

THE TAKE

The word “factory” might make you immediately think of a run-down building with smokestacks and tanks on the roof.



Photos:

Li, Y. *FUTURE STITCH Smart Factory in Jiaxing, China.* <https://www.archdaily.com/915654/future-stitch-smart-factory-azl-architects>





Deloitte. *Smart Factory in Wichita.* <https://www2.deloitte.com/us/en/pages/about-deloitte/articles/press-releases/deloitte-opens-new-us-smart-factory-in-wichita-kansas.html>


Menges, S. *View of TRUMPF Smart Factory Chicago from south, with machine showroom at left.* https://www.architectmagazine.com/project-gallery/trumpf-smart-factory-chicago_o

THE REVEAL

So, you probably wouldn't guess that the buildings pictured aren't sleek office buildings—they're factories.

THE SCOPE

These are smart factories, which, as the name suggests, are extremely high-tech. They're being constructed as part of a greater  movement  within manufacturing, known as  Industry 4.0 



Industry 4.0 (aka the Fourth Industrial Revolution) is the collective term for new technologies that promote interconnectivity  between equipment and human workers across factory floors. We'll dive into these specific technologies in the next few newsletters.

DEFINING IT

Just a few of the countless cutting-edge technologies found in smart factories...


SMART SENSORS



The equipment in smart factories do a lot of self-evaluation.

With smart sensors , equipment can collect and store data about their own performance. The data allows human operators to determine if the equipment needs any fixing (predictive maintenance)  and to perform quality checks on the factory's products.

AUTOMATED TECHNOLOGIES

There's been some talk about building what are called "dark factories."


As the name suggests, there is no light  inside these factories. *Why?* Dark factories employ zero human workers. The equipment in dark factories, called automated technologies, are designed to perform tasks without *any* human assistance or input.

In smart factories, automated equipment not only operate without humans, but also communicate with each other. All the equipment  across  one factory floor can collectively detect and solve issues in the production process by collecting, sharing, and analyzing data from their smart sensors.

ARTIFICIAL INTELLIGENCE (AI)

AI-based technologies help smart factories perform quality checks, maintain equipment, and reduce environmental impact.

Specifically, AI can...

...use high-resolution cameras to find defects in extremely small products (like microchips or circuit boards). 

...identify problems with equipment *before* the problems even occur.

...use sensor data to adjust fuel valves in factories, keep carbon emissions at a low. 

THE VISUAL



AN INSIDE GLIMPSE

The factory floor of one of the buildings on pg. 1

Photo: New Equipment Digest. Interior of smart factory. <https://www.newequipment.com/industry-trends/article/21257304/where-manufacturing-technology-goes-in-2023-part-1-smart-factories>

THE MEASUREMENTS

Smart sensor data displayed



Photo: Manufacturing Leadership Council. Smart Factory 2.0 @ Wichita production line. <https://www.manufacturingleadershipcouncil.com/experiencing-m4-0-at-the-smart-factory-wichita-tour-28282/?stream=plant-tour-reviews>



Photo: TRUMPF. Machinery in TRUMPF smart factory Chicago. https://www.trumpf.com/en_CA/solutions/smart-factory/our-smart-factories/chicago/

CHECKING IN

In smart factories, human workers mostly inspect and maintain machinery

IT'S ALL CONNECTED

This central piece of machinery processes the materials necessary for other machinery across the factory floor

