



Stichting Technologisch Kenniscentrum Textielverzorging

Cleaning Technology Performance

by Mr P.N.M. Wennekes

Texcare
Frankfurt
01-06-2008

TKT

- TKT is the Dutch technical knowledge center for the textile care industry
- TKT initiates and coordinates technical innovation projects for the Dutch and the European textile care industry
- TKT is closely affiliated to the Dutch national associations FTN (laundry) and Netex (dry cleaning), as well as CINET (the international committee of professional textile care).

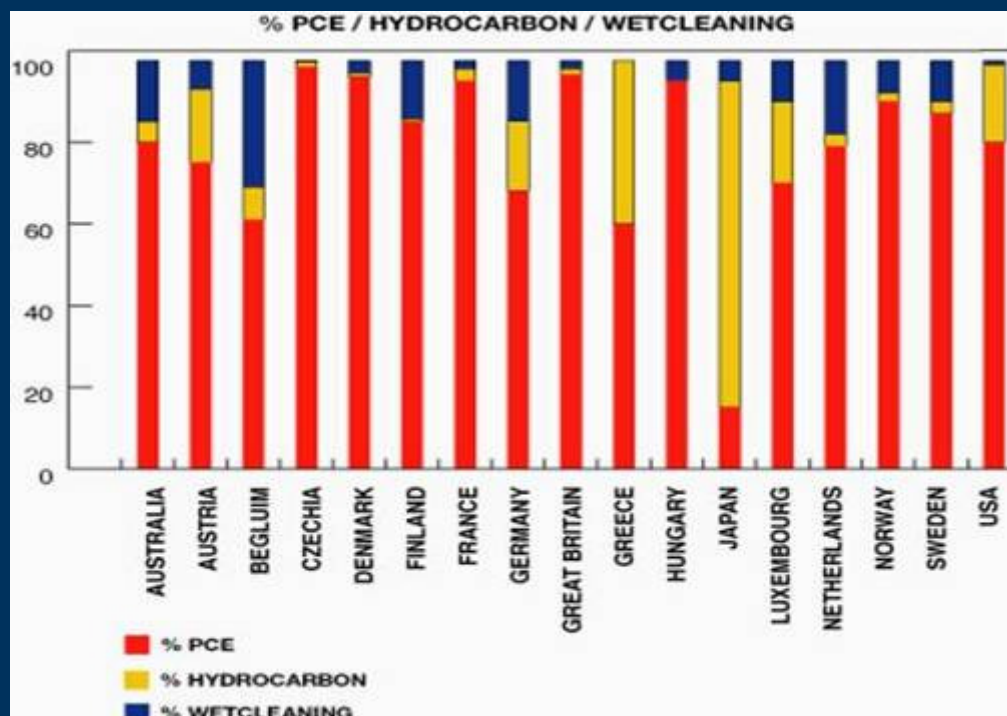
Cleaning Technology Performance

Content of the presentation:

- Introduction
- Solvents in Use
- Professional Wet Cleaning
- New Technologies in Textiles
- Long Term Perspective
- The Choice for the Future

Introduction

- Market share of different cleaning solvents in Europe and some major countries



Introduction

Developments :

- Increasing pressure from governments to minimize or even ban the use of Perc
- Introduction of alternative dry cleaning solvents Siloxane D5 (GreenEarth) and Liquid CO₂
- Recent introduction of care symbol for professional wet cleaning :



Solvents in use

PERC

- Perc is still the most widely applied solvent
- Perc is the most versatile and universal solvent
- Good cleaning performance
- Well known and mature technology
- California bans the purchase of Perc machines(2008)
- Which government will follow this example?

