



# WIRE TALK®

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FEATURED ARTICLE

## UL Fact-Finding Study on Powering Over Data Cables

At the 2015 IWCS show, Anthony Tassone's session on powering over communications cables drew a lot of attention. Anthony's presentation, "Update on Industry Study of Powering Over Data Cables," discussed how new technologies are placing greater demands on data cables and also provided details about UL's recently launched optional suffix designation for Limited Power Cables (-LP (XXA)).

With the increased use of remotely powered devices and increasing levels of power needed to support these devices, concerns have been raised in the International Standards development community about the safety and performance effects of increased heat on the cables. This is especially true when the cables are routed in large bundles or when installed in areas with elevated ambient conditions (above 30°C).

A fact finding study was initiated to investigate the effects of higher levels of power applied over communications cables within the limits permitted by the National Electrical Code. Tests were conducted using 24 AWG Cat. 5e cables in various conditions, including a single conductor in free air, different size bundles in conduit, and a 576-cable bundle in an open wire tray. The test protocol was consistent with similar industry studies, though broader in scope, with the focus on power (volts, watts, amps) rather than applications and the potential safety concerns.

*[continued on next page](#)*

IN THIS ISSUE

**UL Fact-Finding Study on Powering Over Data Cables**

**WireTalk Overview**

Page 2

**Tradeshows**

Page 3

**UL's New Laboratory in Jakarta Offers Local-for-Local Service for the Indonesia/ASEAN Region**

Page 5

**New CCNs in Fourth Quarter 2015**

Page 5

**Update on Our Anti-Counterfeiting Initiative for the Wire & Cable Industry**

Page 6



2015 BICSI Winter Conference & Exhibition  
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[Learn more >](#)

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## UL Fact-Finding Study on Powering Over Data Cables

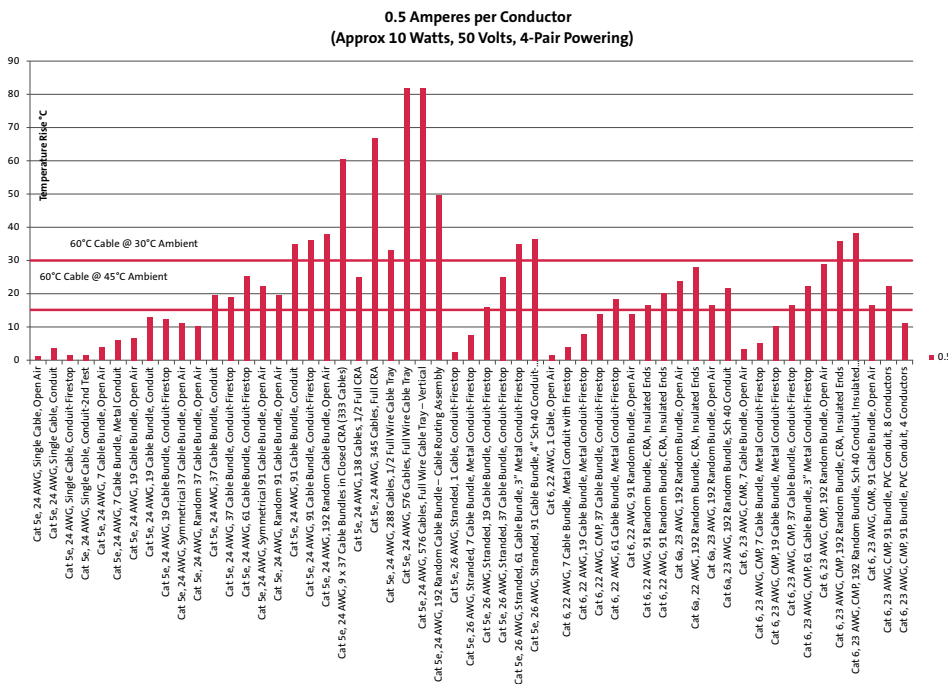


Chart 2. Results of cable type tests at 100 watts. To see charts for 30, 60 and 200 watts, e-mail [editorial@wirenet.org](mailto:editorial@wirenet.org) for a PDF.

One key observation was that even very small increases in current resulted in significant increases in the measured temperature: in the first case, an increase of 0.1 amperes resulted in a temperature change of over 15°C; in the second case, involving a larger bundle size, a 0.1 ampere change resulted in a temperature rise of over 20°C. See Chart 3.

