



SIEMENS

Ingenuity for life

Not a nuisance, but a safety alert

AFCI and Home Safety

Join the movement to make
homes safer

usa.siemens.com/afci

AFCI and Home Safety

Join the movement to make homes safer

We all want to live in homes protected from fires caused by electrical arcs.

Following is a collection of information and resources to explain AFCIs and their effect on Home Safety.

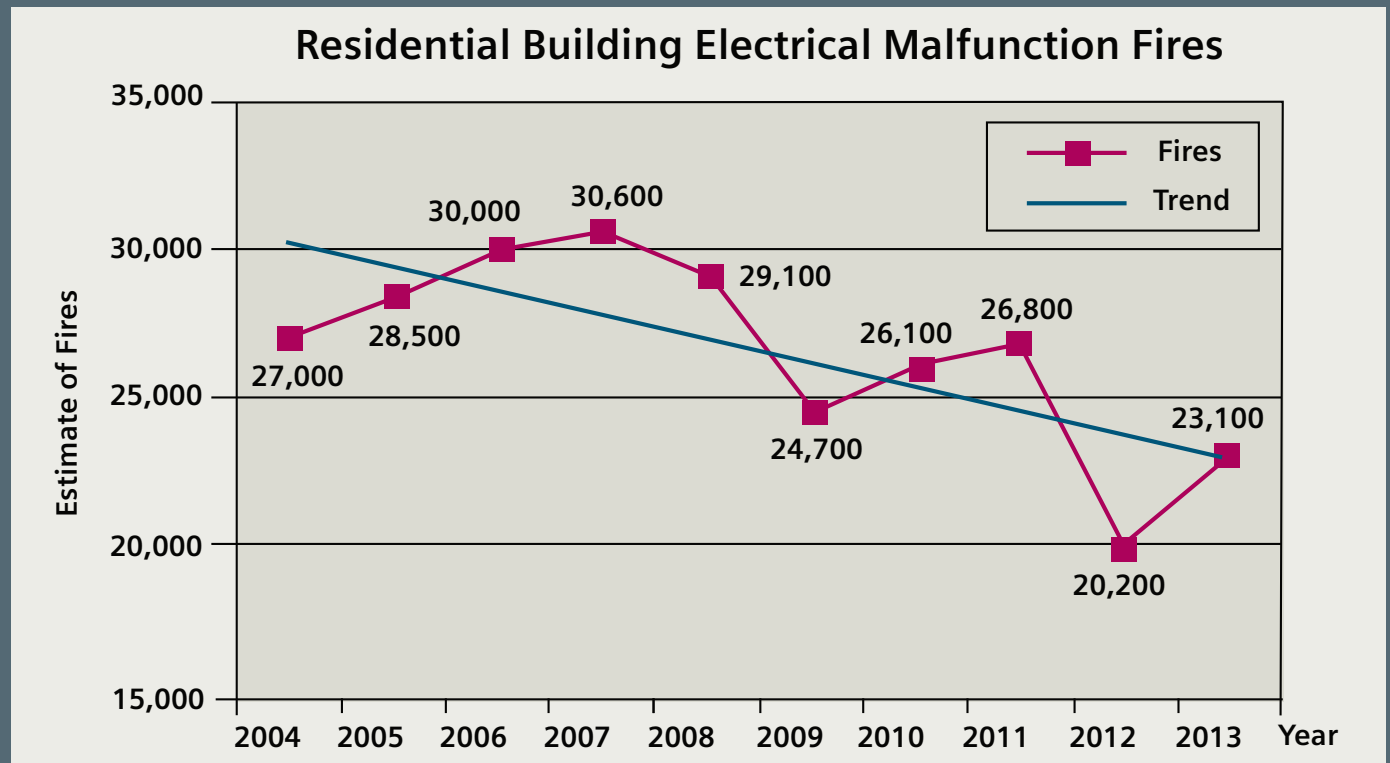
Technology exists to help mitigate the effects of arcing and sparking in our electrical systems. Arc Fault Circuit Interrupters (AFCIs) are devices that alleviate the effects of arcing faults to protect homes against the dangers of electrical fires. Determining the cause of an AFCI trip can be confusing and time-consuming, but the innovative trip indicators and the Siemens exclusive Intelli-arc Diagnostic Tool offer help in the troubleshooting process. This is a technology that has a goal of stopping fires before they begin and can be leveraged in new and existing homes to mitigate the effects of the arcs and sparks that can cause electrical fires.

