Manufacturing in the New Norm

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Social distancing, protecting your employees, restarting operations and machines, catching up on supply chain gaps. Just like society as a whole, manufacturers are experiencing a lot of additional challenges they didn´t expect, and to top it all many are facing reduced budgets. So how do you navigate the new manufacturing norm?

As an initial quick fix to social distancing in a factory, individuals could use face guard and masks. "Manufacturers are now trying to adapt to the changes in conditions, especially in two major aspects," said Hajime Sugiyama, Industrial IoT Evangelist of Factory Automations Systems Group, Mitsubishi Electric Corporation.

"For example, how do you implement social distancing in a factory?"

It´s a very interesting question which has more permutations than most people initially consider. Starting with the individual we can all imagine the use of face guards and masks, and indeed many industries have traditionally used such PPE (Personal Protective Equipment), but this was driven from a hygiene or clean environment standpoint for industries producing such things as food, drugs or even sensitive electronics and semiconductors. Such PPE is not necessarily desirable in all industries, however. For example, in hot or humid environments wearing a mask may actually increase the risks of heat exhaustion, so care must be exercised in truly understanding the worker´s environment.

Some plant managers are considering using screens between workers, but this is also not a panacea as there can potentially be space and restricted movement issues as well as possible problems around access to emergency devices (E-STOPs) or reporting/controlling devices….. or simply visibility challenges.

Stepping back from the individual challenges, Sugiyama goes on to say, "Many manufacturers are focusing on social distancing through shift management. To achieve this, you need to balance work shifts so that fewer people are working together at the same time to prevent a pandemic situation inside the factory. But this presents a whole new set of challenges".

While balancing shift patterns provides factory managers with a level of operational redundancy, i.e. if one shift needs to be suspended due to infection, the second and/or third shifts can continue business as usual after the plant has had a thorough cleaning, it is a natural consequence that less people working will naturally lower productivity. So how do you counter that? "Many manufacturers are focusing on social distancing through shift management," explained Hajime Sugiyama, Industrial IoT Evangelist of Factory Automations Systems Group, Mitsubishi Electric Corporation.

Let your Cobot take the strain

"Building extensive automation solutions takes a great deal of time, budget and planning", says Sugiyama, "and in these times when manufacturers want to get up and running quickly and flexibly all three resources are likely to be in short supply."

So what´s the alternative? One possible solution is the increased use of industrial collaborative robots like MELFA ASSISTA. Typically, these light devices can be quickly deployed, are human friendly and so flexible that they can be quickly trained

to do a variety of tasks, i.e. you do not need to have extensive robotics expertise. Probably a key deciding factor is that on the whole they are very cost effective. Enhancing the cobot solution further with AI driven environmental management software, as seen with solutions such as e-F@ctory Alliance partner Realtime Robotics, reduces programing burdens even further and offer live travel path adaption so that the robot can dynamically navigate around obstacles such as humans, other robots and alike.

It´s clear one solution will not fit all, so flexibility to adopt the right social, ´mechanical´ and collaborative solutions will be the norm. An additional area of consideration is remote access," claims Sugiyama.

Remote is not just for homeworkers

Returning to full operations, restarting processes and lines often reveals underlying problems which were not previously visible and creates a maintenance nightmare of unquestionable proportions. Remote access is a key benefit but if the device you are accessing is not intelligent, the value is drastically reduced as the amount of information is restricted. However, if you are lucky enough to be using intelligent automation devices which have degrees of self-determination and extensive diagnostics, resolving maintenance issues can be accelerated. But aren´t all automation devices intelligent?

"While the essential product performance/function maybe similar, you would be mistaken if you thought that all products are equal. For example, it is not really true to say ´a drive is a drive, is a drive,´" states Sugiyama.

As an example, many traditional users of Mitsubishi Electric´s inverters will be familiar with simple features such as a 3-wire fan, the significance of which only

becomes apparent in times like these. The benefit is the ability to diagnose the health of the cooling fan – which in turn helps extend the life of the inverter. In more recent products there are unique environmental sensors on the circuit boards to detect effects of corrosive or polluted atmospheres, complimented by the merging of communications, intelligence and AI through the inverter hardware and partner software to provide advanced maintenance diagnostics.

Sugiyama explains, "Advances in product technology are not limited to the ´external function´ of the device but also in how its operational life is managed and that means maintenance and performance KPIs – but such knowhow cannot remain locked up inside the product and really excels when it can be remotely accessed by the maintenance teams."

IIoT, Industry 4.0, etc. have been talked about for years, but at their core is the process of communication, extraction of data and subsequent analytics. However, when plant managers consider remote access solutions they often quake in their shoes as they contemplate a large, extensive SCADA system and all its associated paraphernalia. It is true these comprehensive systems are excellent for capturing vast amounts of data, providing alarms and analytics and reviewing historical data, but as mentioned earlier they do take time to correctly plan and install. Other, quicker solutions can be remotely, but directly, connected to an HMI device on the shop floor to mimic the local screen or can access data over a wireless interface, or even the more recent trend towards utilizing Edge controllers.

So what is the new Norm?

Actually, for Sugiyama he sums it up as "A practical approach is critical. Sometimes the answer is simply a partition screen, other times it is an investment in a cobot,

but the watchwords are flexibility, scalability and results focus. So maybe the new norm is actually reminding us to identify what is important."

Learn more about industrial IoT through Webinars on the Mitsubishi Electric FA channel at: Latest Industry IoT trends for everybody

Image captions:

Image 1: Hajime Sugiyama Industrial IoT Evangelist of Factory Automation Systems Group, Mitsubishi Electric Corporation. [Source: Mitsubishi Electric Corporation, Japan]

Image 2: As an initial quick fix to social distancing in a factory, individuals could use face guards and masks. [Source: Mitsubishi Electric Corporation, Japan]

Image 3: Some plant managers are considering using screens between workers, but this is not a panacea as there can be operational limitations [Source: Mitsubishi Electric Corporation, Japan]
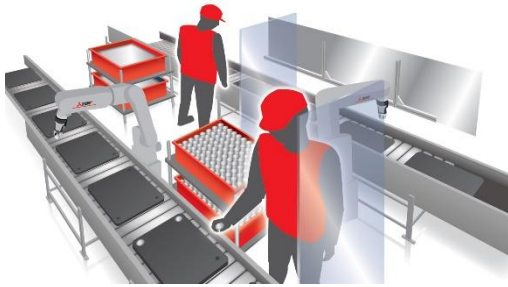
Image 4: One possible solution is the increased use of industrial collaborative robots like "MELFA ASSISTA" [Source: Mitsubishi Electric Corporation, Japan]

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*U.S. dollar amounts are translated from yen at the rate of ¥221=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2022.

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