

RECENT ARTICLES ON THE STATE OF THE MEMS INDUSTRY (LINKS TO THE FULL ARTICLES ARE AVAILABLE ON THE MIG WEB SITE)

Article #1

Title: MicroGen Gets Funding for MEMS-based Energy Harvester

Source: RFID Journal, February 2009

Article Highlights:

- The New York State Energy Research and Development Authority (NYSERDA) has awarded MicroGen Systems a \$300,000 contract for a project focused on developing an energy harvester application for capturing and storing energy for wireless sensor networks that leverages micro-electro-mechanical systems (MEMS).
- "The wireless sensor network market is growing quickly, yet is limited by existing short-lifetime batteries," said Robert Andosca, MicroGen's president and CEO, in a prepared statement. "Providing a green, virtually infinite alternative power source to traditional energy sources will significantly expand applications for wireless sensor networks and other technologies."

Article #2

Title: ADI consolidates fabs amid sales drop

Source: EETimes Asia, February 2009

Article Highlights:

- Analog Devices Inc. will accelerate plans to consolidate its two remaining U.S. fabs into one facility as part of an effort to permanently reduce spending in the face of further projected revenue decline of 5 to 15 percent, the company said Feb. 18.
- Fishman said the recession had caused most technology companies to go into "survival mode" and noted the existence of a "defeatist attitude" where companies expect only cost cutting going forward.
- "We tend to think about the future somewhat different," said Fishman, describing ADI's efforts to strike a balance between innovating in areas with the most potential payback while "ensuring a relentless focus on reducing our infrastructure costs worldwide." He said ADI strives to emerge from the downturn as a more innovative and cost effective than its closest competitors.

Article #3

Title: ESC market will rise against trend, driving MEMS demand, iSuppli says

Author: Christoph Hammerschmidt

Source: EETimes, December 2008

Article Highlights:

- Electronic Stability Control (ESC) systems are one of the few automotive electronics segments that will rise against the general automotive downturn trend, says market researcher iSuppli. For MEMS manufacturers, this will create opportunities.
- A major factor that drives the market are government mandates in the US and later in Europe. "This provides opportunities for at least six players new to the ESC market, either in development or sampling gyroscopes, and likewise four companies developing products for accelerometers."
- Another MEMS market segment is pressure sensors. These devices modulate the braking of individual wheels to realize changes in trajectory computed by the motion sensors of the ESC system.

Article #4

Title: Impact of the economic crisis on MEMS market

Source: Yole Development, November 26, 2008

Article Highlights:

- It is very clear that the current economic crisis is already having a strong impact on automotive business. As such, the MEMS automotive business will certainly remain flat in 2008 compared to 2007 at \$1.3B.
- Applications with strong growth due to legislation (e.g., TPMS, electronic stability systems) or those gaining market share on existing non MEMS technologies will be less impacted compared to the established MEMS automotive applications such as MAP-BAP and airbag sensors.
- "The impact of the downturn will be important in 2008 (\$500M of business will disappear) and very important in 2009 (\$1.5B off). But at YOLE Développement we believe that the business will be able to recover between now and 2012 to reach \$15B to \$16B for the worldwide MEMS markets.

Article #5

Title: 3-5pc MEMS growth this year, modest slowdown for 2009

Source: SEMI, USA, November 17, 2008

Article Highlights:

- For equipment makers, however, things will be worse, he notes, as capital spending will likely be cut back in the uncertainty, and end of year orders are likely to be pushed out. There's also lots of excess capacity in the industry.
- The sector's move to 8-inch wafers is adding big chunks of capacity to be absorbed. Ten MEMS companies are already using 8-inch wafers, and 12 more plan to move to the larger diameter in the next 18 months or so. Some of these companies will likely forge ahead with their investment because they need the larger diameter to do wafer level packaging, while others need the capacity for high volume automotive or consumer applications. But some others will now likely push out their plans a while now.
- Other analysts are somewhat less optimistic. Marlene Bourne, president and principal analyst of Bourne Research, projected negative growth in 2009 for all MEMS applications except sensors for industrial automation, which she argued remain by far the best market opportunity.
- Jeremie Bouchaud, director and principal analyst for MEMS at iSuppli, hazarded no specific prediction for next year, but was optimistic that consumer spending for items like MP3 players and games under \$200 or so for Christmas would keep up MEMS sales through 2008.
- Bouchaud noted that online sales of software applications that use motion sensing by accelerometers was generating revenue for both cell phone makers and network operators, assuring inclusion of the sensors in phones.
- If the market watchers had no clear vision of big changes, the investors were quite emphatic that it was a new reality for funding companies. "The IPO market is now closed, and when it reopens, companies will need to have a larger market and one or two quarters of profitability to go public," said Intel Capital's Tammi Smorynski, senior investment manager.

Article #6**Title: MEMS devices to feel impact of consumer slowdown****Author: Loring Wirbel****Source: EETimes, October 2008****Article Highlights:**

- MEMS device growth will experience an impact from the credit crisis, since consumer products make up more than 50 percent of the MEMS market, a new report from The Information Network predicts.
- Nevertheless, The Global MEMS Device, Equipment, and Materials Markets: Forecasts and Strategies estimates that new applications for MEMS in industrial, automotive, and other fields will lead to a 25 percent growth in 2008 to just over 2.5 billion units.

Article #7**Title: The Ultimate Business Tune-up for Times Like These****Authors: Adam Bluestein, Leigh Buchanan, Max Chafkin, Jason Del Rey, April Joyner, and Ryan McCarthy****Source: Inc. Magazine, January 2009****Article Highlights:**

- In a tough economy with credit extremely tight, big investments are not an option for most companies. Yet no business can afford to stand still. Inc. Magazine asked their favorite entrepreneurs for the tips and tricks they have used to pilot their businesses through difficult times. The result: 23 things you can do right now to energize your employees, wow your customers, and get your business back on track.
- Quotes include “Bring back the fun,” “Think like a tech start-up.,” “If you cut, cut deeply.,” “Take a risk.,” “Find ways to praise employees.,” “Listen. Really listen,” “Be brutally honest,” “Market more, not less,” “Get serious about service,” and “Plan for the upturn.”

Article #8

Title: Global disruptors: Steering through the storms

Authors: The Economist

Source: A report from the Economist Intelligence Unit, sponsored by PRTM, October 2008

Article Highlights:

- Based on an online questionnaire taken by 242 senior executives from around the world. The survey was supplemented by in-depth interviews with chief executive officers and chief operating officers. These executives came from Argentina, India, Turkey, the UK and the US, reflecting the global spread of the survey sample itself.
- Survey found that senior executives believe that operational strategy is one of the top three elements requiring change. For the most global of the firms participating in the survey, operational strategy came at the very top of their list. Many firms have already made significant operational changes in response to these forces, and say that they may yet make more. The areas that are most frequently changed are “organizational structure and talent management” and “customer operations”. These are the self-same areas that respondents say contribute most to the performance of their business.
- Other areas for operational change that were included in the survey in addition to organizational structure and talent management and customer operations were product operations, supply chain operations, physical footprint, network of partners in the value chain, information architecture, and regulatory and policy management.
- To prevail under these conditions, companies must be operationally agile - that is, their operational strategies must be adaptable, so that they can quickly change course when necessary. Winning companies demonstrate this adaptability, and are thus able not only to weather storms that arise but to make any storm, however threatening, work to their advantage.