Background information:

NFPA reported 47,700 home fires involved some type of electrical failure or malfunction in 2011. Those fires resulted in 418 deaths, 1,570 injuries, and \$1.4 billion direct property damage. However, the CPSC estimates more than 50% of electrical fires that occur every year could be prevented by AFCIs.

The U.S. Department of Housing and Urban Development's Healthy Homes Report listed the absence of AFCIs among the primary residential hazards associated with burns and fire-related injuries.

Given these staggering statistics, here are some simple steps which will help you to assure Safety for all.



U.S. Fire Administration



Preventative measures (for contractors)

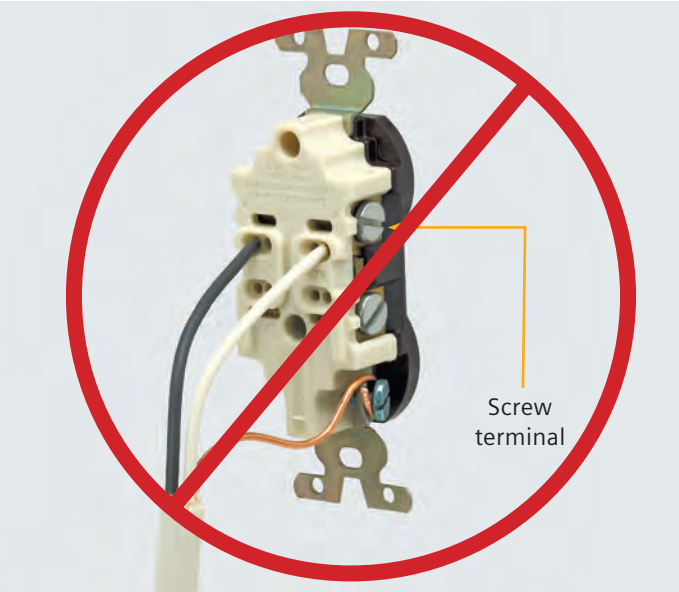
- Ensure light bulbs are tight in socket
- Wire receptacles around the screw
- Devices in the home should be UL and FCC Part 15 compliant
- Route wires in strategic areas so homeowners and other trades are less likely to pierce through a wire



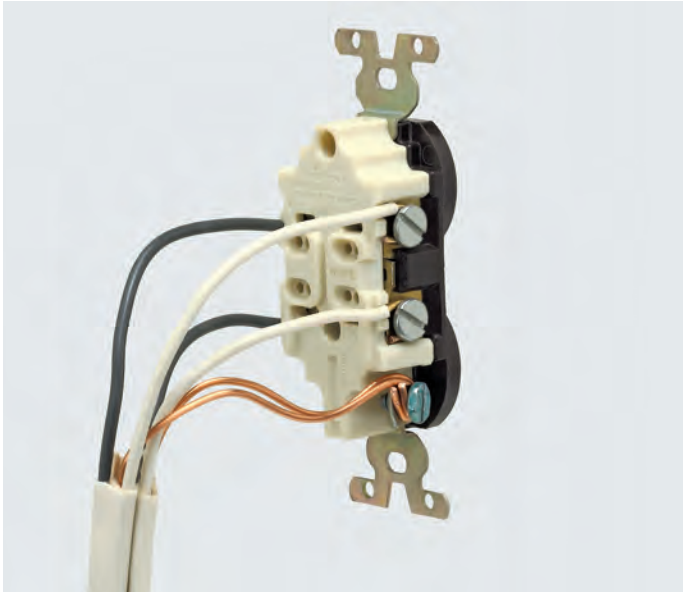
50 to 75 percent of all electrical fires in the United States are caused by arc fault conditions



