

Contribution to Eco innovation
by Hans Markowski, CEO KICI the Netherlands
and Coordinator of the T4T consortium

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WHEN BUSINESS MEETS THE ENVIRONMENT





Introduction

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Introduction

The Netherlands:

In a country like the Netherlands as an example, each year around 80 million kilos of second hand textiles are collected, 50% of which is not of the right quality (technically or economically) to be sold in second hand markets such as Eastern Europe or Africa. This 50% contains about 20% cotton, which is about 8 million kilos of cotton available per year.



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Introduction

The Netherlands:

another 124 million kilos is disposed of in the household waste, ending up in the incinerator. Each kilogram of textiles which is incinerated and not being reused is equal to an emission of 3,4 kg CO₂, thus harming the planet without any need to do so. In case only 50% of this amount of textiles is saved from the incinerator and again 20% would be cotton, then this adds another 12.4 million kilos of cotton waste which can be used for recycling.



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Value of second hand textiles

| | | | |
|---------------------|-----|------------|---|
| Crème | 10% | Profitable | → |
| Rewearable textiles | 40% | | → |
| Recyclable textiles | 40% | | → |
| Waste | 10% | | → |



2nd hands shops Eastern-Europe



trade in Africa



Recycling: cleaning-rags, fibres for re-use in carpets, blankets, etc.



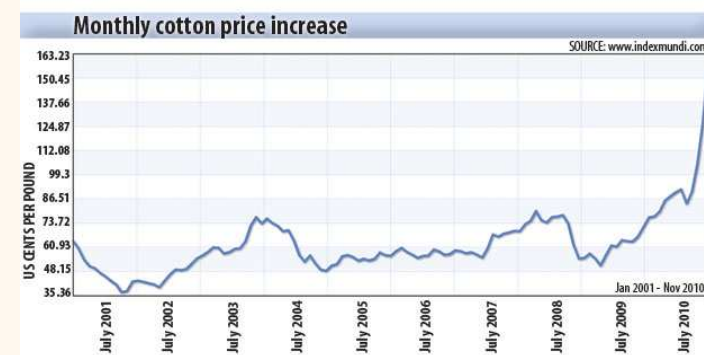
incineration





Why automated sorting

- Textile waste has a value, esp. with higher prices of raw materials
- The value increases when composition of sorted fraction is better known (fibres and colours)
- Post-consumer non wearable textiles often have unknown composition of multiple fibre sorts
- Cost of sorting in Europe/USA is higher than sales value of sorted fraction with limited and low value recycling options
- Handsorting in Asia/Africa is possible, but implies logistics



➔ Solution is automated sorting



Creating value in the chain

- Identification and automated sorting increases the quality of regained fibres
 - Chemical composition: wool, cotton, polyester, acrylic, ..
 - Colour: can prevent necessity to re-dyeing the textiles saving cost and environmental impact
- ➔ This creates opportunity to make new textiles from post consumer textile waste = Textiles4Textiles



Costs T4T Machine

| | | |
|-------------------------------------|----------|----------------|
| Investment (Machine) approx. | € | 431.000 |
| Fixed Costs per year | | |
| Depreciation (10 years) | € | 43.100 |
| Interest 50% | € | 12.930 |
| Maintenance | € | 12.930 |
| Annual updates library | € | 3.500 |
| Annual costs space (€50,- m2) | € | 35.000 |
| Total fixed costs per year | € | 107.460 |

| | | |
|---------------------------------------|----------|---------------|
| Manpower | | |
| Operators per shift | | 1,5 |
| Operator costs per year | € | 25.000 |
| Total costs per shift per year | € | 37.500 |





Annual costs



Sorting capacity/year

| shifts | KG | Energy euro/year | Manpower | Fixed costs | Total costs (Euro/yr) | Cost per kg (€/kg) |
|--------|------------|---------------------|-----------|-------------|--------------------------|-----------------------|
| 1 | 4.147.200 | € 20.736 | € 37.500 | € 107.460 | € 165.696 | 0,040 |
| 2 | 8.294.400 | € 41.472 | € 75.000 | € 107.460 | € 223.932 | 0,027 |
| 3 | 12.441.600 | € 62.208 | € 112.500 | € 107.460 | € 282.168 | 0,023 |

From these calculations it becomes clear that an extra selling price of minimal 0,02 - 0,04 €/kg is needed in order to compensate for the extra cost of sorting.



