Industry Visit Report
Course – Systems in Mechanical Engineering

Name of Factory
Shri Sant Tukaram Co-operative Sugar Factory Ltd., Kasarsai,Pune

Date of Visit
29-Nov-2023(Tuesday)

Name of Teaching Faculty

Mr.Y.B.Karandikar
Mr.P.G.Kokare
Dr.S K Upasani
Ms.S N Wani

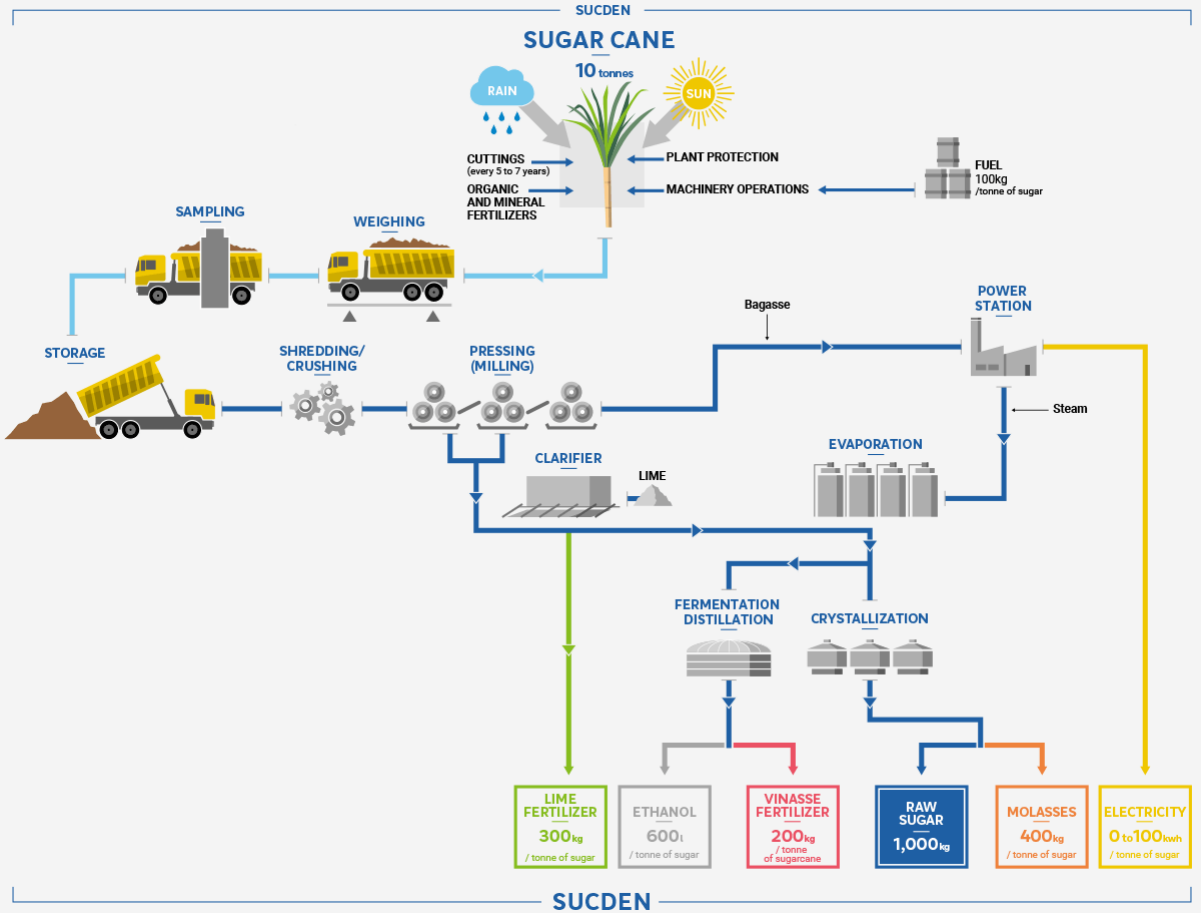
Department of First Year EngineeringAll India
Shri Shivaji Memorial Society's College of
Engineering
Pune - 411 001

SHRI SANT TUKARAM SUGAR FACTORY – Basic Information

NAME OF INDUSTRY	Shri Sant Tukaram Co-operative Sugar Factory Ltd., Kasarsai,Pune
ADDRESS	Darumbre, Post Kasarsai, Mulshi Taluka, PuneDistrict, 410506 Maharashtra.
OWNER	Yashwant SSK Limited
Contact Person **Phone**	N.P. DURVE 020-25730566
Email:	santtukaramssk@yahoo.co.in
NATURE OF BUSINESS	Sugar, Cogen, Distillery, By-products (Bagasse, Molasses, Press mud**,** Green leaves and top**s)**
Raw Materials	5,32,000 tonnes of Sugarcane (2006-2007)
Installed Capacity	2,500 tonnes crushing daily (TCD) of Sugarcane

Sugar Production Process

The sugar production process involves the extraction of sucrose from sugarcane or sugar beet. The harvested cane or beet is first washed and chopped into small pieces. Then, it is crushed or shredded to extract the juice, which is filtered and clarified to remove impurities. The juice is then boiled and evaporated to form a thick syrup, which is further crystallized to separate the sugar crystals from the molasses. The sugar crystals are then washed, dried and packed for sale. The molasses, which contains residual sugar and other substances, is either sold as a by-product or used for further processing.



