

## **Tips on Permanent Powered Fencing and Temporary Powered Fencing**

The following outlines various simple, yet proven, methods in constructing both fixed and portable fencing systems as well as providing information about the fence materials and any additional tools and hardware you will require.

<b>Contents</b>	<b>Page number</b>
How does an electric fencing system work?	2
Choosing the fence system you need	2
Tips for Permanent Powered Fencing	3
(i) Area and geography of the land	3
(ii) Location of existing power supply	3
(iii) Number and shape of paddocks	3
(iv) Permanent fence construction	4
Tips for Temporary Powered Fencing	6
(i) Planning the fence layout	6
(ii) Choosing between tape or wire	6
(iii) Fence construction	6
Post and Wire Spacings	7

## How does an electric fencing system work?

An electric current, generated from an energiser which is earthed, travels along a fence wire as a pulse. The circuit between the fence and the ground is completed when an animal touches the fence wire and consequently receives a short, sharp, safe shock. This provides enough of a deterrent to an animal, making the electric fence a psychological barrier rather than a physical one.

## Choosing the fence system you need

When planning your powered fencing system, consider whether you need a permanent fence or a temporary, portable fence. In addition, choose one of three ways to power the fence; mains power, battery or solar/battery. The type of powered fence system you choose will depend on several factors – see table 1

	<b>Permanent fence</b>	<b>Portable fence</b>
Expected fence life	20 -40 years. Long-term permanent installation	Short-term. Can be moved daily
Best suited to	Controlled grazing, longer rotation times during periods of slow pasture growth, conservation of silage etc	Strip-grazing Managed intensive grazing
Animals controlled	Long-term animal control such as; Cattle, horses, goats, sheep, pigs, rabbits, deer, feral etc	Short-term animal control such as; Dairy herds, cattle, horses, goats and sheep etc
Level of construction and installation	Some knowledge of fence construction and special tools required	Straight-forward and easy to install
Power source for fence energiser	Mains power, solar panel/battery	Mains power where available Battery, solar/battery - particularly useful in remote areas without mains power

**Table 1: Factors to consider when choosing permanent or portable powered fencing systems**

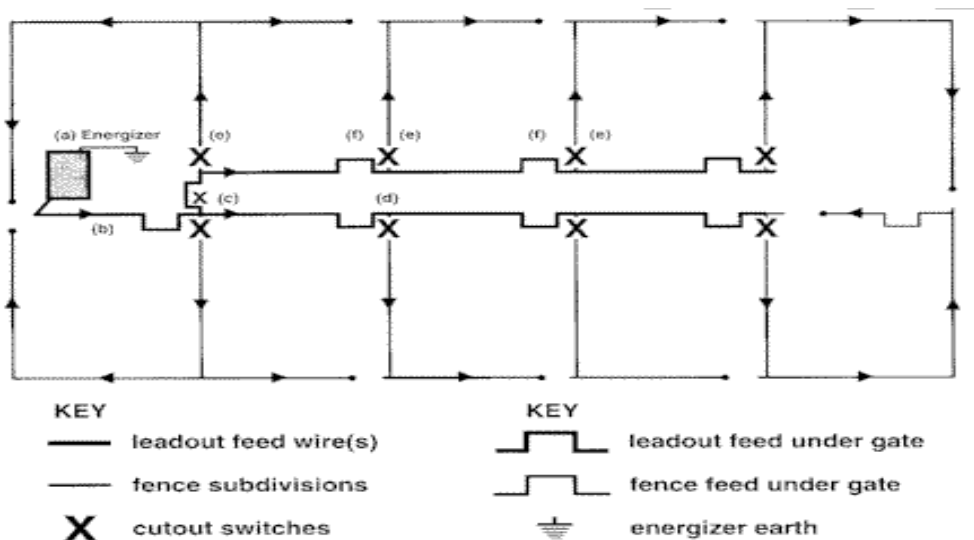
An MGG Electric Fence Energiser can be used as part of a permanent fence system or a portable one which makes powered fencing more flexible, efficient and reliable.

## Tips for Permanent Powered Fencing

Careful planning will ensure safe, simple and fast installation of the electric fencing system as well as reducing the amount of time required checking and maintaining powered fences in the future. When drawing up a plan of the fence system you want, consider the following;

### (i) Area and geography of the land

An ideal fence layout for a flat rectangular-shaped farm is shown below. The same principles can be applied to farms on slopes/hilly areas as well as farms of differing shapes and sizes.



Incorporating a lane or raceway either through the middle or alongside the paddocks is useful for maneuvering animals from one section to another. If required, water pipes can be laid down in this area.

