

Shetkari Shikshan Prasarak Mandal's

Krishna Mahavidyalaya, Rethare Bk

IQAC 2018-2019

ACTIVITY REPORT  
PHYSICS DEPARTMENT

IQAC ACTIVITY No:

NAME OF THE ACTIVITY: Field Project at "Yashwantrao Mohite Krishna Sahakari Sakhar Karkhana, Rethare Bk."			
DATE	FACULTY	DEPARTMENT/COMMITTEE	COORDINATOR NAME
09 February 2019,	Science	Physics	Dr. Dhanaji S. Dalavi
TIME	VENUE	NUMBER OF PARTICIPANTS	NATURE: Outdoor/Indoor
8.00 to 2: 00 pm	Yashwantrao Mohite krishna Sahakari Sakhar Karkhana ,Rethare Bk.	03 students + 01 faculty	outdoor
SUPPORT/ASSISTANCE:	Nil		

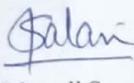
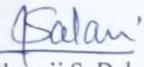
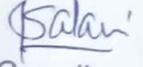
BRIEF INFORMATION ABOUT THE ACTIVITY (CRITERION NO. - ):

TOPIC/SUBJECT OF THE ACTIVITY	Field Project at "Yashwantrao Mohite Krishna Sahakari Sakhar Karkhana, Rethare Bk."
OBJECTIVES	to reinforce experiential and contextual learning and to enhance classroom learning by making real-world connections.
METHODOLOGY	Plant visit
OUTCOMES	Students got a great opportunity to get exposure to the details of the sugar manufacturing technology and bagasse-based power generation technology which are not usually visible, by observing the machineries and equipment

PROOFS & DOCUMENTS ATTACHED (Tick mark the proofs attached):

1. Notice & Letters	2. Student list of	3. Activity report	4. Photos	5. Feedback form
6. Feedback analysis	7. News clip with details	8. Certificate	9. Any other	10.

IQAC CELL ACTIVITY NUMBER:

NAME OF TEACHER & SIGNATURE	NAME OF HEAD/ COMMITTEE INCHARGE & SIGNATURE	PRINCIPALS SIGNATURE	IQAC COORDINATOR (SEAL & SIGNATURE)
 Dr. Dhanaji S. Dalavi	 Dr. Dhanaji S. Dalavi HEAD DEPARTMENT OF PHYSICS KRISHNA MAHAVIDYALAYA, Rethare Bk; Shivnagar - 415108	 Principal Krishna Mahavidyalaya, Rethare Bk, Tal. Karad: 415 108 (MS)	 IQAC, Coordinator, KRISHNA MAHAVIDYALAYA, Rethare Bk; Shivnagar - 415108 Tal. Karad, Dist. Satara

**Shetkari Shikshan Prasarak Mandal's**  
**KRISHNA MAHAVIDYALAYA, RETHARE BK**  
**DEPARTMENT OF PHYSICS**  
**ONE-DAY STUDY TOUR (FIELD VISIT REPORT)**  
**2018-2019**  
**B.Sc. Part-III**

A one day study tour (field visit) for B.Sc.III physics student was arranged on 9<sup>th</sup> February, 2019 to visit Yashwantrao Mohite Krishna Sahakari Sakhar Karkhana, Rethare Bk. Dr. Dhanaji S. Dalavi, accompanied the B.Sc.III students. The main purpose of the said visit at sugarcane factory was to observe co-generation power plant/electricity from sugarcane bagas and to achieve practical knowledge of how the electricity can be generated from sugarcane bagas.

As the sugarcane factory is nearby our college campus, we started our journey early in the morning at 8.00 am and reached there at 8.20. Engineers gave detailed information about co-generation power plant which has a capacity of 16 MW. We had made thorough discussion on production of power/electricity from sugarcane bagas through steam. The pressure of steam required to rotate turbine. The principle and working of the turbine has been explained in detail.

