



How 'smart' is the smart factory?

How is the move to digitisation changing the face of electronics manufacturing? **Frank Zycinski** looks at the impact it's having on factories

It would be fair to say that the electronics sector is full of buzzwords, from the Internet of Things (IoT), to Industry 4.0 and smart factories. While there is a debate to be had as to whether these are 'new' technologies or just processes that are being 'rebranded,' the fact is that these concepts are now taking centre-stage within the manufacturing landscape.

Contract manufacturing is a market in which design, development, manufacturing and distribution teams are having to work closely together to deliver new technologies, whether it's

for the IoT, or using augmented reality (AR), Li-Fi or artificial intelligence (AI).

While it's hard to predict the speed, scale, and scope of how these trends and technologies will become a reality, contract manufacturers will have a key role in enabling them.

So, how are these trends impacting contract manufacturers and the way they engage with their customers?

When it comes to high-complexity electronics, manufacturing the move into digitisation, or smart factories, has been building for years. But, in reality, it is only now that the full impact of this move is being felt

by both design and manufacturing companies as well as their customers.

Impact of digitisation

The digitisation of manufacturing works on two fronts. Manufacturers are using digital technologies to deliver greater process efficiencies, while customers are looking to develop smaller and more power-efficient products at a lower cost, with the additional ability to connect to any kind of data infrastructure.

One of the major changes that this is driving is that Original Equipment Manufacturers (OEMs) are now using Electronics Manufacturing Services (EMS) – particularly when it comes to getting new IoT products onto the market. Why? Because these products tend to often cut across traditional sectors, pushing OEMs to merge their traditional product lines with wireless technologies with which they have little experience.

It is a question of technologies and competencies. With many, particularly start-ups, it is that they have a product idea that is often in an advanced stage of planning/feasibility, but

they need a partner to engineer and deliver it. They are looking to work with a company that already has the technology and competencies in place to deliver to their requirements rather than having to heavily invest in new equipment and expertise themselves.

A prime example of this is the pharmaceutical sector where companies now pursue a different business model to that of even ten years ago. They are moving towards using experts outside of their own business to enable them to develop and deliver new products in a cost-effective way.

An EMS provider is no longer considered just for its production capabilities, but for the complete value stream of services that it is able to offer an OEM.

This is causing a sea-change in the way the two parties interact. It is very rare today that a company arrives with a fully formed design project and then says “make this for us”. It has become a much more collaborative process with the OEM selecting a design-through-to-manufacture company to engage with from the earliest stages of the process. This has the benefit of a product being designed from the outset to maximise its manufacturability, reducing the opportunities for defects and delays down the line and improving time to market.

However, it is not just in the design for manufacturing and engineering stages that this collaboration is taking place. It also extends to product qualification and aftermarket services. This is leading to longer relationships between the partners and a deeper understanding of the end customer’s needs on both sides.

Defining the rules of engagement

This trend is also driving a need for standardisation of processes and terminology across the electronics production market. The introduction of Industry 4.0 is one example where a ‘buzzword’ is given life and becomes a

platform for key industry issues to be discussed and then implemented.

Industry 4.0 has been referred to as the fourth industrial revolution through the use of cyber-physical systems, IoT, cloud computing, and cognitive computing. But what does this actually mean to an EMS? It’s a bit like the weather forecast - without access to constant data and measurement stations, a reasonable prediction is impossible.

Industry 4.0 and the smart factory enables a clearer picture of what is happening in the factory. For example, more facilities are using sensors that are able to communicate what is happening and where. This allows for better control, planning and delivery.

This also means that the EMS provider can confidently communicate on progress with its customer at every stage of the production process.

This notable change in the level of communication within the partnership has arisen as a direct result of the technological developments in modern electronic production. Today, it is essential that effective relationships are built with all parties at an early stage of a product’s development. These may be interdepartmental, between companies or on an international scale. Whatever the scope, defining the rules of

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engagement for all parties at an early stage in a formal, contractual agreement is now best practice.

Building these networks early on provides a common ground for the development of trust between the stakeholders. It allows for increased levels of communication. These ground rules should be laid down at the initial proposal stage. By describing and defining the division of deliverables within the scope of the project, it ensures that all participants clearly understand the work to be done. This provides the foundation for a successful environment.

During the life of any project something always ‘comes up’. However, with a clear path of action and defined levels for escalation already in place, this should never become a problem. With all these areas covered there should be no barrier to implementing a successful programme for any project. Utilising best practices means that all stakeholders will benefit from the experience and capitalise on a broader base of knowledge.

‘Smart’ production

This has been a learning curve across the whole electronics manufacturing sector. The need for wide ranging communication has become essential as EMSs find they are working on increasingly complex products for companies outside of its traditional customer base. More OEMs are looking to work with an EMS that can offer both a full range of engineering skills and close physical proximity, so that they can keep the lines of communication easily open.

Smart factories, Industry 4.0 and IoT may be what everyone is talking about, but it is a high level of communication between all stakeholders that will ensure that success is achieved. This is the major change that will move the electronics sector even further ahead and facilitate a step change in performance.

