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Substation Automation, Digitization, Cyber Risk and Chain Risk Management Reliability

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Abstract : There has been a fast growth in the introduction and use of communications, information, monitoring, and sensing technologies. The new technologies are making their way to the Industrial Control Systems as embedded in products, software applications, IT services, or commissioned to enable integration and automation of increasingly global supply chains. As a result, the lines that separated the physical, digital, and cyber world have diminished due to the vast implementation of the new, disruptive digital technologies. The variety and increased use of these technologies introduce many cybersecurity risks affecting cyber-resilience of the supply chain, both in terms of the product or service delivered to a customer and members of the supply chain operation. US department of energy considers supply chain in the IR4 space to be the weakest link in cybersecurity. The IR4 identified the digitization of the field devices, followed by digitalization that eventually moved through the digital transformation space with little care for the new introduced cybersecurity risks. This paper will examine the best methodologies for securing the electrical substations from cybersecurity attacks due to supply chain risks, and due to digitization effort. SCADA systems are the most vulnerable part of the power system infrastructure due to digitization and due to the weakness and vulnerabilities in the supply chain security. The paper will discuss in details how create a secure supply chain methodology, secure substations, and mitigate the risks due to digitization

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