Another observation of particular interest was that changes in cable construction had a very large impact on measured temperatures. Chart 4 shows the temperature difference between a Cat. 6a cable and a Cat. 6 cable, both 23 AWG. The design and construction had a significant effect on the thermal dissipation capabilities of the cable despite the identical wire gauge.

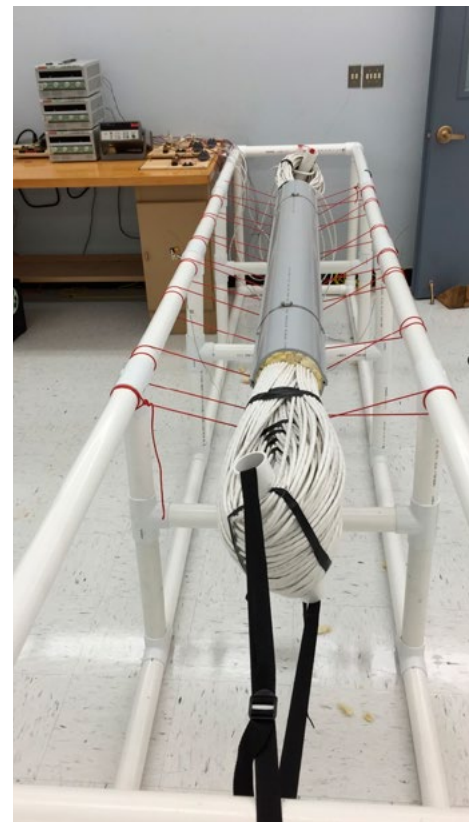
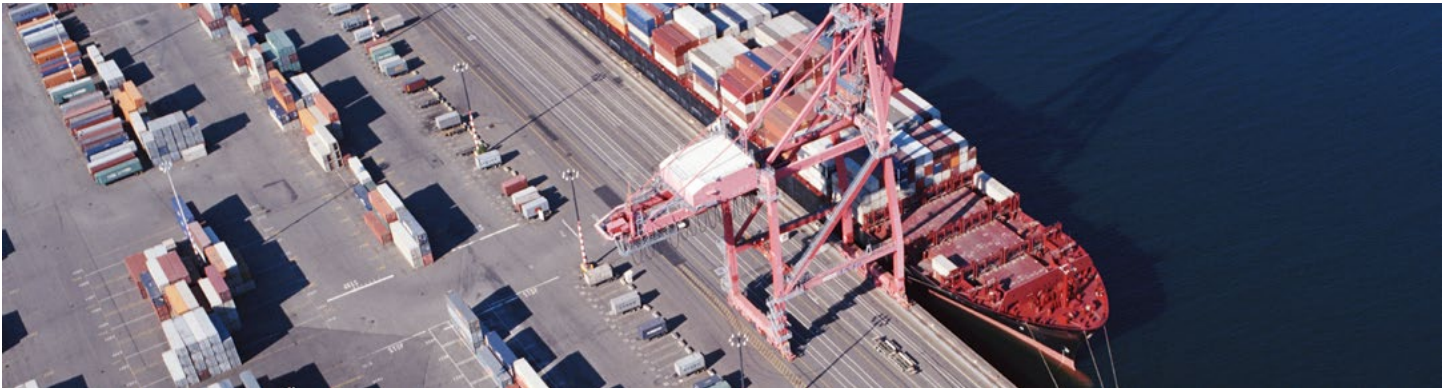


Figure 1. “-LP” cable testing

*continued on page 6*



## Update on Our Anti-Counterfeiting Initiative for the Wire & Cable Industry

The UL brand protection team diligently works to protect and maintain the integrity of the UL family of Marks from counterfeiting activities. Here is an overview of the value-added services provided by the team as well as highlights of the work they have done for the wire and cable industry.

UL's value-added services include:

