

## ME24\_04 – Lessons learned through commissioning, livening, and operating switchgear: Part 3

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**Abstract** - Industrial and distribution facilities involving modern protection schemes, such as arc-flash detection (AFD) and automatic transfer schemes in addition to conventional protection, pose inherent challenges during the development, construction, commissioning, testing, and livening of the electrical system. Using an arc-flash protection scheme for secure, fast clearing of an electrical fault resulting in an arc-flash event is common in modern industrial protection systems. Improved reliability, selectivity, and speed is achieved by using a well-designed arc-flash protection system, which saves human lives, mitigates serious mechanical equipment and asset damage, and results in greater reliability and a shorter outage and restoration time. This paper presents lessons learned from the commissioning, testing, and livening of a 500 MW industrial expansion project that involves complex protection and control schemes. The paper discusses some power system-related events that have occurred during livening, involving AFD, automatic transfer scheme performance during an external fault, and the importance of electrical and mechanical interlocks for safety when manually operating primary equipment. Event details, root cause analyses, engineering improvements, and administrative actions are discussed in detail.