

# FutureHorizons



The Global Semiconductor Industry Analysts

## **Future Horizons Newsletter**

**July 2021**

## **Contents Page**

<b>Industry News by Company</b>	<b>Page 03 - 05</b>
<b>Industry News &amp; Trends</b>	<b>Page 06 - 07</b>
<b>East European News &amp; Trends</b>	<b>Page 08</b>
<b>World Economic Round Up</b>	<b>Page 09</b>
<b>Future Horizons &amp; Industry Events</b>	<b>Page 10</b>

## **Industry News By Company**

### **[GlobalFoundries To Build \\$4 Billion Chipmaking Plant In Singapore To Address Semiconductor Shortage](#)**

GlobalFoundries—controlled by United Arab Emirates sovereign wealth fund Mubadala Investment Co.—said Tuesday it will invest \$4 billion to build a chip manufacturing plant in Singapore to meet the unprecedented demand for semiconductors worldwide.

The U.S.-headquartered company held a virtual ground breaking ceremony to start the construction of the 300-millimeter fabrication plant in Singapore. When completed in 2023, the facility can produce 450,000 wafers annually, boosting GlobalFoundries' output in the city-state to 1.5 million wafers per year.

The Singapore expansion—supported by the Singapore government and some of GlobalFoundries' customers—is part of the group's global strategy to boost its output to meet the rapidly growing demand for semiconductors. The company said it also plans to expand capacity at manufacturing sites in the U.S. and Germany.

### **[TRENCHSTOP™ 5 WR6 Family In TO-247-3-HCC Housing Improves Isolation Voltage Rating And Thus The System Reliability](#)**

Munich, Germany – 30 June 2021 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) introduces the new 650 V TRENCHSTOP™ 5 WR6 family in a discrete housing. The family comes in a TO-247-3-HCC package and offers a broad portfolio comprising 20 A, 30 A, 40 A, 50 A, 60 A and 70 A current ratings. The devices can easily be used for replacing previous technologies like Infineon's TRENCHSTOP 5 WR5 and HighSpeed 3 H3 as well as competitor technologies. The family is optimized for power factor correction (PFC) for residential and commercial air conditioning systems as well as welding applications.

The TRENCHSTOP 5 WR6 switches provide very low conduction losses (30 A, 1,45 V at 25°C) as well as lowest switching losses (30 A, 1,55 mJ at 175°C). They feature a very low saturation voltage (V CE(sat)) of 1,45 V and a monolithically integrated diode with optimized forward voltage for the target applications. This results in best-in-class performance while enabling a low BOM cost. Additionally, the device leverages the performance advantage of the TRENCHSTOP 5 WR5 series, the predecessor to the TRENCHSTOP 5 WR6 series.

### **[QuEST Global Acquires Synapse Design To Boost Semiconductor Business](#)**

QuEST Global, a global product engineering and lifecycle services company, has acquired Synapse Design, a Silicon Valley-headquartered design and engineering services provider to top-tier semiconductor and systems companies worldwide. The financial details of the deal were not available.

This acquisition will enable QuEST's vision to grow its semiconductor business, add at least 2,000 engineers in the next four years while enhancing their ability to leverage the convergence of electronics, software, and digital engineering services. This will also enable QuEST to provide innovative, digital solutions to its customers, help improve its operational efficiency and solve the complex challenges in terms of cost and quality of products.

### **Renault Group And STMicroelectronics Enter Strategic Cooperation On Power Electronics**

Renault Group and STMicroelectronics today announced a strategic cooperation on the design, development, manufacturing, and supply to Renault Group of STMicroelectronics' products and related packaging solutions for the power electronics systems of battery-operated and hybrid vehicles. These technologies will have significant impacts on electric vehicles' driving range and charging by reducing power losses and improving efficiency, which will result in lower battery costs, more kilometres per charge, shorter charging time and reduced user-cost.

Renault Group and STMicroelectronics will work together with the objective of improving the power performance of Renault's Group's applications for electric and hybrid vehicles, based on STMicroelectronics' wide bandgap semiconductor technologies and products. The companies will collaborate on the development of efficient, rightsized, and modular components based on the understanding of Renault Group's technology needs for Silicon Carbide (SiC) devices, Gallium Nitride (GaN) transistors, along with related packages and modules. As Renault's key innovation partner, STMicroelectronics will benefit from significant volumes guaranteed for the annual usage of these power modules and transistors from 2026-2030.

### **STMicroelectronics Reveals Highly Integrated and Flexible Automotive LED Driver**

STMicroelectronics' ALED6000 single-chip automotive LED driver with integrated DC/DC converter is a low-BoM (Bill of Materials) solution that allows design flexibility and keeps the lighting intensity consistent as electrical conditions within the vehicle fluctuate.