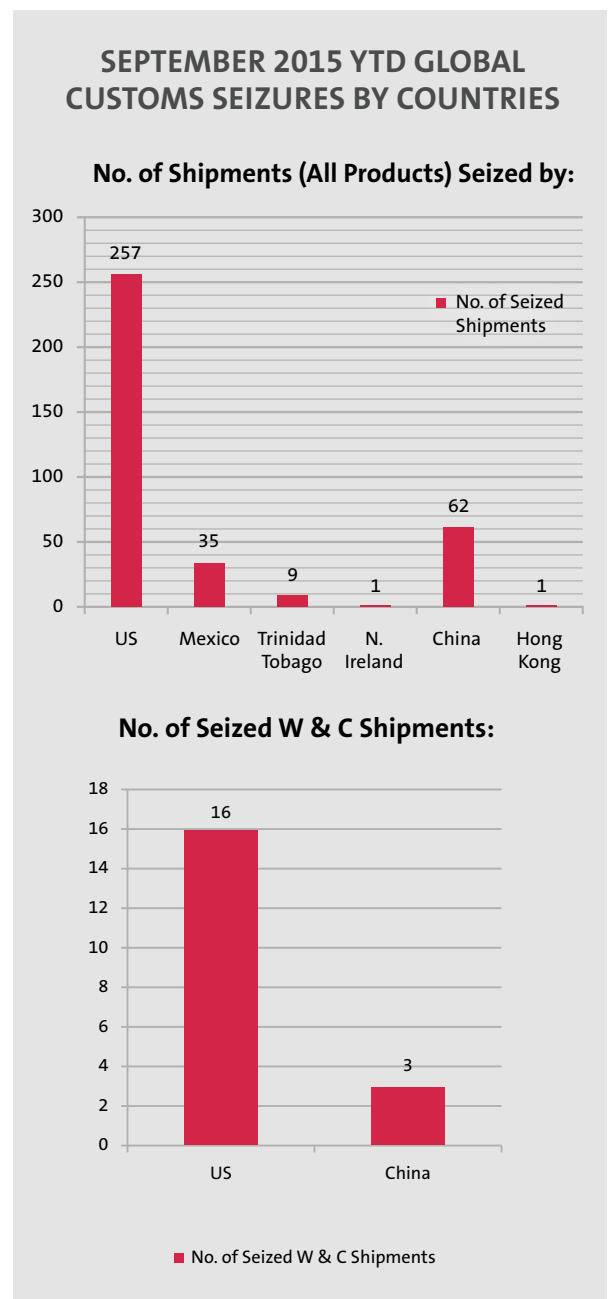
- Investigation support for UL clients together with global law enforcement authorities
- Training for UL clients, including customized courses about their products for law enforcement, through the International IP Crime Investigators College
- Networking with global law enforcement and private sector stakeholders through UL brand protection conferences and workshops

The UL brand protection team works closely with law enforcement to remove products bearing counterfeit UL trademarks from the stream of commerce and to hold accountable those responsible for their manufacture and distribution.

For illustration purpose, we provide a high level summary of some of our brand protection activities in China that are specifically for wire and cable products:

Investigation & Legal Actions Taken by UL – 2010 to Q3 2015 210+ investigations, 110+ administrative enforcement actions and 30+ criminal enforcement actions have been completed. As of Sep 30, 2015, there were 14 criminal convictions; 22 counterfeiters were sentenced to a combined total of 39 years + 5 months and fined \$2.7 million CNY in total. China Customs: There were 500+ seized shipments; 53 shipments were found to be counterfeit Wire & Cable products.

**For more information, please email us at [brandprotection@UL.com](mailto:brandprotection@UL.com), or visit [UL.com/brandprotection](http://UL.com/brandprotection).**







## UL's New Laboratory in Jakarta Offers Local-for-Local Service for Indonesia/ASEAN Region

With a view to address the testing and certification needs of the wire and cable industry in ASEAN region, UL is going to open a new laboratory in northeast Jakarta, the capital of Indonesia, effective February 1, 2016. The new laboratory aims to help customers in Indonesia and those who would like to expand their business into the ASEAN region by offering a cost-effective process with quick project turnaround. The UL team can work with manufacturers in ASEAN at their own convenience, in their own language, and in their own time zone, which maximizes efficiencies in testing and auditing processes.

### Target Services:

- SNI Certification
- IEC Test Report
- Performance Verification Test
- One-stop solution to integrate with other UL Certification

The new facilities in Jakarta is accredited as a Certification Organization (CO) and a Testing Organization (TO) for the local SNI Certification mark for low voltage wires and power supply cord sets (IEC60502\*, 60227, 60884, 60320). Additionally, under the ASEAN Certification scheme, the test report prepared by an accredited TO in ASEAN can be recognized and accepted by other ASEAN member countries in the near future. Therefore, this laboratory will also be able to provide upcoming services to customers for market access in other ASEAN member countries.

**Should you have any questions or wish to submit your product for testing and certification, please contact Denny Bachrul, Indonesia Office (Denny.Bachrul@UL.com).**

\*Testing voltage up to 3 kV

## New CCNs in Fourth Quarter 2015

The following CCNs are created within 2015. Please contact [Susan Stene](#) if you need additional information.

