

***ELECTRICAL FAILURE RISK ANALYSIS ON THE HE-382 CONTAINER
CRANE SPREADER USING FTA METHODS AT PT INDAH KIAT PULP
AND PAPER***

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ABSTRACT

The The spreader is a main component of a Container Crane used to lift, lock, and transfer containers. The reliability of its electrical system is important because failures can disrupt operations and reduce productivity. This study aims to identify the causes of electrical system failures in the HE-382 Container Crane spreader using the Fault Tree Analysis (FTA) method. Data were collected through field observations, interviews, documentation studies, and historical failure records from February to May 2026. The results showed 7 failure occurrences, consisting of 3 wire rope failures (50%), 1 electric motor failure (16,6), 1 proximity sensor failure (16,6%), and 1 power supply failure (16,6%). The motor failure was caused by a phase-to-phase short circuit due to loose terminal connections, while the proximity sensor malfunction was caused by dust accumulation. The power supply failure was caused by component aging, while wire rope elongation caused spreader imbalance. FTA successfully identified the root causes of the failures. Recommended corrective actions include inspecting terminal connections, cleaning proximity sensors, replacing power supplies, and regularly inspecting wire rope conditions to improve spreader reliability and reduce downtime.

Keywords: *Spreader, Container Crane, Electrical System failure, Fault Tree Analysis (FTA).*