



Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

PRESENTER:

Yusuf Abdul

General Manager- Technical Services

Guyana Sugar Corporation Inc.

Ogle, East Coast Demerara

GUYANA

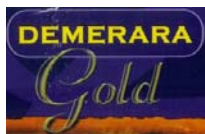




Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

INTRODUCTION

Guysuco estates have experienced a series of production issues associated with delivery and growth of canes. Among these have been reduced availability of labour and as a result, Bell loaders were introduced in the field to assist in harvesting. The associated increased mud and extraneous matter have posed several challenges to factory performance.





Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

OBJECTIVE

Our aim in this presentation is to highlight practical solutions to major issues in processing of cane, to cope with high levels of extraneous matter and immediate challenges to factories equipped with conventional machinery for the future.





Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

HARVESTING APPROACH

Agriculture development in the estates has struggled with limited resources, skilled staff, and financial and labour shortages. Attendance of workers averaged 70 - 85%. This was due primarily to increased competition in the labour market. This had prompted the implementation of a programme to mechanise the Industry that was temporarily curtailed in 1990 with return of labour during a period of relative high prices, that is now coming to an end with the cessation of the Sugar Protocol.





Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

The medium term goal for eventual mechanized harvesting has since been set. This programme will require the conversion of traditional cambered bed fields to a culture of wide beds (45m) that run approximately 370m . In the short term, Bell tricycle loaders have been introduced on a large scale to improve the productivity of manual harvesters and guarantee a satisfactory rate of cane supply.

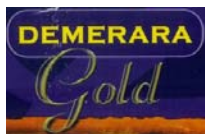




Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

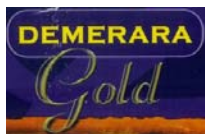
Mechanical loading showed an improvement, but extraneous matter pose a problem especially during the wet seasons. Extraneous matter, mud made a significant difference in the operation and some factories experience problems on:

- ◆ Clarification
- ◆ Filtration
- ◆ Steam generation
- ◆ Manual cleaning of Boilers - high cost.





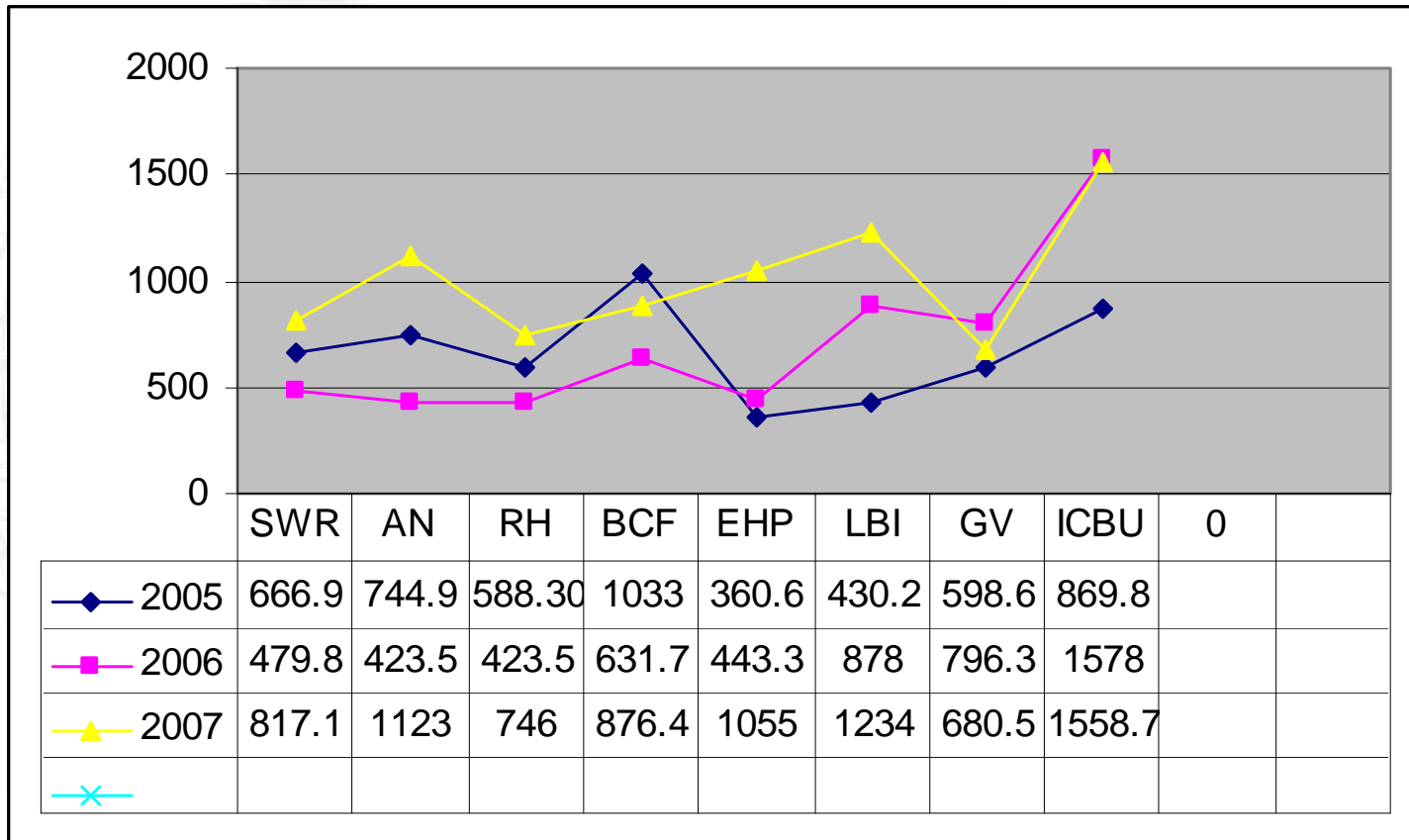
Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production





Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

Lost time due to cane shortages.





Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

FACTORY APPROACHES

Clarification

- ◆ Cold condensate was used for the effective slaking of lime (Ca O).
- ◆ Liming of mix juice should not exceed 7.8 pH using milk of lime of about 50 brix.
- ◆ Mud should be limed between 7.8 and 8.0pH and the mud temperature raised to 1800 F in the mud tank.
- ◆ An acceptable phosphate level is 280ppm minimum in the raw juice. If this is not the case then additional chemical phosphate should be applied preferably with phosphoric acid. Note the use of triple super phosphate is not discredited but it produces a greater volume of mud in the clarifier.





Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

- ◆ Residual phosphates in the clarified juice should be between 40 and 60 ppm.
- ◆ Faster Settling- use of very long chain high molecular Anionic polyacrylamide arrange between 3 and 5 ppm on juice and this level should determine the clarifier-settling rate (This is done experimentally). The point of application of superfloc + A-2015 or A-2025 must be on the piping between the flash tank and the clarifier.
- ◆ Juice heating must bear a relation to the boiling point of the limed juice. Temperature of the juice must be higher than 212 F; 220 F is known to be adequate.

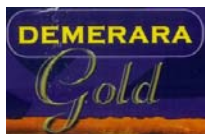




Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

Filtration

- ◆ Pick up vacuum (low vacuum 15" - 7")
- ◆ Wash vacuums (high vacuum 15" - 20")
- ◆ Standard drum speed 10 REV/ hr
- ◆ Temperature on wash water greater than 70° C
- ◆ Filter cake pol. (target 1.2 %)



