



X-FAB DRESDEN GMBH & CO. KG

Construction and adaptation of a flexible production line for smart power circuits

X-FAB Dresden GmbH & Co KG develops, produces and sells semiconductors and sensors primarily for use in the automotive industry, in energy management, in industrial and medical applications as well as in the consumer and mobile communications sectors. X-FAB Dresden is a globally active company that specialises, among other things, in the production of customer- and application-specific integrated circuits for high-voltage technologies. The circuits can be used to communicate, measure, regulate and control various signals, making processes as a whole more energy-efficient and safer.

Challenges

The growing demands of the market for high-quality and cost-effective integrated circuits require optimised and flexible production of semiconductors and sensors in order to remain competitive in the long term. X-FAB is facing the challenge, to efficiently and flexibly design its production, which comprises a wide and very diverse product range. The company has

an enormous variety of products, but their production often involves only small or medium quantities and also processes very different raw materials. For this individual market, it is now necessary to develop methods of production organisation, factory control, quality monitoring and the associated data management and to orient them more strongly than before towards diversified production.

Objective

The aim of X-FAB Dresden is to set up a flexible production line for energy-efficient circuits and to drive it forward towards market maturity. For this purpose the company will further develop a pilot line developed in the European ECSEL funding programme for the production of semiconductor chips with extended functionalities. The end result will be a production solution for highly diversified product and technology portfolios in a joint production environment. The aim is to meet the requirements for effective and fast prototyping (time to market) as well as

the efficient manufacture of products with high quality standards.

Approaches

X-FAB's project will involve considerable research and development effort to create an innovative and flexible production line for power semiconductors for automotive and medical applications. The development work includes special process and material developments to make the systems more reliable, stable and reproducible. This applies in particular to processes with low capacity utilisation. New concepts for quality assurance and process control are being developed, as well as new device and application designs and new methods for handling different substrates (material and form) are developed within the same production. In addition, the individual process steps are automated and integrated in terms of data technology in the direction of Industry 4.0.



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Location

Dresden



Perspectives

The developments from the project not only provide a technological platform on which power semiconductors can be realised as components for future and innovative IoT applications from the automotive, medical and communications sectors, but also secure a technological lead for microelectronics in Europe. Medium-sized and small companies in particular will benefit from this, as it will make it easier for them to access power semiconductor technologies. X-FAB will design its production capacities and capabilities in such a flexible way that medium to small series in particular can be manufactured. With the development of high-performance, energy-saving and cost-effective semiconductor solutions, the two X-FAB projects contribute to advancing the key technology of micro- and nanoelectronics as a common European goal and to addressing the societal challenge of digitalisation. The solutions developed can be used in all industries where power semiconductors play a role.

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