**QHZR** – This category was developed at the request of PV systems manufacturer who needed an ungrounded cable for use in accordance with Article 690. This category covers multi-conductor, nonintegrally jacketed, distributed generation (DG) cable. This cable is intended for use with specific distributed generation equipment/devices such as photovoltaic modules, inverters, solar trackers, etc.

**TEP22** - This category covers polymeric compounds, parts and substances, including insulating materials, jacket materials, fillers, tapes, and other components for wire and cable products investigated for the presence of RoHS restricted substances.

The materials covered by this program have been investigated for the presence of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) with respect to the maximum concentration levels in homogeneous materials specified in DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast). The investigation was performed in accordance with UL 746R, "Outline of Investigation for Restricted Use Substances in Polymeric Materials." The substance testing is conducted using IEC 62321, "Determination of Certain Substances in Electrotechnical Products," standard methods.

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## UL Fact-Finding Study on Powering Over Data Cables

Extensive testing and research demonstrated that cable heating can be managed by four main factors: (1) increased AWG size, (2) cable design variations, (3) material selection, and (4) installation practices.

This led to the development of test-based requirements for limited power (LP) cables, which can take advantage of these factors. Rather than restrict the cable design, a single testing approach was selected to maximize opportunity for design innovation. See Figure 1. The consideration of reasonable installation extremes in the test plan minimizes the need for onerous restrictions on cable installation planning.

UL is confident that by taking advantage of advances in cable design, LP cables will provide an attractive alternative to ampacity tables and bundle size limitations. They provide an uncomplicated way to prepare installations for increasing power levels, and they are not as susceptible to the issues caused by excessive heat generation. UL continues to do research as part of an ongoing process to support growth and innovation in the cabling industry.

**Should you have any questions about this new program, please contact Anthony Tassone at [Anthony.T.Tassone@UL.com](mailto:Anthony.T.Tassone@UL.com). Anthony Tassone is UL's Principal Engineer, Wire & Cable, Commercial & Industrial.**

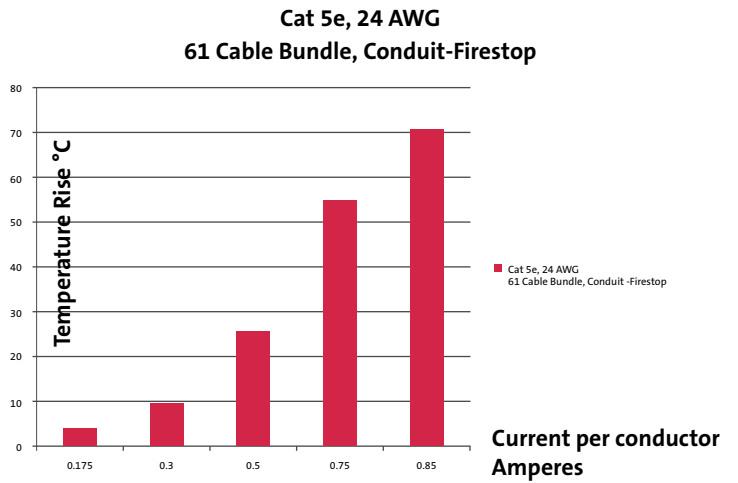


Chart 3. Temperature effect of increasing amperes on a 61-cable bundle.

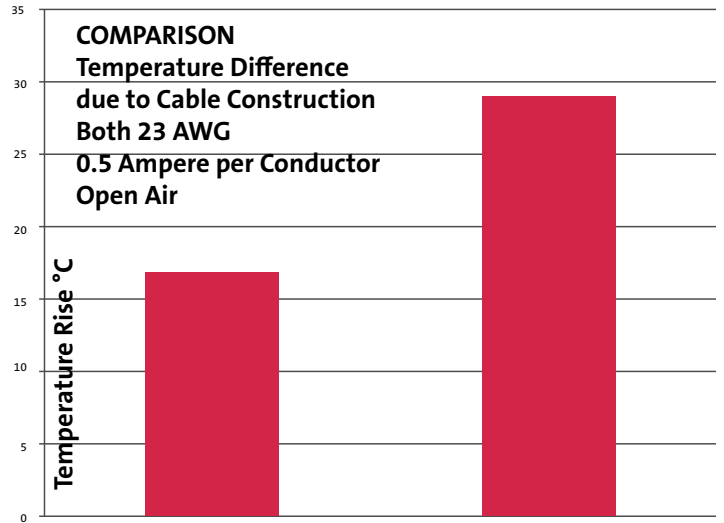


Chart 4. The effect of different cable constructions on temperature