Suitable for exterior lighting such as daytime running lights, headlights, rear lights, stop lights, and turn signals, as well as interior lighting, the ALED6000 drives a single string of LEDs at up to 3A and has a wide input-voltage range of 4.5V to 61V.

The ALED6000 implements digital dimming and has a dedicated pin to apply the PWM control signal. There is also an Enable pin and a Sync pin that ensures low noise in multi-device applications. The output current is accurate within 3.2% and is monitored efficiently with a sense resistor that has a typical voltage drop of 250mV. The quiescent current is extremely low, at just 2.4mA in operation and 11µA in shutdown. Also featuring a VBIAS auxiliary-input pin and pulse-skipping operation at light load, the ALED6000 ensures high efficiency across the load range.

## **Synopsys to Acquire BISTel Semiconductor and FPD Units**

Synopsys has signed a definitive agreement to acquire the semiconductor and flat panel display (FPD) solutions from BISTel.

Synopsys Inc. has signed a definitive agreement to acquire the semiconductor and flat panel display (FPD) solutions from BISTel, a leader in engineering equipment systems and AI applications for semiconductor smart manufacturing, headquartered in South Korea. When completed, the acquisition will broaden Synopsys' industry-leading process control solutions for semiconductor fabs with an integrated and comprehensive yield management and prediction solution to enhance manufacturing quality and efficiency. The acquisition will also add a team of experienced engineers to accelerate technology development using real-time manufacturing predictive analysis.

The transaction is subject to customary closing conditions and is expected to close in Synopsys' fourth quarter of fiscal year 2021. The terms of the deal, which are not material to Synopsys' financials, are not being disclosed.

## **Industry News & Trends**

### **[Samsung Turns South Korea Garrison City Into Chipmaking Boom Town](#)**

SEOUL -- At first glance, the massive Samsung semiconductor fabrication plant seems almost out of place in Pyeongtaek, which not that long ago was known more for its open pastures and barracks that housed thousands of American troops.

But this port city 50 km south of South Korea's capital has grown into a high-tech hub as well over the past decade.

It was only 10 years ago this place used to be a pasture smelling of manure," said Khang Yong-ho, a 65-year-old cab driver. "To think they'd build such huge buildings in this place."

Under construction is the third of what will become a six-building chipmaking complex. The finished buildings, standing 83-meters tall and 500 meters across, are accentuated with tri-color block patterns.

### **[Quadric Hybrid Architecture Takes On AI, Computer Vision](#)**

Quadric, a Silicon Valley startup, has built an accelerator designed to speed both AI and standard computer vision algorithm workloads for edge devices such as robots, factory automation and medical imaging. The company's hardware architecture is a novel hybrid data-flow and Von Neumann design which can handle workloads including neural networks, machine learning, computer vision, DSP and basic linear algebra subprograms.

"Right from the start, we were very aware that AI is not the only application that's needed for on-device computing on edge devices," Quadric's CEO Veerbhan Kheterpal told EE Times. "The developers of these products need for the full system to be able to run classical high-performance computing algorithms, along with AI. That's really the full system requirements."

Kheterpal stressed that the architecture is not a collection of accelerators for individual workloads. Rather, it's a unified architecture with a data-parallel instruction set designed to accelerate varied workloads, including AI inference.

### **[TSMC Will Reportedly Favour Apple And Carmakers As Semiconductor Shortages Continue](#)**

TSMC will prioritize Apple and car makers when deciding who to build chips for, according to a report.

A global semiconductor shortage is impacting chipmakers like TSMC.

Apple and carmakers are set to be at the front of the queue for chips made by TSMC, according to a new report. This as a global semiconductor shortage continues to hamper the production of chips.

According to a new DigiTimes report, TSMC has decided that it will prioritize Apple and carmakers ahead of those who make PCs, servers, and networking devices.

TSMC will give supply priorities to orders for automotive ICs and those placed by Apple in the third quarter of 2021, followed by chip orders for PCs, servers and networking devices, according to sources at fabless chipmakers.

Apple has some high-profile product launches still to come this year with new iPhones and Apple Watches an almost certainty. Apple will want to make sure iPhone 13 supply is enough to meet demand later this fall and TSMC is the company tasked with building the Apple-designed chips that will live inside. The same goes for any further Apple silicon Macs that could be announced later this year, too.

### **Diamond Could Take Chips Beyond Moore's Law Era**

Adam Khan, the founder and chairman of Akhan Semiconductor, expects diamond to be just one of the materials that will help take semiconductors to a new stage beyond the Moore's Law era.

