ISSCT PROCESSING WORKSHOP

Baton Rouge, Louisiana, USA 29 May to 1 June, 2006

"Cane Juice Purification Processes"

- Host
- **Programme**
- Abstracts
- Report

PROGRAMME
TOPIC: "Cane Juice Purification Processes"

The workshop covered various aspects of cane sugar processing from raw juice through evaporator supply. These comprised all approaches to juice purification and recent developments in juice handling and treatment, including new separation techniques aimed at producing different grades of sugar.

Sub topics:

- **Juice handling** – screening of juice, flow measurement and control, enzyme treatments.
- **Juice heating and liming** – different types of heater, direct contact heating, hot vs. cold liming, saccharate vs. milk of lime, control of lime addition, pH control.
- **Clarification** – Chemistry of clarification, types of clarifier, CFD studies, juice color, effect of cane quality, soda ash dosing to reduce evaporator scaling, control of mud consistency, flocculant chemistry and characteristics.
- **Rotary vacuum filtration** – optimization of filter operation, filter design, filter retention, mud handling, microbiological losses, mud disposal.
- **Other approaches to mud filtration** – horizontal belt filters, decanter centrifuges, pressure filtration.
- **Sulfitation** – SO_2 production, SO_2 absorption, optimization of color removal.
- **Filtrate clarification** – flotation clarification, quality of filtrate, sucrose losses.
- **Membrane filtration** – microfiltration, ultra- and nano-filtration, optimization of membrane plant and equipment, power requirements, treatment of retentate, impurity removal.
- **Ion exchange treatment of juice** – softening juices, de-ashing, regeneration.
- **Decolorization of juice** – nature of colorants, formation of color pre-cursors, sulfitation, carbon treatment, ion exchange decolorization, simulated moving bed equipment.
- **Treatment for direct consumption sugar** – blanco directo, mill white sugar, direct refined sugar production, organic sugar.

Details of Programme and Communications:

PROGRAMME	
SUNDAY 28 MAY, 2006	
15:00 - 17:00	**REGISTRATION**
17:00 - 19:00	Welcome Cocktails
MONDAY 29 MAY, 2006	
08:00 - 09:00	**REGISTRATION**
09:00 - 09:50	Welcome/Introduction **Welcome** - Dr D Boethel, Vice Chancellor, LSU AgCenter **Welcome** – F.A. Martin, President ASSCT (La Division) **Introduction** – J. Simon, GM American Sugar Cane League
Session 1: Juice Handling - Chairperson: V. Sens	
10:10 - 12:00	**Chairpersons Introduction**. V.Sens, Belgium **Reliability in the Determination of the Content of Insoluble Solids in Mixed Juice.** R. Arteaga, F. Morales and C. Martínez, Colombia **Bagacillo Removal by the Use of a Vibroscreen to Improve Quality and**

