FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Industry News By Company

GlobalFoundries Announces New Semiconductor Fab in New York

A major semiconductor manufacturer is making a play to expand its U.S. manufacturing operations. GlobalFoundries Inc. announced July 19 it would be making a $1 billion expansion in order to address the global semiconductor shortage. According to CEO Tom Caulfield, the new expansion, a 'fab' for making semiconductor wafers, will increase production by 150,000 wafers a year.

The investment will expand GF's Malta campus and add 1,000 new high-tech jobs to the site, which currently employs about 3,000 people. In remarks delivered at the company's headquarters in Malta, Caulfield said the semiconductor-manufacturing industry is poised to expand dramatically over the next few years.

JETCOOL Tech Helps Solve Global Semiconductor Chip Shortage

The semiconductor chip shortage wreaking havoc on the automotive and tech industries is forecasted to reach into 2023. Although the $500 billion chip industry is no stranger to turbulent supply and demand cycles, the latest shortage stems from unexpected consumer buying behavior during the pandemic. One Boston start-up has a solution for enterprises to do more with their limited chip supply by using an innovative liquid cooling solution.During the pandemic, tech spending increased by 12% as consumers heavily invested in entertainment and electronics. Meanwhile, overall car sales were down be 14.6% from 2019. This imbalance in consumer spending led tech manufacturers to increase their chip demand while automakers hit pause on orders. With the height of the pandemic behind us, manufacturers in both industries are now competing for semiconductor chip supply to meet unexpected market demands.

Macronix and Foxconn Sign Asset Transaction Agreement for 6-inch Wafer Fab

SINCHU, Aug. 6, 2021 /PRNewswire/ -- Macronix International Co., Ltd. ("Macronix") (TWSE: 2337), a leading integrated device designer and manufacturer in Non-Volatile Memory (NVM), and Hon Hai Technology Group ("Foxconn") (TWSE: 2317), the world's largest electronics manufacturer and service provider, today announced the signing of an Asset Transaction Agreement for the sales of Macronix's 6-inch wafer fab and equipment in Hsinchu Science Park to Foxconn for NT$2.52 billion. The transaction is expected to be closed by the end of 2021.

The Asset Transaction Agreement was signed by Dr. Chih-Yuan Lu, President of Macronix, and Dr. Bob Wei-Ming Chen, President of Foxconn Semiconductor Business Group ("S Business Group"). The momentous event was also witnessed by Mr. Miin Wu, Chairman and CEO of Macronix, and Mr. Young Liu, Chairman and CEO of Foxconn. Not only does the transaction reflect Foxconn's commitment to the long-term "3+3" (industry and technology) company vision but it also signifies a deeper commercial collaboration between Macronix and Foxconn

ON Semiconductor 16 Mp XGS Sensor Brings High Quality, Low Power Imaging to Factory Automation and Intelligent Transportation Systems

PHOENIX--(BUSINESS WIRE)--ON Semiconductor (Nasdaq:ON) introduced the latest addition to the XGS series of CMOS image sensors. The XGS 16000 is a 16 Megapixel (Mp) sensor that provides high quality, global shutter imaging for factory automation applications including robotics and inspection systems. Consuming only 1 Watt at 65 frames per second (fps), the XGS 16000 delivers exceptional performance at low power. This makes the XGS 16000 one of the best in class for power consumption, while also offering one of the highest resolutions available for standard 29 x 29 mm industrial cameras.

The XGS 16000 shares a common architecture and footprint with other XGS CMOS image sensors. This enables manufacturers to use a single camera design to develop products in different resolutions. Supporting up to 65 frames per second readout at full resolution, the sensor is available in various speed grades, all with Bayer color or monochrome options.

Developers of camera systems used in intelligent transportation systems, machine vision inspection and industrial automation applications will benefit from the high resolution and high frame rate of the XGS 16000. ON Semiconductor's global shutter pixel technology addresses the limitations associated with rolling shutter pixels in these applications. Artifacts such as motion blur and distortion are avoidable using a global shutter approach. This is increasingly important in automation, inspection, and identification applications.

Rockley Photonics Unveils End-To-End Digital Health Monitoring Solution Based On Spectrophotometer-On-A-Chip Sensing Module

Rockley Photonics, a leading global silicon photonics technology company, today revealed its complete full-stack, "clinic-on-the-wrist" digital health sensor system.

Rockley's sensor module and associated reference designs for consumer products integrate hardware and application firmware to enable wearable devices to monitor multiple biomarkers, including core body temperature, blood pressure, body hydration, alcohol, lactate, and glucose trends, among others.

Rockley's full-stack sensing solution features a wristband that contains the sensor module and communicates with custom cloud-based analytical engines via a Rockley smartphone app. The wristband will be used in a sequence of in-house human studies in the coming months.

