

# Ergon Energy Restores Power to 2,400+ Meters of URD with Novinium Cable Injection

## Highlights

- Cable rejuvenation project restored approximately 10 MVA of network capacity
- Cable was tested by the University of Queensland and found to be free of partial discharge
- Major URD line back returned to full operating capacity after project completion

## Overview

Facing difficult weather challenges and unusual soil conditions, Novinium® restored a cable line in Queensland, Australia that had been abandoned for five years. Novinium tailored their Cablecure® 732 fluid for warm tropical and desert soils, achieving renewed reliability on the cable.

## The company and situation

Ergon Energy provides electricity-related services to around 600,000 customers across Queensland, Australia. A cable run on the north side of Cairns, Queensland, had failed several times and had been abandoned for an overhead line.

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The development of a product that will recover the operating condition of cables that would otherwise be abandoned is a major benefit to utilities. Prior to this breakthrough, cable needed to demonstrate some sustainable dielectric strength before refurbishment could be considered.

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– Leon Powell  
Principal Engineer, Network Refurbishment  
Ergon Energy



### Company

Ergon Energy

### Location

Cairns, Queensland, Australia

### Website

[www.ergon.com.au](http://www.ergon.com.au)

### Cable Sizes and Length

3-phase, 22 kV, XLPE insulated, 630 mm<sup>2</sup> (1250 kcm) conductor, 2,421 meters

### Method

Novinium® Cablecure® 732 fluid for high ambient soil temperature and circuits with recent dielectric failures



Tropical conditions including torrential rains punctuated by Cyclone Larry made this job hot and wet. Injection adaptors to accommodate the large conductor and thick insulation were easy to install. Conductor compression ranged from round to compressed to compact. Each cable subsegment was provided with a customized formulation tailored to its strand compression.

pressures and the tailoring of the injection fluid viscosity were a real benefit in managing injection time,” said Leon Powell, Principal Engineer, Network Refurbishment at Ergon Energy. After a three-month pause, the project was completed.

## Results

The project restored approximately 10 MVA of network capacity in Cairns City and allowed deferral of future network reinforcement. After completion, the cable was tested by the University of Queensland personnel and found to be free of partial discharge (PD).

Once the project was completed, tests conducted with the University of Queensland and the Queensland University of Technology showed the cable was discharge-free and demonstrated significant improvement in insulation improvement and dielectric response.

## Evaluation process

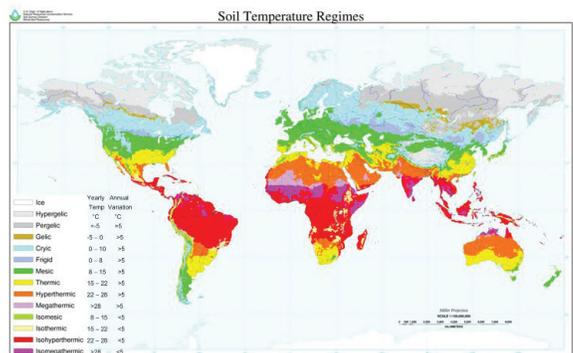
The utility had repaired multiple failures in a long underground insulated cable covering a wide geographic area in the north part of Cairns, a large city in Queensland. Eventually, Ergon had to shut down the line and install an overhead line to partially compensate for the loss of capacity.

When Ergon decided to try cable rejuvenation, the long line had been out of service for five years. After Ergon become aware of the innovations in Novinium’s cable refurbishment techniques, the utility saw the opportunity to get the abandoned line back in service without the very high cost of replacement.

## Solution

The cable refurbished was an abandoned 2.5 KM, 22 kV aluminum, 630 mm<sup>2</sup> substation inter-connector that had suffered numerous failures and was considered too unreliable for operational service. The ability to refurbish the cable in manageable 500-meter lengths by injecting the cable between joint positions was a real bonus with such a long cable covering a large cross-sectional area. Novinium recommended the Cablecure 732 fluid, optimized for warm tropical and desert soils.

The injection project was started and then interrupted by Cyclone Larry. The weather was deteriorating with torrential rain setting in. It was possible to inject sections in periods between rain inundations. The work had to be postponed with the onset of the cyclone, without detriment to the cable or the injection regime. “The sustained injection



Isohyperthermic soils in Cairns means that the average ambient soil temperature at 1 meter of depth is greater than 22°C throughout the year. Novinium’s patented and patent pending injection approach tailors the fluid formulation making the appropriate adjustments for the ambient temperature of the soil and the current load on the circuit.