



Why recycle hand towels

- Prepare for **future legislation**
 - EU circular economy package – recycling 65% of municipal waste by 2030
 - Extended Producer Responsibility
 - Gewerbeabfallverordnung (GewAbfV), etc
- **Customers request sustainable** solution for the used paper hand towels
 - Waste reduction increasingly important among sustainability goals
- Essity **sustainability strategy**
 - Contribute to a Circular Society
- New recycled **fiber source**
 - Good fiber quality





Main challenges

Recycling of used hand towels

- Quality of collected material
 - Purity: ≥ 98% hand towels
 - Not mix with non-wet strong grades
- Not a defined grade, not included in EN643
- Regulatory
 - Product safety
- Logistic
 - Partnership
 - Cost efficiency
- Sustainable business model



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Understanding process & behaviors



WE STUDIED WASHROOM VISITORS AND CLEANING STAFF TO UNDERSTAND BEHAVIOURS...

...TO BE ABLE TO DESIGN SOLUTIONS DRIVEN BY **USER INSIGHTS**...



... MONITORING PROGRESS BY **SORTING ANALYSIS & CLOSE COOPERATION** WITH STAKEHOLDERS...

...WHICH **IMPROVED COMPLIANCE** TO > **98%** PURITY OF HAND TOWELS

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NEXT STEP:
SECURE **SCALABILITY, REPETABILITY AND EFFICIENCY** OF SOLUTION



Waste bins and signage

How it could look

Concept A



Waste bins and signage

How it could look

Concept A





Sorting analysis

DE pilot customer example

	BASELINE	WITH CONCEPT
INTERVENTION	NO INTERVENTION	 <ul style="list-style-type: none"> • TRAINING & QUICK GUIDE FOR CLEANERS • OPTIMIZED CLEANING TROLLEY • DOUBLE BIN & STICKERS • ONE PAGER IN WR
AMOUNT OF HAND TOWELS	81,1 %	98,7 %

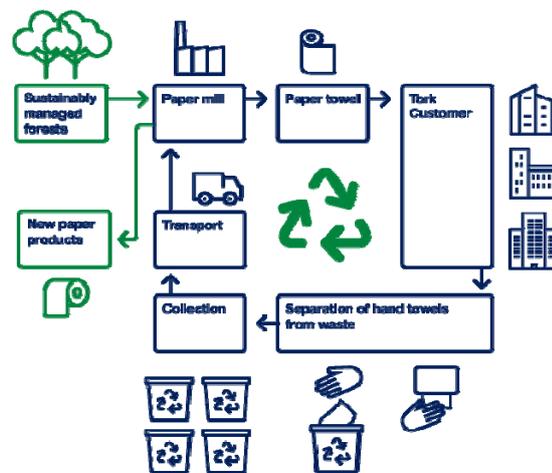
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Tork PaperCircle®

How the service works

- Tork together with a recycling partner collects used paper hand towels from customer sites
- Hand towels are recycled in local mills in order to minimizing transport
- Tork ownership of entire process makes customers' facility management easier, and guarantees that the used hand towels will be recycled into new paper products
- Developed in close cooperation with pilot customers and our mills



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Tork PaperCircle®

What is included



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Let's close the loop together

Tork offers a unique service collecting used hand towels and recycling them locally into new paper products

Our service helps you:



Close the loop ensuring that your used paper towels become new recycled paper products and not waste



Showcase your commitment to sustainability by providing statistics and feedback to use in communications



Reach your waste and carbon footprint targets to become a more sustainable and circular business



Draw attention to your sustainability initiatives through creative communication in the washroom, based on nudging and behavioral science

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Environmental benefits of recycling hand towels



- **Circular society**
Recycling of used hand towels reduces the amount of waste and contributes to the circular society.
- **Resource efficient society**
Recycling of used hand towels creates new raw material for tissue paper and thereby releases renewable material (pulpwood) for use elsewhere.
- **Climate benefits**
Recycling of used hand towels releases renewable material that becomes available for the renewable energy sector where it can be used to replace fossil energy. This will have a huge climate benefit.



*Results of a life cycle analysis (LCA) conducted by Essity Tork and verified by IVL, Swedish Environmental Research Institute Ltd, 2017, where the avoided processes have been taken into account.



Process learnings (1:2) Recycling of used hand towels



- **Technical evaluation in cooperation with our mills**
 - DE, Kostheim
 - NL, Cuijk
- **Combining wet strong broke line with DIP line**
 - High wet strength material requires increased pulping time/energy
 - Cleaning steps required to remove non-fiber material
 - Heating needed to insure sufficient microbial inactivation
- **Microbiology assessment**
 - Extensive MBA performed by RISE (Research Institute of Sweden)
 - Mapping of potential contaminations
 - Mapping of process conditions (time/temp curve)
 - Conclusion: the log-reductions from heat inactivation is far above what is reasonable needed





Process learnings (2:2)

Recycling of used hand towels

- **Learnings from pilots**
 - Purity of separately collected hand towels ≥ 98%
 - Microbiology measurements shows good decontamination throughout the process

- **Pros and cons compared to our other PfR grades**
 - Energy, time, complexity
 - + High yield, fiber length

- **Conclusion after pilots**
 - Separately collected hand towels are well suitable for recycling into new tissue products



Main challenges

Recycling of used hand towels

- **Quality of collected material** ✓
 - Purity: ≥ 98% hand towels
 - Not mix with non-wet strong grades

- **Not a defined grade, not included in EN643** ! **Cooperation is needed**

- **Regulatory** ✓
 - Product safety

- **Logistic**
 - Partnership ✓ **Cooperation is needed**
 - Cost efficiency

- **Sustainable business model** ✓
 - Service fee on par with current waste disposal cost





European Paper Recycling Award

- Tork PaperCircle® has been honored with special recognition award in the Information and Education category of the European Paper Recycling Awards, held on October 18th 2017 in the European Parliament
- The awards recognize innovative projects changing and enhancing the way we do paper recycling, to help Europe achieve its goal of a 74% paper recycling rate by 2020.



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