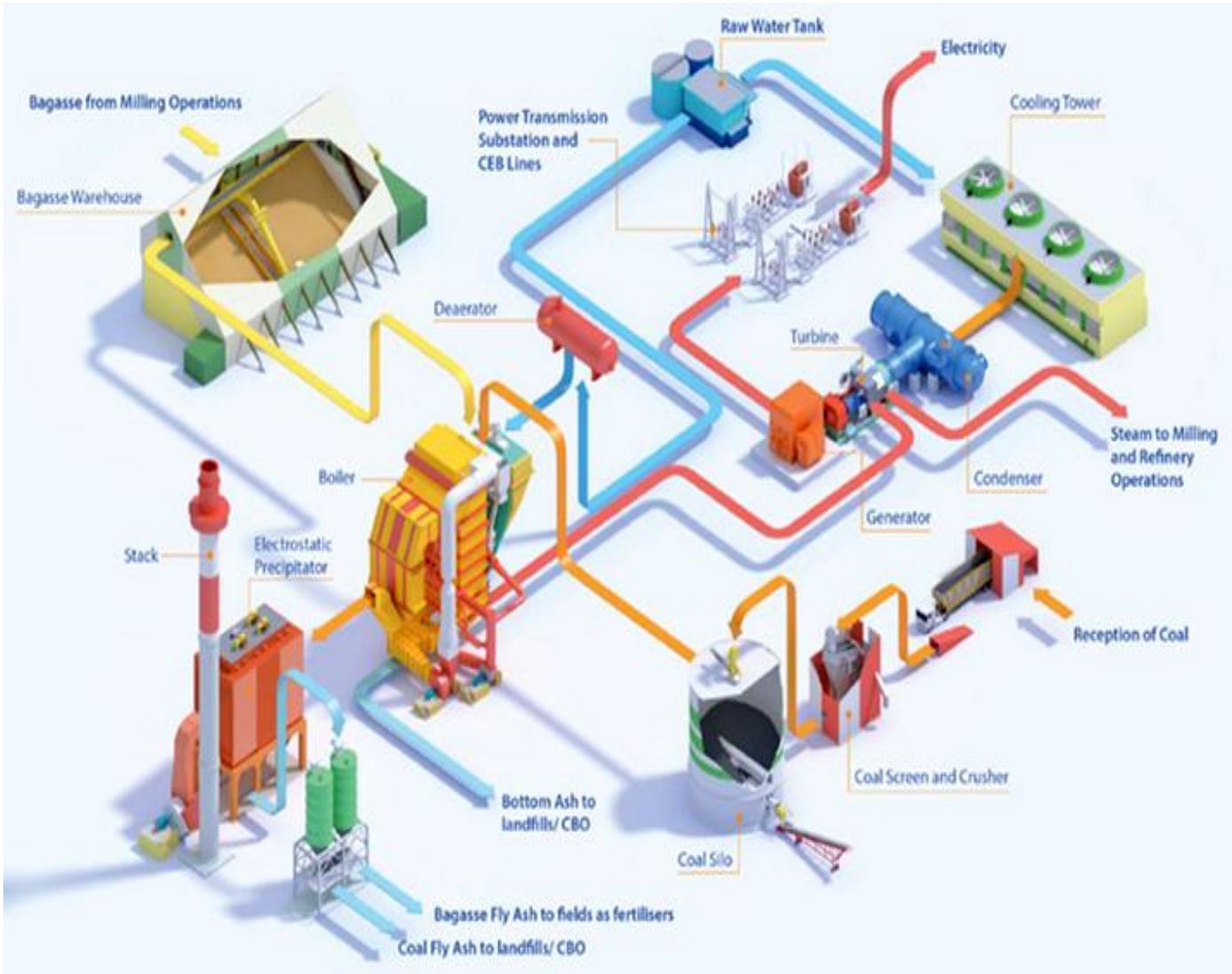
**Following are the detail or Co-generation Power Plant**

**Co-generation Power Plant/Electricity from sugarcane bagasse.**

The method is similar to any other power plant only the source of energy is different. Like coal/natural gas in thermal power plants, Uranium in nuclear power plant; the source of energy in a sugarcane based power plant is *Bagasse*. After the juice has been extracted from the sugarcane for making sugar and

other related products, the fibrous waste which remains (called bagasse) is kept for drying. This is how Bagasse looks like:

The dried Bagasse is burnt to produce heat which is used to convert water into steam in boiler. The steam at high pressure is used to rotate a turbine-generator system to produce electricity. The general schematic of any biomass (including bagasse) based power plant is given below:



The power plant at Yashwantrao Mohite Krishna Sahakari Sakhar karkhana is one of the largest bagasse co-generation plants in the Maharashtra which has a capacity of 16 MW. It uses bagasse during the sugarcane crop period

to generate steam and electricity for the cluster and electricity for the national grid.

