Measuring Methods for Resistance to Shifting in Leno Fabrics

Ing Gregory Haezebrouck

ir Geert De Clercq, Hannelore Biebau
Prof. Dr. ir Lieva Van Langenhove, Dr. ir Simona Vasile
Prof. Dr. ir Joris Degrieck

Leno seminar - Ghent, 25th February 2010
Resistance to Shifting in Leno Fabrics

- Existing standards not applicable on gauze
- 3 methods evaluated
- Force in weft direction measured (lowest)
Needle Comb
Separated Yarn Systems
U-formed Frame
### Quantifying resistance to shifting

<table>
<thead>
<tr>
<th>method of measuring</th>
<th>Comb</th>
<th>Separated Yarn Systems</th>
<th>U-formed frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>value taken from graph (v)</td>
<td>slope of best fit curve</td>
<td>peak</td>
<td>peak</td>
</tr>
<tr>
<td>amount of crossing points (cp) concerned</td>
<td># weft yarns in 7 cm X # pairs in 4 cm</td>
<td># weft yarns in 7 cm X # pairs in 15 cm</td>
<td># pairs in 13 cm</td>
</tr>
<tr>
<td>mN/cp</td>
<td>v*1000 / #cp</td>
<td>v*1000 / #cp</td>
<td>v*1000 / #cp</td>
</tr>
<tr>
<td>note</td>
<td>7 cm = width of sample</td>
<td>7 cm = width of sample</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 cm = distance of comb</td>
<td>displacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 cm = distance between cut sections</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3 methods

Pros (+) & Cons (-)

<table>
<thead>
<tr>
<th>Sample preparation</th>
<th>+</th>
<th>-</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test itself</td>
<td>-</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>For high/low density?</td>
<td>rather low</td>
<td>rather low</td>
<td>high</td>
</tr>
<tr>
<td>For high/low resistance?</td>
<td>low</td>
<td>low / high</td>
<td>high</td>
</tr>
</tbody>
</table>
3 methods

Correlation between methods

Correlation 0.991

Correlation 0.750

Correlation 0.987
3 methods

Operator independency

Correlation 0.9896

Correlation 0.9925

Correlation 0.9838
3 methods

Repeated tests

Correlation 0.9861

Correlation 0.9970

Correlation 0.9976
evolution towards denser leno fabrics

breakage

return to existing methods
ISO 13936-1
ISO 13936-1

Seminar Leno-weaving - Measuring Methods for Resistance to Shifting
Ghent, 25 February 2010
Conclusions

- choice of method depends on:
  - density
  - resistance to shifting

- ISO 13936-1

- redesigned testing equipment can increase accuracy
Acknowledgments

- IWT Vlaanderen for the financial funding

- University College Ghent:
  - Gregory Haezebrouck, Geert De Clercq, Tom Martens, Leen Allaert, Bianca Smet, Laurent Verbrugge, Kurt Gabriël, Willy De Bruyne, Filip Ghekiere, Hannelore Biebau

- University Ghent:
  - Lieva Van Langenhove, Joris Degrieck, Simona Vasile, Johanna Louwagie, Jeanine De Somer

- 13 Industrial Partners
Seminar Leno-weaving - Measuring Methods for Resistance to Shifting

Ghent, 25 February 2010
Thank you for your attention!
For more Information on the Research on Needle Leno, feel free to contact:

ing Gregory Haezebrouck - gregory.haezebrouck@hogent.be
ir Geert De Clercq - geert.declercq@hogent.be

University College Ghent, Department of Textiles
Voskenslaan 362, B-9000 Gent, Belgium
Tel +32/9/242 42 97    Fax +32/9/242 42 92