SPECIFICATION OF RAW SUGAR

DESCRIPTION	RAW SUGAR TYPE		
	LP	VHP	VVHP
POLARIZATION %	98.36	99.40	99.63
MOISTURE %	0.30	0.06	0.04
ASH %	0.26	0.12	0.07
REDUCING SUGARS %	0.47	0.13	0.07
R.S. / ASH %	1.80	1.08	1.00
COLOUR (ICUMSA)	3800	800	427
INSOLUBE MATTER (MG /KG)	N.A.	250	150
STARCH (MG/KG)	N.A.	237	125
DEXTRAN (MG/KG)	N.A.	< 50	< 50
SULFITE	N.A.	N.A.	NIL

Types of Sugars Available

Lactose:

This obtained **from milk**

Xylose:

This sugar obtained **from wood**

Glucose:

This sugar is obtained **from grapes**.

Fructose:

This sugar is obtained **from fruits**.

Maltose:

This sugar is obtained **from malt.**

Raw sugar:

This sugar obtained **from sugar cane by defecation process**. Only limeused for its purification.

Uses – *it is used for production of refine sugar or direct human consumption*.

Refined Sugar:

This Sugar obtained **by purification of raw sugar**.

Uses – it is used for food and beverage in medical formationas a chemical.

Cube Sugar:

Refined sugar is can be form readily soluble in water, but do not breakduring packing.

Size of sugar – 2 to 5cm

Uses – *it is used for food in Star hotels.*

Products

Sugar production process

The sugar production process involves the extraction of sucrose from sugarcane or sugar beet. The harvested cane or beet is first washed and chopped into small pieces. Then, it is crushed or shredded to extract the juice, which is filtered and clarified to remove impurities. The juice is then boiled and evaporated to form a thick syrup, which is further crystallized to separate the sugar crystals from the molasses. The sugar crystals are then washed, dried and packed for sale. The molasses, which contains residual sugar and other substances, is either sold as a by-product or used for further processing.

Cogen

Cogen, short for cogeneration, is the simultaneous production of electricity and heat from a single fuel source, such as bagasse, the fibrous residue of sugarcane after juice extraction. Cogeneration is an efficient and environmentally friendly way of utilizing the energy potential of bagasse, which would otherwise be wasted or burned. By burning bagasse in boilers, steam is generated, which drives turbines to produce electricity. The exhaust steam from the turbines can then be used for various heating purposes in the sugar factory, such as juice concentration, crystallization and drying. Cogeneration not only reduces the dependence on fossil fuels and grid power, but also generates surplus electricity that can be exported to the grid or other consumers

Distillery

Distillery is the process of producing ethanol or alcohol from molasses or other feedstocks. Ethanol is a renewable and clean-burning fuel that can be blended with gasoline or diesel to reduce greenhouse gas emissions and improve engine performance. Ethanol can also be used for industrial and potable purposes. The distillery process involves three main steps: fermentation, distillation and dehydration. Fermentation is the conversion of sugars into ethanol and carbon dioxide by yeast or bacteria. Distillation is the separation of ethanol from water and other impurities by boiling and condensing. Dehydration is the removal of residual water from ethanol by molecular sieves or other methods

By-products

Bagasse: As mentioned above, bagasse is used as a fuel for cogeneration or as a raw material for paper, pulp, board and bio-composites.

Molasses: Apart from being used for ethanol production, molasses can also be used as a feed additive for livestock, as a soil conditioner or fertilizer, as a source of yeast and organic acids, or as an ingredient for food products such as candies, cookies and sauces.

Press mud: Press mud is the solid waste obtained from the filtration of cane juice. It contains organic matter, minerals and wax. It can be used as a compost or bio-fertilizer for improving soil fertility and crop yield. It can also be used for biogas production, mushroom cultivation, vermicomposting or extraction of wax78.

Green leaves and tops: Green leaves and tops are the parts of sugarcane that are usually discarded during harvesting. They can be used as a source of biomass for energy production, as a mulch or compost for soil conservation, as a feed for animals or as a raw material for bioplastics

Observations : After successfully completing this Visit

1	Students can understand actual working of cogeneration power plant.
2	Students can understand Natural Draught, Forced Draught and Induced Draught.
3	Students can understand how cogeneration Power Plant works and application of high Pressure Boiler.
4	Understand working and location of Accessories and Mountings of Boiler, Sugar manufacturing process.

FACTORY EQUIPMENTS SPECIFICATIONS