



The European Institute for the PCB Community

EIPC SPEeDNEWS

The Weekly On-Line Newsletter

Issue 9 – April 2024

ARTIFICIAL INTELLIGENCE NEWS

Elon Musk thinks we'll have AI smarter than any one human by next year

Elon Musk has once again spoken about some of his expectations for the future of artificial intelligence (AI), this time in an interview held on X Spaces.

On Monday, Musk spoke on a Spaces call with Nicolai Tangen, founder of Norwegian hedge fund AKO Capital, about a range of topics, especially focusing on AI, space exploration and a few details about Tesla-like its path into the automotive market in India.

Interestingly, Musk said that he thinks humans will probably have AI that's smarter than any one human by the end of next year, while he believes that the total amount of compute power of AI will exceed all humans in five years.

"My guess is that we'll have AI that is smarter than any one human, probably, by the end of next year," Musk said. "The total amount of sentient compute of AI, I think will probably exceed all humans in five years."

Musk also said that xAI plans to have Grok 1.5 finished by May, and that it will be better than OpenAI's ChatGPT-4. However, like the above and many of Musk's other claims, it's worth taking his timelines with a grain of salt as he also announced that Grok 1.5 would be coming "next month" in January.

Along with predictions for AI and xAI's plans, he also pointed to the need for a regulatory division to monitor the rapid growth of the AI sector, though he says the technology is already progressing at a rate that's too fast for any regulatory agency to keep up with. He also echoed recent warnings about AI being programmed to be too politically correct, citing Google's Gemini AI as an example.

“But I do have a comment for what I think is very important for achieving safe AI, which is that it’s very important to train the AI to be as truthful as possible,” Musk added. “I think you can get some very dangerous things when you program an AI to be politically correct.”

“I think that things may seem relatively innocuous now, but will not be so in the future if AI has immense power. You can take the Google Gemini example where it refused to produce a picture of George Washington as a white man, and any impact, any historical figure, would automatically be made diverse, because it’s been programmed to insist on diversity.

Which sounds you know, perhaps okay at first, but not if the AI has so much power that it can actually enforce diversity and decide there’s too many of one kind of people, or too many of one sex, and just kill off enough until the diversity numbers is what is programmed to believe is correct.”

Musk has warned about some of the risks of AI in the past, calling it a potential “civilizational risk” in September and even talking to Israel Prime Minister Benjamin Netanyahu about AI concerns later that month.

Last July, Musk launched xAI as a rival to OpenAI, and the company debuted Grok as its first product in November. Musk in February filed a lawsuit against OpenAI for abandoning its open-source, non-profit mission, and last month xAI went on to officially make Grok’s model weights open-source.



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NEWS FROM BELGIUM

NCAB acquires Cumatrix BV in Belgium

NCAB Group has today acquired 100 per cent of the shares in Cumatrix BV, based in Lommel, Belgium, a country where NCAB has not had a local presence until now.

Cumatrix BV's net sales amounted to 7 MSEK in 2023 with an EBITA margin of about 7 percent. The company has 2 employees. The majority of sales is concentrated to the industrial sector and sourcing is being made from manufacturing partners in China. The acquisition is expected to be earnings accretive for NCAB Group in 2024. Synergies are expected in the areas of suppliers, payment terms and logistics.

Benjamin Klingenberg, VP NCAB Europe:

“This acquisition is small but all the same it presents a strategic opportunity for NCAB Group to establish a local presence in the Belgian market. With this action, we also gain highly skilled and experienced personnel from the PCB industry, who will complement our existing capabilities and play a pivotal role in unlocking new growth opportunities and expanding our network in Benelux.

Gert Peeters, owner of Cumatrix BV:

“We are happy to be able to enhance our business in the NCAB context. This will mean a positive development for our customers, us personally and not the least give us new possibilities to grow in Belgium with the support of the entire NCAB Group.”

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NEWS FROM FRANCE

Thales expands PCB production capabilities for the European railway industry demand

Thales Group has expanded its circuit board production capabilities at its Industrial Competence Center here, citing an increased demand among Germany and Europe's rail systems.

The company said circuit boards are critical components for the railway industry to make the rail infrastructure in Germany and Europe fit for the future, and global supply bottlenecks can threaten that goal.

To prevent supply issues, Thales said it has made its circuit board production more efficient.

“This means we can increase our production speed and have significantly more planning and delivery security,” the company said. “Our customers such as Deutsche Bahn and all rail travelers benefit from this through better planning of upcoming modernization projects.”

