“IGBT application growth will lead the market to $6B+ by 2018,” says Yole Développement

Yole Développement announces its IGBT Markets and Application Trends report. Yole Développement’s report provides a complete analysis of every IGBT application, market metrics and forecasts, players, packaging evolution. It also focuses on six key applications: PV, wind, rail, UPS, EV/HEV and motor drives.

EV/HEV, renewable energies, motor drives, UPS and transportation: These key applications will drive IGBT growth to $6B by 2018

After a few hiccups in 2011 and 2012, Yole Développement expects a return to steady growth for the IGBT market; specifically, from $3.6B today to $6B by 2018.

Six key applications, which are extensively analyzed in this report, will fuel this growth: Motor drives is the largest one for IGBTs; in this report, Yole Développement’s analysts provide its splits for industrial, commercial and residential segments. Renewable energies (PV and wind) are also trending well.

Since they rely on government investments, they can be unpredictable, but Japan and several developing countries will make up for Europe’s slow-down. Mass transportation and UPS are based on infrastructure needs; thus, the need for greater efficiency is pushing these markets. As for hybrid and electric cars, question marks remain. Market growth will occur, but nobody can predict to what extent.

Our forecast is based on the latest Q1/2013 results and our own understanding of technology adoption.

IGBT in everyday life: consumer and home appliances are now part of the equation

In addition to the six key applications, every secondary application is analyzed in this report as well, and there are important trends not to be missed: the so-called “inverterization” trend is one of them. Home appliances increasingly require inverter-based motor drives, which provide better performance, comfort and efficiency: all “musts” for high-end products.

Consumers are also using more advanced home solutions, like induction-based plates for rice cookers. These new applications will contribute to IGBT’s growth in consumer applications.

25% drop in 2012: more a matter of circumstances than an actual crisis

In 2012 there was a crisis in the power devices markets, IGBTs in particular. This is explained by multiple factors:

- The slow-down of PV installations due to the reduction of feed-in-tariffs in Europe
- The slow-down of wind turbine installations in China
- The train accident in China that halted the high-speed train production line
- The fact that global economic recovery has been much slower than expected (thus affecting the consumer markets).
Also, Yole Développement believes that the 2011 earthquake in Japan caused system makers to secure their orders.

All these factors combine to explain 2011’s overproduction, which was paid for in 2012 and early 2013.

**IGBT faces competition from thyristors, SiC, GaN and MOSFET**

The IGBT market also faces competition from external, market-impacting trends. By following the component trends surrounding IGBT, we’ve observed many evolutions, all of which are explained in this report. In fact, IGBT drivers’ area has never been so active: there are a bunch of start-up companies proposing solutions offering more design flexibility and/or higher performance. Other companies are structuring offers at power stack level, and we’ve seen a lot of work put into power module packaging solutions.

“**IGBT is no longer the only high-end device solution. SiC devices are ready, and GaN devices are at sample stage. Adoption roadmaps are clearer now.** We’ve seen the first full SiC PV inverters based on MOSFETs or JFETs; we see it more as a displacement. IGBT is slowly moving to medium and-low end solutions, allowing SiC to handle higher voltages, and GaN to capitalize on lower voltages,” explains Alexandre Avron, Technology & Market Analyst, Power Electronics at Yole Développement.

The need for efficient energy solutions is stronger than ever, and IGBT devices are still undergoing developments and improvements: thinner wafers, more efficient production, integration of functionalities, etc. This is why Yole Développement believes that IGBT is not on its deathbed, nor even declining. No, there are plenty of opportunities still to be had.

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**Strong supply chain evolution with Asia entering the game**

The IGBT supply chain is not steady either, and we’ve observed a growing number of Asian companies involved or willing to be involved in this market. Chinese and Korean companies are part of this trend, and we’ve listed them in this report. Among the biggest are CSR (who acquired Dynex), and of course...
BYD; both are moving towards a vertically integrated business model. Also, foundries and fabless companies are targeting opportunities in the low-voltage, low-end market. As a first step, Asian players will probably remain with standard technologies and focus on production for local use.

On the other hand, European and U.S.-based players are pushing for innovation. Some, such as ON Semiconductor (with its division, Sanyo) and Alpha and Omega Semiconductor, are entering or re-entering the IGBT market.

About IGBT Markets and Application Trends report:

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- **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 in addition to corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, Yole Développement group has expanded to include more than 50 associates worldwide covering MEMS, Compound Semiconductors, LED, Image Sensors, Optoelectronics, Microfluidics & Medical, Photovoltaics, Advanced Packaging, Nanomaterials and Power Electronics. The group supports 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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