The cogeneration plant captures by-product heat from the combustion of bagasse and transforms this heat into useful energy, namely steam and electricity. This dual fuel system allows for the non-interrupted production of energy throughout the year. Bagasse recuperated from the milling operations is used during the crop season. This fuel shares its properties that allow the thermal plant to function with both combustibles without mechanical or structural alterations.

After the bagasse is conveyed to the thermal plants, a set of crushers and conveyors prepare and deliver the fuel to the power plant. The fuel is crushed into a fine powder which is blown into large boilers. The boiler walls are lined with pipes that are filled with water. As soon as the fuel enters the boilers, it catches fire instantly and burns with high intensity. This heat rapidly boils the water inside the pipes, changing it into steam. This process steam travels to the sugar complex.

As the bagasse burn, emissions and ash are produced. The gases, together with the lighter ash (fly ash), are vented from the boiler up into the stack. Air filters called electrostatic precipitators remove the majority of the fly ash before it is released into the atmosphere. The heavier ash (bottom ash) collects in the bottom of the boilers and is removed. Fly ash from bagasse combustion is sent to the fields to be used as fertilisers. This type of combustion produces very small amounts of bottom ash. In the case this re-uses of fly ash and bottom ash will take place in the Carbon Burn Out plant.

Meanwhile, steam moves at high speed to the turbines. As jets of high-pressure steam emerge from the pipes, they propel the turbine to spin rapidly. A metal shaft connects the turbine to a generator and as the turbine turns, it causes an electro-magnet to turn inside the generator. The spinning magnet puts electrons in motion inside the wires, creating electricity. Part of the electricity travels to the cluster to power the milling and refinery operations. The rest passes through transformers to increase the voltage of the electricity that is generated. Transmission lines then carry the high voltage electricity to substations to be exported to the national grid.

Following are the details of Turbine which has a capacity of 16 MW.

## टर्बाइन माहिती

टर्बाइन तपशील	
मेक	- सिन्नी निप्योन मशानरी लि, जपान.
क्षमता	- 16 मे. वॅट
टाईप	- डबल एक्सट्रॅक्शन कंडेन्सींग
फर्स्ट एक्सट्रॅक्शन प्रेशर	- 8Ata फ्लो - जास्तीत जास्त 14 मे. टन/तास
सेकंड एक्सट्रॅक्शन प्रेशर	- 2.5Ata फ्लो - जास्तीत जास्त 58 मे. टन/तास
एक्सॉस्ट प्रेशर	- 0.1Ata फ्लो - जास्तीत जास्त 46 मे. टन/तास
गव्हर्नर मेक	- वुडवर्ड मॉडेल 505 E
स्पीड	- 6194/1500 RPM
गिअर बॉक्स रेशो	- 4.129:1

कंडेन्सेट एक्सट्रॅक्शन पंप तपशील	
मेक	- के.एस.बी. पंप लि.
मॉडेल	- WKT 065/10
पंप संख्या	- 3 नग (2W+1S)
फ्लो	- 26 m <sup>3</sup> /तास / पंप
हेड	- 95 मीटर
स्पीड	- 1440 RPM
मोटर	- 15 KW फ्लॅज माउंटेड

कंडेन्सर तपशील	
सरफेस एरिआ	- 1142 m <sup>2</sup>
वाटर फ्लो	- 3036 m <sup>3</sup> /तास
स्टीम फ्लो	- कमीत कमी 8.5 मे. टन/तास
	- जास्तीत जास्त 46 मे. टन/तास
ट्युब साईज	- 19.05 mm ओ.डी. X 9 mm जाड X 5200 mm लांब
इनलेट स्टीम प्रेशर	- 85 केजी/सेमी <sup>2</sup>
इनलेट स्टीम टेम्परेचर	- 505 ± 5°C

