

## MEMS Report (PPT)

## Dynamic Times for MEMS Microphones

By Jérémie Bouchaud and Richard Dixon, Principal Analyst and Senior Analyst, MEMS

**Forecast****Frequency, Time Period**

- Yearly
- 2006-2013

**Measures**

- Units
- ASP in US\$
- Revenue
- Market shares 2006 - 2009

**Detail Level**

- By application
- By MEMS microphone type : analog vs. digital, overall and by application

**Applications/Products Covered**

- Mobile handsets
- Laptops
- Headsets
- Digital Video Cameras
- Other consumer electronics (DSCs, MP3, PNDs, Set-top boxes...)
- Automotive
- Medical

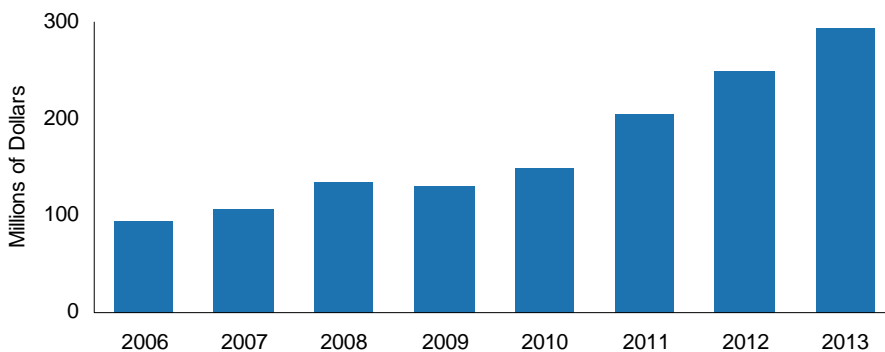
**Company Profiles of 14 MEMS Microphones Manufacturers**

- Corporate
- Manufacturing chain (in-house/fabless, foundry partners...)
- Status of commercialization
- Product portfolio
- Main customers
- Estimated shipment and revenue with MEMS microphones in 2008 and 2009

**End Product Database**

- Products featuring MEMS microphones identified through teardown and interviews (mobile handsets, laptops, cameras...)
- MEMS microphone supplier and product reference

MEMS microphones are one of the great success stories of MEMS. Only six years after product introduction, the market leader Knowles has shipped over a billion parts. That makes other companies hungry: Bosch and EPCOS bought their tickets for this high-speed train-ride in 2009. The track is bumpy, however, with 2009 witnessing a painful pull on the brakes with a 2% decline in revenue. Full speed will be regained in 2010 and MEMS will exceed one billion parts per year by 2013, largely because it outperforms conventional microphones on size, scalability, and offers easier assembly processes. New functions, requiring multiple microphones like noise cancellations and beam forming, are emerging in mobile handsets, headsets, laptops, video cameras and cars, all of which will benefit MEMS. The demand for digital microphones will also play a role. One should not underestimate the "old" electret condenser (ECM) technology though. Such devices are now available as SMD parts and are still significantly cheaper than MEMS. This report takes a detailed look at the opportunity for MEMS vs. ECM and the supplier landscape, including a unique analysis of market share and supplier agreements. Through numerous iSuppli teardowns analyses, we estimate the penetration of MEMS microphones and respective consumption of MEMS microphones at the top OEMs.

**Market for MEMS Microphones****Critical Questions Answered**

- What are the real advantages of MEMS microphones compared to ECM according to users?
- What will the penetration of MEMS vs. ECM be in cell phones and laptops in the next 4 years?
- What is the penetration of MEMS microphones at the top 5 mobile handset makers today?
- What will the suppliers' landscape likely be in 2013?
- Is there a market opportunity for higher performance MEMS microphones or is it purely price-driven?
- What is the opportunity for digital MEMS microphones? How and when will SLIMBus impact the market?

**Who Should Read This?**

- MEMS Component Manufacturers
  - Marketing executives
- MEMS Foundries
  - Sales
  - Marketing
- OEM (mobile handsets, laptops)
  - Purchasing
  - R&D

### Lead Analyst

#### Jérémie Bouchaud, Director

Mr. Bouchaud is head of market research for MEMS and is responsible for over 100 MEMS related studies on the field of consulting and market research. His breadth of knowledge of MEMS applications and individual markets, such as MEMS sensors for automotive, consumer markets and RF MEMS, is unique to the industry.

Jérémie is a graduate of the Munich University of Applied Sciences and of Ecole Supérieure de Commerce de Grenoble. He was in charge of technology transfer for sensors and MEMS at the German office of CEA-LETI (leading French R&D center in semiconductor and MEMS) between 1998 and 2000 when he joined WTC as co-founder. He has authored over 40 publications on market and applications of MEMS and sensors.

Jérémie speaks French, English and German.

#### Dr Richard Dixon, Senior Analyst

Richard Dixon is senior analyst for MEMS and the author of over 50 MEMS related consulting and market research studies.

Richard graduated from North Kent University with a degree in Materials Science and earned a doctorate from Surrey University on semiconductor characterization.

He served as a technology transfer engineer for RTI International for 5 years before serving as an analyst for WTC for consumer and automotive MEMS for clients as varied as Qualcomm, EPCOS, University of Munich and Robert Bosch.

Richard speaks English and German.

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