



Image source: PST Sensors.

Is It Time for Printed Temperature Sensors?

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IDTechEx thinks so. In recently updated IDTechEx report, “Printed and Flexible Sensors 2022-2032: Technologies, Players, Markets,” market researchers concluded that the “demand for printed temperature sensors is forecast to grow substantially over the next decade, with an increasing number of companies developing this technology.”

The report explains that the new class (printed and flexible) of temperature sensors is made from a solution-processable semiconductor. The sensor is coated between conductive rows and columns in a passive matrix architecture. Since both the temperature sensing semiconducting layer and the conductors can be printed onto flexible substrates such as polyethylene terephthalate (PET), this processing enables the low-cost production of a wide range of shapes and sizes.

The report sites two emerging application that could drive high volumes. With legislation and regulations for electric vehicles (EVs) increasing, printed temperature sensors are well suited for the thermal management for EV batteries. Also, printed temperature sensors are also highly promising for wearable healthcare applications, since printed thin-film sensors can adapt to the curvature of the skin.

While a lot of research and papers have been presented over the past years, very few companies are producing and selling printed temperature sensors.

Roger Grace of Roger Grace Associates, an industry expert who has followed printed/flexible sensors (PFS) and electronics technology for over 7 years, says the major commercialization of PFS has been in force and touch sensors. Two companies

that are currently producing printed temperature sensors are Brewer Science, Inc., USA and PST (for Printed Silicon Technology) Sensors of South Africa.

Grace observes, “One of the primary reasons the major sensor manufacturers are not engaged in PFS technology is that it is materials and chemistry/ink based and not electronics — and consequently incompatible with their existing experience knowledge base and fab equipment...thus presenting a major disruption to their historical business strategy .”

However, he believes that the major players have PFS sensors on their radar and are in the stealth mode.