

WHITEPAPER DISCUSSING THE MARKET, QUALITY AND BENEFITS OF DURAMITE™ PORCELAIN REPAIR TECHNOLOGY

DURAMITE™ WHITEPAPER

Prepared by Moxie Strategic Marketing

About Porcelain Repairs

The repair of high voltage electrical porcelain has been successfully used for over 24 years, however, to many unaware of the substantial cost and time savings, it is a relatively new technology. Those utilities unaware of the high quality repairs that can be made with DURAMITE™ have more than likely spent millions replacing circuit breaker and transformer bushings over the years. That said, even greater losses have been experienced by utilities and industrials due to loss of revenue while the equipment is out of service, kept in service in a compromised status, or when equipment failure causes an unscheduled outage. As you can see by the chart below, the repair process and subsequent downtime is substantially lowered with the use of DURAMITE™.

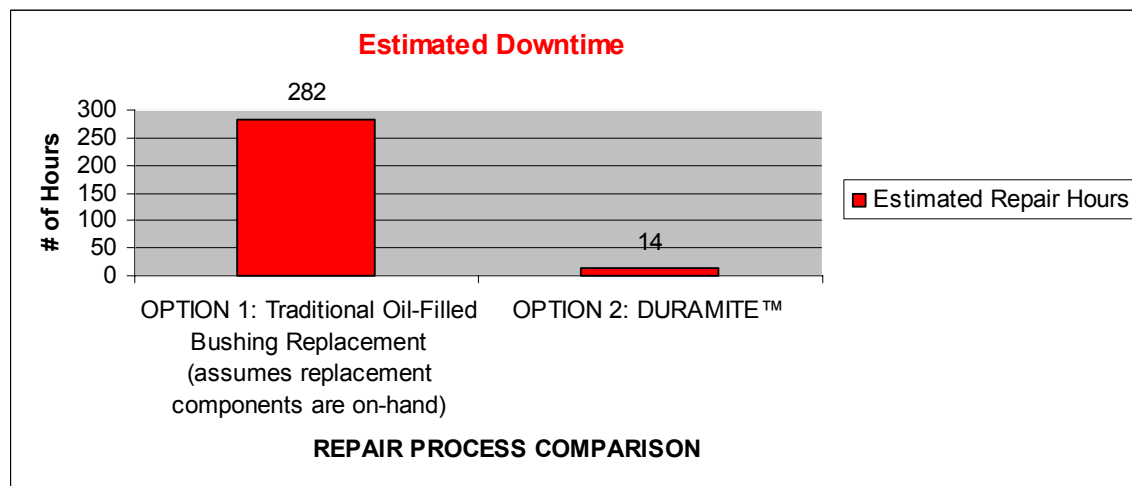


Chart Details

OPTION 1: Change out of a traditional oil-filled bushing hours estimated at **282** hours.

