Industrial Internet of Things Integration

BY LUIGI DE BERNARDINI | TUE JUN 16 2015

Industrial and economic analysts predict that over the next ten years the demand for mass-produced, highly personalized products will guide innovation of production processes and organization. This will require the convergence of mechanical, electronic, and information technologies.

Innovation in fields such as robotics, automation, Cloud Computing, 3D printing, social networking and connectivity will lead to a new form of production identified as smart manufacturing, Industry 4.0 or Industrial Internet of Things. This imminent convergence of multiple technologies will not merely lead to new manufacturing processes, but to a more radical transformation of business processes that are directly linked to production. Processes in which human beings, machines and resources will communicate among each other in a very natural way, resembling what is happening today in social networks.

Proprietary interfaces and the development of custom integration systems will be outdated by the adoption of Internet-based standard protocols that will allow you to combine, in a flexible way, components from different

vendors to quickly and effectively adapt the production processes to the market demands.

Flexibility has become the key to surviving and competing in today's economic environment. It is further destined to become the core element around which any productive organization is structured, expanding processes beyond the traditional walls of each plant.

> Production will, in fact, continue to become ever more interconnected, until each component is interconnected with all others, generating the Industrial Internet of Things.

Logistics will need to be first to adapt. Increased flexibility goes hand in hand with the need to reduce stock levels, which many companies have already embraced as part of lean manufacturing initiatives. This results in the need to improve the procurement process, often involving a large number of parts from global suppliers with greater transport times. This increases the number of manufacturing steps needed.

The coordination of all of this must be carried out in a stable and reliable manner. Most of the technologies are already available, but a transformation in the way many companies approach the market is required. In some cases, this will lead to a change of business model, where the Industrial Internet of Things becomes the central element.

Technical, market, sector and process knowledge will have to join together to ensure that information and physical objects connect seamlessly, without any distinction.

Also the separation between products and business processes will disappear. It will no longer be possible to

approach the two areas separately. Their fusion is necessary, with physical devices that become integral components of business processes, nourishing them with data and information, generating events that affect the flow and transporting themselves according to the rules by which they must be managed.

The fourth industrial revolution will be marked by materialization of the information or, equivalently, the computerization of physical components and the total integration of machines and work flows. This scenario has a significant implication—the proper management of information and the interdependencies of the materials will lead to a reduction in production time and required stock, with a consequent reduction in required capital.

This moves the competitive advantage from those who have greater capital investment capacity to those who have a greater capacity for information coordination and control, those who are able to operate with a maximum level of flexibility.

We are certainly only at the beginning of the fourth industrial revolution, but given the speed of change brought about by technology, it is reasonable to think that we could be admiring a significantly changed manufacturing scenario within the next few years.

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