

# CHIP2FOIL

## Ultra thin chip integration process for low cost communicative polymer foils

### VISION & AIM

**CHIP2FOIL PROJECT NUMBER:**  
248160

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**WEBSITE:**  
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**TIMELINE:**  
01/01/2010 – 31/12/2012

**BUDGET AND FUNDING SCHEME:**  
CP  
Overall Cost: 4,668,697 €  
EC Funding: 2,980,000 €

**PROJECT PARTNERS:**

1. Technische Universiteit Delft, the Netherlands
2. Holst Centre/Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO) – The Netherlands
3. Orbotech ltd – Israel
4. Interuniversitair Micro-Electronica Centrum vzw (IMEC) – Belgium
5. Plastic Electronic GmbH – Austria
6. Koninklijke DSM nv – The Netherlands
7. Datacon Technology GmbH – Austria

**CHIP2FOIL** aims at realising a technology platform for low cost placement and interconnection of ultra thin chips on polymer foils, within a high volume, reel-to-reel production concept. This competence allows realising a broad variety of disposable communicative packages. These packages provide increased interaction between the packed product, the package and the user through near-field communication systems, allowing improved intelligent control of the logistic process of high volume applications like medicine and food. The chosen demonstrator is a Smart Blister package, which monitors the medicine taking behaviour of patients to ensure therapy compliance. Therapy non-compliance is a severe ethical and economic problem, leading to considerable numbers of casualties per year and high health care cost.

A breakthrough is needed to raise the throughput of ultra thin chip placement and interconnection while reducing the cost. Target values are: chip thickness 10-20µm, 10-50 chips/second, package thickness 30-50µm, and assembly cost reduction 50%.

The proposed **CHIP2FOIL** technical concept combines two main elements: (1) self-assembly for high speed chip placement with moderate accuracy, and (2) an adaptive circuitry approach, which compensates the initial placement errors and creates electrical interconnects after the chips have been placed.

The objectives of **CHIP2FOIL** are to develop the main technology building blocks for the self-assembly and the adaptive circuitry approach, to determine and evaluate a preferred integration of these techniques, and to demonstrate and evaluate a complete process flow by realising a communicative foil package for the Smart Blister application.

The consortium of 7 partners (4 industrial of which 1 global end-user, 2 research centres, 1 university) are leading partners in the field of flexible electronics and chip integration.