Example of line-to-ground arc fault (nail puncturing NM-B wire)



Inserting wire into the pressure slots on the back of the receptacle is not the best method



Wrapping wire around the screws located on sides of the receptacle is the best method

Preventative measures (homeowners)

- Ensure light bulbs are tight in socket
- Protect electronics on surge protectors
- Do not put furniture on or push furniture up against electrical wires
- Devices in the home should be UL and FCC Part 15 compliant
- Do not overload a circuit



Be careful not to overload a circuit



Damaged/bent cords can cause arcs



Light bulbs should make a complete connection with the socket



Surge suppressors will not only protect the homeowners' electronics, but also decrease the "noise" emitted from electronics

Additional questions to ask when troubleshooting:

- 1) How many LED's on the breaker upon reset?
- 2) What event/action is causing the trip condition?
- 3) Has the event/action for the trip condition been identified?
- 4) Which circuits are experiencing the trip condition?
- 5) What devices are on that circuit?

| 1-Pole CAFCI circuit breaker | | | |
|------------------------------|-----|---------------------------|--|
| LED indicators | | Last known trip condition | Troubleshooting |
| 1 | 2 | | |
| Off | Off | Overcurrent | Ensure current on the circuits does not exceed the current rating for the breaker. |
| On | Off | Arc fault | Check wiring for the parallel and series arc faults. Check devices for series arc faults. Use Intelli-Arc to assist and accelerate diagnosis. |
| On | On | Art fault to ground | Check wiring, switches, and receptacles for possible ground leakage. Use Intelli-Arc or circuit tester to troubleshoot. Using safe electrical practices, systematically identify the source of the ground fault. |

| 2-Pole CAFCI circuit breaker | | | | |
|------------------------------|-----|-----|---------------------------|--|
| LED indicators | | | Last known trip condition | Troubleshooting |
| 1 | 2 | 3 | | |
| Off | Off | Off | Overcurrent | Ensure current on the circuits does not exceed the current rating for the breaker. |
| On | Off | Off | Arc fault (leg A) | Check wiring for the parallel and series arc faults. Check devices for series arc faults. Use Intelli-Arc to assist and accelerate diagnosis. |
| Off | Off | On | Arc fault (leg B) | |
| On | On | On | Art fault to ground | Check wiring, switches, and receptacles for possible ground leakage. Use Intelli-Arc or circuit tester to troubleshoot. Using safe electrical practices, systematically identify the source of the ground fault. |

Additional Resources:

- Siemens Technical Support: 1-800-333-7421
- www.afcisafety.org
- UL AFCI training – FREE!: Go to www.afcisafety.org and click on the link at the top of the page for the “free online training program”
- NEMA White Paper: Wiring Practices & Troubleshooting with AFCIs found under Publications and Multimedia Presentations at afcisafety.org
- usa.siemens.com/afci

Intelli-arc:

- brains shark:
<http://www.brainshark.com/siemens/DYKIntelliARC>

CustomPoint resources:

- Posters: RPMR-IADT1-0909, RPMR-IADT3-0909, RPMR-IADT2-0909
- DVD: RPMR-IADVD-0610
- Brochure: RPFL-IADT2-1011

**Published by
Siemens Industry, Inc. 2017.**

Siemens Industry, Inc.
5400 Triangle Parkway
Norcross, GA 30092

For more information, please contact
our Customer Support Center.

Phone: 1-800-241-4453

E-mail: info.us@siemens.com

usa.siemens.com/afic

Order No. RPBR-TPSTR-0517

Printed in U.S.A.

© 2017 Siemens Industry, Inc.

The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.

