

The recent progress of the semiconductor silicon technology (a review)

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Current state and prospects of development of world markets of semiconductor poly-Si and mono-Si are considered. Solar and electron grade silicon grown by Cz-Si method are under consideration. It was noted that after a period of low prices for poly-Si, which prevented financial investment in the industry, there is a period of price equalization to the level of investment attractiveness. Estimates of the balance of supply and demand until 2024 and in the long term are given. The main process diagrams of poly-Si and Cz-Si production under modern conditions are analyzed. It was noted that some surplus of the poly-Si market will continue in the near and medium term. However, the “green turn” proclaimed by all governments in the energy sector, the development of local markets and the restoration of prices to an investment-attractive level, contributed to the emergence of new projects for poly-Si plants. Domestic solar energy has finally approached the threshold, which makes it profitable to implement the entire technological chain of production of photovoltaic products. The next stage should be the expansion of localized production of Cz-Si in addition to the current sole fab in Podolsk.

Keywords: solar energy, microelectronics, poly-silicon, Siemens method, FBR-method, Czochralski method, demand, supply, balance, prices and pricing.

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