School of Engineering Physics and Radioelecrtonics: a new mini-plant for chips manufacturing

SibFU School of Engineering Physics and Radioelecrtonics has entered a project on compact microelectronic production for custom chip manufacturing, which provides for building a mini-factory according to the AIDL concept (Agile Integrated Device Laboratory). The university is planning to open a compact smart factory based on MinimalFab Japanese equipment.



Smart Factory are systems of complex technological solutions that ensure, in the shortest possible time, the manufacture of globally competitive products of a new generation and from a workpiece to a finished product. The distinctive features of these factories are a high level of automation and robotization which eliminate the human factor and related errors leading to losses in quality (unmanned production).

At the mini-factory, students will undergo practical training, implement their ideas and fulfil real-life orders of enterprises in the real sector.

Vladimir Zasemkov, assistant professor of the School of Engineering Physics and Radioelecrtonics of Siberian Federal University, notes that the semiconductor device market will almost double by 2025. However, the main market players — megafactories— are no longer interested in small orders; they take large contracts and crank out the same type of chips in millions of copies. As a result, there is no modern electronic filling for new highly specialized devices and devices produced in small numbers (from single-item production to a batch of several dozens of thousands). However, the needs of this electronics sector, according to leading analytical agencies, already exceed 50% of the entire world electronics market.

The future mini-plant has already acquired an industrial partner — Rost Engineering Centre (Zheleznogorsk).

"This equipment will be able to reproduce a full technological cycle of creating microelectromechanical systems for various purposes and even CMOS chips, only a thousand times cheaper and faster than modern megafactories," said Konstantin Baranko, director of Rost Engineering Centre. "It is also important that students will be involved in the process. Say, a student has designed a chip today. Within two weeks, they will be able to verify it and launch it into production. Today this is a unique opportunity that will be available only to students of Siberian Federal University."

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