" Sheel, Sharir, Adhyayan "
Aundh Shikshan Mandal, Aundh

Raja Shripatrao Bhagawantrao Mahavidyalaya, Aundh. (Satara)

Experiential Learning

B.Sc. Part 3

Subject: Physics

2019-2020

RAJA SHRIPATRAO BHAGAWNTRAO MAHAVIDYALAYA, AUNDH (SATARA)
DEPAARTMENT OF PHYSICS

Study Tour Report – 2019-20

Introduction:

The purpose of the educational trip was to provide students with practical and theoretical experience of field work. The III year of class of Physics student visited for their annual educational tour on dated 3/01/2020. The tour offers a rare opportunity for the students to learn about the industrial background in Maharashtra as well as current issues faced .The students of Physics department able to understand the industrial and economic development.

Objectives of the Study Tour:

In accordance with the rationale of the Study Tour, its aim will be to foster an understanding of the industrial and economic development. The study tour guided by following main objectives;

To explore the economy of the rural town and learn their contribution I development.

To investigate the significance of region.

To identify the strength, weakness and opportunities in the development of rural region in Maharashtra.

Analysis of Study Tour:

During the trip, the students visited following areas in the rural region of Maharashtra. Students of department collected primary as well as secondary data as needed and necessity of objectives of study tour. Various groups of student are engaged in discussion with the local residents and local hawkers came to sell various commodities as well as also observe the economic behavior of tourist. Students collected data regarding income of residents, employment status, living of standard, sources of income, governmental scheme, transportation facility, poverty etc. the collected data has processed and make some broad conclusions as follows;

The economy of selected rural rigion of Maharashtra is in weak position in general and particular in employment generation.

We observe the living of standard of local residents is poor due to unavailability of socio-economic aspects.

The growth of economy is depends upon the agriculture products. It is the main source of income.

Earning sources is totally related to the agriculture; there is no alternative source.

Outcomes of Study Tour:

Understanding the barriers in process of economic development of rural region.

Student learns from observation, experience and field work.

Observe the industrial development on local residents.

Develop the skill regarding organization, management, decision making and problem solving.

PRINCIPAL
Raja Shripatrao Bhagwantrao
Mahavidyalaya,Aundh(Satara)

Head
Department of Physics
R.S.B. Mahavidyalaya,
Aundh.

AUNDH SHIKASHAN MANDALS AUNDH

RAJA SHRIPATRAO BHAGAWANTRAO MAHAVIDYALAYA, AUNDH (SATARA)
DEPARTMENT OF PHYSICS 2019-20

Sr. No	Name of student
1	* Bhosale Najuka Himaat
2	* Shinde Komal Mohan
3	* Nikam Shewta Mahipati
4	Jadhav Vaibhav Balu
5	Nikam chaityna popat

PRINCIPAL
Raja Shripatrao Bhagwantrao
Mahavidyalaya,Aundh(Satara)

Head
Department of Physics
R.S.B. Mahavidyalaya,
Aundh.

RAJA SHRIPATRAO BHAGAWANTRAO MAHAVIDYALAYA, AUNDH

Department of Physics

Study Tour Record

Sr. no	Year Date	Class	Study Tour Places
1	2013-14	B.sc III	hydroelectric project,Koyananagar
			Tal- Patan,Dist- Satara
2	2014-15	B.sc III	Ganesh khind, Varud
			Tal- Khatav,Dist- Satara
3	2015-16	B.sc III	Green power sugar industry,Gopuj
			Tal- Khatav,Dist- Satara
4	2016-17	B.sc III	Green power sugar industry,Gopuj
			Tal- Khatav,Dist- Satara
5	2017-18	B.sc III	Green power sugar industry,Gopuj
			Tal- Khatav,Dist- Satara
6	2018-19	B.sc III	Green power sugar industry,Gopuj And Vardhan Agro Limited,Ghatmata
7	2019-20	B.sc III	Solar hot water plant, Mahabaleshwer And Murud.

PRINCIPAL
Raja Shripatrao Bhagwantrao Mahavidyalaya,Aundh(Satara)

Head
Department of Physics
R.S.B. Mahavidyalaya,
Aundh.

