

Assessing if a Water & Wastewater System has Operational Technology

This document helps to determine if a Water and/or Wastewater System (WWS) is using operational technology (OT).

Does the WWS use any OT?

- The term “*operational technology*” means hardware and software that detects or causes a change through the direct monitoring or control of physical devices, processes, and events in the enterprise.
- In other words, OT is technology that uses a combination of software and hardware to monitor and control specific devices and processes in an industrial setting.
- A WWS may use OT for one or more of the following operational processes: source water intake, treatment, distribution, water storage, pumps, and monitoring.
- Examples of OT include industrial control systems (ICS) such as Supervisory Control and Data Acquisition (SCADA) systems for drinking water treatment and distribution, building management systems, fire control systems, and physical access control mechanisms.

NOTE: Even if a WWS’s OT system is “air-gapped,” meaning it is not connected to the Internet, it may still be vulnerable to cyber incidents.

Does the WWS use any of the following OT commonly found at a WWS?

SCADA:

A system of software and hardware components that allow the WWS to control industrial processes locally or at remote locations; monitor, gather, and process real-time data; directly interact with devices such as sensors, valves, pumps, motors, and more through human-machine interface (HMI) software; and record events into a log file.

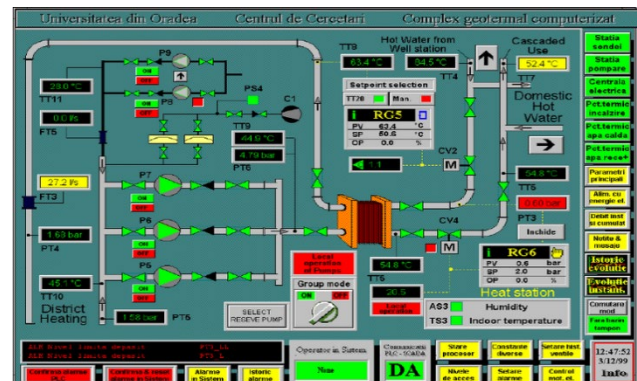


Figure 1 SCADA

Please note: This is a short list of some of the more commonly found OT at WWSs. It is not intended to be an exhaustive list of all OT that may be used at a WWS.

HMI:

A user interface or dashboard that connects a person to a machine, system, or device. While the term can technically be applied to any screen that allows a user to interact with a device, HMI is most used in the context of an industrial process.



Figure 2 HMI

Programmable Logic Controllers (PLCs):

Small industrial computers, with various inputs and outputs, used to control and monitor industrial equipment based on custom programming.



Figure 3 PLC

Remote Terminal Unit (RTU):

Remote Telemetry Unit or Remote Telecontrol Unit is a control device typically installed in a remote location as part of a larger system. The main purpose of an RTU is to monitor and control field devices, such as valves, actuators, sensors, and more.



Figure 1 RTU

Are there systems that have a low cybersecurity risk?

A WWS with hardware-based OT that does not meet any of the conditions below may have a lower cybersecurity risk:

- Connected or occasionally connected to a computer (for any reason including alarm reporting), or
- Connected or occasionally connected to a network (local, wide area or internet), or
- Are remotely accessible or occasionally remotely accessible (either for control or monitoring)

If you are still unclear whether a WWS has OT, [EPA's Cybersecurity Technical Assistance Program for the Water Sector](#) can help you. Click on the link to submit your questions or request to consult with a subject matter expert about cybersecurity today!