About Thales Group

Founded in 1968, Thales Group is a French multinational company that designs, develops, and manufactures electrical systems, devices, and equipment for the aerospace, defence, transportation, and security sectors. The company is a global technology leader with more than 77,000 employees on five continents, headquartered in Paris' business district, La Défense, has its stock listed on the Euronext Paris.



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NEWS FROM GERMANY

European PCB Survey 2023 has been published and is available from Data4PCB

Recently the new European PCB survey for 2023 was published. The report covers the European PCB production and is based on the input of about a third of the remaining active PCB manufacturers. These companies, however, represent almost three quarters of the total PCB production volume.

The report consists of two parts: the first (37 pages) with comments and tables, taking a close look at each country. The second (58 pages) offers detailed graphs, visualizing the most important data.

Please contact Michael Gasch at statistcs@data4pcb.com for further details and price.

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NEWS FROM SWEDEN

NCAB appoints Tim Benjamin as new CFO

NCAB Group has today appointed Tim Benjamin as its new CFO. Tim has a long and broad experience of managerial business finance roles, including M&A and IT. He succeeds Anders Forsén who announced in early February that he plans to retire in 2024. Tim will assume his new role no later than October 2024.

Tim Benjamin has had a successful career of almost 20 years within the Sandvik Group, most recently in the role of Business Area CFO for Sandvik Mining & Rock Solutions. Prior to that, he held various roles both in the US and Sweden as Controller and VP Finance in different parts of the group, from production to sales. In these different roles Tim has contributed to a positive profitable development, and in addition to the pure Finance responsibility, has also been active in the M&A field. Tim holds a Bachelor of Science in Accounting, as well as an MBA from Clemson University, South Carolina, USA.

“Tim Benjamin has a solid background and the knowledge from a global company we were looking for”, said Peter Kruk, CEO NCAB Group. “After Anders Forsén announced that he wished to leave his position after 16 years as CFO to have more free time, we have carried out a recruitment process. Our goal has been to find a new CFO with an industrial background and experience from M&A’s.

We have been looking for a candidate who is business oriented and can continue to drive NCAB’s expansion in the M&A area. It was also important to find a good leader experienced in leading a finance team and interacting with investors. Tim Benjamin has a solid background and the knowledge from a global company we were looking for. We also believe that his

personality, drive, and values will fit very well into our culture. I am very much looking forward to him joining us,” says Peter Kruk, CEO of NCAB.

“NCAB is a company growing globally with great opportunities, and I am very pleased to take on the role of CFO and lead the finance team. I also look forward to maintaining a high pace in the acquisition processes. I look forward to being part of the Group Management Team and contribute with strategy, IT and finance expertise. It feels exciting to be part of a growth journey in the top management of a smaller but growing global company, says Tim Benjamin.

“Anders Forsén has been instrumental in NCAB’s fantastic development during his time. During his 16 years at NCAB, the company’s revenues have grown about tenfold, with continued good returns. We thank him and regret that he is leaving, but we wish him all the best and are happy that we have found a strong successor in Tim who will continue to carry the torch to new heights,” concluded Peter Kruk.

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PCB MATERIALS NEWS

Doosan will introduce a high-end copper clad laminate (CCL) lineup that is applicable to memory and system semiconductors in the North American market.

Doosan Co., Ltd. announced on the 8th that it will display advanced CCL products such as the CCL line-up at the IPC APEX Expo 2024.

At this exhibition, Doosan Co., Ltd. decided to introduce CCL for memory and system semiconductor packages, CCL for communication networks, and FCCL for smart devices. CCL for semiconductor packages is a material that electrically connects semiconductor chips and main boards and protects semiconductors. It delivers electrical signals quickly and accurately and is strong enough to withstand high-temperature semiconductor processes.

CCL for communication networks is a product applied to data centers. Doosan Co., Ltd. will introduce 800GbE (Gigabit Ethernet) CCL, which speeds up data processing and minimizes communication latency, and next-generation 1600GbE CCL, which is currently being developed.

“As the world’s only supplier with a high-end CCL full-line-up, we will solidify our position as a top leader in the CCL market based on our competitiveness in a timely manner to supply products that meet the needs of our customers,” a Doosan Co., Ltd. official said.

Are glass substrates the next major trend in chip development? It is rumored that Apple and Nvidia will adopt

TPCA

Printed circuit boards (PCBs) made of glass substrates may be “the next big thing” in chip development, and Apple is rumored to be planning to adopt them. Now news from South Korea points out that as the artificial intelligence (AI) competition intensifies, Nvidia, AMD, Intel, etc. are also interested in adopting it, and it is estimated that it will be on the road as soon as 2026.

