



**EDITION 35**  
**VOLUME 1**



# 12 TOP INNOVATIVE PRODUCTS AND SERVICES TO CUT LABOR COSTS AND BOOST SAFETY

**COMPOSED BY**

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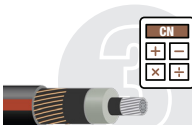
## 1. WILDFIRE FORENSIC TESTING

A covered conductor or tree wire is a Covered Aerial Medium Voltage (CAMV™) product to upgrade bare overhead conductors to mitigate wildfire ignition in areas where trees crowd the right-of-way. The ruggedized crosslinked covering over the bare conductor has been proven to prevent arcing and flashovers. Wildfires with high-temperature flames char the outer covering and thermally deform the inner conductor, which is strung under tension and is the weight-bearing component. Southwire offers comprehensive forensic testing to evaluate the physical and chemical characteristics of the extruded polymer layers as well as the mechanical performance of the conductor to help utility customers decide on repair or replacement.



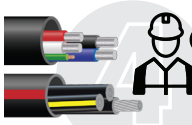
## 2. METAL CORROSION INVESTIGATION

Rain and ground water are excellent electrolytes because they contain a variety of organic chemicals and minerals, which can trigger metal corrosion. Combining the quality of local air with varying degrees of carbon dioxide, salt, ozone, sulfur, and other pollutants such as fertilizers or deicing agents can increase the rate and the severity of corrosion. Corroded conductors can be found in both below-grade or above-ground installations. Southwire has helped industrial and utility customers in confirming the root cause of the metallic corrosions using SEM elemental analysis and FTIR chemical fingerprinting.



## 3. CONCENTRIC NEUTRAL CALCULATOR

Most MV cables contain a "full size" copper neutral rating for a single-phase system or a "one-third" neutral design relative to phase conductor size when used for a 3-phase supply. Modern rapid switching equipment at substations reduces short circuit current and duration compared to decades ago. Using reduced neutrals from 1/4 to 1/12 saves metal cost upfront but can pose a risk due to an insufficient short circuit capacity. Southwire was the first in the industry to launch an online and mobile version of the Re3™ Concentric Neutral Calculator to customize the size and count for a specific conductor. This transformational free engineering tool lowers utility and renewable power cable costs without compromising long-term reliability.



## 4. LABOR SAVING ESTIMATOR

Direct buried cables are subject to damage from nearby construction, corrosive soil, and wildlife. Installing these cables in conduit adds extra physical and mechanical protection from these environmental hazards. The SIMpull® Cable-in-Conduit (CIC) product features flexible and coilable High-Density Polyethylene (HDPE) duct extruded around one or more cables. All wet-rated underground products can be designed with an all-in-one CIC assembly. Southwire is the first to launch a free online Re3™ CIC Labor-Saving Estimator based on National Electrical Contractor Association (NECA) labor rates. This tool calculates the total labor savings compared to pulling cables onsite into a conduit.



### CABLETECHSUPPORT™ SERVICES

Southwire's CableTechSupport™ Services group's qualifications include a Ph.D., MBA, and Master of Science degree in Electrical Engineering (MSEE), as well as certified MV splicers and Professional Engineer (PE). Over 15,000 technical requests are fulfilled yearly to assist end users, engineers, contractors and installers in meeting project requirements, gaining approvals from project owners or building inspectors, and responding to issues in the field. Our whitepapers and online calculator tools assist users in selecting innovative products and solutions. Scan the QR code to access the comprehensive technical library.



### WE DELIVER POWER...RESPONSIBLY®

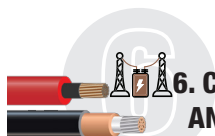
In 2022, Southwire entered partnership with the Copper Mark, an assurance framework for responsible production of copper. This organization provides a comprehensive social and environmental governance program, and we are committed to adhering to internationally recognized operating practices to source and manufacture copper products. Southwire also offers more than 180 Reinforced, Resilient, and Reliable wire & cable products to be deployed in many industries, including infrastructure, industrial and utility applications. Scan the QR code to access the engineering spec library and select products to meet your project's sustainability objectives.





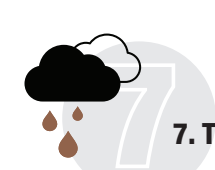
### 5. BUILDING WIRE SELECTOR

From residential homes, high-rise buildings, and battery energy storage units to EV charging stations and data center facilities, Southwire's patent-pending Re<sup>3</sup>™ Building Wire Selector recommends the 600V products to match end users' specified location, installation, current, and run length. This free online tool delivers electrical calculations including ampacity, resistance, and voltage drop. The product spec sheet is linked to provide access to engineering data for a specific stock code and color. There is no need to worry about under-sizing the conductor or exceeding the 3% voltage drop per the NEC®.



