



A BURNING ISSUE

Bare Wire Network transformation using Covered Conductor

The transformative advantages of specifying and installing Covered Conductor as an alternative to bare wire overhead lines is well understood, and particularly so in climates that are subject to acute wildfire risk and in geographies and communities that are exposed to an amplified risk to life and property.

Benefits include:

- Asset life extension from greatly improved corrosion resistance
- Elimination of outages previously caused by clashing phases
- 98% reduction in wildfire risk
- Equally effective for fire risk reduction as burying lines
- Highly efficient (circa 25% of the cost of burying lines)
- Quick to install and scale, replacing more network more quickly than burying

With advantages such as this on offer, at a time when the stakes are so high, one would expect the energy transmission and distribution industry to embrace innovation. In the case of Covered Conductor, one might have expected networks to have unilaterally ceased installation of new bare line network and embarked on replacement programmes of existing bare wire network.

This isn't always the case.

THE INNOVATION CHALLENGE

Groundline Engineering are at the frontline of network transformation and the large scale deployment of innovation and technology such as Thor Poletest™ and Covered Conductor. With unique insight into solving the strategic, design and operational challenges encountered, a global reputation in helping networks successfully harness the right innovations to transform has been earned.

When navigating the challenges of innovation and wildfire mitigation it is hard to ignore the impact of legacy industry thinking, decision processes and the maintenance of 'status quo' in what remains one of the most regulated and conservative industries.

Groundline Engineering has found that inherently the challenges facing networks are not directly related to the technical attributes of any innovation and identifies four key barriers facing networks around the world in their aspiration to accelerate innovation and transformation:

1. Bureaucratic procurement systems with long established supply chains
2. Technical standards focused on compliance rather than advancing benefits
3. Training regimes rigidly focused on conformity with works practices that are slow to improve
4. Regulatory insurance frameworks that are reactionary rather than proactive



THE INNOVATION SOLUTION

Whilst not directly addressing these pervasive challenges, Groundline's partnership with Networks around the world in wildfire risk mitigation helps streamline, accelerate and scale transformation through sharing, collaboration and leveraging three key principals:

1. Proper scoping and preparation

The installation of covered conductor into a network designed for bare wire is not difficult as it is physically very similar. A coordinated, well managed roll out is however essential. Recognition that the project purpose is to make the network safer must be mandated as the overarching driver;

- current standards compliance requires an in-depth knowledge of local and global standards with experience to apply the best practice standards (or to flag where one needs to be developed).

Reference - Groundline Engineering designed and delivered United Energy with an extensive standards compliance program to support their rollout of covered conductor into Victoria.

- training practices need to be focused on the practical Linesworker skill development – an extension of the current skills set and a familiarisation of new products.

Reference - Groundline's own Linesworker training teams trained and upskilled Powercor field crews during and throughout their installation of covered conductor into the Powercor SWER network.

- modification of existing field vehicles and required tooling is straightforward and complimentary to existing equipment.

With Groundline's assistance, AusNet were able to correctly source specialist grips and instruments from local Utilities during an installation to connect a saw-mill in a high wildfire region during a tight network shut down.

2. Solid Engineering

Most Utilities operate with field maintenance and centralised design engineering groups that rely heavily on standard designs and property data. The deployment of new conductors or fittings often raise many technical questions due to unfamiliarity with the solution and it's 'compatibility' with existing infrastructure.

Although overwhelmingly minor in nature technical issues such as these can cause friction across teams and delays in installation, and on a day-to-day basis Groundline plays a key role in the provision of reassurance, expertise and experience. Commonly supported aspects of a bare wire replacement program using Covered Conductor include:

Sourcing and confirmations of data sheet values required for calculations and modelling. Once familiar and institutionalized into a Utilities knowledge base this becomes business as usual.

As data sheet values supplied are likely to differ to their own experience, Groundline provides on-demand resources to network engineers seeking confirmation of a variety of physical properties such as sag / sway requirements.

Interaction with legacy infrastructure which often highlights unanticipated issues that require addressing.

Leveraging extensive knowledge of transmission and distribution infrastructure, Groundline Engineering provide advisory services to many Utilities globally, and offer particular expertise in the serviceability and life of timber utility poles. Digitally transforming both inspection practices as well as asset management decision processes, Groundline Engineering exclusively leverages the cloud-based Thor Poletest™ NDT system to establish empirical data standards and 'whole of network' condition mapping.

Satisfaction of local standards

Groundline Engineering draws on an extensive resource catalogue of existing abrasion standards, as well as developing new abrasion standards for networks that address local vegetation and bird interaction with covered conductor.

3. (Incremental) Training

Helping existing teams of experienced Linesworker in Networks become familiar with subtly different installation techniques and familiarisation with some different tools and fittings is critical in establishing and maintaining momentum in a roll-out of covered conductor.

Using a combination of classroom and in-field education, Groundline Engineering not only onboards these teams but maintains ongoing training services for in-house trainers, new recruits, and outsourced lines workforces.