D SEdesk™

Harnessing Data Analytics in Power plants while addressing Security concerns

S.T.E. energy

Background

Initially, Industrial Control Systems (ICS) were isolated systems running proprietary control protocols using specialised hardware and software. Internet of Things (IoT) and digitalisation have been reshaping the energy landscape over the past few decades: billions of physical devices are now connected to the internet, collecting and sharing data. The technology advancement makes feasible the Big Data Analysis, which brings enormous opportunities: performing predictive maintenance, optimising operation costs, reducing outage time, turning raw data into useful business information and many others. However, the converging of Information Technology (IT) and Operational Technology (OT) systems, provides significantly less isolation thus increasing the possibility of cybersecurity vulnerabilities and incidents.

Challenge

Many power plants, especially the larger ones, which are considered critical infrastructures, still use the approach to completely isolate two domains. This means however that they are not taking advantage of the digitalisation opportunities. Due to increasing need from OT system vendors to monitor and control sensors and connected systems as well as easily analyse, manage and monitor Big Data from remote, this separation model has been increasingly compromised. So, how to make digitalisation a real opportunity for all power plants, pushing them into the Industry 4.0 and yet thwarting cyber-attacks?

Industry

Critical Infrastructure
Power Generation & Electrical Infrastructures

Challenges

- Use Data Analytics to improve operations and maintenance by monitoring and control sensors and connected systems on a huge scale

Goals

- Bridge the gap between IT and OT to maximise efficiencies and cost savings of the IoT and the smart grid balancing security, productivity and flexibility

Solution

SEdesk™ is a unified workspace providing secure remote access to whitelisted resources and on-device isolation to reduce the surface of attacks in a perimeterless digital workplace.

Solution

Collection and analysis of data is key to improving efficiency in power plant operation.

However the fast-growing amount of data of power plant collected and stored in large and numerous data repositories, has far exceeded human beings ability for comprehension and optimisation of information without powerful tools. The easiest way to perform efficient Big Data Analysis is therefore to integrate all the information in a unique platform.

For this reason, S.T.E. Energy developed the software STE Guardian, a web-based application for the collection and management of data from different assets.

However, automated processes that are connected to the Internet provide an attack vector. Power plants Monitoring and Control Systems use computer hardware that can be exploited, while legacy supervisory computers can be hacked by exploiting known vulnerabilities in older operating systems, such as Windows XP. Older networked sensors and actuators also pose a threat; first and second generation Industrial Internet of Things (IIoT) devices were manufactured with zero security measures.

In this scenario, SE*desk*™ finds it perfect place as being the right combination of application and network layer protection by isolation. By defining a controlled perimeter, SE*desk*™ not only provides authenticated service isolation but also data protection through delivery and storage leveraging the SE*link*™ technology to protect data transfer from the remote power plants to the STE Guardian server in the control room. A multi-layer approach to protect both the network and the endpoints from data exfiltration.

Benefits

- **Complete isolation** of data and applications on endpoint devices

- **Fine-grained access control** to the core plant network through context-based policies and User-Device-Server multi-factor authentication

- **Reduced maintenance** on endpoint devices

- **Zero configuration** on endpoint devices for easy deployment (VPN free)

- **Optimisation of operational costs**

- **Future proof technology,** ready for resilience against quantum computer attacks

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Thanks to its hardware-based security, SE*desk*™ is the perfect solution to make our STE Guardian platform compliant with the stringent cyber-security criteria, avoiding any IT work for client-server communication

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A. Di Vittorio,
Head of ICT Department

S.T.E. energy

STE Energy is an Italian company based in Padua that acts as a global player in the fields of engineering, construction, operation & maintenance in energy and infrastructure sectors. With more than 25 years' experience and 300 power plants to its credit, S.T.E. Energy leverages its strong technical know-how to face the energy industry challenges by developing innovative solutions that meet customers' needs

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