CROWN JEWEL ANALYSIS

- SYSTEM OWNER
- CRITICAL SYSTEM OR SUBSYSTEM
- CRITICAL FUNCTION OR SUB-FUNCTION
- CRITICAL COMPONENTS
- CONTROLLERS
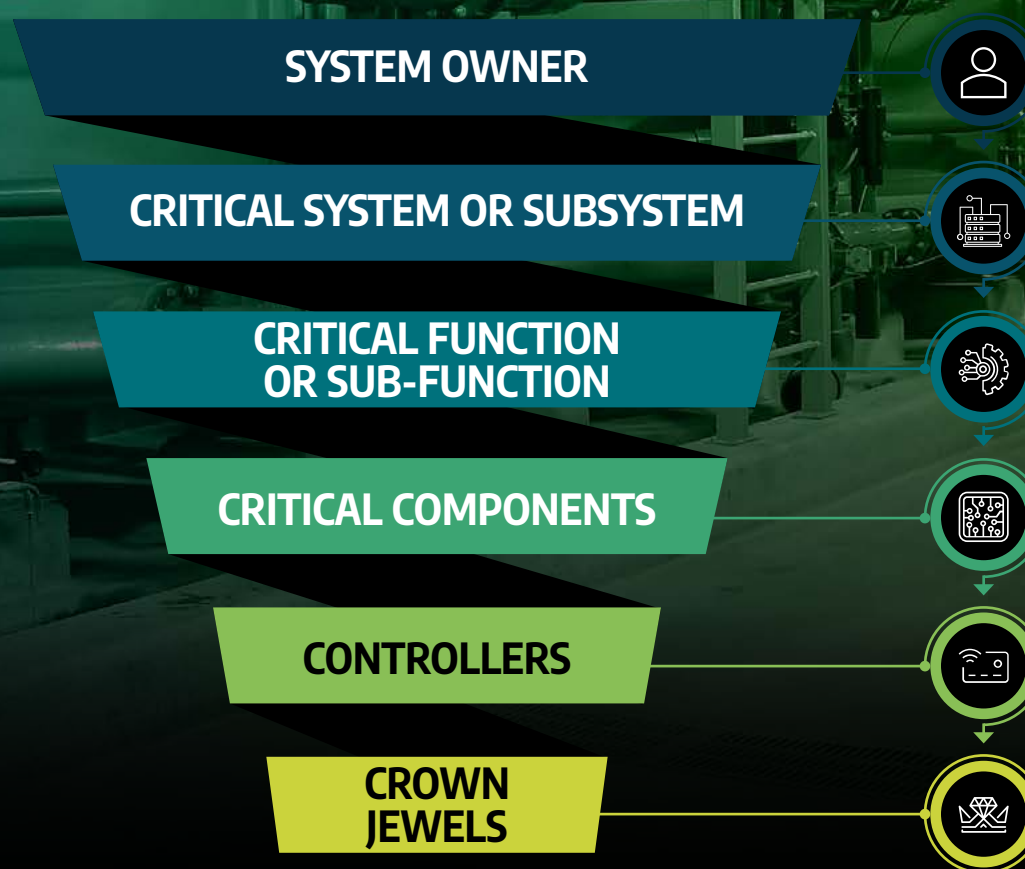- CROWN JEWELS

SECTOR: WATER TREATMENT CONTROL SYSTEMS

Crown Jewel Analysis (CJA) is an iterative process that works top-down to systematically determine the physical & logical assets, data, and communication and control interfaces required for primary system function. Knowing the specific devices required for operation enables every aspect of vulnerability management, incident response, disaster recovery, and where protection and detection should be prioritized.

Finished water pumping is a primary function of the drinking water treatment processes. Once drinking water meets quality requirements (e.g., turbidity, hardness, and MCLs) as determined by the appropriate local regulators, it must be pumped to a finished water storage tank. Problems at any stage within the process can have a direct impact on households, businesses, public services (e.g., firefighting) and other locations in the services areas.

Below is a simplified example of a Crown Jewel Analysis for the water treatment control industry. Categories below are arbitrary and some products could be placed in more than one (or many) categories.

SYSTEM OWNER
Specific provider within an industry discipline, geographic region or demographic that may be targeted

WATER TREATMENT CONTROL SYSTEM

WATER TREATMENT CONTROL SYSTEM

CRITICAL SYSTEM OR SUBSYSTEM
Collection of assets, facilities, networks and/or operators that provide a specific, collective function and output

WATER TREATMENT PLANT

FINISHED WATER PUMPING

FINISHED WATER PUMPING

CRITICAL FUNCTION OR SUB-FUNCTION
Required principal tasks of a system such as heating, cooling, exchanging, pumping, separating, compressing, distributing, storing, etc.

FINISHED STORAGE TANK LEVEL/FLOW CONTROL

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Shown here are examples of physical and logical devices that are representative of these levels of the model. These will be unique to the critical function of the CJA. Items listed below are commonly found in the wastewater treatment industry and are not CJA specific for this example.

CRITICAL COMPONENTS
Physical assets required to complete a system critical function

VARIABLE FREQUENCY DRIVES (VFDs)	ULTRASONIC LEVEL TRANSMITTERS	DIFFERENTIAL PRESSURE SENSORS
PUMPS	LEVEL MONITORING INSTRUMENTATION	
ELECTRIC MOTORS	VENTURI FLOW METERS	

CONTROLLERS
Represented by their direct interconnection between the logical and the physical network

FINISHED WATER PLC	FACILITY PLC PROVIDING OPERATIONAL INTERLOCKS
PANEL VIEW OITs	

CROWN JEWELS
Critical data, logical assets and/or communication and control interfaces required to exercise control over components, and thus, functions

PLCs	VFDs
PANEL VIEWS	FIREWALL
I&C TECHNICIAN LAPTOPS	REMOTE ACCESS CONNECTION

COMMON VENDORS: AUTOMATIONDIRECT | GE | Ignition by inductive automation | MISSION COMMUNICATIONS | OSIsoft | RSView 32 | Rockwell Automation | SIEMENS | VTScada Software for Monitoring & Control | WinCC Professional | AVEVA Wonderware

DRAGOS