Stabilization And Precise Regulation of Cane Flow With Enhancement of Cane Density For Cane Sugar Industry

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Abstract- *Sugar cane conveyed through the cane carrier that travels on in the different shapes, bundles or in the entangled form which has many gaps and voids in between bundles, creating non-continuous less densely flow of sugar cane passing to the cane flow stabilizer & density enhancer, which has specially designed knives, having two sharp edges, the knife piece cuts the excess pieces of vertical sugar cane; the cane flow stabilizer & density is designed to rotate in the reverse direction as compared to the travel of incoming cane on the cane carrier it throws back towards the cane yard but necessarily cut cane pieces to fall in the cane carrier; precisely controlled quantity of densely prepared sugar cane then is allowed to pass to the cane cutter; the wellprepared cane by cane flow stabilizer & density enhancer and cane cutter proceeds to mill tandem.*

Keywords- flow stabilizer, density enhancer, non-continuous flow

I. INTRODUCTION

Cane sugar industry is passing through a critical phase of setback due to uncertain nature, irregular and insufficient rains and other statutory regulation problems. There are also several technical problems in the sugar industry due to manufacturing defects, acquired inefficiency during modifications, expansions and additions of plant, machinery and equipment. All of these problems contribute to the huge losses to the sugar industry and Nation by way of reduced crushing capacities, lower efficiencies, long duration repeated stoppages, several breakdowns and failures, all resulting in high sugar losses in the process of sugar manufacture ultimately resulting in low sugar Recovery. All of these problems have contributed to the sickness of number of sugar factories in the country. There is a chronic problem, of serious choking at various designs of cane kicker, in the sugar industry. Over feed cane at the kicker is either choked seriously or passed to the leveller from the topside. The cane passing below cane kicker has very irregular poor density of @130 to 150 kg/.m^3. There are several problems due to irregular cane feeding to the cane leveller, cane fibrizer / shredder and mills. All of these problems result in to uncertain as well as irregular milling performance.

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II. PROBLEM IDENTIFICATION

There are generally three machines installed for canechopper or cutter and fiberizer or shredder, are installed one after another in series to achieve continuous working and achieve high cane preparation suitable for cane milling process. Cane preparation is measured in terms of preparation index (P.I.), which is the degree of fineness or percent of open cells when cane prepared. The desired preparatory index is in the range of 85 to 90%. The cane preparation is expected of shred of long hairy fiber type. The powder formation of sugar cane is supposed to be avoided. But there is a chronic problem of serious choking in the cane preparation process in the sugar industry. Therefore, the expected simple purpose, of cane kicking of excess sugar cane and regular feeding of cane to the preparatory devices, is never achieved.

III. PROBLEM OBJECTIVE

The excess quantity of over feed sugar cane in the cane carrier will be kick back towards the cane yard and normal level of sugar cane shall be allowed to pass, through the clearance set between the tip of arms of the cane kicker and top of the slat of cane carrier, further towards the cane preparatory devices.

The excess or any quantity of over feed sugar cane in the cane carrier, approaching in vertical or horizontal form, will be chopped off efficiently, thrown back far towards the cane yard but necessarily to fall in the cane carrier. The voids between the cane bundles and below entangled loose cane, are

filled up with the chopped off sugar cane pieces. The density of approaching cane is expected to enhance @ 250 to 300 kg/cub.m. Normal level of high-density compact sugar cane is allowed to pass, through the clearance set between the tip of knives of Cane Flow Stabilizer and Density Enhancer and top of the slat of cane carrier. The compact, densely, properly levelled and stabilized flow of sugar cane is allowed to pass towards the other cane.

IV. CONCLUSION

We have tried our best efforts to introduce an equipment i.e. cane equalizer which will overcome the existing problem in sugarcane industry, for proper and uninterrupted operation of plant and also to increase production rate of the plant

1. There is considerable increase in production of sugar after installation
2. We have obtained the precise and continuous flow of sugarcane with uniform distribution.
3. Jamming of cutter due to uneven and irregular flow of sugarcane is avoided.
4. Work done by workers to remove the sugarcane which is jammed in cutter is eliminated.

From this project we got learn really more of what we learn in our curriculum. It was challenging task. We were successful in overcoming all hardships and problems.

We think that this project of ours was an initiative in order to reduce the human effort to all possible ways by providing easier way. We really hope that this effort of ours surely proves to be helping hand in industry.

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