

SAFETY BULLETIN

The Safety & Financial Risks of Rope Failure

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scope

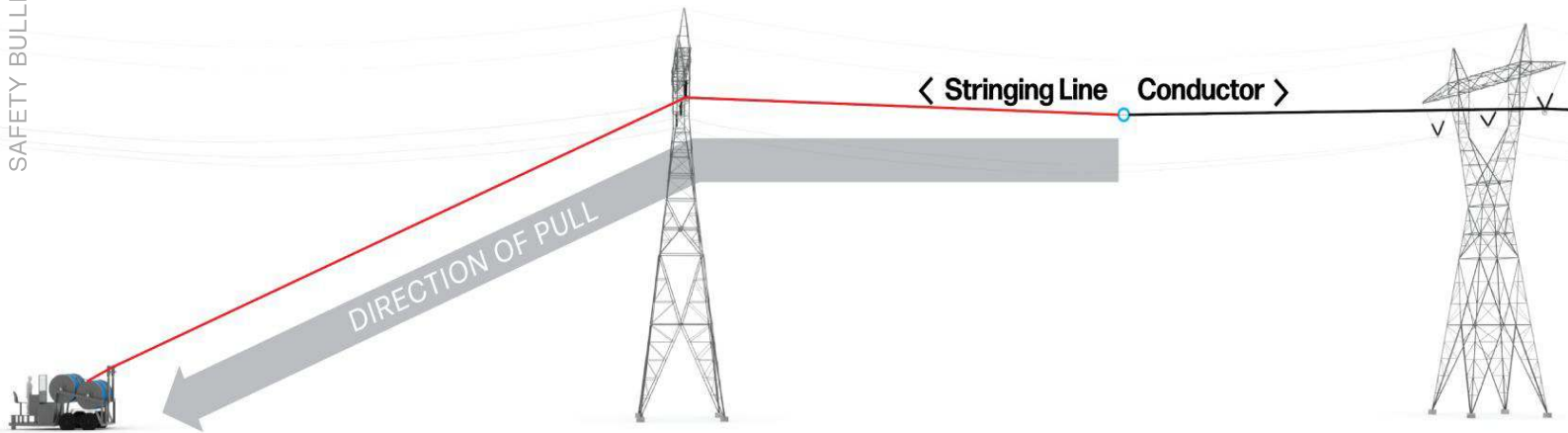
When the working end of a stringing line fails, the consequences can be catastrophic. In addition to the obvious safety risks to workers, a stringing line failure can result in severe operational delays, equipment damage, and in the worst cases, injury or loss of life.

For utility companies and contractors, such incidents can lead to millions of dollars in costs due to downtime, legal liabilities, and the need for emergency repairs.

The Weakest Link: How the Working End of Your Stringing Line Could Be a Point of Failure

Utility stringing operations rely on the strength and reliability of their equipment to ensure every pull is successful. However, one often overlooked part of the stringing line—the working end—could be your biggest point of vulnerability. With 23% of inspected utility stringing lines falling below 60% residual break strength (RBS), it's critical to understand how this section of your line is most at risk and what you can do to prevent it from becoming the weakest link in your operation.

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What Is the Working End of the Line?

The working end of a stringing line is the part most often involved in high-tension pulls and most exposed to wear and tear. It's the segment that experiences the greatest load during operations, particularly toward the end of a pull when tension is at its highest. As a result, the working end degrades faster than other parts of the line, making it the most vulnerable point for failure.

Even in routine operations, the working end is subject to significant stress. The friction and force it endures can weaken its fibers over time, reducing the line's break strength more quickly than the rest of the line. If this critical section goes unchecked, it could lead to an unexpected break at the worst possible moment, just before the pull is complete, when tension is at its highest and the greatest length of conductor could be dropped.

Why Inspections Matter

As a line's strength drops over time due to factors such as fatigue and abrasion, equipment owners and operators should monitor this decay and retire the line (or sections of the line) as to avoid failures in the field. Yet, our inspections reveal that 23% of lines in operation have a residual break strength below 60%. This indicates that many companies may be using lines dangerously close to their failure point, especially at the working end.

Without regular inspections, it's nearly impossible to predict when a line will fail. Even trained professionals may miss the subtle signs of wear, especially if relying on visual cues alone. Comprehensive inspections using advanced tools like Scope's AI-driven platform can detect weakening sections of line or hazardous areas before they pose a threat.

