



FlexLogIC™ Manufacturing innovation by PragmatIC

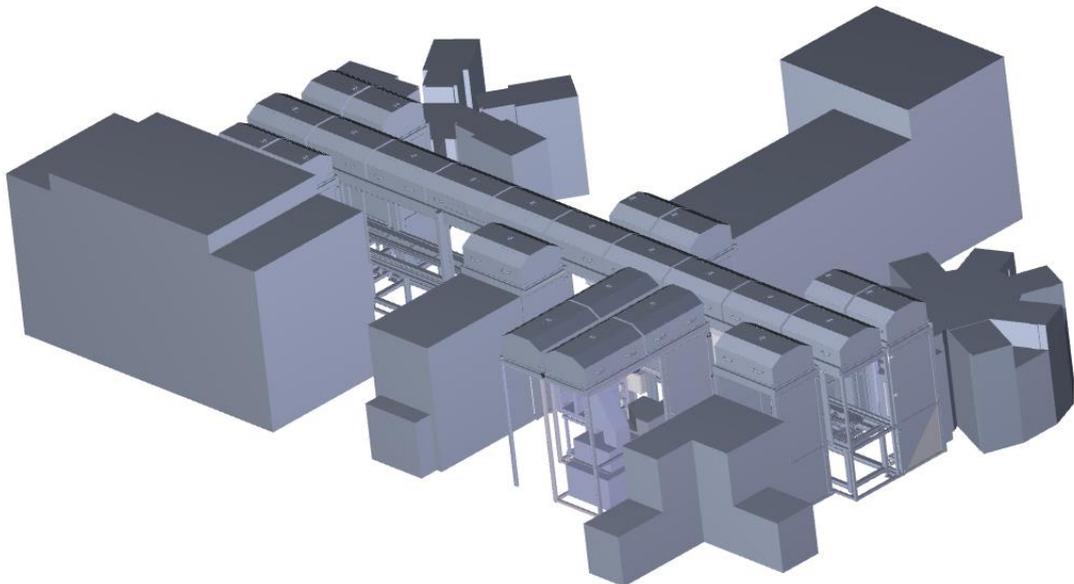
Electronics in everyday objects

PragmatIC is a world leader in ultra low cost flexible electronics, enabling the potential for trillions of smart objects that can engage with consumers and their environments. Our unique technology platform delivers flexible integrated circuits (FlexICs) that are thinner than a human hair and can be easily embedded into everyday objects.

PragmatIC's solutions provide the opportunity to add new functionality, as well as extending proven applications such as RFID and NFC into mass market use cases previously prohibited by the cost of traditional silicon ICs. Our novel, differentiated products are being adopted by a growing base of global companies across diverse markets, including consumer goods, games, retail, pharmaceutical and security sectors.

Now PragmatIC has developed FlexLogIC™ - a unique "fab-in-a-box" model for low capital, high capacity manufacturing of FlexICs.

While the traditional silicon industry is oriented towards delivering highly complex electronic products, FlexLogIC™ provides a radically different approach aligned to the mass market volumes and low cost requirements of embedding flexible electronics in everyday objects.



FlexLogIC™ fab-in-a-box

High capacity with low upfront investment

Establishing new silicon IC fabrication capacity requires extensive capital outlay, in the billions of dollars per fab. It is also a time-consuming process, typically requiring at least two years to build and commission a fab. Ramping up global capacity for trillions of smart objects using a conventional silicon IC foundry model would therefore be both cost prohibitive and high risk.

FlexLogIC™ addresses this manufacturing gap as the upfront investment costs are several orders of magnitude lower - between 100 and 1000 times lower capital expense than a silicon IC fab of a similar capacity. FlexLogIC™ systems can also be delivered more rapidly on a build-to-order basis in around six months.

This dramatic reduction in both cost and time opens up the potential for highly scalable FlexIC capacity, and enables a more distributed production model. Compared with silicon ICs, where a few very large foundry companies produce most of the world's supply, the FlexLogIC™ model can support a large number of manufacturers across multiple application sectors, geographies and industry supply chains.

Fully automated self-contained production

As well as enabling a shift to more distributed regional manufacturing, FlexLogIC™ also opens up the potential for non-electronics companies to become active participants in the supply chain for flexible electronic solutions.

Whereas silicon IC fabs require extremely sophisticated operational expertise in relevant process technologies, the fully automated nature of FlexLogIC™ means that it can be operated by companies with a comparatively low level of electronics expertise. The detailed material recipes, end-to-end process flow, in-line quality monitoring and feedback control loops are implemented within the equipment and software design, to ensure reliable production without operator intervention.

The physical footprint of FlexLogIC™ is also significantly smaller than a conventional silicon fab. Its self-contained nature allows installation in a wide range of manufacturing environments, such as label and packaging facilities, providing on-site just-in-time FlexIC production and eliminating months' worth of supply chain inventory.

Accelerated time-to-market

FlexLogIC™ production cycle time is under a day, compared with over a month for a silicon fab. The upfront design costs are also considerably lower, meaning that new flexible electronic solutions can be developed, tested, and rolled out in shortened timescales and with dramatically reduced risk.

When combined with on-site integration into the manufacturing supply chain, this enables a radically new model for rapid introduction of electronics into smart objects.

Electronics for the mass market

FlexLogIC™ delivers scalable high volume FlexIC manufacturing capability with very low upfront capital investment requirements, suitable for installation and operation in a diverse and distributed range of supply chain environments. This dramatically reduces the cost of scaling flexible electronics capacity compared with conventional silicon and reduces time-to-market. It enables a more responsive electronics supply chain structure, providing a natural fit with the existing geographically distributed production model of target markets such as labels and packaging for fast moving consumer goods.

For more information visit: www.flexlogic.systems and www.pragmatic.tech