CEATI

Distribution System Health Indices

Overview

Currently, there are no standardized criteria for assessing the health and condition of distribution system assets to establish their end-of-life or to support replacement/repair decisions.

The objective of this project was to develop a guide complete with methodology and recommended algorithms for assessing the health and condition of distribution assets in the form of health indices, which could be used to justify asset replacement and renewal decisions.

Over recent years, most regulatory jurisdictions have started to employ risk-based tests to confirm whether the risk mitigation benefits outweigh the costs to ensure the economic efficiency of investments. Asset health Indices can be employed to express, measure, and benchmark the health and operating condition of assets.

Distribution Equipment and Planning Interest Group

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How to use this research

This report provides guidelines and algorithms for developing health indices for all distribution system assets.

- Utility personnel can implement the methodology and recommended algorithms for assessing the health and condition of distribution assets
- This methodology could be used to justify asset replacement and renewal decisions on their part
- With an improved understanding of failure and degradation modes, utility personal will be able to make replacement decisions at a quicker pace

Key questions Addressed

- What methodology and algorithms can be used for the evaluation of assets condition?
- What are the common asset degradation and failure modes?
- When do I need to replace my assets?
- How to justify investments and asset replacement and removal decisions?
- How to develop health indices for all distribution system assets?

Research Summary

The report provides a summary to help readers understand asset degradation modes and asset roles as well as functions in the electrical distribution system. An industry survey took place to assess the types of asset condition monitoring practices and available data at member utilities. With this context, the project conducted Interviews with subject matter experts to develop best practices health indices.

The report describes the degradation modes of distribution assets in service and provides methodologies and algorithms to determine health indices of assets employed on electrical distribution systems, using available information from service age, inspections, field tests and recent failure performance.

The report covers all major assets employed on overhead and underground distribution systems, including distribution poles, cables and conductors, overhead and underground line sections, distribution transformers, overhead distribution switches and disconnects, pad-mounted switchgear, submersible switchgear, lightning arresters, voltage regulators, pole-mounted reclosers, pole-mounted capacitor banks, and distribution rights-of-way.

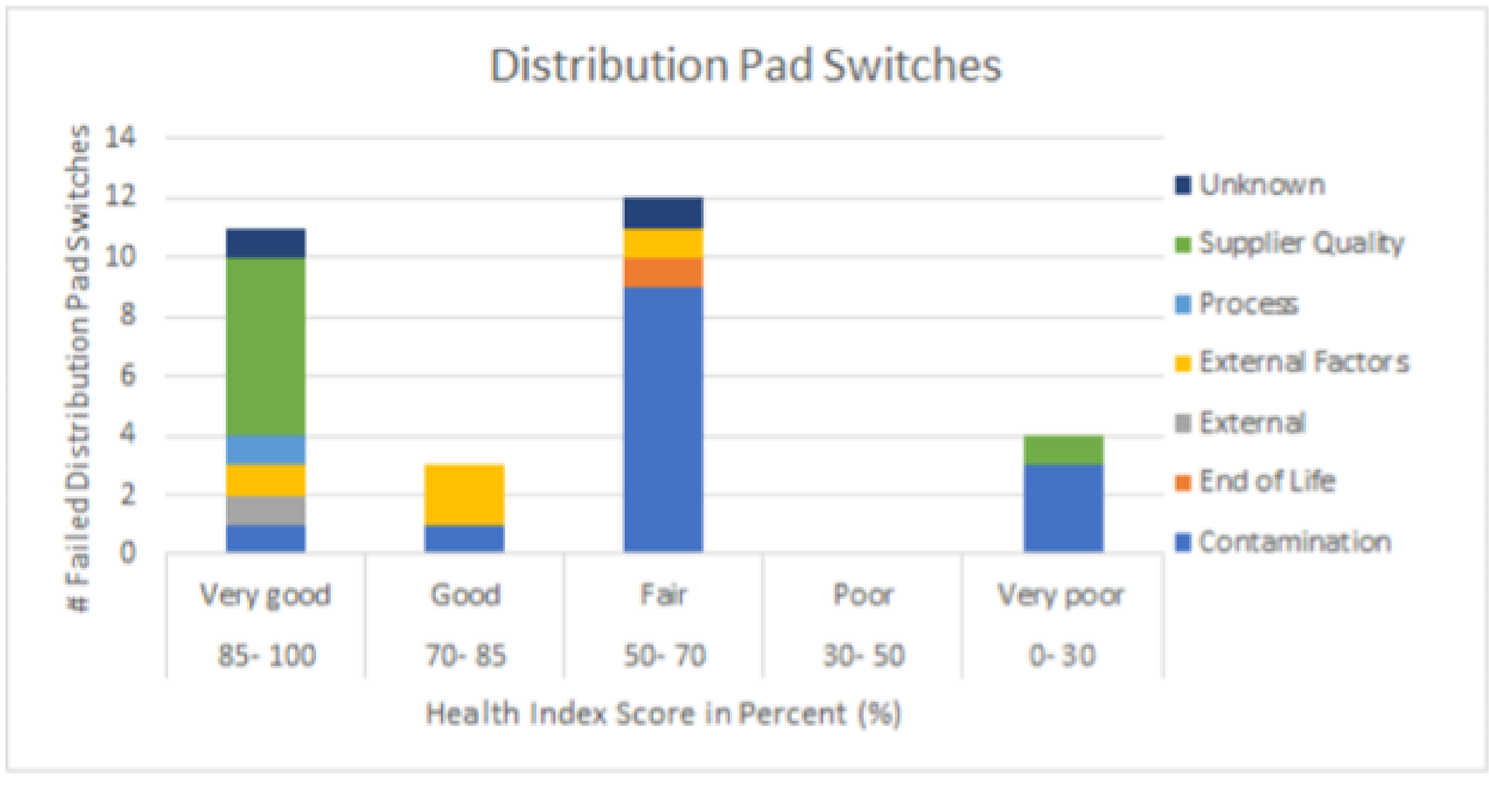

Figure 1 – SHIF for Failed Distribution Pad Switches (No Gateway)

About CEATI Research

CEATI facilitates the planning and implementation of collaborative R&D projects among its electric utility members. This approach enables members to solve shared challenges and maximize their return on investment.

Get the Full CEATI Report

CEATI Distribution Equipment and Planning members can access the report here.

If you're interested in joining the Distribution Equipment and Planning group to access the full report as well as additional research, expert guidance, networking events, and more contact us today.