

DSTAR

DISTRIBUTION SYSTEMS TESTING, APPLICATION, AND RESEARCH

What Distinguishes DSTAR?

- Definitive guidelines for system design, operating, and protection practices
- Industry perspectives, technology evaluation, and equipment application practices
- User-friendly software tools tailored for the distribution engineer's needs

DSTAR Focus Areas

- *Reduction in operating and engineering costs*
- *Powerful engineering software applications*
- *Maximizing system asset utilization*
- *Improving system reliability*
- *Leveraging the stretched utility workforce*
- *Comparative test results and application guidelines*
- *Perspectives on, and critical analysis of current industry issues*

ABOUT DSTAR

Distribution Systems Testing, Application, and Research (DSTAR) is a consortium of electric utilities, facilitated by General Electric International, Inc., sharing the results of distribution research. During its 20+ years of existence, DSTAR has focused on providing its member utilities with results that are directly applicable to everyday distribution design, operation, and maintenance.

DSTAR offers utilities a cost-effective and responsive source of information to help address urgent problems that require near-term solutions. By cooperatively funding research with other utilities, each member utility substantially amplifies its investment.

DSTAR's ORGANIZATION

- DSTAR research activities are conceived and directed by the member utilities.
- Member utility representatives are chosen as the overseers for each project, providing technical guidance and accountability.
- The individual research projects sponsored by DSTAR are bundled into research programs. Each program consists of several independent research projects, covering diverse topics.
- Membership is on a program basis; participants in a given program receive the deliverables for all projects included in that program. A program typically runs from eighteen months to two years.
- The cooperative arrangement has the positive result of exposing utilities to a wider range of practices and approaches to distribution engineering challenges.



DSTAR Technical Areas

- | | |
|------------------------------------|---------------------------------------|
| Workforce Training | Distributed Generation Impact |
| Smart Grid | Engineering Analysis Software & Tools |
| System Reliability | Economic Analysis |
| Engineering Guidelines | Equipment Testing/Evaluation |
| Industry Perspectives/White Papers | Operational Efficiency |
| Power Quality | System Protection |

White Paper Executive Summaries

1. [Distributed Generation Impact](#)
2. [Ferroresonance Guidelines for Modern Transformer Application](#)
3. [Padmounted Transformer Tank Fault Withstand Capabilities](#)

www.DSTAR.org

Or upon request via
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DSTAR e-HANDBOOK



Features include:

- Hyperlinked navigation
- Simple calculation sheets
- Strong search capability
- Portable PDF format
- Nominal R&D investment per utility

FOR MORE INFORMATION

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www.DSTAR.org

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DSTAR Impact: Advancement, Efficiency, Reliability, and Safety.

- With increasing industry focus on operational efficiency, demand reduction, and smart grid technologies, DSTAR commissioned a suite of projects aimed at: understanding the loss profile of member utilities; improving utility energy efficiency; and assessing the impact of the changing nature of loads on distribution operations.
- DSTAR-developed software allows utilities to procure and apply transformers, considering the transformer life, and economic impacts of loading practices. Members have reported significant capital investment savings due to reductions in transformer over-sizing.
- Pioneering DSTAR research has shed much light on the complex phenomenon of ferroresonant overvoltages. DSTAR produced guidelines for its members specifying applications where arresters can safely eliminate ferroresonant overvoltage concerns. As a result, member utilities have been able to reduce failures, improve reliability and save money.
- Distribution utilities in the U.S. are vulnerable to the devastating and expensive impacts of major storms. A recent study by DSTAR examined the practices and experiences of U.S. utilities during storm occurrences to understand and convey the best practices and lessons learned. Members reported that the results are extremely interesting and useful for their operations.

Available Software Tools

- [Cold-Load Pickup Software \(CPLUS\)](#)
- [Transformer Owning Costs Software \(TOCS\)](#)
- [Graphic Secondary Voltage Imbalance Calculator Software \(GSVIC\)](#)
- [Cable Electrical Parameters Software \(CEPS\)](#)
- [Engineering Toolbox](#)
- [Overhead Calculation Suite Software \(OCS\)](#)
- [Transformer Loading Analyzer \(TLA\)](#)
- [Voltage Drop and Flicker Analysis Software Tool \(V-Drop\)](#)
- [Cable Pulling Assistant \(CPA\)](#)
- [Guy Tension Analyzer \(GTA\)](#)
- [Secondary Electrical Design Software \(SEDS\)](#)
- [Transformer Scrap/Repair Decision Software \(TSRDS\)](#)
- [System Owning Cost Comparison Software \(SOCCS\)](#)
- [Distribution Data eHandbook](#)
- [Economic Overhead Conductor Software \(EOCS\)](#)
- [CFO Calculation and Arrester Application Guidelines \(CFOCAST\)](#)
- [Harmonic Load Calculator](#)

DSTAR MEMBERS



Ameren
American Public Power Association
Duke Energy
National Rural Electric Cooperative Association
Pacificorp
South Carolina Electric & Gas
Southern Company
We Energies
Wisconsin Public Service