

# Refinement of a cigarette pack

*G. Dreves, C. G. Munzenmayer, H. Larsen, J. W. Holmsnæs, O. Lund and Troels A. Nissen*

DTU Process & innovation, Technical University of Denmark

## INTRODUCTION

In many years there has been an increase in cigarette butts littered onto streets, nature trails and beaches throughout the country. The increase was especially significant after an additional smoke law became effective in august 2007, that restricted smoking in establishments over 40m<sup>2</sup>. Many initiated campaigns, with the focus of reducing cigarette associated litter, have seen the solutions as making people quit smoking. Our approach deviate from these by not focusing on the amount of smokers and cigarettes smoked, but more on the actual behavior and making sure the cigarette butts never land on the ground in the first place.

## HYPOTHESIS

Through our research we have ascertained that smokers, being the suppliers of this littering, have a tendency to discard cigarette butts when not having an ashtray or garbage can inside his or her general reach. The municipalities spends measurable resources on man-hours for manually collecting these cigarette butts and is in fact, given the comparison to the amount discarded on a daily basis, a very inefficient solution. These are the costs and environmental strains we will try to reduce.

## Methods

We have created a refinement of the existing packaging solution for 20 cigarettes. Cigarettes are each placed in single sections and by extraction of a cigarette, free space is created and reserved for the ashtray functionality that awaits the finished smoked cigarette. The embering cigarette butt can then be inserted from below into the empty compartment, which has a small bag, made of polyester film (BoPET), that will expand to the length of the butt. The ember is put out by a gel blister located in the small pocket's top, made of vinegar and citric acid. These fluids reduce the release of smells to a minimum and the few smells that would elude will be kept isolated from the packages surrounding environment due to a rubber lid covering the bottom. When the package is full, it is simply thrown in the garbage can and the municipals will not need to collect them from the streets.

## Conclusion

Our packaging solution will be more expensive both in production and milli person reserve (mPR) due to more material needed. But through a LCA on this refinement, we have estimated a reduced environmental impact, if just six or more cigarette butts were discarded in the pack - simply due to reduced need for street cleaning.