

CHAPTER 1



2-pipe HVAC (heating, ventilating, air conditioning) system: A two-pipe system consists of fan coil units with single coils connected to two pipes. The two pipes, one supply and one return, are connected to supply lines in the building's mechanical room. Supply lines can supply hot water or chilled water. Two pipe systems are less flexible than a four-pipe system because the entire building is in either heating mode or cooling mode.

3-level password protection: Requiring an additional password to authorize critical operations greatly reduces the surface area to attack the secondary credentials since they are used less often; for example, a power-on password, a parameter-setting password, and a parameter correction password. Requiring reauthentication to perform special actions can protect against CSRF (cross-site request forgery) attacks. Cross-site request forgery is also known as *one-click attack* or *session riding*.

3D laser scanning system: A very precise system that captures 3D shapes on an assembly line to inspect, measure, and collect data of real-world objects.

4 -pipe HVAC system: A four-pipe system includes the distribution system that consists of a hot water supply with return lines and a chilled water supply with return lines. Four-pipe systems can supply heat to one room while simultaneously cooling another room. A four-pipe HVAC system can be hacked so the building heat and cooling systems are on at the same time, working against each other—driving up energy costs.