Samsung will treat and reuse 400 million liters of wastewater per day to produce chips

Wastewater will be treated and purified at Samsung Electronics' Hwaseong factory.

The semiconductor industry is famous for its huge water consumption, each chip requires thousands of gallons (1 gallon = 3.785411784 liters) of ultrapure water (UPW) for production.

Ultrapure water is water that has undergone a filtration process to remove impurities, including fine particles and microorganisms, leaving only the basic hydrogen and oxygen molecules that make up H2O.

In order to meet the growing demand for semiconductors, Samsung Semiconductor (a subsidiary of Samsung Electronics Corporation) is planning to expand its production line. One of the knock-on effects from this is that by 2030, the amount of industrial water needed for their facilities is expected to more than double what it is now.

To address this need, Samsung Electronics has announced plans to use wastewater to meet its huge water needs.

The South Korean tech giant plans to filter and use 400 million liters (105.668 million gallons) of wastewater daily to produce chips. Wastewater will be treated and filtered to meet safety standards for industrial use at Samsung Electronics' Hwaseong (Korea) factory.

Even microscopic impurities can affect chip quality and production, so the water goes through multiple stages of filtration and purification to ensure it is completely free of any potential contaminants. harmful to the manufacturing process of fragile semiconductors.

Samsung Electronics sees this initiative as an important step towards sustainable manufacturing. By using wastewater, the Korean corporation is significantly reducing its dependence on freshwater sources, thereby contributing to water conservation efforts.

The move is expected to have a major impact on the chip manufacturing industry and other companies are likely to follow Samsung Electronics' lead. This could set a new standard for sustainable practices in an industry that has long been scrutinized for its environmental impact.

Samsung Electronics management is aiming to regain the top position in the revenue rankings in the semiconductor components market in the next 2 or 3 years.

According to Business Korea, this statement was made at the annual shareholder meeting after witnessing Samsung Electronics' memory market drop to fourth place in the semiconductor component revenue rankings in 2023, not just behind TSMC and Intel but also Nvidia.

In the past, Intel and Samsung Electronics often competed for the title of largest semiconductor component supplier in terms of revenue, but in recent years, they have had worthy competitors in TSMC and Nvidia - two companies The company saw a sharp increase in revenue due to the COVID-19 pandemic and the explosion of artificial intelligence (AI) systems.

Samsung Electronics' semiconductor component revenue is only 45.9 billion USD in 2023, while TSMC ranks first with 66.8 billion USD and third place belongs to Nvidia with 49.5 billion USD.

In 2024, Samsung Electronics aims to restore the 'fundamental competitiveness' of its semiconductor business and address operational weaknesses that were exacerbated by last year's industry downturn. Notably, Samsung Electronics will introduce an AI chip called Mach-1 in early 2025 with performance equivalent to Nvidia H100.

Samsung Electronics plans to invest $15 billion in developing its own research center in Yongin City (South Korea) until 2030, doubling resources related to semiconductor development. In addition to the 6th generation of 10 nanometer DRAM and 9th V-NAND memory, Samsung Electronics will bring the 6th generation of HBM (high bandwidth memory) to the market.

3 nanometer technology will be used to produce mobile chips codenamed Exynos 2500. The advanced chips will serve the mobile device, automotive and wireless data transmission segments.

Samsung Electronics is expected to earn at least $100 million from providing chip packaging services using 2.5D layout in 2024. Power electronics will be supplemented with solutions based on silicon carbide and gallium nitride. By 2027, the Korean corporation will begin producing microLED screens for virtual reality (VR) and augmented reality (AR) devices. Samsung Electronics' leadership believes these efforts will help them become the largest semiconductor component supplier in terms of revenue in the next 2-3 years.

Recently, Samsung Electronics signed a contract to provide Mach-1 AI chip to Naver, Korea's largest social network.

More specifically, Samsung Electronics has reached an agreement worth 1,000 billion won (equivalent to 750 million USD) to provide Mach-1 to Naver at a cheaper price than Nvidia's AI chip.

Mach-1 is an AI accelerator in the form of an SoC that combines Samsung Electronics' proprietary processor and low-power DRAM chip to minimize bottlenecks between the GPU (graphics processing unit) and HBM, and help Reduce power consumption by only 1/10 of Nvidia's AI chip.

The official quantity and selling price of Mach-1 are still being researched by Samsung Electronics. But according to The Korea Economic Daily, Samsung Electronics plans to price each Mach-1 at about 3,756 USD. The initial order is expected to range from 150,000 to 200,000 Mach-1.

Naver plans to use Mach-1 for the servers of the Naver Place AI map service, replacing the Nvidia chips currently used. According to The Korea Economic Daily, Naver may order more Mach-1s if the first order works as well as expected.

The cooperation between Naver and Samsung Electronics marks a turning point in the field of AI chips in Korea. It shows the great potential of Mach-1 and affirms Samsung Electronics' position in the technology field.

In addition, this move also demonstrates the effective combination between leading businesses in the fields of technology and social networks, towards the common goal of developing a strong and autonomous AI ecosystem.

Samsung sees a recovery in demand for technology equipment in 2024 after record losses in the chip business

After reporting a 34% decrease in profit for the fourth quarter of 2023 compared to the same period in 2022, Samsung Electronics forecasts that demand for memory chips and technology will continue to recover in 2024 because memory chip prices have increased again but consumer demand is low. Use is still low in many areas.

Samsung Electronics expects mobile phone and personal computer (PC) makers to equip devices with more and better chips as the use of AI expands and the need to replace devices increases. Older owners will also help demand gradually recover. Samsung Electronics is the world's largest memory chip manufacturer.

The Korean group said in a statement: 'In 2024, the memory business expects the market to continue to recover despite many potential obstacles, including interest rate policy and cadastral issues. treat'.

Samsung Electronics said operating profit fell to 2,800 billion won ($2.11 billion) in the fourth quarter of 2023, compared with 4,300 billion won a year earlier.

For the whole of 2023, Samsung Electronics' chip business lost a record 14,900 billion won compared to a profit of 23,800 billion won in 2022, due to the unprecedented recession and low demand for chip-based devices.

However, the loss in the fourth quarter of 2023 is less than any other quarterly loss in 2023 for the chip business, which was once the "golden egg" of Samsung Electronics.

Losses in the Korean corporation's chip business decreased to 2,180 billion won in the fourth quarter of 2023, compared to a loss of 3,750 billion won in the third quarter of 2023, due to memory chip prices increasing again.

Chinese PC and mobile device manufacturers began restocking memory chips in the fourth quarter of 2023 after exhausting their own inventories for a long time.

SK Hynix, Samsung Electronics' main rival, also said chip prices will improve in 2024 as customers need to restock and manufacturers will continue to cut traditional chip output. SK Hynix (Korea) is the second largest memory chip company in the world.

Samsung Electronics' fourth quarter 2023 revenue decreased by 4% compared to the same period last year, reaching 67,800 billion won.

Samsung Electronics said its memory business will focus on advanced chips and improve profitability by aggressively addressing demand for HBM and generative AI-related server products this year. .