

# ENEC Builds Comprehensive Counterfeit, Fraudulent, and Suspect Items Program to Safeguard the Barakah Nuclear Energy Plant



Counterfeit, fraudulent, and suspect items (CFSI) can pose real risks in a nuclear facility. With today's advanced manufacturing tools and artificial intelligence, it's easier than ever for bad actors to create convincing fake parts and documentation. If these items make their way into plant systems, they can lead to equipment issues, unplanned shutdowns, lost generation, and lengthy, expensive evaluations before the plant can return to normal operations.

To stay ahead of the threat, the Emirates Nuclear Energy Company (ENEC) drew on key elements of EPRI's Plant Reliability and Resilience Program to build a comprehensive program to prevent and detect CFSI at its Barakah Nuclear Energy Plant.

## Benefits

ENEC's proactive, cross-functional CFSI detection program has strengthened nuclear safety and tightened supply chain oversight across all Barakah units, significantly reducing the likelihood of counterfeit and fraudulent items affecting its plants. Between 2017 and 2025, the team flagged 70 potential cases and confirmed 11 actual CFSIs with zero safety-related failures. By catching suspect items before they're accepted or installed, the program has helped avoid equipment issues, cut downtime risk, and keep reliable power flowing.

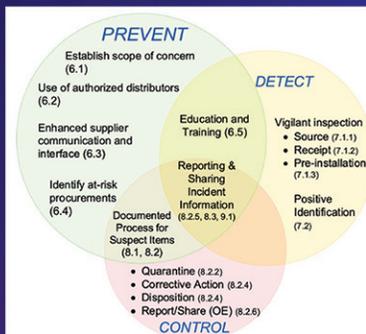
The effort also boosted confidence in ENEC's procurement processes and raised awareness across both the organization and its suppliers. It encouraged a culture of staying ahead of risks—one that now extends throughout the UAE's civil nuclear supply chain. Additional benefits include reduced overall risk exposure, greater supplier accountability, stronger coordination between departments, and broader education for regional suppliers. ENEC's program now serves as a model for other nuclear facilities in the Gulf region and beyond.

## Application

A strong CFSI program doesn't just rely on catching issues at the loading dock – it builds defenses across every part of the procurement and inspection process. This strategy is especially important during busy procurement periods, like construction or early operation, when the volume of incoming equipment is high. To make this possible, ENEC integrated EPRI's procurement guidance, inspection criteria, and training on authenticity, traceability, and suspect-item screening directly into Barakah's day-to-day work. These tools were built into digital platforms, procedures, workflows, and supplier audits, creating a reliable, multilayered safety net. EPRI also supported the effort through ongoing collaboration, shared case data, and recognition of ENEC's program as a leading example of comprehensive CFSI management.

Key EPRI resources included:

- Counterfeit, Fraudulent, and Suspect Items (CFI), Version 2.0, 3002015960
- Plant Support Engineering: Counterfeit and Fraudulent Items—Mitigating the Increasing Risk, Revision 1 of 1019163, 3002002276
- Plant Support Engineering: Counterfeit and Fraudulent Items – A Self-Assessment Checklist, 10214393



**Figure 1**  
Illustrates the components of EPRI's Plant Reliability and Resilience Program: prevent, detect, and control.



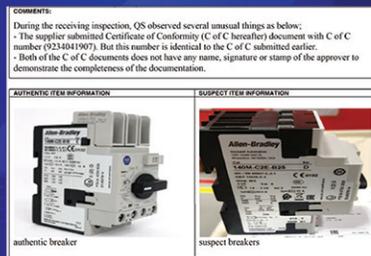
**Figure 4**  
Shows a suspect structure tubing.



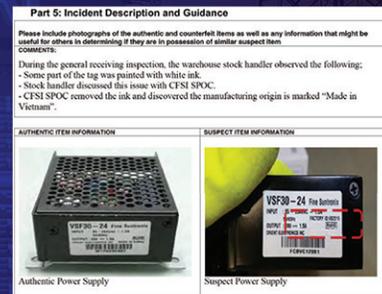
**Figure 5**  
Shows a suspect angle.



**Figure 6**  
Shows suspect pipe fittings.



**Figure 2**  
Compares an authentic breaker (left) with a suspect breaker (right). The suspect breaker's Certificate of Conformity used the same number as a previously submitted certificate, and both suspect certificates were incomplete—missing a name, signature, or approver stamp.



**Figure 3**  
Compares an authentic power supply (left) with a suspect power supply (right). On the suspect unit, part of the tag was covered with white ink; underneath were the words "Made in Vietnam," revealing the true manufacturing origin.