Fence Energizers

Issues to consider before buying any energizer:

1. Total length of fence: This is actually of minimal importance! Why? Because even small units will energize long fences and stop animals—***if there are no leaks of energy to the soil via weeds or poor insulators.***
2. Amount of wet/green weed contact with the energized wires. ***Very important!*** 1/4 mile of high-tensile wire that's covered with weeds and is only 6" above wet soil may leak or drain away more energy than a 3-joule energizer can provide!
3. How high above the soil will the lowest live wire be? Low wires (6") will have more leakage from weed contact. More leakage means you need energizers with a high joule output at 200Ω.
4. Species to be contained or deterred: Species vary in their internal resistance (in ohms).
   Wide-impedance units (or large low-impedance ones) are best for species with high internal resistance (poultry, goats, deer). Cattle, horses and domestic pigs have lower internal resistance.
5. Climate: Low-impedance units are ideal for places where the grass stays green. Wide-impedance units are superior when grass turns brown.
6. Soil: Wide-impedance units are better for rocky and/or sandy soil. Low-impedance units are better for clay and/or loam soils.
7. Power source: 110 AC plug-in units are best if fence is close to power. If not, look at the battery/solar options.
8. Cost: The most expensive energizer is the one that isn't big enough for your needs.

Key Definitions:

Volts/voltage: A measure of the pressure upon electrons to move from "A" to "B". Very similar to psi in water and air systems.

Electrons can't flow from A to B unless enough voltage (pressure) exists to overcome the sum of the resistances between the 2 points.

Joule(s): A measure of the volume of electrical energy (electrons) in a pulse. Comparable to pints, quarts or gallons in water systems.

When enough electrons (joules) suddenly pass through an animal's (or human's) nervous system, the pain is memorable and cause for avoidance in the future.

Amps/ampere/amperage: Measure of the rate of flow of electrons per unit of time. Similar to gallons per minute for water systems.

Pulse frequency: The number of pulses that occur each minute. 40 pulses/minute computes to a pulse every 1.5 seconds.

Ohms (Ω): Measure of resistance to electrical flow. More Ω = more resistance. It's additive. If 1000 ft of wire is 200Ω then 2000 ft is 400Ω.

Conductor: Any material with low ohms/1000 ft numbers such as copper, aluminum, tin or steel.

Water is a conductor. Wood, if wet internally (e.g. sap) or externally (dew, rain), can become a conductor. Similarly moist soil and grass stems are conductors. Animal tissue with body fluid in it or moisture upon it is a conductor.

Electroplastic conductors/netting: A cable or ribbon comprised of small conductive metal (copper or steel) filaments and nonconductive plastic filaments. The metal carries the electrons. The plastic provides visibility, strength and elasticity.

Insulators: Materials with high resistance (ohm numbers) such as fiberglass and plastic.

Wood is an insulator *if it is dry* internally and externally.

Dry animal hair, wool and feet are poor conductors and thus are insulators (albeit often poor ones).

Fence Energizer FAQs

Q. Exactly what is a fence energizer?
A. A box that takes in small amounts of electrical energy from an outside source (battery or 110 volt outlet).

The energizer stores this energy, then pushes it out of a metal terminal (marked "fence") in very brief, high voltage and high amperage bursts (pulses). The outbound terminal is commonly called the "positive" or "fence" terminal.

All energizers also have a second terminal (marked "ground" or "earth") whose purpose is to absorb as much of the pulse energy as possible back into the energizer. Experts call this the "negative" terminal.

Q. What, exactly, is an electric fence?
A. An extension of the 2 terminals (fence and ground/earth) of the energizer.

The inbound (earth) terminal is extended by driving metal rods into the soil and connecting them to the earth terminal with conductive wire.

Because soil moisture is a good conductor, this makes the subsoil for miles around (not an exaggeration) an extension of the earth/ground terminal. So animals, humans and grass are all "standing" upon an extension of the energizer's earth/negative terminal.

The outbound/fence terminal is extended by attaching conductive wires to it. They are suspended above the soil and kept separate from the soil by insulators and/or nonconductive posts.

Q. How high is the voltage of a pulse?
A. Up to 10,000 volts. That sounds extreme—but static electricity is often higher still. High voltage is necessary to be able to force electrons through the resistance of wires, animals and the soil.

Q. How brief is the electric pulse?
A. Less than 3/10,000 of a second. It's important that it be this brief to allow animals and humans time to move away after touching it.

Q. Will I feel anything if I touch a terminal when the energizer is on?
A. Not if you touch only one ***and carefully avoid touching the other one at the same time!***

If you accidentally touch both at the same time ***(we strongly advise you not to do this!),*** you will feel the full impact of the pulse.

Note: *We never do this, not even when the energizer is off, without first carefully touching both terminals with a long metal screwdriver* ***with insulated handles!***

Q. What happens when grass touches energized fence wires?
A. Think of the wires as swollen with excess electrons from the pulse.

Green vegetation is a conductor—particularly when wet. So when it contacts an energized wire, energy is pushed by the voltage down through the moisture in the stem into the soil. Folks call this a "leak" (similar to a hole in a water hose) or a "short."

Q. What happens when an animal touches energized wires?
A. The high voltage of the pulse pushes electrons through the animal's point of contact (often the nose or ears), then through the body's tissue and fluids and out through the feet/hooves/paws into the soil moisture.

The amount of energy (measured in joules) that passes through the animal determines how much pain the animal feels. Again, many factors affect how much energy flows when a contact occurs.

Q. Why is animal weight a factor?
A. The weight of a heavy animal (e.g. a pig or cow) compresses the soil. This reduces the electrical resistance of the soil and thereby increases the joules that can flow through the animal.

This explains why heavy animals are more "affected" by electric fence. More energy (joules) actually flows through them so they feel more pain.

This also explains why electric fences may fail to stop light animals (poultry). Their soil-to-foot contact is poor. So their resistance is higher and less energy flows through them.

Further, this explains why wide-impedance units (more output at higher resistances) are better for lightweight animals.

Weight (or the lack of it) explains in part why calves and lambs will seem to be less affected by a pulse than cows and ewes.

Q. Why is grass color a factor in choosing a suitable energizer?
A. Green grass indicates the soil is moist, so the soil will have less resistance to a pulse.

Also, the high-moisture green stems and leaves are themselves able to drain away more energy from an energized fence, thus reducing the pulse energy available to an animal. All of this suits the capabilities of low-impedance energizers.

Brown grass suggests the opposite.

Q. Which species are most affected by an electric fence pulse?
A. In order from most to least: pigs, horses, cattle, canines (wet noses, bare pads), raccoons, sheep, goats, deer, geese, chickens and rabbits.

This assumes a low-impedance energizer was used and adult animals are contacting the fence with their nose, beak or paw.

Q. Which energizer brands are wide-impedance?
A. Most IntelliShock and Kube units.

Q. Which energizer brands are not wide-impedance?
A. All others.

Q. I'm confused by all the energizers that Premier offers. Why so many?
A. Some folks have strong preferences based on prior experience or advice from others. By offering multiple brands we enable them to access our other fence products as well as our support services.

All units that we offer are from proven, world-class manufacturers.

But we understand the problem this may cause folks new to electric fences. If you have questions, call us at 1-800-282-6631. Our consultants are trained to respond in a soft, no-pressure way.

Q. Why Premier's energizer "know how" is unique...
A. Other firms may supply more units—but no one supplies more units (50,000) direct to end-users ***and*** tracks the results. We know what failed, when and why. When you join our list of satisfied customers you tap into that experience and expertise.