

A Case Study :

Survey of process technology and comparative performance of furnaces used for jaggery making in Akola district of Maharashtra

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ABSTRACT

A survey was conducted in Akola District of Maharashtra to study the present status of process technologies followed and the types of furnaces being used in jaggery manufacturing. Ten jaggery manufacturing units were identified for survey where jaggery manufacturing is being carried out using furnaces and the process pursued is little different. It was observed that at some places instead of anhydrous powder, Bhandi and Soya milk is being used as colouring agent. It was felt that the manufactures experienced that three pan method is convenient, with less energy requirement and fewer manual labour employment and hence gives very superior results in jaggery manufacturing.

Key words : Process technology, Furnace, Jaggery

Sugarcane is one of the most important cash crops in India. Along with sugar, the quality and popularity of jaggery (gur) gives better financial benefits to the farmers. Thus jaggery has emerged as foreign exchange earning commodity during last few years.

Presence of calcium, iron, magnesium, manganese, copper and vitamins increase the medicinal value of jaggery. While sugar serves the purpose of sweetening, jaggery serves the both sweetening with medicinal purpose.

About 19 per cent of total sugarcane produce in India is being processed for production of jaggery. Around 2.5 lakh people in India are engaged for jaggery production every year. In year 2001-2002, total export of jaggery was 1.8 lakh tones and earned exchange of about Rs. 20.97 billions.

So in present study the effort was made to study the existing types of jaggery making processes and energy requirements of these processes. Comparative performance of these processes and furnaces was done on the basis of the data collected.

Theoretical consideration:

Juice concentration is one of the major unit operations of jaggery, for this open pan furnaces are used everywhere. Due to poor heat utilization and thermal efficiency of these furnaces, many times situation arises that bagasse, generated in the process of juice extraction is not sufficient for juice concentration and requirement

for additional fuel is faced.

Jaggery produced in different parts of Maharashtra has different physical and chemical properties due to different processes followed and furnaces used.

Factors affecting performance of furnaces:

Heat requirement factors

Fuel requirement factors

- Uneven and more fuel rate
- Excess air supply through ports
- Absence of grate in burning chamber
- Construction material of furnaces
- Higher clearance between bottom of pan and point of combustion.

Process technology of jaggery preparation:

It involves following processes-

- Cane juicing
- Boiling of juice and removal of molasses
- Preparation of jaggery paste
- Preparation of jaggery

METHODOLOGY

Various types of furnaces having one or more pans and different capacities are lesser heat efficient due to which bagasse, a valuable raw material for paper and pulp industries is burnt on a large scale. Thus there is a need for improving the productivity, quality and storability of nutritive and eco-friendly jaggery, thermal efficiency