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Return on investment

- It is expected that prices of the sorted materials (100% materials and the common mixtures) will have commercial values between €0,30 and €0,50 per kg
- In terms of return on investment this implies that the automated sorting machine has a payback time of about 2,1 years. When the sorting machine is used in 2 or more shifts, the extra value will increase and the pay-back time will decrease sharply
- Sorting line can commercially 'rented' out to third parties.





Return on investment

| # shifts | kg sorted per yr | Investment (euro) | extra yield per kg (euro) | Extra yield per year (euro) | R O I (years) |
|----------|------------------|-------------------|---------------------------|-----------------------------|---------------|
| 1 | 4.147.200 | 431.000 | 0,050 | 207.552 | 2,076588 |
| 2 | 8.294.400 | 431.000 | 0,063 | 522.564 | 0,8247794 |
| 3 | 12.441.600 | 431.000 | 0,067 | 837.576 | 0,5145802 |





Unstable raw material prices

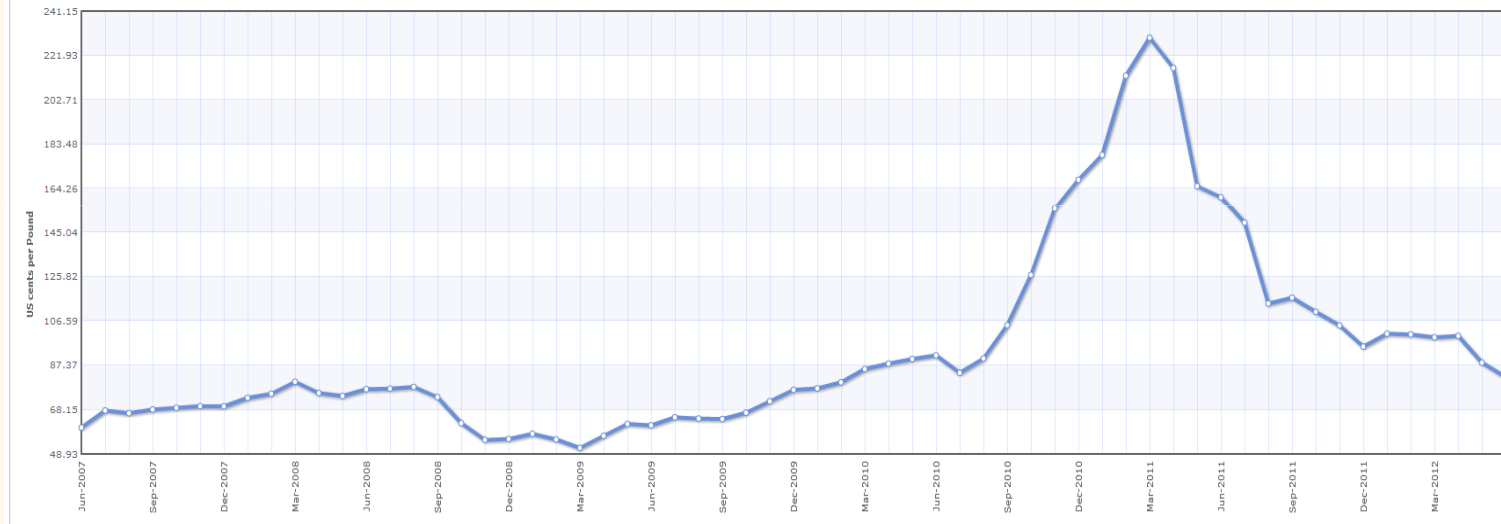
65.81

Average spot price in US cents per Pound for Upland cotton (color 41, leaf 4, staple 34)
As of: Tuesday, July 24, 2012
Source: USDA Market News

Cotton Monthly Price - US cents per Pound

Range 6m 1y 5y 10y 15y 20y 25y 30y

Jun 2007 - Jun 2012: 21.740 (35.97 %)



Description: Cotton, Cotlook 'A Index', Middling 1-3/32 inch staple, CFR Far Eastern ports, US cents per Pound

Unit: US cents per Pound



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Thank you!

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