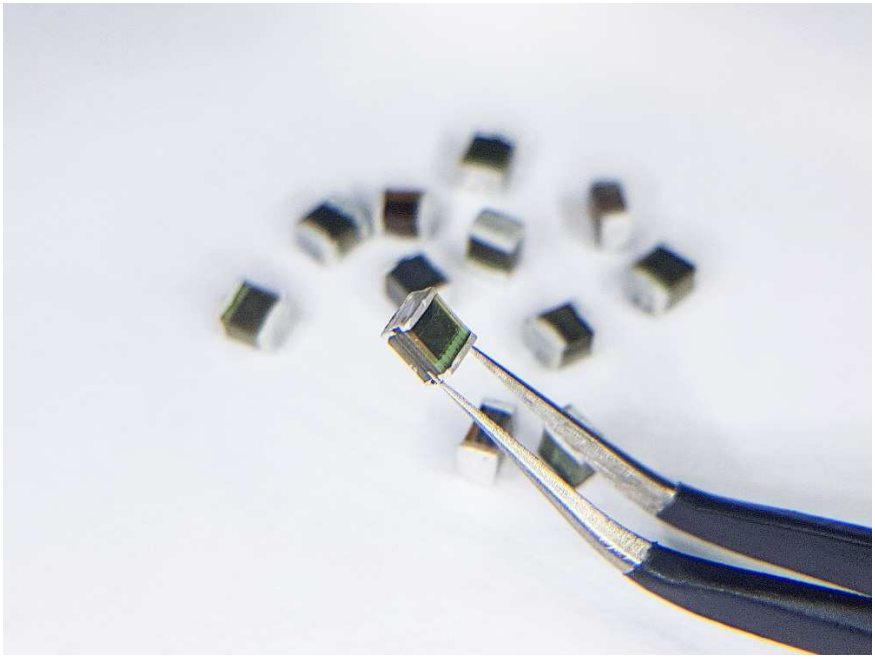

High scale integration, self-reliance, security of data, ease of manufacturing, simple recycling and low manufacturing costs are the main drivers of the wearables industry.

To meet all these requirements, it is now required to have energy micro-storage solutions available in a very compact form factor, easy to assemble and able to deliver high power on demand while being user-friendly and able to recharge in a few minutes.

Wearable designers are most of the time compelled to use rechargeable batteries (coin cell type or equivalent) which are bulky, expensive to assemble (manually) on printed circuit boards and costly to recycle; such batteries need normally their capacities to be oversized by the designers in order to deliver the pulse currents required by the application or must be power-assisted by one or several bulky and expensive supercapacitors. From a user perspective, recharging the battery takes normally one hour or more.

ITEN's charter is to manufacture fast-rechargeable solid-state micro-batteries in tiny SMD outlines which are pick-&-place and solder reflow compatible. They are recycled like any other SMD component. They are compatible with 10 to 20 years lifespan and operating temperatures up to -40°C to +85°C. These solid-state micro-batteries are safe and exhibit no risks for the human body since there is neither lithium metal nor flammable materials nor toxic materials inside.

The new ITEN rechargeable solid-state micro-battery is the world first combining all the following key features:

- High capacity (500 µA.h),
- Ability to deliver high pulse currents (350 -500 mA)
- Fast charging capability (charge from 0 to 80% in less than 5 minutes)
- Tiny SMD outline 3,2 x 2,5 x 1,7 mm

Contact : ITEN - Alain JUTANT – VP Sales & Business Development – alain.jutant@iten.com - October 10, 2019

This is the first micro-battery to really behave as a battery for energy storage and as a supercapacitor to deliver power and pulse currents required by RF transmission (Bluetooth, Zigbee, LORA, Sigfox or Nb-IoT standards) of data delivered by an autonomous wireless sensor node to a gateway; all that in a footprint of a few millimeter square and in a volume of around $12mm^3$.

This is actually a breakthrough in the field of energy micro-storage for wearables applications.

Thanks to their small sizes, their high energy storage densities and their costs, ITEN micro-batteries are used specially in emergency power backup applications (RTC, microcontrollers, memories and SSD). Their compactness, their fast-recharging capability, their high-power storage density and their long lifespan make them also ideal for smart watches and e-textiles, where such micro-batteries can also be used in conjunction with energy harvesters to store energy for instance collected from

- photo electric cells or from integrated solar panels
- vibrations
- thermal effects
- triboelectric effects.

More generally ITEN's products are ideal for all miniature and nomadic devices and concrete answers as soon as you need to back-up data in the event of power loss, to power-assist primary batteries and deliver peak currents, or to power up security modules in IoT and wearables applications as well.

About ITEN :

ITEN is the leading industrial company developing and manufacturing solid-state lithium-ion micro-batteries in the form of SMD components. Such micro-batteries are rechargeable In a few minutes and are not only able to store high energy density but also to deliver power and high peak currents (a few 100 milliampers) over a wide operating temperature range. ITEN's micro-batteries are the ideal solutions to back-up and power up applications in electronics, mobile and GPS devices, SSDs, medical devices, smart cards and security tokens, home and building automation, smart cities, wearables and e-textile, IoT and more generally wireless sensor networks.

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