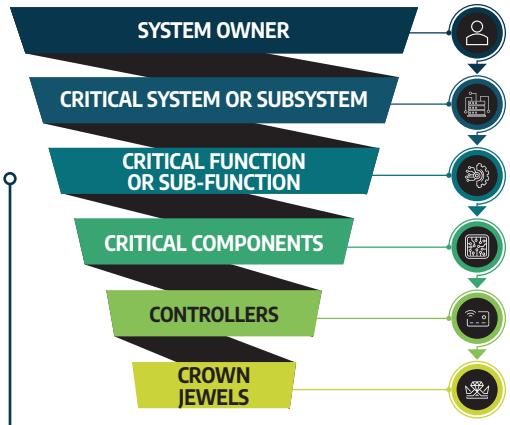

CROWN JEWEL ANALYSIS

DRAGOS

SECTOR: WIND POWER GENERATION

Crown Jewel Analysis is an iterative process that works top-down to systematically determine the physical and 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. Below is a simplified example for wind power generation.

SYSTEM OWNER

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

- ELECTRICITY TRANSMISSION
- ELECTRICITY GENERATION
- ELECTRICITY DISTRIBUTION
- ELECTRICITY RETAILING + MARKETS

→ ELECTRIC UTILITY

CRITICAL SYSTEM OR SUBSYSTEM

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

- SINGLE-CYCLE OR COMBINED-CYCLE GENERATING ASSETS
- RENEWABLE GENERATING ASSETS
- NUCLEAR GENERATING ASSETS
- HYDRO-ELECTRIC GENERATING ASSETS

RENEWABLE GENERATING ASSETS:
- SOLAR
- WIND
- TIDAL
- GEO-THERMAL
- BIOMASS

→ WIND POWER GENERATION

CRITICAL FUNCTION OR SUB-FUNCTION

Required principal tasks of a system such as heating, cooling, exchanging, pumping, separating, compressing, distributing, storing, etc.

- ELECTRICITY GENERATION
- ELECTRICITY CONVERSION
- ELECTRICITY TRANSFORMATION

→ ELECTRICITY GENERATION

CRITICAL COMPENENTS

Physical assets required to complete a system critical function

CONVERTER	BLADE PITCH MOTOR	LOW-SPEED SHAFT
YAW MOTOR	SCADA SERVERS	GEARBOX
RTUs	CONDITION MONITORING SYSTEM	HIGH-SPEED SHAFT
PLCs	WIND FARM/PARK CONTROL SERVER	GENERATOR
TRANSFORMER	WEATHER STATION SYSTEM	BRAKE

CONTROLLERS

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

- RTUs
- PLCs

CROWN JEWELS

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

RTUs	WIND FARM/PARK CONTROL SERVER
PLCs	OPERATOR WORKSTATIONS
SCADA SERVERS	

Shown here are examples of physical and logical devices that are representative of these levels of the model. These will be unique for each industrial environment and each individual Crown Jewel Analysis being performed.

To request a Crown Jewel Analysis of your OT environment, email sales@dragos.com.