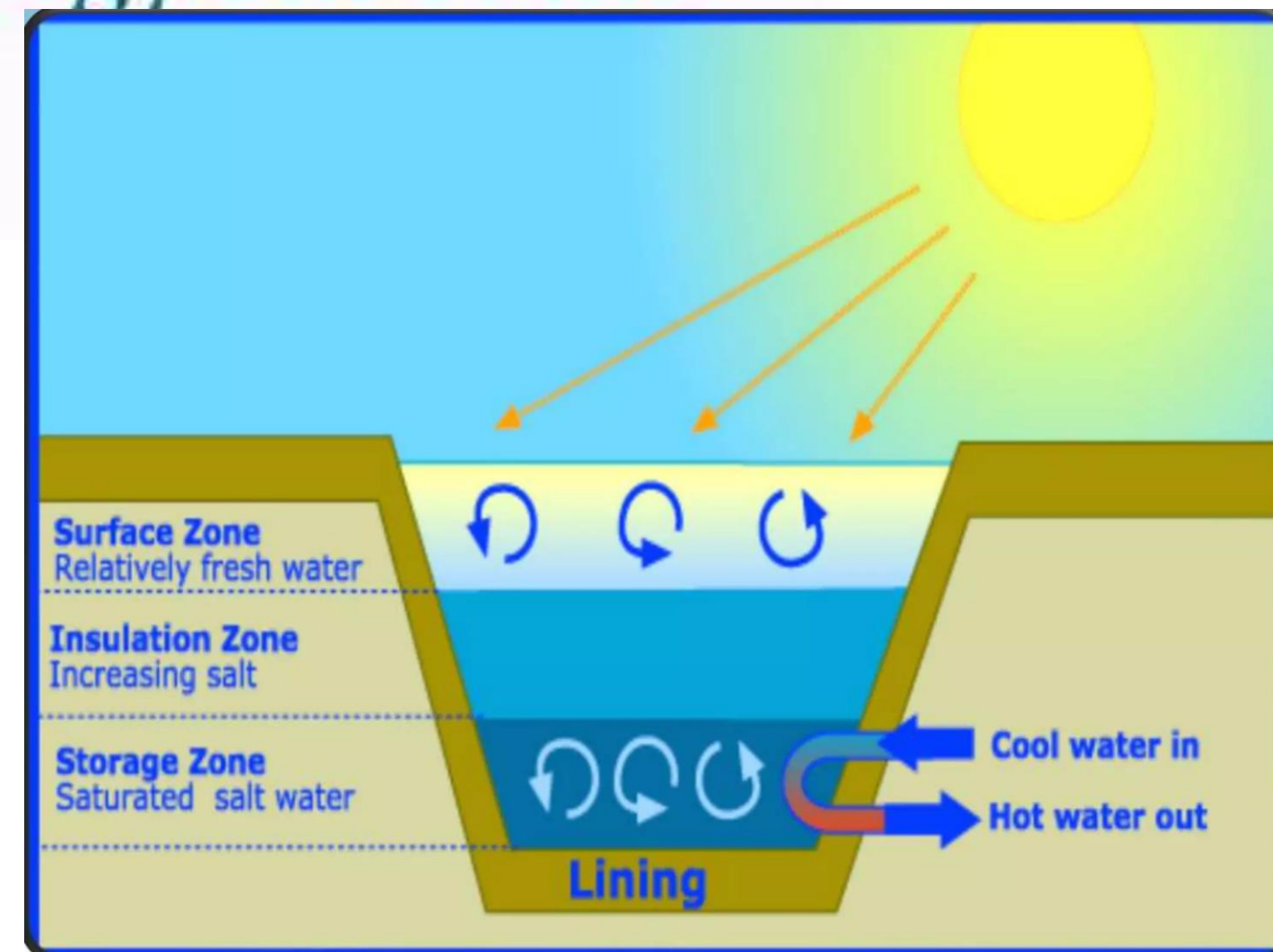
WHAT A SOLAR POND IS

- A solar pond is a body of water that collects and stores solar energy.
- Water warmed by the sun expands and rises as it becomes less dense.
- Colder water moves down creating a natural convective circulation that mixes the water and dissipates heat.
- Its design reduces convection in order to store heat collected by the pond.
- Salinity gradient prevents convection current.
- Solar radiation reaches the lower layer which contains a concentrated salt solution.
- Temperature in this layer rises but heat is unable to move to the surface by convection.
- Solar heat is thus stored in the lower layer of the pond.



MAIN FUNCTIONS OF SOLAR POND

- Collection of radiant energy and its conversion into heat.
- Storage of heat.
- Transport of thermal energy out of the system





APPLICATION

- **Salt production**
- **Aquaculture, using saline or fresh water**
- **Dairy industry (to preheat feed water to boilers)**
- **Fruits and vegetable canning industry**
- **Grain industry (for grain drying)**
- **Water supply (for desalination)**



DESALINATION

- Solar ponds can provide a cost effective solution to the portable drinking water problems, desalination cost work out to be 7.5 paisa per litre , in coastal villages





ASSESSMENT



publicdomainvectors.org





REFERENCE



Reference Book:

1. S.P. Sukhatme, 'Solar Energy', Tata McGraw Hill Publishing Company Ltd., New Delhi, 1997. (UNIT II)
2. G.N. Tiwari, 'Solar Energy – Fundamentals Design, Modelling and applications', Narosa Publishing House, New Delhi, 2002. (UNIT II)
3. S.M. Muyeen," Wind Energy Conversion Systems: Technology and Trends", Springer 2012. [UNIT III]

Text Book:

1. G.D. Rai, 'Non Conventional Energy Sources', Khanna Publishers, New Delhi, 2006. (UNIT I - V)
2. D.P.Kothari, K.C.Singal and Rakesh Ranjan,"Renewable energy sources and Emerging Technologies", PHI Pvt. Ltd., 2009. (UNIT I-V)



THANK YOU!!