### 6. COVERED JUMPER AND SWITCHGEAR CABLE

Southwire's jumper and switchgear cable can be found in substations installed on insulators and inside switchgears isolated from the ground where a non-shielded cable is desired. This non-UL cable does not have a voltage rating and is not recognized by the NEC®. However, UL approval can be obtained by testing the complete assembly of inside enclosures and equipment. It complies with 6.2.1.3 of IEEE C37.20.2 and 6.2.7.1 of IEEE C37.20.3, which defines the insulation requirements on bus bars. The cable has passed the 150 kV Basic Insulation Level (BIL) test that simulates a lightning strike. The passing of BIL at 38 kV allows this product to be operated up to 40 kV.



### 7. TRIPLE WATER PROTECTION

Water intrusion is a leading cause of cable system failures. Moisture accelerates the dielectric breakdown of insulation and triggers metallic corrosion. A strand-fill compound to fill the interstices between the conductor strands to water-block is frequently specified for underground MV cables. Water-swellable powder can be applied over any shielding type to absorb and retain moisture. Water-swellable tapes are standard designs for underground transmission cables rated 69 kV & higher (HV), but these super absorbent tapes can also be incorporated into MV cables rated 15-46 kV. Triple water protection is achieved by applying two water-swellable tapes under and over the copper neutral wires in addition to a water-blocked conductor. The risk of metallic corrosions is greatly alleviated.



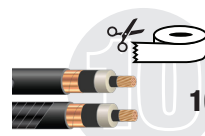
### 8. LOW FRICTION PULL

Reducing the friction between the cable and the raceway means lower tension which enables longer pull distance without splicing. Southwire's patented formula permanently reduces the Coefficient of Friction (CoF) of the cable insulation or jacket, eliminating the need for field-applied pulling lubricant which can be messy, inconsistent, and will wear off over time during long pulls. The NoLube® technology can be found in SIMpull THHN® and SIMpull XHHW-2® building wires as well as SIMpull® PVC and PowerGlide® LLDPE jackets for MV cables. More than 10 patents have been issued to protect Southwire's inventions. Contractors in all sectors have completed safe and efficient cable pulls using the SIMpull Solutions® Innovations.



### 9. WILDLIFE DETERRENT DESIGN

Southwire has supported utility, renewable, and industrial customers to protect electrical cables from wildlife attack incurred by gophers and rodents including rats, squirrels, and moles. These animals have sharp teeth that continually grow so they must chew on different materials to control the growth and size. Copper wires are better wildlife deterrents compared to the softer aluminum conductors. Ruggedized overall jacket materials can be paired with extra layer of metallic shielding tape to create a rodent-proof design for 600V or 1kV substation controls and MV underground feeders. Contact Southwire today for a wildlife deterrent consultation!



### 10. ALL-IN-ONE REPAIR KIT

Southwire's Re<sup>3</sup>™ cable repair kit can be applied to both single and multi-conductor products, including jacketed primary MV, service entrance (USE-2), service drop, substation control cables, and more. Damaged conductors (i.e., metal) or products exposed to significant weather events or incidents such as storms, fires, or floods are beyond repair. This all-in-one package includes an abrasive strip, a solvent wet wipe pack, one primary repair tape roll, one protective finishing tape roll, and a step-by-step instruction sheet. With same-day shipment available, this cost-saving solution can restore new cables with minor scratches and small nicks to their original integrity and minimize scrap.



### 11. NITROGEN PURGING SERVICE

Southwire has delivered emergency field support for over 20 years, including onsite nitrogen-purging services to mitigate unforeseen water intrusions in new cables. Moisture migration might occur during transit, storage, or installation due to unprotected ends or rainwater exposure during construction. The service life of a cable with trapped moisture will be shortened, and its performance will be compromised even if the cable is rated for wet locations or direct burial. High-pressure dry nitrogen gas is applied to the stranded copper or aluminum conductor ends to push moisture out of the cable and restore it to factory condition. To prevent premature failures, Southwire offers wet cable consultations or purging services to remove water in new MV or 600V cables.



### 12. INNOVATION CENTER OF EXCELLENCE

Southwire's Cofer Technology Center was established in 1992. Since then, this ISO-17025 accredited facility and a UL and CSA-recognized laboratory has developed proprietary dielectric formulations, conducted advanced metallurgy research, and launched novel cable products. There are more than 500 U.S. and international patents in Southwire's intellectual property portfolio, which allows us to stay competitive. We also offer complimentary forensics and testing as a value-added service to our customers. In 2023, this facility installed an innovative HVAC system that uses a geothermal heat pump technology and has resulted in an approximately 40% decrease in electricity consumption for the building.

