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Why Trust Anyone Else?

GFCI and AFCI Explained

As new technology brings us new tools to make our lives easier, it also provides new devices to keep us safer in our homes. GFCI protected electrical receptacles and AFCI protection circuit breakers are small technological wonders. They are outlets and / or circuit breakers that contain some extra specialized and micro-miniaturized electrical circuits that can detect the specific, characteristic signs of household electrical current problems that are present when certain dangerous situations occur. When detecting such conditions, they automatically shut down the electricity, providing an extra layer of safety and, possibly saving a life in the process. Regular circuit breakers are designed to protect the house's electrical system, not people! The amount of electricity that is needed to kill a human being is thousands of times less than the amount that will 'trip' a regular circuit breaker. Please read the explanations below.

Fuses and Circuit Breakers - Fuses and circuit breakers, also called "over current devices" are used in your house's electrical system in order to guard against too much electrical current running through the house's wiring. As electrical current flows through the wires, it loses some of its power because the wires have an electrical resistance. This is safe, but if too much current flows, based upon the wires diameter and resistance rating, the wire may get too hot and start a fire. To prevent this, fuses or circuit breakers will detect when too much electricity is flowing and will blow (fuses) or trip (circuit breakers). When this occurs, it usually means that someone has tried to put too may electrical devices on one circuit. Fuses in a circuit breaker, are designed to protect the house's wiring from fire. They are not designed to protect the people in the house from being electrocuted. That is where GFCI and AFCI devices come into play.

GFCI Electrical Outlets - A GFCI outlet (GFCI stands for Ground Fault Circuit Interrupt) is a special electrical outlet device that provides much greater protection from electrical shock than a standard electrical outlet does. Think of a GFCI outlet as a small, ultra-sensitive circuit breaker that is built right into the outlet but it does not guard against fire, but against human electrocution, it should be called an 'Anti-Electrocution Device'. Here's how it works.

When the amount of electrical current coming out of the 'hot' prong of the outlet (the smaller slot) is just 5/1000 of an amp different from the amount of electrical current coming back into the outlet on the 'neutral' prong (the larger one), the GFCI outlet will 'trip', i.e. shut down the outlet. In such a case, the GFCI outlet senses that it is putting out more electricity than it getting back. The only place that this missing electrical current can be going is to another source of electrical ground, which is probably a person! Please note: A GFCI outlet will still provide this protection, even if the outlet is not grounded. The only thing it cares about is that the electricity going out is the same amount that is coming back.

GFCI outlets are now required to be used anyplace in your house where there is a close proximity to the grounding of a human being. Such places are; all kitchen counter tops and islands, within 6' of other sinks or water sources, bathrooms, unfinished basements areas, garages and all outdoor outlets.

Please Note: If your house was built before GFCIs were required, local building codes do not necessarily require them, but proper home safety does! Going beyond the minimum safety requirements of mere local building codes, to the higher standards of safety, is part of what a professional home inspector does.

Besides, having your older house retrofitted with GFCI protection is inexpensive and easy. Why would you not want to protect your family from electrocution? GFCI protection can be installed with GFCI receptacles or with the whole circuit being equipped with GFCI Circuit breaker.

AFCI Electrical Outlets - AFCI protection is much like a GFCI outlet, but it protects against an entirely different potential danger. Sometimes, certain types of electrical appliances will be used to convert electricity into heat. Sometimes, these devices will also cause heating where the device plugs into the wall. This is called arcing. You sometimes see it when you quickly unplug a heating appliance, like a clothing iron, from an outlet while it is switched on. Electrical arcs can also be caused when someone drives a nail through a wire that is in a wall (like when hanging a picture) or by mice or squirrels who like to chew on electrical wiring.

An AFCI protection device will detect any 'arcing' (i.e. sparks, where electricity is being conducted through the air and converted to heat (can you say 5,000 degrees!) when you don't want it to and shut down the outlet before any damage can be done.

AFCI protection is now required, by the Wisconsin Electrical Code (for new construction and addtions) for electrical wiring that serve all sleeping areas, such as bedrooms or dens with fold out couches. These are areas where fires could start and catch people who are sleeping or otherwise unable to get out quickly.

AFCI protection devices are not found in wall receptacles, but are incorporated into your house's main electrical service equipment panel, in the form of special circuit breakers. Your house can easily be AFCI protected. Just have a licensed electrician replace the circuit breakers for bedroom areas with AFCI circuit breakers.

Please Note: Like GFCI outlets, older homes are not usually required by local building codes but are a safety concern

You must ask yourself the question. **How safe do you want your home to be?** Are you willing to spend about $100.00 to add this protection? The choice is yours.

Honest Home Inspection wants to be your building consultant for life. We hope this material was informative for you. Thank you for allowing us to help

Scott C. LeMarr

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A Referral is the best compliment we can get!