A 23 YEAR REVIEW OF FLUIDISED BED DRYING AT SEZELA

BY STANLEY MUNSAMY
HISTORY

• The dryers were described by G.F. Mann (SASTA 1983).

• Two 40 t/h dryer/coolers installed in 1982.

• The units still operating 23 years later in its original form.
ADVANTAGES OF FLUIDISED BED DRYERS

- About 60% of capital cost.

- Dryer itself has no rotating parts.

- Very small footprint (3.6m diameter)

- Low weight, less civils and structures.
DISADVANTAGES

• Large quantities of air required.
• Air serves dual function – drying and fluidising.
• 200kW F.D. Fan and 90kW I.D. Fan.
• Requires complex automation.
• Requires steady sugar flow – Centrifugal synchronising.
OPERATING DISADVANTAGES

- Unable to handle sticky sugar (low pol).
- Excessive sugar dust.
- Large quantities of water required to minimise dust – affects energy balance.
- Higher undetermined loss from sugar dust.
- Using Centrifugal as part dryer – longer spin cycles.
- Excessive bacterial growth in rotoclone and piping.
- If bed slumps unable to re-fluidise – labour required to dig choke.
# RESULTS

<table>
<thead>
<tr>
<th>SEASON</th>
<th>POL % SUGAR</th>
<th>MOIST. % SUGAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995/96</td>
<td>99.39</td>
<td>0.10</td>
</tr>
<tr>
<td>1996/97</td>
<td>99.38</td>
<td>0.12</td>
</tr>
<tr>
<td>1997/98</td>
<td>99.35</td>
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<tr>
<td>1998/99</td>
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<tr>
<td>1999/00</td>
<td>99.41</td>
<td>0.11</td>
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<tr>
<td>2000/01</td>
<td>99.39</td>
<td>0.11</td>
</tr>
<tr>
<td>2001/02</td>
<td>99.34</td>
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<td>2002/03</td>
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<tr>
<td>2003/04</td>
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<td>0.10</td>
</tr>
<tr>
<td>2004/05</td>
<td>99.38</td>
<td>0.10</td>
</tr>
</tbody>
</table>
CONCLUSION

• From an operating point – a rotary louvre dryer is preferable.
• However very efficient dryer/cooler.
• Low maintenance costs.
• Higher operating costs – energy balance, undetermined loss.
• Labour required to dig out chokes.