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# Darnell Group

# NEWS

## Energy Harvesting Reaches Major Market Inflection

Corona, California, November 19, 2009 – Darnell Group has determined that the “crossover” from the “Introduction” phase to the “Growth” phase for energy harvesting and related micro battery products will take place in the 2009/10 timeframe. As that happens, the market share of energy-harvesting-powered devices will grow rapidly compared with traditional wired or battery-powered wireless alternatives. Profitability of energy harvesting and microbattery companies will increase, and within a short time, the industry will begin to experience consolidation and mergers.

"Darnell Group has been following the energy harvesting market for more years than other analyst firms. In 2005, we recognized the potential of this technology to both capitalize on, and transform, the small but growing wireless sensor market. After working with a number of North American and European companies, this current report is the third edition of our Energy Harvesting report series," stated Linnea Brush, Senior Analyst with Darnell Group. "This detailed commercial analysis clearly identifies the emergence of third-generation products and the significant value propositions and cost savings enabled by these new devices. Those factors are transforming the market and driving it rapidly into the Growth phase of its development. This transition will provide companies with significant sales and 'branding' opportunities," Brush concluded.

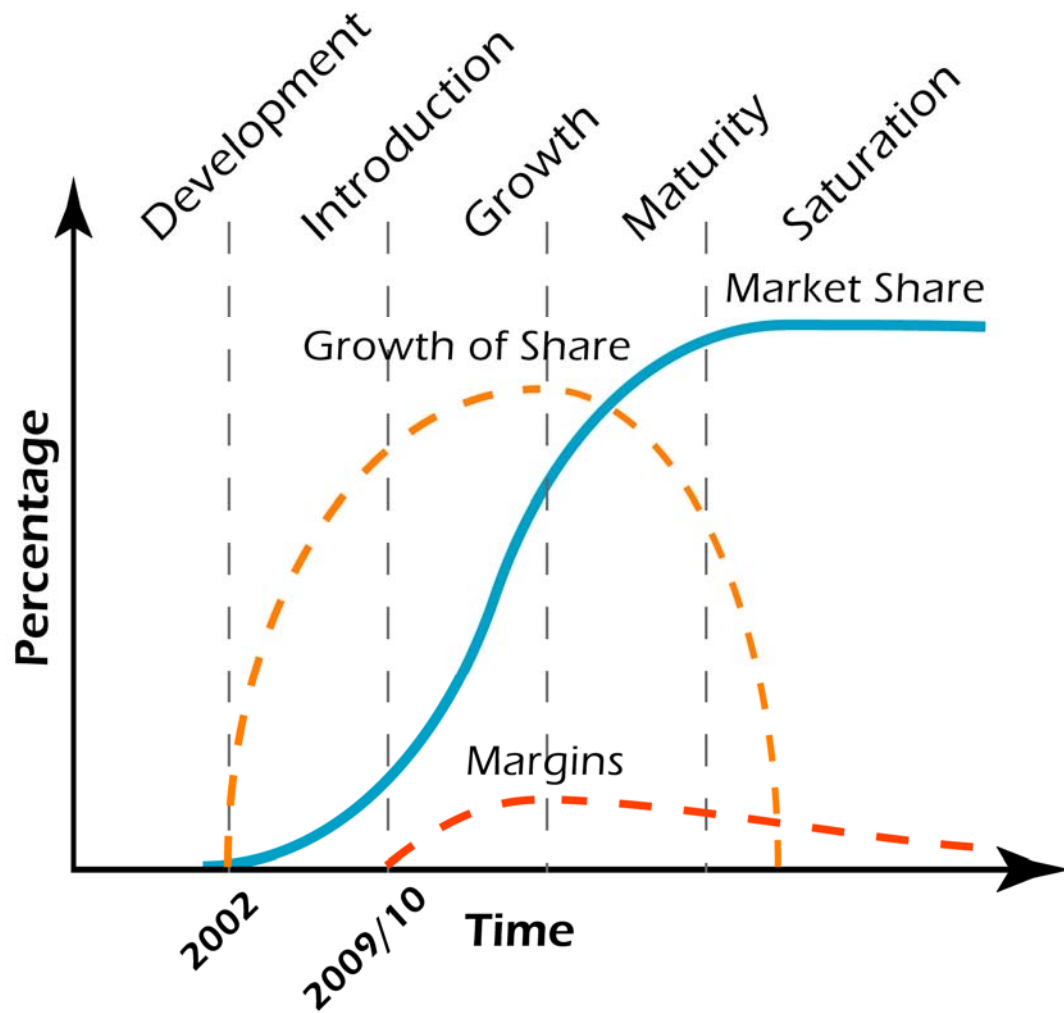
A detailed quantitative analysis of the relative costs of wired systems, battery-powered wireless systems and energy-harvesting-powered wireless systems is a key part of this third-edition analysis. The installed cost savings are consistent for both smaller and larger wireless versus wired systems. Smaller systems do not have as many nodes, however, so they do not have as many batteries to replace. Therefore, the cost savings for a smaller system are good, but battery replacement is less of an issue. In a large system, however, the number of nodes increases significantly, along with the number of batteries. This presents a good business case for energy harvesting, where the cost of battery replacement is added to the installed cost savings.

Energy harvesting is most known as a “battery-less” technology, with the advantage of providing power where batteries are a significant problem. However, it is also being touted as a “complementary” power source in conjunction with microbatteries. In many applications, energy harvesting will be exploited to run devices when they can, but will then store excess energy for later use. For example, most ambient energy harvesting transducers do not provide adequate peak power or the power reliability needed to perpetually power micro-electronic applications requiring autonomy, such as wireless sensor nodes, active RFID and RTLS tags, consumer wireless remote controls or security systems. As a result, microbatteries and supercapacitors will present concurrent market opportunities with energy harvesting solutions.

As part of this extensive and on-going effort, Darnell has also identified key industry issues and players, and brought them together with the international nanoPower Forum (nPF). Now heading into its fourth year, nPF will be held in May, 2010. This experience provides unique and useful insight into a market that is ready to break out of its emerging status. <http://nanopower.darnell.com/>

Darnell Group is the leading source for worldwide strategic information covering the full spectrum of power electronics, energy storage and generation. The company specializes in the economic/business analysis of emerging power markets and technologies. Complete information on “Energy Harvesting & Microbatteries: Market Forces and Demand Characteristics can be found at: [http://www.darnell.com/store/product\\_info.php?cPath=2\\_24\\_35&products\\_id=41](http://www.darnell.com/store/product_info.php?cPath=2_24_35&products_id=41)





**Product Life Cycle Curve for Energy Harvesting Devices**