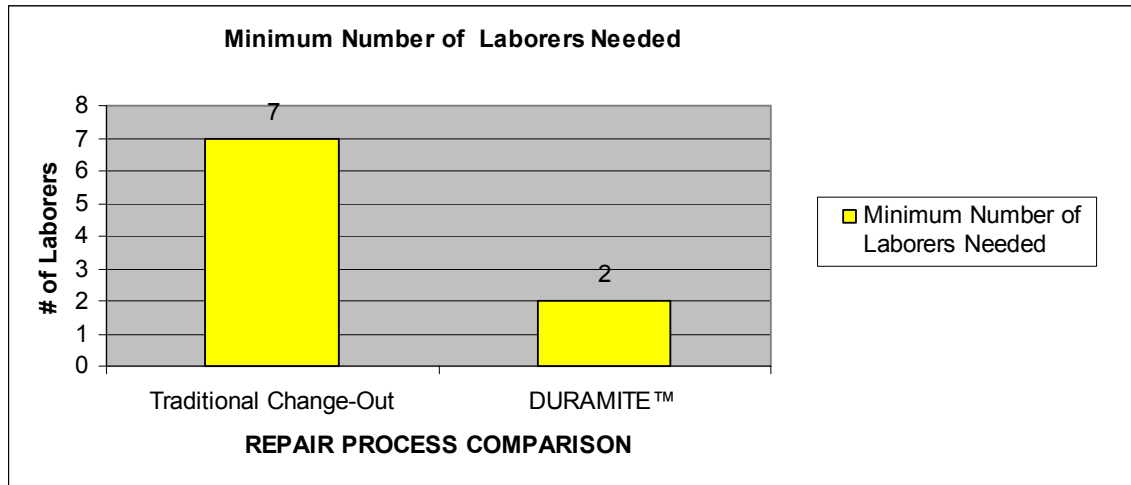
- Personnel to perform vacuum check and transfer oil 72 hrs
- Oil trucks 36 hrs as a minimum
- QA personnel 110 hrs (total time work is being performed on transformer)
- Clean area personnel approx 16 hrs (when bushing is actually pulled to re installation, approx.)
- Crane operator 8 hrs approx.
- Maintenance personnel 16 hrs min
- Electrician 8 hrs (to remove electrical leads on bushing)
- Personnel to check electrically 16 hrs (2 guys doing electrical checks)

OPTION 2: DURAMITE™ on-site repair hours estimated at **14** hours.

- Preparation of repair area 3 hrs
- Repair process 9 hrs
- StaClean protective coating 1 hr
- Post repair inspection and documentation 1 hr

The Solution

DURAMITE™ Porcelain Repair by Electrical Builders, Inc makes it possible to repair damaged electrical porcelains in the field WITHOUT removing the broken units from the equipment. The end result is a repaired porcelain component that is as good as new, in a fraction of the time that it takes to remove and replace the broken unit. This capability can save the utilities and industrials much more than the cost of replacement bushings. Since DURAMITE™ is non-invasive, no testing of the transformer is needed, no oil transfer is required, no confined space entries are needed, thus DURAMITE™ decreases downtime, minimizes liability exposure and requires substantially less labor.



It is also now possible to repair large porcelain breaks that would not have been considered previously. In some cases, breaks which included 75% of a skirt up to 46” long have been reconstructed with our proprietary technology. Even bushings with large breaks which included missing parts of the body and are subjected to internal pressure have been repaired successfully when sent into the shop (this particular level of extensive repair is not available in the field, only at our repair facility). The voltage range of the repaired bushings to date has varied from 15KV to 500KV. The convenience, environmental benefit and time savings can easily justify the repair of high voltage bushings.

Benefits

- Convenient “in-field”, “on the apparatus” repairs
- Non-invasive
- Save time
- Save money
- Substantially decrease downtime
- Emergency services available

Quality

DURAMITE™ has been formulated to match the thermal coefficient of porcelain. It is electrically and mechanically as strong as porcelain.

Mechanical Specifications

Compressive.....22,000 psi
Tensile.....4,000 psi
Flexure.....4,000 psi
Helium Permeation, 80 psi...<2x10⁻¹¹cc/sec
Weatherometer (UV)....1867 hr (no change)

Electrical Specifications

Dielectric.....450 v/mil
Dielectric Constant.....4.5
Volume Resistivity...2x10¹⁵ ohm-sec
Dry Arc Resistance.....+1800 sec
Tracking Wheel Test....+1600 hrs

Conclusion

High Voltage Porcelain repairs done with DURAMITE™ save valuable time and money. Repairs done with DURAMITE™ are non-invasive, thus environmentally friendly and substantially safer than change-outs. With over 24 years of proven success, DURAMITE™ continues to stand the test of time.

More information may be found online at www.duramite.com or by calling Electrical Builders, Inc 877-297-0616.

Electrical Builders Inc, (EBI) is the premier national installation contractor of high power conductor systems. EBI is women-owned and an active member of IBEW. EBI has been providing quality workmanship since 1974. Electrical Builders has been involved with some of the most prestigious power utility and substation projects throughout the United States and Canada.