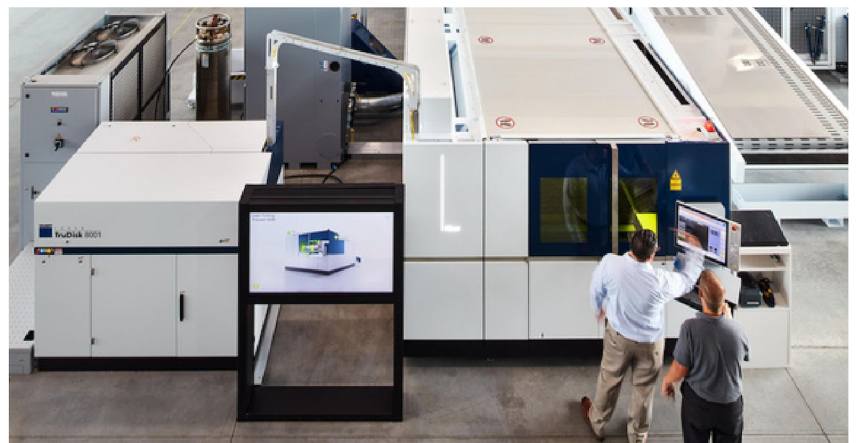
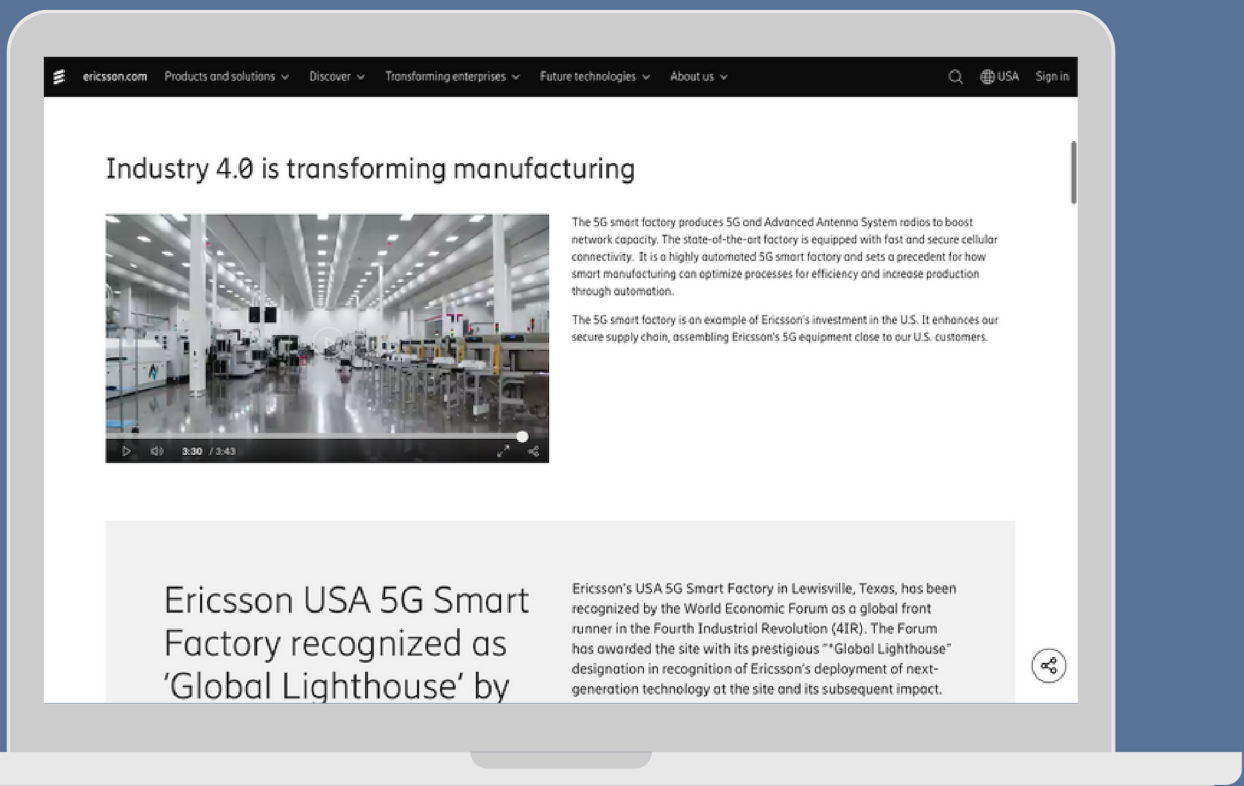


Photo: TRUMPF. Machinery in TRUMPF smart factory Chicago. https://www.trumpf.com/en_US/solutions/smart-factory/our-smart-factories/chicago/

CHECK THIS OUT!

[Link to Ericsson Smart Factory Tour](#)



LOOKING AHEAD



Edition 3 –The Internet of Things

The next few newsletters will cover specific examples of Industry 4.0 technologies. Stay tuned!

FOLLOW OUR SOCIALS



Instagram: @thesubortusproject

Email: info@thesubortusproject.org

Website: thesubortusproject.org

Written by Olivia Liu

SOURCES CONSULTED

https://www.trumpf.com/en_US/solutions/smartfactory/our-smart-factories/chicago/

<https://industrial.omron.eu/en/solutions/blog/starting-the-smart-factory-journey>

<https://news.sap.com/2022/09/the-smart-factory-wichita-future-of-manufacturing/>

<https://www.archdaily.com/915654/future-stitch-smart-factory-azl-architects>

[Cobots: 14 Things You Need to Know | Gardner Web](#)

<https://www.forbes.com/sites/bernardmarr/2018/09/02/what-is-industry-4-0-heres-a-super-easy-explanation-for-anyone/?sh=66ae8a399788>

[Where Manufacturing Technology Goes in 2023: Part 1, Smart Factories | New Equipment Digest](#)

[Experiencing M4.0 at The Smart Factory @ Wichita Tour](#)