



5 Considerations to Connect Your Manufacturing Facility

Industry 4.0 is here—the world around us is connected, automated, and filled with data. Remember the days before our smartwatch collected data about our activity and location during the day? Smartwatches of today can even monitor oxygen levels and heartbeats, analyzing those elements to measure your sleep quality each night.

These connection points in our daily lives provide us with data that helps us to make better choices—going for an extra walk during the day or choosing a more suitable bedtime. Manufacturing facilities are no different—from doors opening and closing to lights going off and on—these data points help us to understand how manufacturing facilities are occupied and utilized each day.

Industry 4.0 can unleash your manufacturing facility's potential in a multitude of ways.

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15–20%	15–30%	30–50%	10–30%	85%	10–20%
inventory-holding cost reduction	labor productivity increase	machine downtime reduction	throughput increase	forecasting accuracy improvement	cost-of-quality improvement

According to The US Office of Energy Efficiency and Renewable Energy, manufacturing facilities utilize 35% of the electricity used in the US². When we create an understanding of how a manufacturing facility is used, we can take action to improve its energy usage. Connecting your manufacturing facility doesn't need to be complex—these five considerations can help you have a conversation with a controls provider, like Trane, to design a system to meet your needs:

1 What are your goals and what will you need to measure and control?

What are the goals for your manufacturing facility or business operation? Decarbonization, the act of reducing energy use and emissions, is trending across the industry. If decarbonization is a concern in your facility, sensors can help detect variables like humidity to adjust how much outside air is needed to increase comfort without sacrificing efficiency. Our sensors can even monitor cooling initiatives—our process cooling solutions eliminate unwanted heat and ensure that the process can continue safely and reliably, thereby protecting your bottom line and helping prevent dreaded downtime. Even when ambient temperatures fluctuate, we can deliver the necessary cooling capacity.

2 How will you connect your manufacturing facility?

After you've decided on the goals for your manufacturing facility, the next step is how to connect your manufacturing facility. You can think of this connection point as your manufacturing facility's smartwatch. If you have a small space with only a few zones, a web-connected smart thermostat may fit your needs. If you have a medium to large manufacturing facility or something more complex, a building automation system—commonly referred to as BAS—would do the trick. You can also use a mix of smart thermostats and BAS if you are responsible for multiple manufacturing facilities. It's important to choose a solution that will give you the flexibility to change and grow, provide a secure remote connection to your manufacturing facility, and utilize standard open protocols such as BACnet. Cybersecurity is another important consideration when connecting your manufacturing facility. Other connection points to consider include:

- Sensors throughout the building can help us to understand if a room is occupied, has a comfortable humidity level or even safe by detecting CO2 levels. Zone sensors help us to understand the temperature of the space.
- When selecting HVAC equipment, it's important the equipment has a connected unit controller that utilizes standard open protocol, such as BACnet. A connected unit controller allows for the building automation system to control your HVAC equipment based on data through the building.

3 How will your manufacturing facility's system control and equipment controllers communicate?

Now that you have your manufacturing facility and its components connected, how do you want all the controllers in the facility to speak to one another? Wireless communication is a reliable and flexible choice that allows all parts of the manufacturing facility to speak to the building automation system without wires. Wireless communication is also an easy way to make sure your facility is future-proof. Wired communication, MSTP or IP, is another option that involves physical wires that connect equipment controllers to the BAS. IP communication can provide faster data speeds for large complex control systems.

4 How will you manage your manufacturing facility?

What's the purpose of your manufacturing facility being connected and communicating if you can't get a good view of it all? A building management system—commonly referred to as a BMS—can help you get a good picture of all the happenings in your manufacturing facility or portfolio of facilities. Dashboards and reporting make it easy to recognize trends in the data you are collecting. It's important to choose a building management system with secure remote access so you can access your BMS from virtually anywhere, even on your smartphone. It's useful to select a BMS that has standard user interfaces and graphics to decrease the amount of training needed to operate and make it easier for service providers to access.

5 What actions will you take for your manufacturing facility?

Now that you have a baseline and view of your building's operation, it's time to act! Our building automation system (BAS) platform, Tracer SC+, comes with operational excellence built-in—meaning years of manufacturing facility expertise and optimization algorithms are included out of the box, finding ways for your HVAC systems to run more efficiently, automatically. Additionally, as building system and user needs scale to larger and more complex Building Management System (BMS) needs, Tracer Ensemble provides a BMS with cloud-based flexibility and reliability. Our experts are also here to help you find ways to meet your goals, such as decreasing your manufacturing facility's energy footprint—from lighting upgrades to Trane Intelligent Services, Optimization Services and Energy Performance contracts.

The baseline is just the beginning. [Contact us today](#) to learn more about getting connected and making a difference for your manufacturing facility and the world.

1. Capturing the True Value of Industry 4.0, McKinsey Company

2. About the Commercial Buildings Integration Program, Office of Energy Efficiency & Renewable Energy



Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit trane.com or tranetechnologies.com.

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