	Color of Sugar. K. Jain, Abdul Alim and V. M. Kulkarni. India **Solid/liquid separation with a Putsch Membrane Filter Press and a Sibomat Screen Filter.** D. Mergner and L. Briones, USA/Germany **Cane Juice Screening Trials and Use at The Andhra Sugars Ltd.** Mullapudi Narendranath, India. **Rotary Juice Screen,** Subodh V. Joshi, India. Effect of return of cush cush on extraction. P Schorn, South Africa. **The Use of Enzymes in Juice and Syrup Processing.** D.F. Day, USA **The Use of a-Amylase to Control Starch Levels in South African Cane Sugar Factories.** B.M. Schoonees, South Africa
Session 2: Heating and Liming – Chairperson: M.A. Godshall	
13:00 - 15:00	**Chairpersons Introduction**. M.A. Godshall, USA **Juice Heating within the Cane Juice Purification Process.** J.R. Braasch, P.C. Toebe, C. Starzinski, Germany/USA **Saccharate Liming at Felixton.** S Jaganath and W Dlamini, South Africa **Lime Saccharate Trials and Use at The Andhra Sugars Ltd.** Mullapudi Narendranath, India. **Milk of lime vs. saccharate liming.** K.T.K.F. Kong Win Chang and A.F. Lau Ah Wing, Mauritius. **Differences in the Factory Performance of Cold, Intermediate, and Hot Lime Clarification Processes in Raw Sugar Manufacture.** G. Eggleston and A. Monge, USA.
16:00 - 18:30	Swamp Tour
TUESDAY MAY 30, 2006	
Session 3: Clarification - Chairman: R. Steindl	
08:00 - 09:00	**Chairpersons Introduction**. R Steindl, Australia **Studies on the Action of Polyaluminum Coagulants** - M. A. Godshall, M. McKee, R. Triche and S. Moore, USA **Mud Transport in SRI Clarifiers.** R.J. Steindl, Australia **Mud Thickening in SRI Clarifiers.** R.J. Steindl, Australia **Application of Computational Fluid Dynamics in the Study of Sugarcane Juice Clarifiers -** L.F. Echeverri and P.W. Rein, USA **The Short Retention Clarifier,** Subodh V. Joshi, India
Session 3: Clarification - continued	
10:10 - 12:00	**Replacement of Lime with Soda Ash in Cane Juice Clarification.** M. Saska, USA **Effect of Clean Cane on Juice, Syrup and Sugar Color at The Andhra Sugars Ltd.** Mullapudi Narendranath, India. **The Use of Capillary Viscometry to Measure the Concentrations of Flocculant.** G R E Lionnet and M Pillay, South Africa **Control of Color and Removal of Impurities by Polymeric Clarification Technology.**M.K.Srivastava and P.P.Chaturvedi, India
Session 4: Rotary vacuum filters - Chairman P. Schorn	
12:00 - 14:50	**Chairpersons Introduction**. P Schorn, South Africa. **Filter design details**. Jord, (R.Steindl) Australia **Use of Flocculants and Bagacillo in Conditioning of Clarifier Mud.** M. Saska, USA **Mud Processing Options.** R.J. Steindl, Australia
Session 4: Rotary vacuum filters –continued	
15:10 - 17:00	**Microbiological Losses on Mud Handling.** D.F. Day, USA **Mud Recycling to Diffusers.** N Rajoo, South Africa **Filtrate Flotation Clarification.** L. Bento, J. Cuddihy and W. Simoneaux, USA

	Filtrate Clarification at The Andhra Sugars Ltd. Mullapudi Narendranath, India **Filtrate clarification by a mud settling process,** Subodh V. Joshi, India.
WEDNESDAY MAY 31, 2006	
08:00 - 16:30	**Visit Raceland and Cora Texas sugar mills and Audubon Sugar Institute, Saint Gabriel**
THURSDAY JUNE 1, 2006	
Session 5: Other purification techniques - Chairman: M. Saska	
08:00 - 09:50	**Chairpersons Introduction.** M Saska, USA **The Effects of Iron and pH on the Color of Clarified Sugarcane Juice.** L.R Madsen, USA **Separation of sugar colorants for further identification and quantification in sugar processing.** Luis Bento, USA. **Cane Juice Sulfitation at The Andhra Sugars Ltd.** Mullapudi Narendranath, India
Session 5: Other purification techniques – continued	
10:10 - 12:00	**Some hard lessons with membrane filtration.** S.J. Clarke, USA **Evaluation of a magnetic ion exchange (MIEX®) resin for application within sugar factory processes.** M. O'Shea, S. Staunton, K. Selby, T. Dahlke and M. Carr, Australia. **Options, benefits and constraints of the application of ion exchange systems, especially softening.** S.J. Clarke, USA.
Session 6: Direct consumption sugar production - Chairman: S. Clarke	
13:00 - 14:50	**Chairpersons Introduction,** S Clarke, USA **Bleaching of Sugar with Hydrogen Peroxide.** M. Saska, USA **The Application of WSM Technology to produce Direct White Sugar from Raw Cane Juice at Felixton Mill in South Africa.** C.R.C. Jensen, S.M. Kitching, S.F. Rosettenstein, F.E. Ahmed. South Africa **Direct Production of White Sugar.** P.W. Rein, L. Bento, USA
Session 6: Direct consumption sugar production – continued	
15:10 - 16:00	**Plantation White Sugar Production in Brazil.** D. Tostes Oliveira, Brazil **The Dedini and SAT processes for direct white sugar manufacture.** M. Saska, USA **Organic cane sugar.** S.J. Clarke, USA **A New Strategy for Sugar in Mauritius.** Dr Kassiap Deepchand, Mauritius. **ISSCT 2007 presentation.** P Schorn, South Africa
16:00 - 17:00	**Summary – V. Sens, ISSCT Factory Section Chairperson** **Process Section Meeting**
19:00	***WORKSHOP DINNER- LSU Faculty Club***