जनरेटर तपशील	
मेक	टी.डी. पॉवर सिस्टीम लि; बेंगलोर
क्षमता	- 16 मे. वॅट
स्पीड	- 1500 RPM
जनरेशन व्होल्टेज	- 11 KV
फुल लोड करंट	- 1050 अॅम्पीअर
पॉवर फॅक्टर	- 0.8
पोल संख्या	- 4
एक्सट्रॅक्शन व्होल्टेज	- 219 V
एक्सट्रॅक्शन करंट	- 627 अॅम्पीअर
ए.सी. एक्सट्रॅक्टर तपशील	
मेक	- टी.डी. पॉवर सिस्टीम लि; बेंगलोर.
टाईप	- GZA 73
आऊट पुट	- 166 KW
व्होल्टेज	- 241 V
करंट	- 690 अॅम्पीअर
फ्रिक्वेंसी	- 50 Hz
स्पीड	- 1500 RPM
एक्सट्रॅक्शन व्होल्टेज	- 94 व्होल्ट
एक्सट्रॅक्शन करंट	- 21.4 अॅम्पीअर
पोल संख्या	- 12
एक्सट्रॅक्शन सिस्टीम	- सेल्फ एक्सट्रॅक्टर
पी.एम.जी. तपशील	
मेक	- स्टॅम्पफोर्ड
टाईप	- BC-116402
व्होल्टेज	- 220 V
करंट	- 39.4 अॅम्पीअर
एक्सट्रॅक्शन सिस्टीम	- ब्रशलेस

*Salan*

HEAD

DEPARTMENT OF PHYSICS  
KRISHNA MAHAVIDYALAYA,  
Rethare Bk; Shivnagar - 415108

Dr. Dhanaji S. Dalavi  
Assistant Professor  
Department of Physics,  
Krishna Mahavidyalaya,  
Rethare (BK)  
Date:08/02/2019

To  
Principal,  
Krishna Mahavidyalaya,  
Rethare (BK)

Subject: Request for permission to arrange one day educational tour to Yashwantrao Mohite, Krishna Sahakari Sakhar Karkhana, Rethare, Bk.

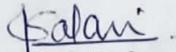
Respected Sir,

With reference to the subject mentioned above, we would like to arrange one day educational tour to visit Yashwantrao Mohite, Krishna Sahakari Sakhar Karkhana, Rethar Bk, on 09/02/2019. The said visit will be beneficial for our students to upgrade their knowledge.

Herewith I kindly request you to allow us to arrange one day educational tour to Yashwantrao Mohite, Krishna Sahakari Sakhar Karkhana, Rethare, Bk on 09/02/2019.

Thanking You

Yours faithfully

  
(Dr. D. S. Dalavi)

Dr. Dhanaji S. Dalavi  
Assistant Professor (Physics)  
Krishna Mahavidyalaya,  
Rethare (Bk.), Tal. Karad

04 Students  
and Faculty &  
has visited on 9/02/2019  
as per prior permission  
letter

  
लेखक डॉ. धनंजी स. दलवी  
प्र.सो. कृष्णा सहकार कर्कणा, रेंहारे बुद्रुक

**KRISHNA MAHAVIDYALAYA, RETHARE, BK**

**DEPARTMENT OF PHYSICS**

**Number of Student Participated in One Day Study Tour (Field Visit)**

**Place: Yashwantrao Mohite Krishna Sahakari Sakhar Karkhana, Rethare Bk**

**Date: 9<sup>th</sup> February 2019**

Roll No	Name of the Student
3011	JADHAV AMOL VIJAY
3012	DESAVALE SURYASHREE VILASRAO
3013	KADAM NIKET SHANKAR



**HEAD**

**DEPARTMENT OF PHYSICS  
KRISHNA MAHAVIDYALAYA,  
Rethare Bk; Shivnagar - 415108**



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KRISHNA MAHAVIDYALAYA,  
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