Ecodesign methodology for recyclable textile coverings used in the European construction and transport industry

Adjunct Prof. Dr.-Ing. Yves-Simon Gloy

A research project funded under the 7th Framework Programme of the European Union under the programme NMP-FP/-2011-3.1-1
ecodesign for new products
under grant agreement no. 280751
Institut für Textiltechnik der RWTH Aachen University
EU Project EcoMeTex
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Content

- Institut für Textiltechnik der RWTH Aachen University
- EU Project EcoMeTex
Fibers and Textiles – Multiple Scale Model

Why fibers?
- strength & stiffness
- flexibility & elasticity
- surface & porosity

Therefore TEXTIL:
- Soft up to completely elastic ↔ rigid, firm
- bendable, foldable, drapable ↔ rigid and geometrically stable
- Highly absorbent ↔ close

5 - 10% of all material classes are fibers!

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Our Guiding Themes

Mobility
Construction
Energy & Environment
Health
ICT
Production
Product Development
Education
Textile Economy

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ITA – Facts and Figures

Staff:
- 85 Scientists
- 55 Service personnel
- 190 Graduate research assistants
- 50 Students majoring in textile technology each year

Research and development
- Publicity and third party funded research
- Academic and industrial education

Development and transfer
- Direct industrial research
- Further education

Budget: ca. 14,3 Mio. €

Fundamental Research ca. 30%
Industrial Funding ca. 31%
Industry-Related Public Funding ca. 35%
Subsidy ca. 4%

Strictly confidential

partially public

cal. 30%

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### Model at ITA

| International: | „Worldwide Network for tomorrow’s products“ |
| Industry:      | „Innovation for Industry and Society“ |
| Interdisciplinary: | „From Cardiac Valve to Valve Body“ |
| Integrated:    | „Research and Services as a whole“ |
New form of cooperation between industry and university:

- 15 relevant clusters
- Exchange of research results, employees, further resources
- Biggest European technology campus
- Ca. 2 Bill € investment till 2020
Content

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- EU Project EcoMeTex
Main facts regarding carpets

- Application of carpets
  - Private sector
  - Public sector
  - Transportation
  - Outdoor area
- Construction of a tufted carpet
  - Pile yarn: 30%
  - Primary backing: 10%
  - Precoat: 30%
  - Secondary backing: 30%
EcoMeTex – Motivation

- Product quality
- Product safety

RAW MATERIALS

PRODUCTION

DISTRIBUTION

STATE OF THE ART

USAGE

END OF LIFE

DISPOSAL

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EcoMeTex – Project Partners

for detailed info see: www.ecometex.eu

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EcoMeTex – EcoDesign Carpet

Idea:
Different approaches for the development of an innovative carpet

- Tufted carpets with a separation layer for recycling
- Woven carpets for direct recycling
- Actual design
- Idea: Different approaches for the development of an innovative carpet

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Problem:
• Very high requirements concerning dimensional stability and weight
• Usage of different materials

Aim:
• Easy separation of the pile thread and tufting medium and the carpet backing
• The upper part which consists of PA6 can subsequently be depolymerised in the recycling process
• After the separation, the carpet backing can be refined and reused as a filling material

Approach:
• Development of an innovative separation layer without affecting the characteristics of the carpet

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Possible structure of a separation layer carpet:

Pile thread:
• Consists of Econyl

Primary Backing:
• Polyamide based non-woven

Coating and separation layer:
• Adjusting the design of the coating to the requirements of the depolymerisation
• The utilization of dispersions enables the usage of a separation layer
• The utilization of additives in the glue layer enables a controllable predetermined breaking point in the carpet structure
EcoMeTex – Real life Test

If you want to see the test track, please visit us at the Institute of Textile Technology in Aachen

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EU Projects

Your added value:

- The development of your product/service portfolio via a strategic project that requires skills and competences which match yours.
- Integration of new markets and market needs in your product portfolio.
- Be present at the cutting-edge of innovation.
- Reinforce your brand image through participation in EU projects.
- Make contact with the leading international players in your filed.

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Thank you for your attention

Contact:

Univ.-Prof. Prof. h.c. Dr.-Ing. Dipl.-Wirt. Ing. Thomas Gries
Adjunct Prof Dr.-Ing Yves-Simon Gloy
Fon: +49 241 80 23470

Dipl.-Ing. Ulrike Rübsam
Fon: +49 241 80 24748

Dipl.-Ing. Achim Schröter
Fon: +49 241 80 23454

Institut für Textiltechnik der RWTH Aachen University
Otto-Blumenthal-Str.1
52074 Aachen Germany
Email: ecometex@ita.rwth-aachen.de