Aundh Shikshan Mandal Aundh

RAJA SHRIPATRAO BHAGWANTRAO MAHAVIDYALAYA, AUNDH

Tal- Khatav Dist -Satara

DEPARTMENT OF PHYSICS

YEAR 2019- 2020

TOUR REPORT

This is to certify that ~~Mr.~~/Miss/ Bhosale Najuka Himmat

class BSC-III has satisfactorily completed the activity as prescribed by Shivaji University Kolhapur and the report is attached .

Date:- 05 /02/ 2020

Teacher in charge

Examiner

Head of Department

Head
Department of Physics
R.S.B. Mahavidyalaya
Aundh.

A Review Of Solar Water Heating System

As we visited Mahableshwar to see the water heating system on 3 Jan 2020 reported as follows:

A review of solar water heating system for domestic and industrial applications is presented. They are grouped into two broad categories as (positive) passive & active solar water heating systems. Each of them operates in either direct or indirect mode. Their performances, uses and applications & factors considered for their selection are reported. The active systems generally have higher efficiencies, their values being 35% to 80% higher than those of the passive system. They are more complex and expensive.

Generally more research and development work are needed to further improve the existing level of efficiency for it to serve effectively as a visible alternative to the conventional means of hot water generation. The actual field testing experiences, together with the prospects & economic problems that affect popularization of the systems, are also presented. Their possible solutions are suggested.

Introduction

Hot water is essential both in indu and homes. It is required for taking baths, washing cloths, and utensils, and other domestic purposes in both the urban and rural areas. Hot water is also required in large quantities in hotels, hospitals, hostels, and industries such as textile paper, food processing, dairy and edible oil. In fact, Hot water is required mainly for purpose of hygiene. Hot water demands appear to be highest within the periods of the day when electric energy demands for other purpose is high.

At present hot water demand are met mainly by the use of electric heaters unfortunately rising energy cost, environment concerns and the depleting nature of the current primary energy sources in use have made electric heater less attractive. This is because the primary energy sources of elect energy utilized are mainly the fosil fuels.

The Passive Solar Hot Water system

The PSHWSs generally transfer heat by natural circulation a result of buoyancy due to temperature difference between the regimes. hence they do not require pups to fun They are the most commonly used solar water heater. for domestic application and have been designed and investigated by different research ers. They could either be open loop or closed loop in operation. The open loop systems circulates services water through the collector while the closed loop system use a heat-transfer fluid to pick-up solar energy from the solar collector and subsequently transfer it to the storage and tank containing the service water. Natural circulation flow rate is often controlled by the isolation level. The thermosyphon system and the integrated collector storage (ICS) systems generally fall within this category. However the open & closed loop types can only be applied to the thermocyphon system.

A. The thermosyphon Solar Hot Water System

In this type of SHWs, the facility for harvesting solar energy and the hot water storage tank are seperate components, with the hot water tank usually placed at a level higher than the solar collector. The thermosyphon hot water heating system can be classified into two types that is thermosyphon SHWS using phase change material & thermosyphon SHWS without phase change materials.

The Active Solar Hot water Systems

This category of SHWS's are those having an assembly of collectors, storage device and transfer fluid which converts solar energy into thermal energy and in which energy in addition to solar input is used accomplish the transfer of thermal energy. Active solar water heating systems use electric pumps, valves & controllers to circulate water or other heat-transfer fluid through the collectors. Thus they are more complex and usually more expensive than passive system. This apparant disadvantage is however, countered by the fact that they are more efficient, since they are use pumps to circulate fluid, they do not suffer the restictions of where to locate their storage tanks as the case with the passive systems that demand their tanks installed either close to or on the top of collector. The active SHWS's many use any of the known collector configuration depending on the load and hot water draw off pattern. Since pumps are used, they are basically forced circulation systems & could either be direct or indirect in operation.

