Designing and Prototyping the Next-Generation Cable Pull Switches

Requirements
Stable in varied temperature changes
Robustness
Ease of installation
Cost-effective
Conforms to standards

Chose Distributed Optical System

Refined System to Two-Piece Optical System

Further Centralized to Current One-Piece System

Current Prototype

Velocity sensors help to differentiate between a slow, small linear change from thermal expansion and a fast linear change from an emergency pull.

Position sensors help to determine when the cable is cut and all tension is released in the system.

System will send a low signal to the operating machine if one of the sensors malfunctions, cable is cut, or power fails.
The system will also send a low signal due to a human pull. It will discount movement due to slow thermal expansion and fast vibrations.
Depending on housing, product can be robust to particulate matter.

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