Internet of Things (IoT) Will Boost the Market of Micro Electro Mechanical Systems (MEMS)

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According to the reports of McKinsey & Company and the Intellectual Property Office of the United Kingdom, among others, Internet of Things (IoT) is considered as one of the important future business opportunities. In a talk entitled "Next Big Thing" in the annual meeting of Taiwan Semiconductor Industry Association (TSIA), Morris Chang, the founder of Taiwan Semiconductor Manufacturing Company (TSMC), also asserts IoT to be the next big thing.

IoT mainly includes three major layers, namely "sensor layer", "communication layer", and "application layer", and the "sensor layer" is the key to the recent breakthrough in IoT technologies. "Sensor layer" includes various types of sensors, such as thermometer, hygrometer, altimeter, and magnetometer, etc. With the development of micro electro mechanical systems (MEMS), IoT can measure more parameters at a lower cost. According to the statistics of Bosch, almost seven billion devices are expected to equip network capabilities in 2015, and these network-accessible devices may include billions of sensors inside. Furthermore, based on Yole's report, the market value of MEMS sensors will exceed 20 billion USD by 2020, equivalent to a 100% growth compared to 10 billion in 2014.

Currently, more and more companies have committed themselves into R&D in relevant fields. Asia Pacific Microsystems, Inc., for example, noticed the trend of IoT years ago and has been actively developing sensors for mobile phones, medical devices, and vehicle systems. Recently, following the increasing popularity of wearable devices, their business scope has expanded to include manufacturing of sensing devices such as manometer, flowmeter, and blood-pressure meter, hoping to seize the tremendous business opportunities of IoT. In the meantime, to take an advantageous position in the markets of three-dimensional map, augmented reality (AR), and interactive advertising services, Bosch has been developing ten-axis MEMS sensor and planned for mass production, while Freescale has brought to the market a MEMS device incorporating three-axis accelerometer, three-axis magnetometer, three-axis gyroscope, and altimeter. It is out of question that the competition has heated up, and various companies are trying to gain market shares with different technologies.

Except for those already quite competitive, there are still new but promising fields to be explored. Hong-ren Chen, special assistant in Smart Microsystems Technology Center of Industrial Technology Research Institute (ITRI) indicates that, owing to the special

requirement on sensing methods, gas (or chemical) sensors such as CO, CO_2, or alcohol sensors requires additional technical development, so such sensors may become a future prospect in the MEMS industry.

Nevertheless, considering the competitiveness in relevant markets, patent system will be an important tool to maintain the advantageous position in relevant industries. Apple should be the first company that significantly benefits from sensors. In 2007, Apple took the lead in applying micro-electro accelerometer in i-Phone, bringing forth the sensor revolution in mobile phone industry. To maintain its advantage, Apple has obtained over 400 sensor-related invention patents, and the applications filed by Apple broadly cover touch control, image, sports, vibration sensing, data computation, drop sensing, and brightness sensing, etc. It can be seen that Apple not just uses patents to protect its own market, but goes beyond to make plans for smart sensors in the future. Apple Watch, the next-generation products of Apple, is also leading in the next-generation wearable devices.

With the tremendous business opportunities of IoT ahead, if your esteemed company is interested in exploring the field of sensors and considering to file patents to maintain your advantageous position, an experienced firm familiar with patent practices worldwide would be a good fit for your company to help reduce the expenses of responses and expedite the grant of your patent applications. Our firm, JCIP Group, which offers one-stop worldwide services in various aspects, including patent search, application, response, litigation, etc., and has experienced attorneys at law providing consulting services , will be your top choice.