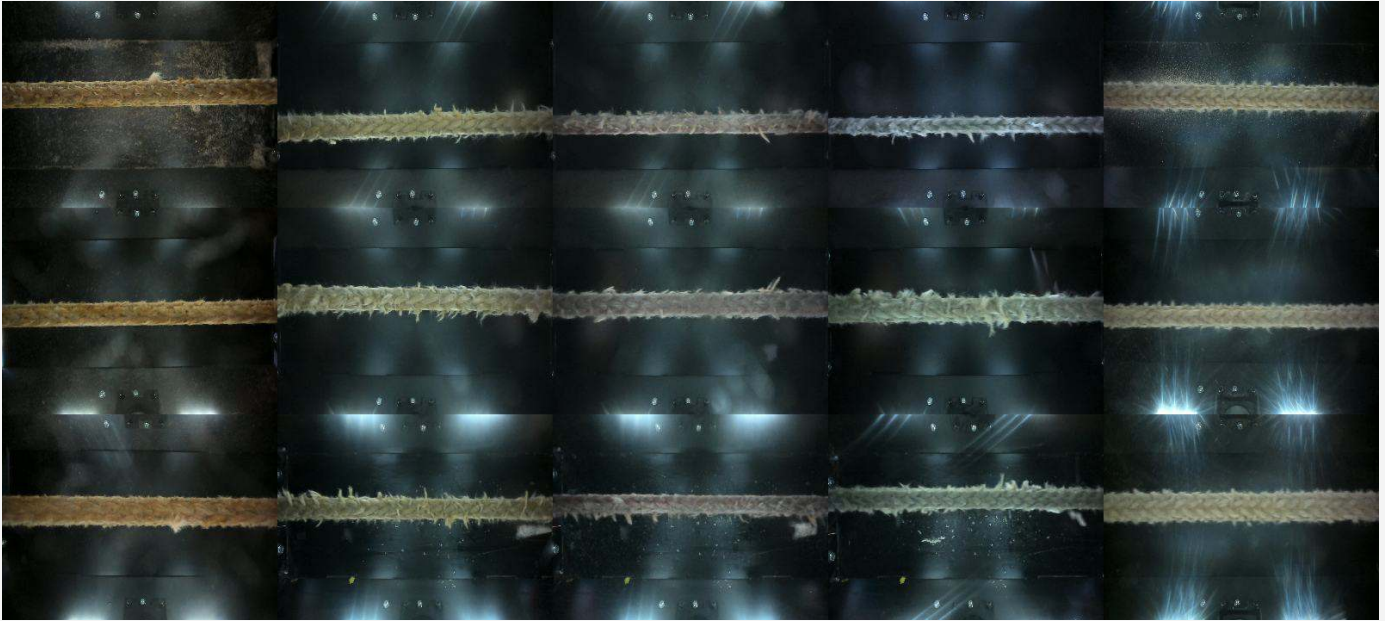


Image displaying low break strength line segments caught during inspections.

A stringing line breaking in the field often means halting operations for an investigation, or waiting for replacement parts and repairing damaged equipment, all of which lends to project delays resulting in lost revenue and potential penalties. For companies that operate in high-risk areas, such as near energized corridors or densely populated areas, a failure could lead to outages or safety hazards affecting thousands of people and further driving up costs.

Preventing Failures with Regular Inspections

Given that the working end is exposed to the most work and highest tensions, it's critical to inspect this segment regularly. Rope inspections should focus on identifying fatiguing sections of line, fraying, and other signs of wear that indicate a loss of RBS. Scope's inspection technology is specifically designed to surface these weaker sections, using artificial intelligence to provide accurate and detailed assessments of a line's condition.

It's essential to schedule inspections before any major operation, especially if the line has been in use for a long time or has already undergone several high-stress pulls. Event-based inspections—triggered by specific operations or environmental conditions—are the best way to ensure that your lines are always in optimal condition for the next job.

Recommendations for Retiring the Working End

At Scope, we recommend you maintain a sufficient factor of safety throughout a line's life, especially as the working end is showing signs of significant wear. Some of our most safety-conscious customers choose to retire their lines at 65% RBS, ensuring that they reduce the risk of failure at a critical moment. In addition to exercising a more conservative threshold, we also see our most safety-conscious clients executing a more regular inspection cadence.

By adopting a more conservative retirement threshold and increasing inspection frequency, companies can greatly reduce the chances of unexpected stringing line failure and the associated costs.

Don't let the weakest link in your line become the reason for your next failure—inspect early, inspect often.



Final Thoughts

The working end of your stringing line is the most vulnerable segment of your equipment, yet it often goes unnoticed until it's too late. With 23% of lines in operation already below 60% RBS, the need for regular, comprehensive inspections has never been clearer. By inspecting frequently—especially after major operations—and retiring lines at a safer threshold, you can avoid costly failures, protect your personnel, and maintain the integrity of your operations.

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