"Our full-stack sensor solution, which brings together optical and electronic hardware, firmware, algorithms, and cloud-based analytics, is an exciting milestone on our roadmap. Our reference designs will significantly aid our customers and partners with the

deployment of our technology and accelerate their own scalable, high-volume product delivery," said Dr. Andrew Rickman, chief executive officer and founder of Rockley Photonics. "We believe that combining machine learning algorithms with continuous monitoring of an extended set of biomarkers from accessible wearable devices will provide new actionable insights to enhance and transform digital healthcare."

STMicroelectronics Joins Startup Autobahn as Anchor Partner to Meet Tomorrow's Automotive Innovators

STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has become an Anchor Partner of Startup Autobahn, which is powering innovation in the automotive sector by introducing selected dynamic new companies to established technology corporations.

Startup Autobahn is created and managed by Plug and Play, the accomplished Silicon Valley accelerator and investor that historically has introduced over 35,000 startups to more than 400 corporations.

Anchor Partners in Startup Autobahn include major car brands and vendors of diverse automotive technologies. ST's support, with its strategic emphasis on smart mobility, boosts opportunities for new companies with innovative ideas for electrification, e-mobility, and smart, connected driving to take part in the program.

STMicroelectronics Manufactures First 200mm Silicon Carbide Wafers

STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, today announced it has manufactured the first 200mm (8-inch) Silicon-Carbide (SiC) bulk wafers for prototyping next-generation power devices from its facility in Norrköping, Sweden. The transition to 200mm SiC wafers marks an important milestone in the capacity build-up for ST's customer programs in automotive and industrial sectors and will consolidate ST's lead in the disruptive semiconductor technology that allows for smaller, lighter, and more efficient power electronics with a lower total cost of ownership.

Among the first in the world, ST's initial 200mm SiC wafers are also very high quality, with minimal yield-impacting and crystal-dislocation defects. The low defectivity has been achieved by building on the excellent know-how and expertise in SiC ingot growth technology developed by STMicroelectronics Silicon Carbide A.B. (formerly Norstel A.B., which ST acquired in 2019). In addition to meeting the quality challenge, the transition to 200mm SiC substrates requires a step forward in manufacturing equipment and the overall support ecosystem performance. ST, in collaboration with technology partners covering the entire supply chain, is developing its own 200mm SiC manufacturing equipment and processes.

Industry News & Trends

Advanced Packaging Technologies Overcoming the Memory System Performance and Capacity Limitation

The competition in the semiconductor industry is becoming fiercer by the day. As such, the importance of the packaging process is being highlighted as a way to implement even smaller and thinner semiconductors with high performance and low power consumption, while simultaneously responding to the limitations of semiconductor miniaturization technology and other market demands.

Packaging is the process where the manufactured semiconductors are packaged so that they are not damaged, with electric wires in semiconductor circuits connected to the outside. Previously, this process was generally recognized as simple and auxiliary work since it was done during the back-end process where the manufactured semiconductors were shipped, rather than the front-end process when semiconductor quality was determined. Recently, however, as the feature size of transistors decreases to 5nm or less and the growing possibility that semiconductor manufacturing will face physical limitations within the next few years, the packaging technology is attracting more attention than ever.

SK hynix has a sense of mission that the packaging process is a key one that's closely connected to customers and represents a semiconductor product. Under this mission, the company aims to create the best performance and quality.

Chip Shortages May Persist Until 2023, Analysts Say

When Mark Liu, chairman of Taiwan Semiconductor Manufacturing Co. (TSMC), suggested to CBS journalist Leslie Stahl that the global semiconductor shortage may extend through 2022, Liu's comment raised questions about the current steep ramp of new capacity to meet demand, the potential for rising chip prices and eventual oversupply.

Chip shortages and possibly over-exuberant capacity expansion come as planners in China and the U.S., recognizing that semiconductors are critical for economic growth, have launched projects to build local, integrated semiconductor supply chains.

The end of shortages in 2023 may be followed by overcapacity in 2024, according to worst-case scenarios offered by industry analysts interviewed by EE Times.

"It depends on how many gigafabs get built," said Dan Hutcheson, CEO of VLSI Research, who predicts overcapacity by 2024, noting that governments tend to be heedless of the profit-maximization mantra that has driven the semiconductor industry in recent years.

Multitasking, Sensors Drive Smartphone Memory Requirements

Smartphone memory and storage requirements continue to be driven forward by 5G networking, but it's not the only trend putting pressure on mobile DRAM and flash.