Korean media BusinessKorea reported that industry sources said on April 7 that as competition for high-performance AI chips intensifies, semiconductor giants such as Huida, Advanced Micro Devices, Intel, etc. are expected to use glass substrates as early as 2026.

Li Changmin (transliteration), a research analyst at KB Securities, predicts that with the surge in the number of AI data processing, plastic substrates will not be able to shoulder the important task by 2030. Glass substrates will initially be used in high-end products such as AI accelerators and server CPUs, and will gradually be used later.

Intel announced in May last year that it would expand its glass substrate business and has cooperated with some Korean companies.

On the other hand, SKC is the first Korean factory to invest in the glass substrate business. The company jointly established Absolics with Applied Materials, a major chip equipment manufacturer, and spent US\$240 million to build a factory in Georgia, USA. Samsung Electro-Mechanics and LG Innotek also regard glass substrates as new growth engines and have initiated production investments.

Technology website 9to5Mac pointed out that current PCBs are usually made of a mix of fiberglass and resin under a layer of copper and solder mask. This material is very sensitive to temperature, and the temperature must be controlled through dynamic thermal management (thermal throttling), which means that when overheating, the chip performance must be reduced. This means that the chip can maintain peak performance for a limited time.

Switching to a glass substrate can significantly increase the temperature that the circuit board can withstand, which means that the chip can

maintain optimal performance for a longer period of time. At the same time, the glass substrate is very flat, allowing for more precise etching, which can increase transistor density. Intel is currently the leader in this area.



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NEWS FROM SMT CONNECT

Would you like to experience the latest trends in electronics manufacturing at first hand, expand your specialist knowledge and exchange ideas with industry experts?

Then immerse yourself in the world of electronics manufacturing and be there when the SMTconnect 2024 opens its doors again in Nuremberg, Germany.

With its focus on Surface Mount & Microelectronics Manufacturing Technologies, the SMTconnect is the only trade fair in Europe that covers the entire production process for microelectronic assemblies and systems. Use this opportunity to expand your partner network and gain a quick overview of the market.

Secure your ticket for the SMTconnect 2024 from 11 - 13.6.2024 now:

https://smt.mesago.com/nuremberg/en/planning-preparation.html?wt_mc=smt.uk.email.Media.eip



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NEWS FROM THE TPCA

Taiwan PCB factory expands investment in equipment factory in Thailand and has longer-term plans to follow up

Mude Technology, which is actively involved in semiconductor packaging and testing equipment, is deeply involved in the Southeast Asian market. In cooperation with customers, it will start to build factories and install equipment intensively in Thailand in 2024. Mude Technology announced that the Thai branch will officially be put into operation on March 1 this year, mainly to compete for various industries. There are equipment business opportunities for PCB factories to set up factories in Thailand; however, equipment factories have to take longer-term integration and plan for local production and supply.

Taiwanese PCB factories are aggressively pursuing investment and establishment projects in Thailand and Vietnam, which provide equipment factories with considerable opportunities. Guangyun CEO Xie Mingkai pointed out that Guangyun also plans to vigorously develop the automation equipment market in Thailand.

Jiangsu Xunlianke Company, which was established in Huai'an, mainland China, under the leadership of Xunde, has major shareholders including Liance and Keqiao. After Jiangsu Xunlianke Company was established in 2022, it originally planned to build a factory in Huai'an, Jiangsu Province. There has been a subtle change in the investment trend of PCB factories in Thailand. Jiangsu Xunlianke Company in Huai'an decided to set up a factory in Thailand for US\$5 million, mainly due to changes in the source of market demand.

Xunde Vice Chairman Wang Nianqing pointed out that Jiangsu Xunlianke Company, a joint venture between three equipment manufacturers, originally planned an investment plan in Huai'an, Jiangsu. Currently, it is temporarily renting factories instead of the original planned large-scale

land purchase and factory establishment. Through Jiangsu Xunlink Company will choose a location to set up a factory; the implementation of this investment project in Thailand will not only meet the needs of Taiwanese businessmen for production equipment in Thai PCB factories, but will also further develop automation and other high-end production equipment locally in the future to expand its presence in the country.

The scale of operations in the Thai market.

Xunde believes that equipment demand for Taiwanese PCB factories set up in Thailand will emerge from the second half of 2024 at the earliest and continue until 2025. Even mainland-based PCB factories are currently investing overseas, and Xunde has also benefited from this, and has already received an overseas order worth US\$1.5 million from mainland-based PCB factories.

