2005 FROST & SULLIVAN
Excellence in Technology Award

Radant MEMS, Inc.

Award Description

The Frost & Sullivan Award for Excellence in Technology is bestowed upon the company that has pioneered the development and introduction of an innovative technology into the market - a technology that has either impacted or has the potential to impact several market sectors. This Award recognizes a company's successful technology development that is expected to bring significant contributions to the industry in terms of adoption, change, and competitive posture. It also recognizes the overall technical excellence of a company and its commitment towards technology innovation.

Research Methodology

To choose the Award recipient, Frost & Sullivan's analyst team tracks technology innovation in key hi-tech markets. The selection process includes primary participant interviews and extensive primary and secondary research via the bottom-up approach. The analyst team shortlists candidates on the basis of a set of qualitative and quantitative measurements. The analyst also considers the pace of technology innovation, the potential relevance or significance of the technology to the overall industry. The ultimate Award recipient is chosen after a thorough evaluation of this research.

Measurement and Judging Criteria

In addition of the methodology described above, there are specific criteria used to determine the final rankings. The recipient of this Award has excelled based on one or more of the following criteria:

- Number of new technologies developed or introduced
- Significance of a technology(ies) in the industry
- Competitive advantage of technology(ies) vis-à-vis competing ones
- Ease of adoption of new technology(ies)
- Potential of technology(ies) to become an industry standard
- General impact of technology in terms of shifting R & D focus

The 2005 Frost & Sullivan Award for Excellence in Technology in the field of RF MEMS is presented to Radant MEMS, Inc. for its development of novel RF MEMS switches and assemblies for the government and commercial sectors. The company has taken the lead in a race to bring MEMS-based radio frequency (RF) switches to market and is one of the pioneers in this burgeoning field.

At just over two years old, Radant is growing fast in the space of RF MEMS switching. Radant MEMS began as a small group within Radant Technologies, Inc., a 25-year-old maker of antenna equipment that works closely with military research labs at nearby Hanscom Air Force Base. Radant had landed a contract to supply electronically steerable antennas to the Air Force to be employed for a fire control radar mounted on a balloon (aerostat). The company obtained some basic RF MEMS IP and started Radant MEMS as a separate company in May 2002.

Significantly, the U.S. Defense Advanced Research Agency (DARPA) selected the company two years ago to participate in a funding contest to develop high-performance switches. Here, Radant delivered several prototypes that are currently still in test and have exceeded 350-billion cycles. The company is now the sole participant in Phase III.

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Radant MEMS' electrostatically actuated microswitches have a demonstrated life of 100 billion switching cycles. This is significant in the light that industry-leading reliability now makes RF MEMS switches an attractive alternative to other mechanical and solid-state switches. Applications include cell phones, satellite, ultrasound, automatic test equipment, wireless LAN, and many other applications.

Unlike custom packaging or ceramic packages, a Radant MEMS switch has its own wafer level package, which reduces costs and complexity and increases reliability of customer systems. The active contacts in the switch are as small as 50 microns. The entire integrated patch is 1.5 millimeters square; Radant can squeeze 7,000 switches onto one standard six-inch silicon wafer, which it then caps all at once. The RF MEMS microswitch is a 3-terminal device that employs a cantilever beam and is fabricated using an all-metal, surface micromachining process on high-resistivity silicon. It operates in a hermetic environment obtained through a wafer-bonding process. Wafer packaging is more cost effective than either custom or ceramic packaging. It also offers a direct connection to the customer's system, thereby reducing complexity and increasing reliability.

Radant MEMS switches are an attractive alternative to solid state and electromagnetic relay switches because they offer several advantages, all of which reduce costs and increase application performance. These advantages include low power consumption, long life cycle (i.e. 100 billion cycles), form factor reduction, improved RF performance, low loss, high-isolation, linearity, and increased switching speed over electromagnetic relays

In conclusion, the 2005 Frost & Sullivan Award for Excellence in Technology recognizes Radant MEMS' groundbreaking research that has led to the introduction of advanced, highly sophisticated RF MEMS switches to the realm of communications.