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SEPARATION OF PAPERBOARD / POLYMER COMPOSITE FOOD PACKAGING BY AUTONOMOUS DEBONDING

ABSTRACT

For a higher ecoefficiency the polymer content of food packaging should be as low as possible. In an ideal case the food protection is ensured by a thin polymer layer and the mechanical strength is due to a reinforcement by paper board. These composite materials are usually adhesively bonded and need to be debonded for separation and recycling of the compounds. This can be done manually by the consumer but only 20% do the manual debonding and deposit the compounds in the plastic and paper waste stream. This leads to the fact that such food packaging is not rated as recyclable according to the present packaging regulation as well as the upcoming PPWR.

Within the Fraunhofer internal project DEBOPack Fraunhofer IFAM developed a system for autonomous debonding of such composite packaging in cooperation with Fraunhofer IBP, UMSICHT and IVV. This cooperation allows a holistic view to the complex task of ecofriendly packaging.

Packaging design and adhesives will be shown that allow autonomous debonding of composite packaging used for cooled and refrigerated food within a few days at ambient conditions. Debonding is triggered by a combination of moisture and temperature, in the specific case room temperature. A specific debonding compound is activated by these triggers. The principle was developed for water-based adhesives, hot melt and HMPSA. These kinds of adhesives are examined for different kind of packaging design.