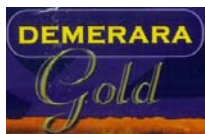


Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

Steam Generation- Boiler Modifications

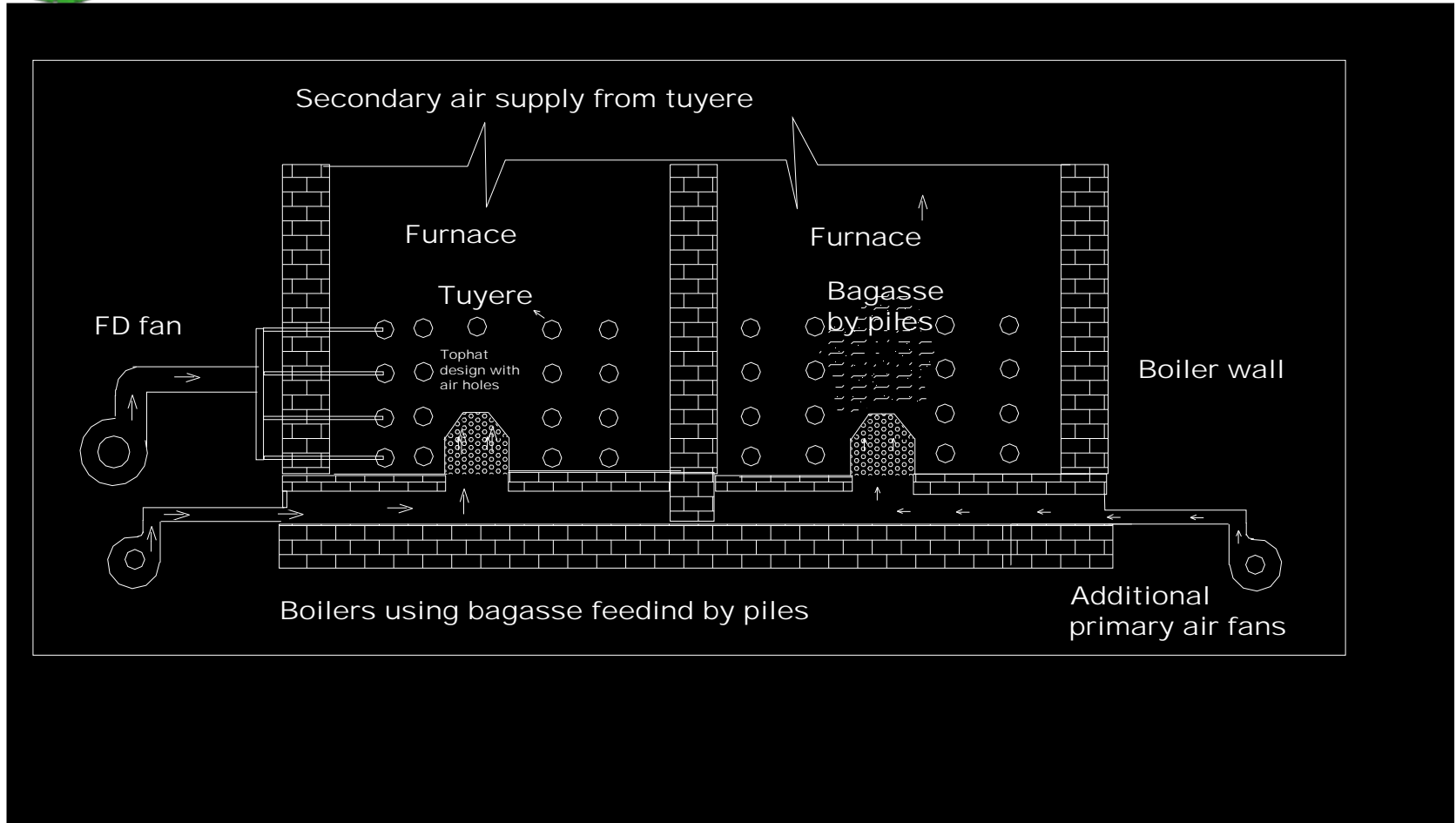
“Top Hat”

A “Top Hat” arrangement was the first improvement done at Uitvlugt followed by installation of a separate fan exclusively to blow air exclusively through the top hat and creating more turbulence in the furnace. The Furnace air is more meaningfully used by the addition of the top hat and keeps the boiler firing more efficiently.





Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production





Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production



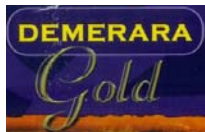


Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

Economizer

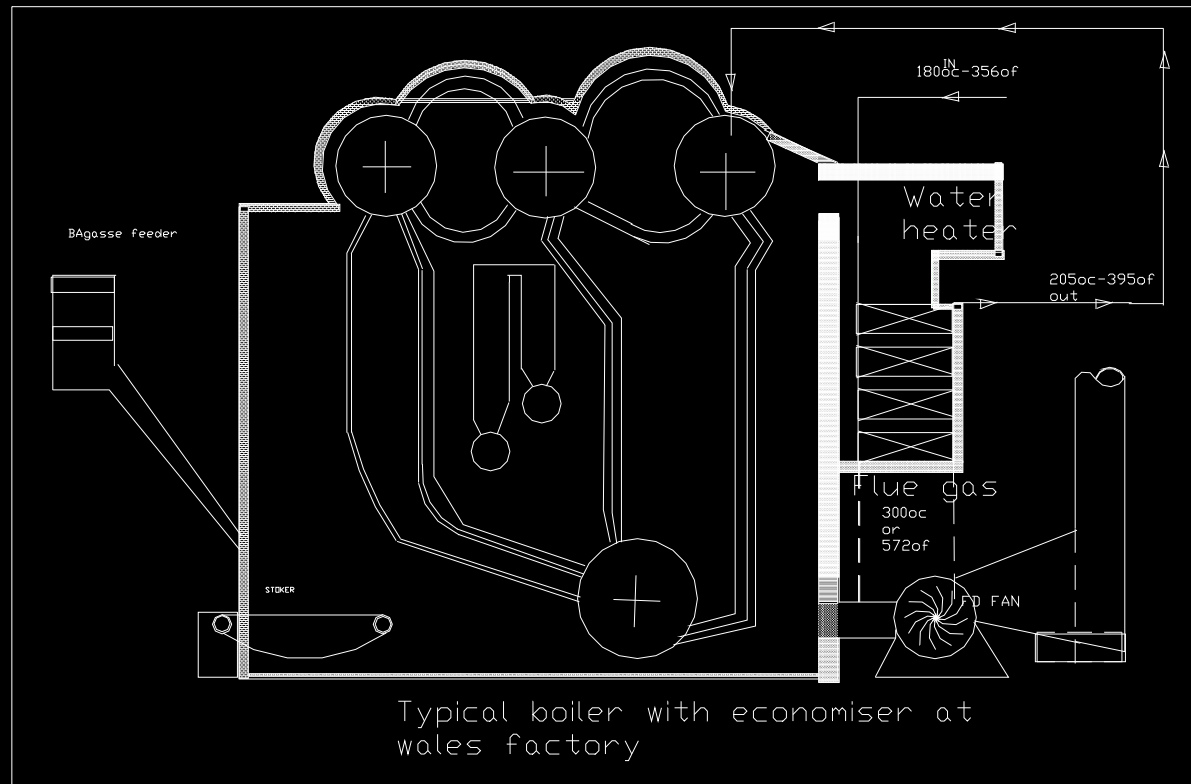
An Economizer is used downstream of Boiler bank to preheat the feed water by absorbing heat from hot exhaust gases.