### (ii) Location of existing power supply

On your plan, show the mains power supply (if using), direction of flow as well as other known power or telecommunications cables. Avoid having the fence wires running parallel with any power or telephone lines. In addition, identify the position of gateways or junctions where single or multiple fence wires can be turned off. These are ideal places to site cut-out switches in order to isolate faults in various sections of the fencing system.

### (iii) Number and shape of paddocks

Plan the number of paddocks required, allowing for rotational grazing, hay/silage conservation as well as longer rotation times during periods of slow pasture growth. For optimum space efficiency and even grazing, keep paddock shapes as square as possible. Long, narrow paddocks are known to be overgrazed at the front and under-grazed at the back and should be avoided. In situations of rough, stony or steep terrain, it is easier and more cost-effective to zig-zag the fence wire around these areas rather than work in straight lines which requires more posts and tie-downs and can potentially increase future maintenance.

(iv) Permanent fence construction

The following is a brief overview of what is required for permanent fence construction.

- Fence posts

Wood - strong, rigid, highly visible and easy to insulate

Steel - strong, rigid, easy to insulate and suitable for hill country terrain

Fibreglass - lightweight, flexible, no additional insulation required, no maintenance, simple and quick to install, inexpensive

- Droppers or battens

Made of wood, plastic or fibreglass, battens are recommended for use with all fence post types to maintain wire spacing and increase fence visibility.

- Strainer assemblies

Form the foundation of the fence line. Their function is to eliminate any movement in the fence and maintain tension in the wire. A 2.1m post, 150mm in diameter should be sufficiently strong as a strainer post for a permanent electric fence. There are several strainer assembly options. Choose the one most suitable to withstand the tension you intend to apply to it:

Strainer assembly	Suitable for	Comments
Angle stay	5-wire fences Firm ground Medium tension	<ul style="list-style-type: none"><li>• The angle stay should be at least 2.1m in length</li><li>• Dig a stay-block at least 100mm below ground level to ensure the angle-stay is held snugly in position</li><li>• Install a foot-block at the base of the strainer to prevent the post rotating up and out of the ground</li></ul>
Bedlog	4-wire fences Firm ground Low/medium tension	<ul style="list-style-type: none"><li>• Install a foot at the base of the strainer, wired to the post to prevent post rotation when the tension is applied</li><li>• Install a bedlog or breastplate, to prevent rotation or movement of the strainer post</li></ul>
Horizontal stay	Soft ground, areas of wet soil and heavy frost High tension Controlling feral animals	<ul style="list-style-type: none"><li>• An additional post, installed 2m from the strainer post and in line with the fence wires</li><li>• A horizontal post is notched into the top of each vertical post and held in configuration with a tensioned wire</li></ul>

- Wire tension

An electric fence system provides a psychological barrier rather than a physical one. As such, the tension does not need to be excessive on the fence wire, ruling out a need for heavy-duty strainer assemblies. This will considerably reduce overall fence construction costs. Ideally, electric fence wire should be tensioned to 90kgs (200lbs), although this may need increasing if you are controlling feral animals, especially in the lower wires. The tension can be measured using a tension meter.

- Fence wire

Hi-tensile wire should be used. Unlike soft wire, hi-tensile wire maintains its tension far longer, therefore reducing the risk of faults within the system. For permanent powered fence systems, the

most suitable is 2.5mm or 12g hi-tensile wire. Smaller diameter wire has higher resistance resulting in lower current flow.

- **Joining wire**

To avoid loss of voltage, all permanent wire connections should be made using crimps. These are as strong as the wire itself and have good electrical contact. To optimise conductivity, connect live wires in parallel at each end of the fence, using joint clamps. In addition, always use high-quality, double-insulated underground cable for connections to the earthing system and beneath gates.

- **Gates**

Where possible, position gates on flat, firm areas. Avoid steep banks. When carrying the power and earth return wires, (if using this system), it is essential to use high-quality, double insulated cable in these areas and encase the cable in durable plastic piping, preferably buried to a depth of at least 300mm deep with the ends of the pipe turned down to keep the water out.

**Important:** In these circumstances, non-insulated wire or thin poor quality cable can perish quickly underground and may not be sufficiently insulated for high-voltage use, resulting in voltage loss or complete short-circuit.

**For further information on Permanent Powered Fence construction, please discuss your specific requirements with a fencing contractor.**

## **Tips for Temporary Powered Fencing**

The versatility of a temporary powered fencing system enables you to strip graze, create short-term paddocks and protect orchards/trees or sections of garden from damage by stock and feral animals.

