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SIMPLE FOR HUMANS BUT TOO COMPLEX FOR ROBOTS

How close are we to hitting full speed on a lights-out factory, product traceability, robotics, digital twins and high-end automation in manufacturing? Mahesh Wagle, Co-founder & Director, Cybernetik gives a tour through the factory of the future.

As the chieftain of an industrial automation company—that has been undertaking the designing, building, and end-to-end installation of turnkey automation systems for the Food, Agro, Pharmaceutical, and Chemical industries for over three decades—Maresh Wagle has the best vantage point to tell both the good and the challenging side of emerging technologies for making factories better, smarter and faster. Let's find out more.

As a company that specializes in robotics and automation expertise, what do you, yourself, look for when you choose any technology for internal use?

As an integrated solutions provider that manages the chores of planning, manufacturing, and installing end-to-end, turnkey automation systems, which we consider our USP, we look for the same qualities when selecting technology for internal usage. Our technological USP stems from the fact that we operate in a variety of sectors, from wind to pharmaceutical, which allows us to cross-pollinate ideas and concepts to develop novel solutions for technological issues that aren't addressed by conventional machinery.

What are the challenges and caution-areas for any CIO—especially in automotive or heavy-industry enterprises—when they are planning a 'lights-out' factory?

Fully automated technology is used in a process known as "lights out manufacturing" to operate a production facility with little to no human involvement. Multiple technologies, including machine learning and high-frequency data collection, are needed to support this. As a result, there would be a significant decrease in workplace accidents, building maintenance expenses, and labor costs. Since machines can reproduce human actions precisely, every day, unlike humans, manufacturers will also experience fewer quality difficulties.

While having a system where machines could be turned on and left about is the essence of manufacturers' dreams, it also has its share of drawbacks. Initially, putting up fully automated processes can be a major technical difficulty that may call for a significant financial commitment. Second, it could be harder to implement automation or see enough benefit for more complicated jobs as well as smaller production runs and operations. Additionally, it should be emphasized that no matter how much a process can be automated, human involvement will still be necessary if something goes wrong in a manufacturing setting and damages raw materials, physical property, machinery, or equipment.

However, these problems can be avoided with remote monitoring and automatic machine failure detection. Lights-out factories must perform scheduled preventive maintenance.

Can robots completely replace humans in factories?

Contrary to common belief, automation won't entirely replace human labor in the near future. But it will instead lead to a dynamic fusion of worker knowledge and technology. We are likely to be living in a time where robots and people coexist. Intelligent automation will free up workers' time to focus on more important, dynamic work by taking over boring, unfulfilling tasks that do not utilize their skills or creativity. Additionally, it will free up time for workers to interact with one another in more significant, original, or relational ways.

What adoption path and inflection points do you see in India when it comes to IIoT, industrial sensors, AI-led preventive maintenance and digital twins?

India's automation industry has progressed from basic operational mechanization to sophisticated automation. The latter employs smart manufacturing, which provides actionable data insights for ongoing development, using technologies including Artificial Intelligence (AI), Machine



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WE MADE INVESTMENTS IN TECHNOLOGY THAT ENABLED US TO PROVIDE REMOTE COMMISSIONING, MAINTENANCE, INSTALLATIONS, AND SUPPORT, NOTABLY DURING COVID.

Learning (ML), data track-trace, cyber physical systems, Internet of Things (IoT), poka-yoke, and digital twins.

Today's manufacturing process design is being impacted by technologies like IIoT, networked plants, and digital twins. When it comes to food products, where quality cannot be compromised, IIoT plays a significant role. Today, every product comes with a barcode on the box if it is part of a batch. Traceability is therefore crucial. If a complaint has been received regarding one batch, you can use the barcode to track that batch in case it was part of the original batch in question.

The digital twin is now attainable due to the digitization of production processes. It aids the discovery of physical flaws earlier, anticipates outcomes more precisely, and creates better products by offering a full digital twin of systems.

How does technology jump in—and where—when you plan capacity expansions—like the one recently announced with a new manufacturing plant?

The decision to expand capacity requires careful consideration and foresight. It is based not only on the skills of our internal teams but also on the state of the financial markets, the expansion of the sector, the political climate, and the international business environment. When we plan capacity expansion, it's to meet the needs of a developing industry or an anticipated increase in demand.

How do you ensure that your processes and tech back-end are seamless when you collaborate with other players—like with Buffalo Extraction Systems?

Having been around for more than three decades, our backend teams have a solid foundation of cross-functional collaboration and process-led operating norms. Our teams are all led by seasoned managers who share a common objective. All stakeholders are guaranteed to have an equal commitment, thanks to management's transparency with its workforce. Last but not least, a

positive workplace culture makes sure that everyone in the team is motivated to work.

You plan to build 5X more factory robots—what's your advice to a CIO who is considering this afresh—and to a CIO who has already invested in robotics?

There is a race to solve a significant unaddressed opportunity for expanding the use of industrial robotics in manufacturing. There are still some production tasks that are simple for humans but too complex for robots. Owing to this, it is crucial for CIOs to take into account the potential of robotics and new technologies in various fields and employ them appropriately to carry out these activities. Any automated system aims to be time—and cost-efficient. CIOs should constantly be looking for methods to reduce the utilization of expensive resources in this regard, with automation already having an impact.

What was the best technology investment done for any business process in the last 2-3 years at your company?

We made investments in technology that enabled us to provide remote commissioning, maintenance, installations, and support, notably during Covid. Additionally, we also invested in the most recent design software for AR, VR, etc. The main ROIs from remote commissioning are a reduction in validation time from weeks to days, minimal cost of changes, better safety, and improved uptime.

What next are you planning to embrace for your own use—in next-gen technology?

Moving ahead, we plan to make greater use of Augmented Reality (AR) to further streamline the virtual commissioning process. This is within the broader context of streamlining the entire process from concept to commissioning. Another vital aspect of this exercise is the faster and more accurate incorporation of feedback received from process simulation into design. 