Solvents in use

Hydro Carbon Solvents

- Well established dry cleaning solvent technology
- Solid and growing market share
- Cleaning performance is somewhat less than Perc
 - To improve by processes and additives
- Risk of bacterial growth resulting in a very unpleasant smell
 - Prevention by proper maintenance
 - Prevention of excess water in the hydrocarbons

Solvents in use

Siloxane D5 (GreenEarth)

- Small but growing market presence in Europe
- Cleaning performance and flammability comparable to hydrocarbons
- Inappropriate for heavily soiled garments (work ware)
- Excellent textile care
 - Less crease
 - No typical “dry-cleaning” smell
 - Soft touch

Solvents in use

Siloxane D5 (GreenEarth)

- Longer cycle times than HC due to extended drying times
- Suitable for application in multi-solvent machines
- HC machines can be easily adapted (Water separator)
- Perc machines are more difficult (Centrifuging, Cycle times)
- Claim that Siloxane D5 has no adverse health effects

Solvents in use

Liquid CO₂

- Still a very small market share
- Technology not mature and still under development
- High investment costs due to high-pressure equipment
- Limited cleaning performance of particles and water soluble soil
- Excellent textile care
 - No “dry-cleaning” smell
 - No shrink
 - Less crease

Professional wet-cleaning

- Market share is expected to grow
 - Recent introduction of wet-cleaning symbol
 - Strong developments expected in technology
 - Good prospects for the application as a parallel technology to solvent cleaning
- Not to be confused with normal laundry processes
 - Low mechanical action
 - Gentle detergency
 - Suitable for sensitive garments



Professional wet-cleaning

- Fresh appearance and smell of the cleaned garments
- Cleaning performance with regard to water soluble and particle soil better than Perc
- Less effective in removing solvent soluble soil
- Extra finishing is required leading to higher labour costs
 - Crease
 - Shrinking
- Environmental friendly

New Technologies in Textiles

Recent developments will have a considerable impact on Dry-Cleaning in the future.

- Addition of functional properties on textiles
- Modified materials
- Application of coatings and finishes
- Yarn development
- Use of renewable sources

New Technologies in Textiles

Examples

- New pigments can generate a luminescent effect that will last over 12 hours
- Nanotechnology: Yarns and Textiles with a modified surface to add specific properties
- Textiles developed on basis of renewable sources like Bamboo and Lactic acid

New Technologies in Textiles

Risks and Opportunities

- Risk: removal of functional properties during Dry-Cleaning
- Opportunity: application & recharge of functionality during Dry-Cleaning
- New Technology in fabrics will require
 - New or adapted equipment
 - New Chemicals
 - New Processes
 - Less mechanical strain
 - Wet Cleaning
 -

Long Term Perspective

- Increasing pressure to ban the use of Perc
 - Example set by California
 - EU are preparing revision of VOC directive
 - Regulations will limit use in residential areas
- Perc is going to stay at the short and medium term
 - Especially for the cleaning of heavily soiled garments
- Increasing use of HC and Siloxane replacing Perc
 - The market share is expected to grow at the short and medium term
- Liquid CO₂ is probably only a long term alternative to Perc

Long Term Perspective

Professional Wet Cleaning

- The market share of professional wet cleaning is expected to grow strongly, especially in combination with other solvents
- The market share of dry clean only garments is expected to shrink, supporting the growth of Professional Wet-Cleaning
- At the long term, Professional Wet-Cleaning could be a potential universal cleaning technology

Possible Choice of the Future

Combination of Solvents and Professional Wet-Cleaning

- Combination comprises the best of both worlds:
 - Economy, freshness and cleaning power of wet-cleaning
 - If necessary, the textile care aspects of solvent cleaning
- Very promising combination from a sustainable point of view
 - Combination of wet-cleaning and cleaning in liquid CO₂
 - No Volatile Organic Solvents involved
- An increasing number of dry cleaning sites add wet-cleaning

Cleaning Technology Performance

Combination of Technologies on one site is most likely the best choice for the future.



Stichting Technologisch Kenniscentrum Textielverzorging

**Thank you for your
attention**

**TKT
PO Box 10
4060 GA Ophemert NL
E-mail: tkt@tkt-nl.com
www.tkt-nl.com**

Texcare 2008 Frankfurt