

China to Use Graphene Chips to Save Its Crippling Semiconductor Industry

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China has been struggling with its semiconductor industry, and with the latest October 2022 US sanctions Chinese chip manufacturing has taken a complete nosedive. To save its dying semiconductor industry, China is looking to explore graphene technology for manufacturing chips, which have traditionally been manufactured using silicon-based technology.

In the latest report by Kuai Technology, the Chinese Graphene Innovation Consortium which includes The Chint Group, Shanghai Electric Cable Institute, and Shanghai Graphene Industry Technology Functional Platform will assist the resident semiconductor manufacturers in transitioning to graphene technology by 2025.

Are graphene chips the solution to [China](#)'s semiconductor problems?

Graphene is considered ideal for chip manufacturing due to its electron mobility. The energy in a semiconductor chip is transmitted by electrons. Therefore, having free mobile electrons results in high energy output compared to silicon.

In lab testing, the graphene chips proved to be ten times faster than silicon-based chips. In 2010, the IBM made graphene wafer achieved 100GHz frequency at the transmitter node. The company claimed graphene chips could run at astronomically high speeds of 500-1000 GHz.

Despite being 10 times faster and more than silicon chips, graphene chips are also more efficient and draw less power.

[China](#) is the largest consumer of semiconductor chips occupying the largest share at 53.7%.

However, the Chinese resident semiconductor manufacturers only contribute 16.6% to the sale of chips. The remaining 83.3% of chips are imported from TSMC and Samsung, among many others. The Chinese government has set the mandate of producing 70% of the total sold semiconductors locally by 2025.

The move to shift towards graphene-based chips is a much-awaited change. The Chinese semiconductor manufacturers have been the victim of outdated technology, which limited their chances of competing on the world stage. However, with cutting-edge graphene technology at the helm and the direct support of Chinese government, [China](#)'s chip manufacturing industry is expected to reach new heights.

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