Bigger bandwidth and faster speeds open the door for significantly large file sizes, including the adoption of 8K video. That nearly doubles the file size of video, said Itzik

Gilboa, Western Digital's head of mobile segment marketing. The company recently announced its second-generation UFS 3.1 storage solution for 5G smartphones, the iNAND MC EU551. It's also aimed at supporting emerging applications such as gaming, augmented reality/virtual reality, and ultra-high-resolution cameras for burst mode photography. The new storage offering is the first to be built on Western Digital's UFS 3.1 platform, which leverages faster NAND along with a faster controller and improved firmware.

Leading IoT Alliances Join Works With 2021 for IoT Connectivity Panel

Silicon Labs has added a multi-alliance panel with IoT leaders: Bluetooth SIG, Connectivity Standards Alliance, Wi-SUN Alliance, and Z-Wave Alliance to Works With 2021. The panel will be moderated by industry analyst Stuart Sikes, senior vice president at Interpret, a global consumer insights firm.

The panel, "Are We There Yet? Driving the Future of IoT," will explore the benefits of wireless alliances and the crucial part they play in driving technology standards within markets as the landscape evolves at an accelerated pace.

Leaders from each Alliance will discuss their role in standard creation based on market trends, as well as the importance of developers' role in driving industry requirements. They will also share perspective on the future of the industry and how to drive innovation.

East European News & Trends

New Technology Controls Vegetation At Vertical Farms

Russian scientists are pushing an experimental pilot project where controllable vegetation technology was used in an automated vertical farm. In downtown Moscow, earlier this year researchers grew vermin- and virus-free potato seed grain for subsequent vegetation in field conditions.

Their vertical farm consists of a number of modular shelves with an automated system of multichannel LED lighting and watering, as well as with a number of sensors to check microclimate and parameters of a substrate from which plants get nutrition.

A competitive advantage to note is a fully customizable LED lighting system offering an array of spectra preferable for specific types of plant and various vegetation periods.

New Materials For Superconducting Devices Developed

Scientists from Russia, China and the U.S. have been working to predict and experimentally develop barium superhydride – a new high-temperature superconductor.

Word came earlier this year that special crystal structure prediction software called USPEX, developed by Prof. Artem Oganov, a Russian chemist and crystallographer, has been instrumental in approaching what reports referred to as successful outcome of the effort.

Chemists and material science specialists from Prof. Oganov's laboratory at Skoltech University in Moscow partnered with their international colleagues as they used the USPEX to analyze and experimentally obtain the new barium compound which has been proven to be extremely rich in hydrogen and possess superconductivity properties.

Draft Program Details Plan To Develop "Green" Vehicle Production

Russia's Cabinet is drafting an $8bn federal program that aims to put together a strong basis for electric and hydrogen vehicle production by 2030, the USRBC reported, citing a yet-unnamed source at the Russian Ministry of Industry and Trade.

The projected funding is apparently falling 26% off compared to a previous draft plan discussed in June.

The funding would be used for the partial compensation of costs for charging stations, vehicle components, and fuel cell manufacturing and for supporting related R&D activities. The draft reportedly does not include demand support measures such as leasing or loan interest subsidies but notes that the Government could raise some $1.5bn for such subsidies by 2030 by increasing recycling fees on automobiles or by imposing an import duty on electric vehicles.

How To Make Heavy Machinery Printable? Ask MPEI In Moscow

Engineers at Moscow-based MPEI University (aka Moscow Power Engineering Institute) have showcased a prototype 3D printer for making large objects. The new device can print as big a part as a user wishes. The technology may benefit such strategic sectors as aerospace, automotive, shipbuilding, and wind energy.

With conventional 3D printers, a part is manufactured inside the device, which limits the size of an object to be printed. The bigger a part a user needs, the larger a printer he should use.

In the new MPEI-driven Roboprint project, components are printed outside the master printer, a solution that brings no limitations at all and is reported to be able to print a part that is ten or hundred times bigger than the printer.

The MPEI team has developed a multi-flow printing technology with a swarm of printing robots at the core. Special radio navigation sensors are placed on moving platforms to coordinate the action of all swarm elements. The master printer is a wheeled platform with the printing part of the system on it. Guided by sensor-generated coordinates, the master platform moves where something must be printed. The printing surface where a part is made is located above the printer, so the printer's head nozzle faces upwards.

World Economic Round Up

The United Nations has warned that the devastating socio-economic impact of the COVID-19 pandemic will be felt for years to come unless smart investments in economic, societal and climate resilience ensure a robust and sustainable recovery of the global economy. In 2020, the world economy shrank by 4.3 percent, over two and half times more than during the global financial crisis of 2009. The modest recovery of 4.7 percent expected in 2021 would barely offset the losses of 2020. The report underscores that sustained recovery from the pandemic will depend not only on the size of the stimulus measures, and the quick rollout of vaccines, but also on the quality and efficacy of these measures to build resilience against future shocks.

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

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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