

SmartSynch

SmartSynch® Inc., serving the electric utility industry since 2000, focuses on delivering automatic meter reading (AMR) systems that are linked through two-way communication architecture. SmartSynch's solution enables utilities to quickly implement a cost-effective, real-time metering solution to its most important customers. The plug-and-play nature of SmartMeters results in easy installation and supports a rapid deployment schedule. In addition, the SmartMeter SystemSM is a proven and reliable solution that enables the utility to offer a host of value-added services to its commercial and industrial customers. SmartSynch now has over twenty major U.S. utility companies as customers.

The latest wireless SmartMeter was developed on the Elster A3 ALPHA® meter – the prototype of which was completed in February of 2002. Power supply size, life and cost were key challenges faced by the company in creating this new wireless meter reader. Lead Acid batteries had been the original power source, but their life expectancy of only three to five years was undesirable, as were their relative heaviness and the costly battery replacement process. Leakage was also an issue in some instances.



A3 SmartMeter integrating Elster's A3 ALPHA® meter
with SmartSynch's SmartMeter module

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The company needed a power supply that would effectively run internal components at a generally constant rate, but one that could also handle the power peaks demanded by the unit's wireless connectivity – something that sharply reduces the life of most batteries. SmartSynch also needed to find a power source that could withstand operating temperatures ranging from 40°C to +80°C, extremes of which also reduce the operating performance and life of batteries, and can cause degradation in their packaging.

During the company's investigation into alternative power supply options, SmartSynch discovered ultracapacitors (also called "supercapacitors" or "electrochemical double-layer capacitors") as an innovative technology for energy storage and power delivery, and came to realize that ultracapacitors would provide many benefits over the components currently in use. One of the manufacturers SmartSynch considered as a possible supplier of ultracapacitors was Maxwell Technologies - a leader in ultracapacitor technology and manufacturing. The company chose Maxwell's BOOSTCAP® PC10 ultracapacitor, based not only on the high-quality of its components, competitive pricing, and availability due to the company's substantial production capabilities, but also because of the positive name Maxwell has in the industry.



Maxwell Technologies PC10 Ultracapacitor

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By using Maxwell Technologies' BOOSTCAP ultracapacitors in the SmartMeter, instead of more traditional energy sources such as Lithium Ion or Lead Acid batteries, the life expectancy of the power supply in the SmartMeter is extended to over ten years – representing a one hundred to three hundred percent improvement over lead acid batteries. The six PC10s in each unit are also lighter and smaller, and facilitate a simpler design-in process due to the components' configuration, which allows them to be mounted flat on the board. SmartSynch realized an overall cost savings of over two hundred dollars per unit – a savings that the company has been able to pass on to its customers. Additional per unit savings of between fifteen and twenty dollars is achieved through the smaller footprint of the new ultracapacitor-based power supply.

SmartSynch customers have provided very positive feedback on the new version of the SmartMeter, for which distribution began in early 2003. For the few hundred A3 SmartMeters in the field, customers have reported that the units are easy to install and operate, have better product integration, and in the area of performance the units are working well and meeting or exceeding all expectations.

The improvements in the performance and price of the SmartMeter resulting from the migration to Maxwell Technologies' BOOSTCAP ultracapacitors is so significant that SmartSynch considers the components a key selling point of the SmartMeter. In fact, such improvements have helped make possible the signing of an exclusive distribution agreement with Itron, one of the largest energy technology companies in the United States.

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