Economiser was fabricated locally and installed at one location as a trial. Tubes were ordered from the manufacturer and the unit designed to benefit steam applications on water tube type boiler. Economizers can be retrofitted to many old boilers to increase the fuel efficiency of the boiler. Feed water can be heated up to a level about 20 - 30 C below saturation temperature of the boiler in the economizer. This significantly reduces the heat energy that would have been required to heat the water from 95° C.



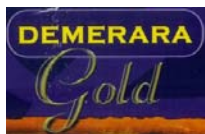


Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production





Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production





Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

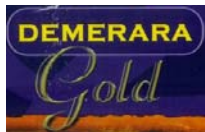
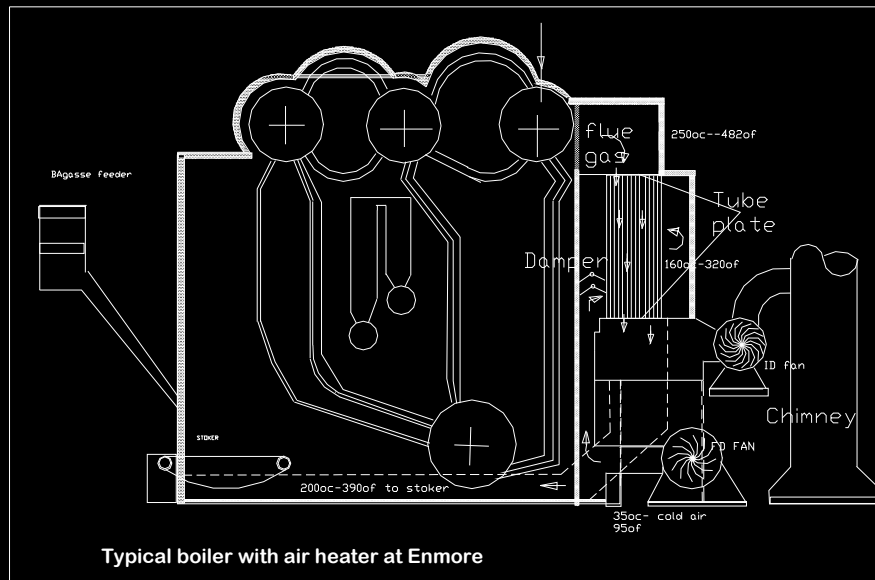
Air Heater

The Air heater is used to preheat combustion air before sending it to furnace for combustion. This also recovers heat from the exhaust gases and reduces the boiler outlet gas temperatures to a range between 160 to 180° C. Hot air helps combustion and hot air temperatures of 150 to 220° C have been achieved in Guysuco boilers. Hot air temperature is especially important, if fuel contains inherent moisture, like bagasse 49.2 %





Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production





Practical Approaches to overcome difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

CONCLUSION

Manual Loading of cane remains popular due to its cost as labourers depend on their earnings for to date survival. There are only 59 Bell loader machines in Guysuco, attached to different location and better practices engage with these machines would be an advantage to solve the labour problem. Factories today can cope with the loading of mud and extraneous matter. Special emphasis is placed on the processing technique, steam generation problems and seeking alternative solution to continue for efficiencies and increase production.





Practical Approaches to over come difficulties encountered by frequent labour shortages, out of cane and cane quality pose during harvesting and production

Low steam condition with the existing boilers are still considered for ten percent increase with excessive air supply, accessories for air heaters and modifications by design to improve the present system. The SRI Clarifier and Jord Filter that was installed in the past was well designed to cope with the settling characteristics of the mud coming into the factories. These changes were implemented by the company as an investment to produce sugar for the survival of the local Sugar Industry.

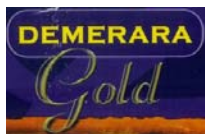




Practical Approaches to over come difficulties
encountered by frequent labour shortages, out of cane
and cane quality pose during harvesting and production



THANK YOU



Guyana Sugar Corporation Inc.
www.GuySuCo.com

