

CRITICAL CIRCUITS – DTS IMPERATIVE

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Abstract

The use of optical fibres for distributed temperature sensing is now well established technology. Significant advances have been made in both the performance and reliability of the measuring equipment as well as the design of cable systems and method of incorporation of the fibre to ensure reliability and accuracy.

Many supply authorities are now introducing this technology as a means of protecting the value of their expensive cable assets. This paper examines the results obtained on a 9.2 km route of 110 kV cable installed as one of the new main transmission distribution feeders in the City of Auckland, New Zealand.

Whilst every precaution was taken during installation to stabilise the environment, the geophysical aspects of the cable route means that the cable passes through a number of areas which can effect thermal rating of the cable system.

Due to the highly critical nature of this circuit, optical fibres were incorporated within the cable construction and for some areas other fibres are also provided externally to the cable. This provides unique advantages in terms of being able to very accurately assess the data obtained and provide opportunities for further system enhancements.

The paper discusses some of these possibilities in the light of technology currently available and the opportunities that exist for maximising the installed assets on the installed cable system.