In 2014, the US Department of Energy's Argonne National Laboratory announced an intellectual property licensing agreement with Akhan, in a public-private partnership aimed at commercializing diamond-based semiconductor technologies. Today, with a strong patent portfolio and a pilot facility for chemical vapor deposition of diamond on silicon wafers, the company aims to be first to test a technology that promises to make enforcement of Moore's Law less urgent.

"There's sort of two camps, right?" Khan said in an interview with EE Times. "There's the Moore's Law, the more-than-Moore's Law group, right? And then there's the what-comes-next group."

### **Welsh Chip Deal Will Show How UK's View On Foreign Owners Is Evolving**

How important is a Welsh factory making silicon wafers? Boris Johnson's government, goaded by critics of Newport Wafer Fab's sale to Chinese-backed Nexperia, reckons it may be a matter of national security and is calling for a review of the deal.

About time, said the likes of Tom Tugendhat, the Tory MP who has led calls for an investigation on national security grounds. "If the sale of our largest chipmaker at a time of global shortage and competition doesn't cross the line for a review, what does?" he wrote in The Daily Telegraph.

Others might find the probe a little curious. The plant is small, employing under 500 people. It makes silicon wafers, which requires no cutting edge technology, and for raw materials it relies on one of the most abundant elements in the earth's crust. It may take time and money, but there is no secret sauce involved in replicating the plant.

## **East European News & Trends**

### **[Russian Neural Tech Helps Users Control Pcs By Thinking](#)**

Neiry, a Russian neural technology start-up, is eyeing ways to commercialize its neural interfaces that would make it possible to use the power of brain activity to control computers.

Neiry is working on brain-computer interface based products for sectors such as education, entertainment, industry, medicine, and personal use. There are two algorithms to focus on; one is expected to gauge a person's cognitive resources and the other would aim to link up the brain and the computer. Data collected in the process will be stored in a de-personalized form.

Earlier this year Neiry launched three pilot projects in Moscow, Kazan (mid-Volga region), and Leningrad Oblast outside St. Petersburg. During the projects schoolchildren tested VR headsets with built-in interfaces and then underwent testing on high school disciplines.

### **[Sanctioned IT Developer Eyes IPO In Russia](#)**

A Russian IT company called Positive Technologies is planning an IPO in Russia at the end of this year or early next year, Forbes Russia reported.

Positive Technologies, which is focused on cyber security, is reportedly counting on a large pool of private investors to go public, and has begun working with those across the board, especially in the IT-related investor community.

### **[Eggshell Brings New Restorative Material For Dental Care](#)**

Researchers in Voronezh, in Central Russia, have come up with a new adhesive to fix restorative dental filling composites which is basically identical to natural dental tissue in composition and properties. One of the key ingredients came from eggshell, an approach that is said to enable the much better fixation of restorative composites to a patient's own teeth, thus extending the dental fillings' service life. Results of the research have been published in English in International Journal of Molecular Sciences.

According to a team comprising scientists from the Voronezh State University (VSU) and the Burdenko State Medical University of Voronezh in partnership with colleagues from the Ural Federal University (Yekaterinburg, Russia) and Clayton (Australia), an outstandingly high level of affinity between the new adhesive and dentine (natural dental tissue) helps the eggshell-derived "glue" form strong bonds with dentine and reliably fix artificial dental fillings.



## **World Economic Round Up**

New outbreaks of Covid-19 remain one of the top risks to a global economic recovery, the OECD's secretary-general has warned, calling for developed nations to support less-developed nations with their vaccination programs. He said that we must do what we can to get as many people as we can, all around the world, vaccinated. There is a particular responsibility for developed economies and it's not just a matter of charity or benevolence, it's actually a matter of self interest both in terms of making sure we keep our populations safe and also to ensure the economic recovery can.

*The latest economic news by country to include USA, Europe, UK, Japan, China, Asia Pacific and India can be found each month in our [Semiconductor Monthly Report](#).*

## Industry Events 2020

### Future Horizons Events

- [Silicon Chip Industry Training Seminar](#) – London – November 2021
- [Industry Forecast Briefing](#), London – September 2021

*To book your place on any of our events please contact us on:*

**Telephone: +44 1732 740440**

**Email: [mail@futurehorizons.com](mailto:mail@futurehorizons.com)**

[Download Future Horizons Full Events Calendar Here](#)

### Industry Events

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**MARK YOUR CALENDER FOR THE NEXT**

**SILICON CHIP INDUSTRY WORKSHOP**

**MONDAY November 2021**

**AND**

**INDUSTRY FORECAST BRIEFING**

**TUESDAY September 2021**

**BOTH BEING HELD AT**

**HOLIDAY INN KENSINGTON FORUM, LONDON**

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