

## Condition assessment of high voltage (22 kV) Aerial Bundled Cable (ABC)

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Nexans Olex Engineering Support Services were engaged in 2014 to conduct a condition assessment of existing 22 kV rated High Voltage Aerial Bundled Cables (HV ABC). The condition assessment was initiated due to recent system reliability issues and cable failures advised by our customer to be primarily due to poor or incorrect installation of the cable.

The task assigned to Nexans Olex entailed an on-site visual inspection of in-service cable at a number of strategically selected locations, and laboratory visual inspection and testing of cable samples collected from the site. Both samples of failed cable and spare non-service aged were analysed.

An outcome of the 2009 bushfire royal commission was a directive such that all new overhead electrical services are to be installed using insulated cable systems. Due to the size of the site electrical reticulation is carried out at 22 kV and from a cable design perspective, this limits the solution to two types of cable:

- i) metallic screened (MS) HV ABC, or
- ii) non-metallic screened (NMS) HV ABC

In the case of this particular site the NMS HV ABC was adopted and progressively installed from 2010 until 2012. The image below details the construction of this product.



The works conducted by Nexans Olex were defined in collaboration with our customer with the aim to achieve the following outcomes:

- Provide an assessment of the observed condition of the in service 22 kV NMS ABC cable at each of the four locations of the site, its expected ongoing reliability and its expected service life.
- Provide results of laboratory testing of cable samples taken from the site.
- Provide product design advice (cable only) based on findings of the on-site inspections and laboratory testing.

This paper provides further details on the tests that were conducted and the observations and conclusions developed during the condition assessment.

Key words

Condition assessment, non-metallic screened, high voltage aerial bundled cable