Thailand has become the most important investment area for PCB factories outside of China. In addition to the original Jingpeng, Jingguo and Taiding-KY, other major manufacturers such as Xinxing, Jinxiangdian, Huatong, Dynamic and Zhending -KY is also accelerating the establishment of a factory in Thailand due to various considerations; Huatong's Thailand factory construction is progressing smoothly, and equipment installation will begin after the cap is capped in June.

Even Jingpeng, which originally had a factory in Thailand, is planning to invest in a new production line for its second factory in Thailand, in addition to expanding its first factory to open new production capacity in June.

Taiwan's PCB and IC substrate market will first stagnate before seeing a sharp increase in 2024 - Taiwan Printed Circuit Association

Taiwan's PCB and IC substrate market will first stagnate before seeing a sharp increase in 2024, according to Maurice Lee, chairman of the Taiwan Printed Circuit Association (TPCA).

Lee pointed out that three of the top 10 trends of 2024 from The Economist are related to businesses: geopolitics, green sustainability, and AI, with generative AI bringing many opportunities to the electronics industry.

Generative AI has made significant breakthroughs since ChatGPT came out in 2022. The rapid development of AI applications has stimulated the

upgrade of electronic products, with AI servers being the key terminal in current AI applications.

Even though AI servers account for less than 10% of overall server shipments, PCB manufacturers believe AI servers are a new blue ocean for the industry because the average selling price (ASP) of an AI server is nearly 10 times higher than that of a general-purpose server.

Geopolitical impacts on PCBs

Lee also pointed out that in the last few years, geopolitics has continuously impacted companies' strategies for the future. Supply chains have begun deploying overseas to diversify risk, and Thailand has become a new hotspot for the global PCB industry with the country's estimated PCB output value growing to 4.7% in 2025.

As various countries deploy semiconductor supply chain policies, Lee stated that geopolitical considerations may indirectly affect substrates. While IC substrates belong to the semiconductor supply chain, their link to packaging and testing plants is even higher.

If all of the major packaging and testing firms in the world set up factories in the US, based on the idea of chips being wholly produced in the US, the pressure felt by IC substrates would undoubtedly increase. US government could focus next on the IC substrate industry.

Taiwanese manufacturers see revenues increase in March

Major Taiwanese substrate manufacturers recently released their first-quarter 2024 results.

Unimicron Technology's March revenue saw a 7.5% increase over February and a 2.7% increase year-on-year to NT\$8.9 billion (US\$276.4 million). First-quarter revenue totalled NT\$26.4 billion, up 2.8% from the previous quarter, and the gross margin reached 17.8%.

Nan Ya Printed Circuit Board's March revenue increased 42.39% over February but fell 38.92% year-on-year to NT\$2.67 billion. First-quarter revenue slid 23.74% from the previous quarter and 43.56% year-on-year to NT\$7.1 billion. According to market sources, Nan Ya PCB's ABF customers are still undergoing inventory adjustments.

Kinsus Interconnect Technology's March revenue totalled NT\$2.44 billion, up 9.1% from February and down 6.1% year-on-year. First-quarter revenue increased 2.3% year-on-year to NT\$6.99 billion.

Zhen Ding Technology, another Taiwanese substrate company actively entering the substrate market in recent years, is reportedly expected to enter the supply chain for the Nvidia GB200. Zhen Ding has also started shipping flexible printed circuits (FPC) for Chinese foldable phones.

As the global economy improves, coupled with the promotion of AI, electric vehicles (EV), and satellite communications, Lee expects the PCB industry in 2023-2024 will rise sharply. Growth in 2024 is estimated to be 7.4%, with the output value reaching NT\$1.21 trillion.

PCB equipment, upstream materials to benefit from demand recovery

In the PCB equipment market, the full recovery of end demand and continued expansion of factories in Southeast Asia over the next one to two years will drive recovery.

C Sun, a long-established PCB equipment maker, has seen revenue from high-end PCBs increase. C Sun general manager Frank Liang said that PCB equipment is experiencing significant growth due to industry recovery and the rapid migration of customers from China to Southeast Asia.

With end market inventories easing and the low base period in 2023, core markets such as mobile phones, computers, and semiconductors are expected to enter a recovery period. Coupled with demand for EVs, AI servers, and satellite communications, compared with 2023, PCB upstream materials companies will see the most growth.

