FLAT OUT ON THE CURVE

INTEGRATORS ARE ALWAYS TRYING TO INCORPORATE DISPLAYS AS SEAMLESSLY AS POSSIBLE. JOE YOUNG TAKES A CLOSER LOOK AT THE FLEXIBLE SCREENS AND SENSORS THAT COULD BE A GAME-CHANGER.

FlexEnable, a British company that was spun out of the University of Cambridge's Department of Physics, has developed a flexible electronics technology that can drive organic liquid crystal display (OLCD) and organic light-emitting diode (OLED) screens and sensors. They are paper-thin and flexible enough to be wrapped around a pencil.

Not only does this mean screens can be integrated more seamlessly, it will also make the way we interact with displays more natural.

So what exactly is the technology and how can we expect it to be used in the future?

In simple terms, the company has made advances in high-performance organic transistor technology to allow electronics to be manufactured on flexible plastic sheets. And the applications are numerous.

The screen on the curved fridge can be wrapped around the door. For a smart watch it can be wrapped around wrist. Heck the whole armband of a watch can be a screen!

Surfaces you wouldn't even dream about putting screens on suddenly offer realistic possibilities.

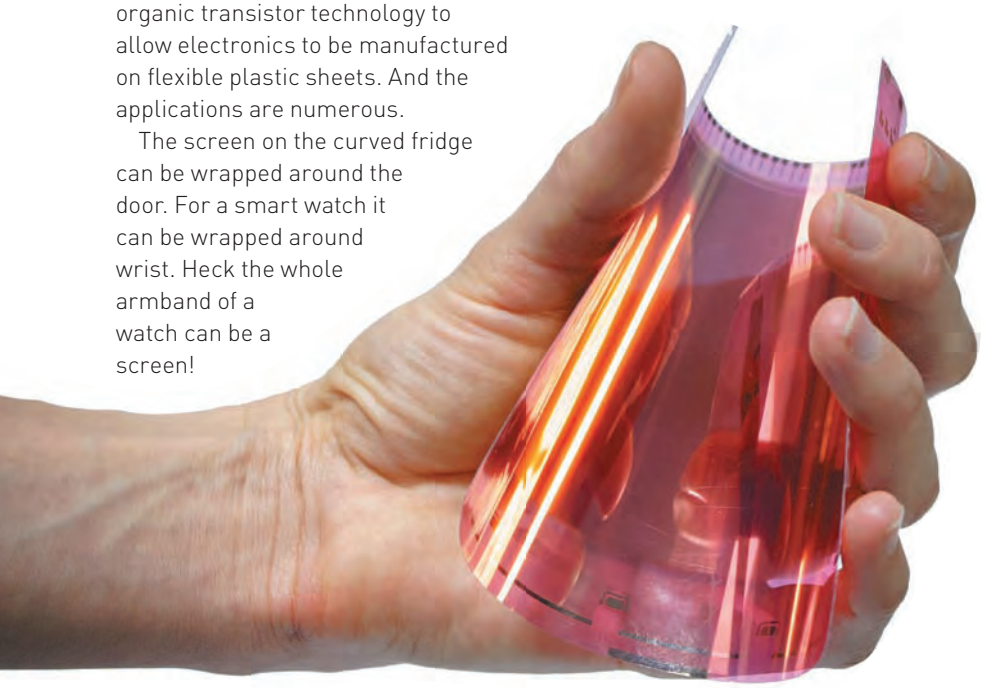
It may seem high-tech and therefore expensive, but FlexEnable has an advantage over the few other players in the flexible display sector.

"Every other flexible display out there uses amorphous silicon transistors, while our transistors are made of plastic substrates and are fundamentally flexible. They can be wrapped around a matchstick thousands of times," FlexEnable strategy director Paul Cain says.

"Silicon transistors need a very high temperature to manufacture. We have developed the ability to deposit organic semiconductors on cheap plastics that's used for example in making Coke bottles, to achieve flexible displays that can be made at low temperatures and therefore at a much lower cost."

Paul says the flexible display will cost no more than a glass screen, and it has the big advantage of being unbreakable.

Because of the bendable plastic, the displays are scratch and shatter proof, therefore ideal for little ones or industrial use – not to mention light.



An OLCD is 10 times lighter than glass, four times thinner, infinitely more robust and isn't any more expensive. But is the video quality reduced?

Paul says the answer to that question would have been 'yes' 10 years ago. However, today the electrical performance of the plastic transistors is better than that of silicon transistors in home TV sets.

"They can do as much colour, as high video rate and as large a video."

Then there is the sensor technology.

FlexEnable has produced prototypes of fingerprint, image and pressure sensors the size of coasters made on the flexible plastic.

This could mean big savings for companies such as Apple, which currently uses the more expensive silicon wafer-based technology to achieve fingerprint functionality.

Saving money is great, but the real excitement for integrators will be all the potential applications of large flexible sensors.

For home security you can have a sensor wrapped around a door handle to register fingerprints and grant access to a 'verified' person. No keys needed.

In a car, fingerprint sensors can be wrapped around a steering to identify the driver, turn on the engine, switch on the driver's favourite radio station and adjust the seat and temperature accordingly."

Paul says the company is currently working with manufacturers in Asia. He believes we'll see the first FlexEnable colour, video-rate displays and sensors in the second half of next year.

Until then we'll just have to wait for this flexy tech to be 'rolled out'. C

Flexenable
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