

Smart Materials / Smart Packaging

by
Paul Butler

So what are smart materials you may ask? It appears we use them without a 'second' thought. Take the quartz oscillator for example; it is the most common form of time and frequency signals and most of the 2 billion made annually end up in electronic circuits, clocks and wrist watches.

Paul Butler of Packaging Materials & Technologies Ltd explained that Shape Memory Alloys, which regain their shape when heated, are being used for spectacles, medical stents and space antennae. Smart grease is a motion control gel whose viscosity increases when shear is applied. Commonly used for CD tray movements.

Smart colours such as thermochromic inks have found their way into packaging such as temperature indicators for beer drinks. Wrist strap shaped sunburn indicators change colour when exposed to UV light and phosphorescent pigments can be incorporated into 'Glow in the Dark' torches.

Smart displays and imaging use hologram and reflective properties. Miniature embossed micro lenses (lenticular graphics) give the perception of movement and electro luminescence can produce light without heat. Examples include the SAS Radisson Tower of Wine display at Stanstead Airport and the Abbey banking sign in London.

For those who enjoy the piste, smart ski's incorporate anti vibration devices and Procter & Gamble have developed a smart comb which evaluates the condition and health of hair. Smart bandages, in development, will use bacteria sensors to warn of infection.

Consumer packaging has experienced significant material-based influences over the last 30 years or so, and packaging today bears little relationship to that experienced by previous generations. Glass and metal are being replaced by plastic alternatives. There has been an evolution in product packaging such as toothpaste in a tin to an aluminium then plastic tube and now in a pump pack.

Today there are significant changes afoot as consumers demand better packaging with improved functionality. Consumers are tired of packs that make demands on their time and attention, are difficult to open or dispose of properly, and contain instructions in font sizes that cannot easily be read.

Packaging now has to sell more than ever. There has to be an emotional connection with the consumer with a user friendly interface. Brand storytelling is being used to enlighten the customer; examples include Hovis bread wrappers with images of beans, cucumber and tomatoes. Oatly, a Swedish oat-based drink, tells the story of the farmer who grew the oats.

Disposable printed polymer electronics are being developed by Siemens, Philips and Dow. Cambridge Display Technologies are using organic semi conductors to print batteries. Odours are incorporated into adhesive seals such as coffee to give that instant impact. A shampoo's smell can also be incorporated into the bottle closure to allow the consumer to experience the fragrance of the product without destroying the tamper-evident seal..

Our thanks are extended to Paul for a most enlightening evening.

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