This includes Copper Clad Laminate (CCL) leaders Elite Material (EMC), ITEQ, and Taiwan Union Technology (TUC), as well as fiberglass cloth manufacturers Taiwan Glass and Fulltech Fiber Glass, and copper foil company Co-Tech Development. Lee said the demand for high-frequency and high-speed materials will be strong in 2024-2025 and high-end PCB materials will see growth.

Taiwan's PCB industry aims to reduce carbon footprint

In the face of the carbon reduction trend, PCB makers must also strive to reduce their carbon footprint. The TPCA continues to promote three key developments in this area, with the first being a low-carbon transformation strategy highly connected to ESG.

In March 2023, the TPCA released the first version of Taiwan's PCB low-carbon transformation strategy and carbon reduction path. The aim is to achieve carbon neutrality by 2050.

The Taiwan PCB Industry Low-Carbon Transformation Strategy 2.0 will be published at the end of 2024. It will re-examine the carbon reduction progress of Taiwan's PCB industry in 2023, and review and revise the carbon reduction paths and strategies.

The high-end technology blueprint for industry development in 2024-2028 will include elements related to low-carbon R&D. At the same time, it will continue to strengthen companies' internal information security awareness and introduce generative AI applications into PCB manufacturing verifications.

IPC Publishes Comprehensive Strategy to Address Electronics Industry's Global Workforce Challenge, Calls on Leaders in Government, Business and Education for Support

One of the most difficult and urgent challenges facing the electronics industry is a chronic shortage of adequately skilled workers. Today, IPC unveiled an expansion of its strategy to address the workforce challenges of the U.S. electronics manufacturing industry and called on its more than 3,000 member companies to join in the effort.

IPC sets out a solutions-focused workforce plan in a white paper written by David Hernandez, IPC vice president of education, Carlos Plaza, IPC senior director of education and Dr. John W. Mitchell, IPC president and CEO. The paper, "Building Electronics Better: A Plan to Address the Workforce Challenges Facing the Electronics Manufacturing Industry," targets both immediate labour market needs and the long-term sustainability and growth of the industry by building a skilled, adaptable, and motivated workforce. IPC's ambitious approach is focused on developing rewarding career pathways.

"IPC is the largest provider of education and workforce development in our industry," said John W. Mitchell. "We credential more than 145,000 people per year, and we recently secured federal recognition for three registered apprenticeship programs. But we can't do it alone – we're calling on our partners in industry, academia, and government to join us on this critically important journey."

"Significant challenges, including the lack of a well-defined school-to-industry pipeline, have contributed to industry workforce shortages that constrain the industry's growth and lead to increased production costs," said David Hernandez. "IPC is delivering a multifaceted approach to recruitment and training. This is essential if we are to turn current socioeconomic, demographic, and cultural trends into opportunities for growth."

According to the white paper, rising demand for electronic devices across the commercial, healthcare, automotive, and industrial sectors will see the global electronics manufacturing services (EMS) market grow from about \$534 billion in 2023 to \$856 billion in 2030. Key elements of IPC's plan include:

Talent Pipeline: Establishing partnerships between educational institutions, businesses, government agencies, and non-profit organizations to ensure a steady flow of skilled workers into the electronics manufacturing industry.

Career Pathways: Developing clear and structured career pathways that outline progression from entry-level positions to advanced roles, enhancing the visibility of career advancement opportunities within the industry.

Training and Education: Prioritizing the development of industry-defined training programs that equip individuals with the necessary skills and knowledge, including both technical and soft skills.

Dispelling Myths: Launching outreach efforts to improve the perception of manufacturing careers, highlighting the innovative aspects of the industry, and addressing misconceptions about manufacturing jobs.

Partnerships: Encouraging collaboration between government, academia, and industry to speed the transition of students and trainees into the workforce, including internships, apprenticeships, and mentorship programs.

Standardized Credentials: Supporting the adoption of universally recognized stackable credentials that validate the competencies and skills of qualified job candidates.



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International Diary

2024

EIPC Summer Conference

Conference & Visit @ ESA/ESTEC

Tuesday 4 & Wednesday 5 June
Noordwijk, The Netherlands

SMT Nuremberg

11-13 June
Nuremberg, Germany

EIPC Technical Snapshot Webinar

Registrations via www.eipc.org
September

EIPC @ FED Conference

20 & 21 September
Ulm, Germany

EIPC Technical Snapshot Webinar

Registrations via www.eipc.org
October

EIPC @ Electronica

12-15 November
Munich, Germany