LYON, France – November 2nd, 2016: Nowadays, the number of enforceable patents dedicated to miniaturized gas sensors is increasing worldwide, and several companies already stand out by their strong IP position. According Yole Développement’s analysts, the market size of gas sensors for consumer applications should grow from US$12 million in 2015 to more than US$95 million in 2021, with an upside of US$60 million if massive adoption of the innovative technologies is confirmed. With a 33% CAGR between 2014 and 2020, this segment is poised to experience the highest grow rate of the gas sensor market. All of these signs suggest the market start.

“In such emerging market, a strong IP position on miniaturized gas sensors is thus essential for companies to enter in this promising business,” comments Dr Fleur Thissandier, at KnowMade. KnowMade, a Yole Group’s company, has investigated the patent landscape of miniaturized gas sensors that could be used in consumer applications. The Technology Intelligence & IP Strategy consulting player identified more than 1,050 patented inventions worldwide up to August 2016 by more than 440 patent applicants.

KnowMade patent analysis entitled “Miniaturized Gas Sensors Patent Landscape Analysis” is now available and proposes an overview of the patent landscape, the IP profile of key players with a detailed ranking and an analysis of the relative strength of the top patent holders derived from their portfolio size, patent citation networks, countries of patent filings and current legal status of patents.

Today, mobile applications aggregate more and more sensors such as pressure sensors, inertial sensors…, and gas sensors could be the next sensors to be integrated in smart phones and/or wearables devices. Consumer applications are driving new gas sensors development to reduce cost, power consumption and size, especially with MEMS.

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1 IP*: Intellectual Properties
2 Source: Gas Sensor Technology & Market report, Yole Développement, February 2016
technologies. Such gas sensors are thus referred as “MEMS gas sensors”.

Technical and business requirements have so opened the door to innovation and added a new dimension to the global competition between gas sensor suppliers. Recent mergers and acquisitions reflect this thriving sector in structuration. For example, KnowMade’s analysts identified two main mergers:
- AMS, Applied Sensors, NXP and Cambridge CMOS
- TDK and Micronas

First patents on MEMS gas sensors was filed by Japanese companies in the early 1980’s by NEC. However patent activity really emerged between 1985 and 1994 with the apparition of European and American companies: Siemens, Fraunhofer, CEA, SRI, SPX…

Multiple start-ups have been created on the basis of CEA R&D results. A first wave of patent publications occurred between 1994 and 2003 induced by the emergence of IDMs (ST Microelectronics, Micronas, Honeywell, NGK, Bosch), American R&D labs (Caltech, University of Florida) and pure play gas sensor companies (CCMOS Sensors, Applied Sensor). Since then, patent publications have increased thanks to a high patent activity of Chinese universities and European players. The last 3 years newcomers started to file patents on MEMS gas sensors including AMS, Sensirion, APIX, NXP…

Currently, more than 760 patents are granted, mainly in China, Europe and USA, and more than 510 patent applications are pending, mainly in Europe, China and USA. KnowMade believes the significant ratio of patents in force and the high number of patent applications still in the pipeline worldwide is an indication of the technology maturity heralding a future ramp-up of the market of miniaturized gas sensors that could be used in consumer applications.

The most surprising result highlighted by KnowMade is probably the discrepancies between the market leaders including Honeywell, MSA, NGK and Figaro and the “patent” leaders such as Bosch, Siemens, Micronas and Cambridge CMOS.

“The market is about to change”, says Dr Nicolas Baron, CEO & Founder at KnowMade. “New patents and related devices are targeting new application, which may disrupt the market.”
Yole Group including KnowMade, System Plus Consulting and Yole Développement are active in this field all along the year. The group proposes several actions until the end of the year:

First, at SEMICON Europa, a detailed presentation entitled “Gas sensors market & technology trends” has been proposed by Dr Eric Mounier. Slides of this presentation are today available on i-micronews.com: click Gas sensors market.

A dedicated webcast will be also organized by Yole Group and will focus on gas sensor industry. Taking place on December 6, the agenda will detail the market, its supply chain and technical challenges as well as the patent landscape. More information will come soon (Contact: Clotilde Fabre).

A detailed description of Yole Group’s reports is available on i-micronews.com, MEMS & Sensors section.
FOR IMMEDIATE RELEASE

About the Miniaturized Gas Sensors Patent Landscape Analysis from KnowMade, partner of Yole Développement

Consumer applications open up new perspectives for gas sensors; Do the key market players have the best IP positions?

For more information on these reports, please contact David Jourdan - Phone: +33 472 83 01 90

Authors:

- Dr Fleur Thissandier works for KnowMade in the field of Microelectronics and Chemistry. She holds a PhD in Chemistry of Materials and Electrochemistry from CEA/INAC, Grenoble, France. She also holds a Chemistry Engineering Degree from the Superior National School of Chemistry (ENSCM), Montpellier, France
- Dr Nicolas Baron is CEO and co-founder of Knowmade. He leads the Physics Department. He holds a PhD in Physics from the University of Nice Sophia-Antipolis, plus a University Diploma in Intellectual Property Strategy and Innovation from the European Institute for Enterprise and Intellectual Property (IEEPI Strasbourg), France.

Companies listed:


About KnowMade - www.knowmade.com

Knowmade is a Technology Intelligence and IP Strategy consulting company specialized in analysis of patents and scientific information. The company supports R&D organizations, industrial companies and investors in their business development by helping them to understand their IP environment and follow technology trends. Knowmade is involved in Microelectronics & Optoelectronics, Compound Semiconductors, IC Manufacturing & Advanced Packaging, Power & RF Devices, MEMS & Sensors, Photonics, Micro & Nanotechnology, Biotech/Pharma, MedTech & Medical Devices. Knowmade provides Prior art search, Patent Landscape Analysis, Patent Valuation, Freedom-to-Operate Analysis, Litigation/Licensing support, Scientific Literature Landscape, Technology Scouting and Technology Tracking. Knowmade combines information search services, technology expertise, powerful analytics tools and proprietary methodologies for analyzing patents and scientific information. Knowmade’s analysts have an in-depth knowledge of scientific & patent databases and Intellectual Property. Contact: Nicolas Baron, Founder & CEO (nicolas.baron@knowmade.fr)

About Yole Développement - www.yole.fr

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, Yole Développement has expanded to include more than 50 employees working worldwide in MEMS, Compound Semiconductors, LED, Image Sensors, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.

The “More than Moore” company Yole and its partners, System Plus Consulting, Blumorpho and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business.

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