### **(i) Planning the fence layout**

Given the option of solar/battery power, the MGG Electric Fence Energisers allow maximum flexibility for the temporary system to be moved on a daily basis and within the most remote areas.

### **(ii) Choosing between tape or wire**

Generally, tape is used where high-visibility is important. Many of the market brands are striped to replicate nature's own warning sign which have been proven to be a more effective deterrent to animals. However, tape is not recommended in areas of strong wind. Alternatively, in areas where persistent adverse weather conditions could destroy a tape over time, a preferable solution is low resistance wire.

### **(iii) Fence construction**

Reels of either wire or tape can be used for a single-line fence or multi-line fences up to a maximum of four-lines.

Single-line fences require an anchor point to secure the wire/tape reel. Pace out the proposed fence line unwinding the wire/tape reel at the same time. Every 20m, or less if the ground is uneven, place a pigtail treadin to secure the line. Attach the reel to a second anchor point, engage a ratchet and tension the wire. You are now ready to connect to the energiser.

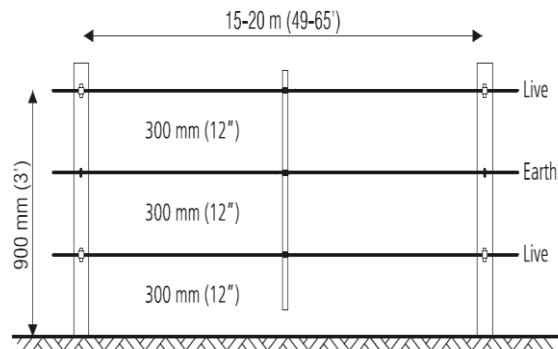
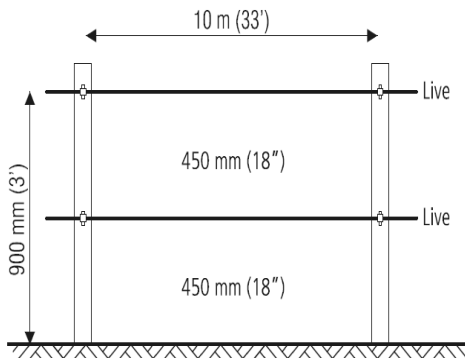
Multi-line fences require the wire/tape reels to be attached to a reel stand. This needs to be secured to an anchor point. Before pacing out the fence line, the wire/tape needs to be fed through one steel post treadin to prevent the multiple lines becoming twisted. Disengage the reel ratchets then unravel the wire/tape reels as you walk to the end of the fence line, placing a treadin every 10-12m or closer to maintain the fence line height over uneven ground. Apply tension to the lines using a ratchet then you are ready to connect to the fence energiser using a multi-reel lead connector.

**For further information on Temporary Powered Fence construction, please discuss your specific requirements with a fencing contractor.**

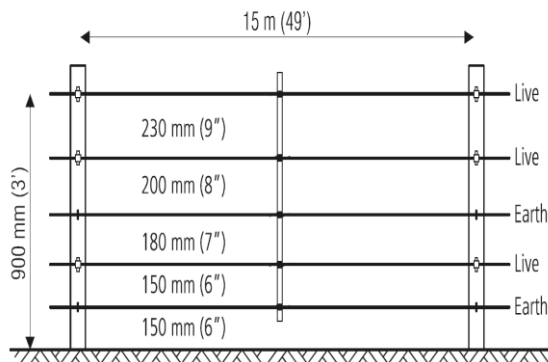
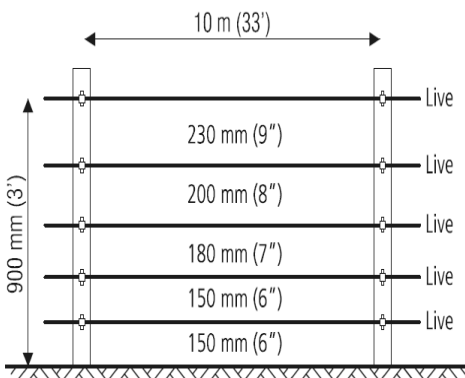
## Post and wire spacings

Ideally, plan the fence line, avoiding rough, stony or steep areas. Build the fence with all wires electrified to control your animal type. As a guide, the smaller the animal the more wires required, for example; cattle 1-3 wires, sheep 4-5 wires and for goats and sheep, ensure the bottom wire is 150mm above ground level to prevent them escaping beneath the fence line. The following are some suggestions for post and wire spacings:

### Cattle and horses



### Sheep, goat and poultry



### Feral animals

