Lely Shuttle B, A Danish attempt for standardized sampler for AMS

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Number of robots in DK

Type of stable and cows
Milk recording july 2012

- AMS/VMS: 26% cows, 23% herds
- T.S: 7% cows, 20% herds
- Rotary: 9% cows, 5% herds
- Side-By-Side: 10% cows, 6% herds
- Herringbone: 47% cows, 45% herds
- Tandem: 1% cows, 1% herds

% cows vs % herds
# Automation in milk recording.

<table>
<thead>
<tr>
<th>Barcode Vials</th>
<th>Electronic Milk Meter (EMM)</th>
<th>Lely-Shuttle</th>
<th>Auto sampler</th>
<th>Ezi-Scanner (fixed installed meters)</th>
<th>Antenna</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Barcode Vials" /></td>
<td><img src="image2" alt="Electronic Milk Meter (EMM)" /></td>
<td><img src="image3" alt="Lely-Shuttle" /></td>
<td><img src="image4" alt="Auto sampler" /></td>
<td><img src="image5" alt="Ezi-Scanner (fixed installed meters)" /></td>
<td><img src="image6" alt="Antenna" /></td>
</tr>
</tbody>
</table>
The center is the sample - not the equipment!

We already paid to get the sample from the cow to the lab

Why not collect more information, and add value to the product line? – and money to the farmers purse!
### Requirement for data validity

<table>
<thead>
<tr>
<th>Error type</th>
<th>Seriousness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk, fat or protein</td>
<td>Problematic</td>
</tr>
<tr>
<td>Somatic Cell Count</td>
<td>Severe</td>
</tr>
<tr>
<td>Johnes Disease, Salmonella, PCR, Pregnancy, Ketosis</td>
<td>Critical</td>
</tr>
</tbody>
</table>
The idea.

Link between sample and cow ID during milking (more important with several robots)

Scanning or RFID

Communication with a datahandler

Easy to handle.

Easy to disassemble

Standard spare parts.

Easy to clean

Easy transportation

Reduced maintenance costs
From idea to result
Kommunikation with datahandler

- No paper
- Less handling when sampling is finish.
- Same system as the milkmeter
- The computer-program "Robolink" handle data.
Easy to handle
Rack with 60 vials
Glass wheel 60 vials
Simple connection

Tube for return air 100 cm
Tube for milksample 150 cm
Tube for moving glass wheel
Tube for moving valve up and down
Tube for main air
Power and communications cable
Male dust cap
Tru-test Datahandler socket
The sample construction

- A2 or A3 interface box.
- Valve bloc.
- Electronic boks.
- Cylinder for mowing valve from inner circle to outer circle.
- Pawl cylinder mowing glass whell forward.
- Valve cylinder move the valve up and down.
- Bar code reader
- Antenna for milk return tube
The whell construction

- Glass wheel
- Bottom plate
- Glass wheel roll
- Brake lower part
Easy to clean
Standard spareparts
Easy transportation
### Mainenence cost in DK

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Total maintenance Euro</strong></td>
<td>38.421</td>
<td>40.921</td>
<td>40.000</td>
<td>15.395</td>
<td>13.684</td>
</tr>
<tr>
<td><strong>Number of Shuttle-B in DK</strong></td>
<td>143</td>
<td>141</td>
<td>139</td>
<td>136</td>
<td>136</td>
</tr>
<tr>
<td><strong>Maintenance/pr. shuttle, Euro</strong></td>
<td>269</td>
<td>290</td>
<td>288</td>
<td>113</td>
<td>100</td>
</tr>
<tr>
<td><strong>Number of bokses</strong></td>
<td>1.150</td>
<td>1.168</td>
<td>1.169</td>
<td>1.071</td>
<td></td>
</tr>
<tr>
<td><strong>Number of herds</strong></td>
<td>420</td>
<td>428</td>
<td>435</td>
<td>415</td>
<td></td>
</tr>
<tr>
<td><strong>Number of cows</strong></td>
<td>76.000</td>
<td>76.400</td>
<td>75.800</td>
<td>67.400</td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance pr. cow, Euro</strong></td>
<td>0.51</td>
<td>0.54</td>
<td>0.53</td>
<td>0.23</td>
<td></td>
</tr>
</tbody>
</table>
Thanks for your attention.