The new face of the power electronics industry

LYON, France – June 29, 2016: “2015 was an important year for power electronics industry”, announces Yole Développement (Yole), the “More than Moore” market research and strategy consulting company. Indeed 2015 corresponds to the beginning of ASP\(^1\) strong erosion due to the high production volume. 2015 is also related to the Chinese power electronics industry and its increasing role within the overall power electronics industry, the merge between Infineon Technologies and International Rectifier as well as an important technology evolution focused on power density increase... All these facts contribute to widely modify the power electronics landscape: Yole’s analysts are expecting lot of changes and offer you to discover the new face of the power electronics industry.

Under the new power electronics report “Status of the power electronics industry 2016”, Yole proposes an overview of the power electronics industry evolution: the company reviews the market segmentation including technology trends, market figures and drivers. It also points out the applications that are strongly impacted the development of power electronics technologies. The analysts present the top 25 power electronics players in 2015 and its evolution compared to the previous year. This technology and market analysis highlights the major trends and developments in the power electronics market and expectations for the future.

In 2015, the power electronics market have been contracted while most indicators were pointing out on the direction of the 2014 recovery. Indeed, 2015 has been a difficult year with the global value of power ICs\(^2\), power modules and discrete components decreasing from US$ 15.7 billion to US$ 15.2

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1 ASP: Average Selling Price
2 IC: Integrated Circuit
billion. This 3% decrease is mainly explained by the strong ASP decrease at IGBT\(^3\) module level.

“We expect this ASP trend to continue, mainly because of price pressure from the automotive market”, explains Coralie Le Bret, Technology & Market Analyst at Yole. “But overall IGBT module and global power electronics market value should increase, as volume growth outweighs this ASP fall”.

Indeed the automotive market will strengthen its position, as Yole is expecting EV/HEV\(^4\) market segment to represent a major part of the IGBT module market by 2021. Over this time the power MOSFET market is expected to grow slightly for all applications, going from US$1 billion to US$1.2 billion value.

In the “Status of Power Electronics Industry 2016” report Yole’s analysts forecast the power electronics market’s evolution, with two different scenarios depending for instance on the future of electrified vehicles. Thus many applications within the power electronics industry is depending on political decisions. These applications include renewable energies and electrified vehicles for instance. It is complex to estimate the evolution of the market: according to Yole’s nominal scenario, the power electronics market will reach US$27 billion by 2030; with a more pessimistic approach, such figure will be totally different.

From the technology side, the evolution is mainly driven by EV/HEV sector, as it is considered as the main power electronics market for the future. The power density increase is the main focus; it induces thermal management challenges that need to be overcome thanks to power packaging evolution. Overmolded modules and double side cooling seem to be the future mainstream, especially for mid-power applications demanding low price. Module design may evolve, removing layers of the package in order to optimize thermal management.

Another trend identified by Yole’s analysts is the one focused on WBG\(^5\) technologies. According to Yole, the adoption of WBG

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\(^3\) IGBT : Insulated Gate Bipolar Transistor  
\(^4\) EV/HEV: Electric and Hybrid Electric Vehicles  
\(^5\) WBG : Wide Band Gap
solutions will be generalized: most of players are already offering devices off-the-shelf and are involved in different R&D projects. “WBG devices are used in some applications thanks to the high energy density they offer and their efficiency”, asserts Coralie Le Bret from Yole. “In the future we expect multi-sourcing and price decrease to favor the WBG materials penetration. Packaging will have to be developed in accordance with the device in order to take the best of it”.

Yole Développement proposes a detailed description of this new technology and market analysis on i-micronews.com, power electronics reports section.
About *Status of the Power Electronics Industry 2016* report

*With strong price pressure and a very strong leader, how will the power electronics market and landscape evolve in the future?*

For more information about the report, please contact David Jourdan - Phone: +33 472 83 01 90

- **About the author:**
  Coralie Le Bret has been an analyst in power electronics and compound semiconductor technologies since 2014, at Yole Développement, the "More than Moore" market research and strategy consulting company. She graduated from INSA Lyon with an engineering degree in material sciences, specializing in semiconductors and microelectronics. At Yole Développement she is in charge of electro-mobility, and she uses her expertise on materials and semiconductors to follow power devices and power packaging evolution.

- **Companies cited in the report:**

**About Yole Développement** – [www.yole.fr](http://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, the Yole Développement group has expanded to include more than 50 collaborators worldwide covering 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 develop their business.

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