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## Line Crews Repair Failing Splices with No Power Interruption

By Mike Dario, Los Angeles Department of Water and Power

Corrosive salt water and high winds in Los Angeles' beach areas were wreaking havoc on the Los Angeles Department of Water and Power's automatic quick sleeves. Linemen were noticing more failures of these sleeves, which are spring-loaded with jaws that grip the wire.

To solve the problem, linemen had to support the wire with a hoist and grips, and install a temporary jumper to maintain electrical connectivity. They would then have to cut the old automatic sleeve out, replace it with a length of conductor and two compression sleeves, and then press these sleeves with a hydraulic press.

### Finding a Solution

After spending a significant time replacing automatic full-tension sleeves in its service territory, the LADWP [<http://www.ladwp.com/ladwp/homepage.jsp>] line crews discovered a new product called the ClampStar from Classic Connectors Inc. The company met with leaders from LADWP's engineering and electrical distribution maintenance departments to demonstrate the product two years ago.

With ClampStar, linemen can repair failing splices without interrupting power. Field crews no longer need to replace splices or cut power or lines. Instead, they can install the device over existing splices, clamps and other connectors.

ClampStar [<http://classicconnectors.com>] exceeds ANSI C119.4 Class AA, extra heavy-duty current class, and restores both electrical and mechanical integrity to weathered or damaged conductors. ClampStar also increases ampacity, allowing for system up-rates and is significantly safer than traditional splice replacement or other alternatives.

### Trial Run

After Classic Connectors educated the LADWP team about the product's benefits, the utility tested the product out in the field. Over a six-month period, the linemen began installing the product on a trial basis.

Unlike other products that require extensive training sessions, the linemen learned how to use the ClampStar out in the field. The LADWP staff first installed the product in a de-energized situation so the linemen could get a feel for it. Then the product went straight to the field.

### Time Savings

The first time the linemen tested the product, they completed six installations in 55 minutes. They then moved their equipment about a half-mile down the street to the next location and then installed the next six in only 25 minutes.

Normally, it would take the field crews about an hour to repair a failing splice, but with the ClampStar, it took about

seven minutes per connector. The linemen were even able to do a few of them in less than five minutes.

Replacing these 12 splices on energized 795 conductor would normally have taken seven to eight hours in these locations, and basically would have been an all-day job doing it the old-fashioned way with jumpers and come-alongs. By using the ClampStar, the field crew was able to start the day at 10 a.m. and complete both jobs before lunch, allowing the crew to move on to another project.

### Streamlining the Work Method

The device also reduces the amount of tools needed on an installation. In the past, linemen had to use mechanical grips, come-alongs, jumper cables or cutters to work on the transmission and distribution system.

Today, with the use of the ClampStar, linemen simply have to clean the spot where the device makes contact with the conductor. They then install the connector grip using one or two hot sticks and a hydraulic gun to tighten the factory-installed torque nuts. This work method significantly reduces the amount of tools needed and minimizes the hazards associated with the job.

In fact, the product can reduce the amount of necessary tools by about 90%. The fewer tools and fewer moving parts that a lineman has to worry about on a job, the less likely it is that things can go wrong.

### Putting Into Practice

After the linemen talked to the engineers about the product's ergonomic, time-saving and hazard-reduction benefits, the company decided to invest in the device for usage by the line crews.

When the product was first introduced, only one size was available, but now that sizes are offered from #6 AWG - 2750 kcmil, the field professionals are able to use the product on a more widespread basis. The product is now available in both rigid and flexible versions to accommodate various connector configurations and cable diameters.

So far, the linemen have used the product in several locations in the beach area that were experiencing high failure rates on the automatic full-tension sleeves, which were installed more than 20 years ago.

By talking with other crews, LADWP learned that it wasn't the only utility facing this problem. Two years ago, at the International Lineman's Rodeo, a Canadian utility also noticed that its sleeves were failing after decades out in the field. With the ClampStar, however, the linemen are able to solve an industrywide problem and ensure a safe and smooth installation.

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**Mike Dario** (mike.dario@ladwp.com [mike.dario@ladwp.com]) is the electric distribution mechanic supervisor for the Los Angeles Department of Water and Power in Van Nuys, California. He has been with the department for 30 years.

Classic Connectors Inc. [www.classicconnectors.com](http://www.classicconnectors.com)

Companies mentioned in this article:

Los Angeles Department of Water & Power [www.ladwp.com](http://www.ladwp.com)