Solar Water Heating System

Progress

The earliest work on scalar water heating system focused more on establishing the technical feasibility using different configuration. This is evidenced by the large no. of parents filed in the USA and Japan in the early 20th century. soon after the first patent of SHWS in 1891. These early systems tested basically of ICS type were soon discovered to suffer substaintially from heat losses to ambient particularly at night & during periods when solar heating is not going on. This was due to their construction which comprised simply of exposed tank lefts out to warm in sun. consequently the thermosyphon SHWS gained prominence and eventually displaced the ICS SHWS in the late 19th century. More detailed discription of the early SHWS is given in reference.

In general, technical advances in SHWS have been very rapid in the past 50 years & these advances are mainly on plate solar collectors.

Conclusion

A review of solar water heating system has been undertaken. From this study the following are evident

i) The passive systems are more common than the active system with the ICS enjoying the most attention for R and D. These is followed by the thermosyphon system and then the active SHWS's.

ii) The best efficiencies of PHWS are in the range of 80% - 50%. Those of the ICS are of the order of 30% while those of the thermosyphon system are of the order of 50%.

iii) Efficiency of active SHWS is about 30% - 80% higher than that of the passive systems.

iv) SHWS have very high potentials to significantially contribute to hot water requirement.

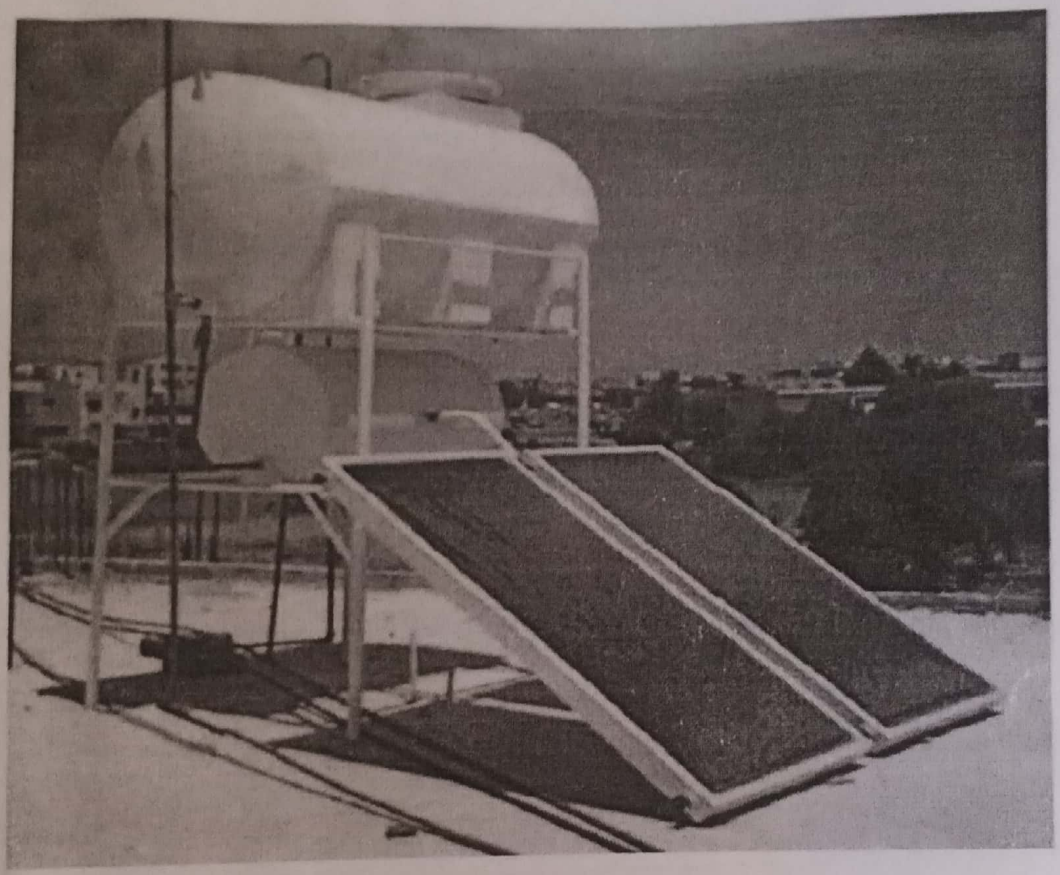

FIG. 4. A typical single phase thermosyphon SHWS.