ISA99 - Security Standards in water treatment plants

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ABSTRACT

Currently, information security is a constant concern for many institutions and countries that use computer resources for communication and to deliver services. Protective measures and countermeasures for traditional networks, such as *firewalls* and intrusion detectors, are well-known and widely used. For *Supervisory Control and Data Acquisition* (SCADA) systems, the situation is no different. In the early days, such systems were based on mainframes and closed-architecture platforms; in other words, they were dependent on manufacturers and consequently isolated from other systems.

These days, SCADA systems are converging more and more onto open-system platforms, with architectures heavily reliant on connectivity; accordingly, interconnection between such systems and the corporate network, and in some cases, the internet itself, is more common. Taking this issue into account, and based on current technological development in the information security area, this research proposes a methodology to implement automation systems in water treatment plants, with an emphasis on security, and a focus on industrial systems that employ the ISA99 automation safety standards. Additionally, an analysis and identification mechanism for malicious events is proposed, based on the understanding of the operational flow chart and the different stages involved in a typical water treatment plant. In summary, the purpose of this essay is to study the safety rules, methods and methodologies for industrial systems, using the water treatment process as a working example, and to propose a methodology to minimize inherent safety hazards.

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Marcelo Teixeira de Azevedo, MSc has worked for several large companies, including: EDS, IBM and AT&T. Currently teaches computer network at Politec, in Brazil and is PhD. Student in Electric Engineering from USP. Marcelo has been working in industry for over 15 years.

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