



The standard UK measure for the declaration of energy in pig feeds is **digestible energy** (DE). Other energy expressions are sometimes used such as **gross** (GE) and **net** (NE).

Surprisingly it is not a legal requirement to list the energy level of pig feed on the label but it should be easy to get hold of from your feed supplier.

This factsheet explains what the different terms relating to energy mean and provides target dietary energy levels for each category of pig.

Gross energy (GE)

This is the energy that would be released from a feed if it was burnt; it indicates the total potential energy in a feed, but not the amount of energy available for a pig to use.

Digestible energy (DE)

This is a step on from GE and takes account of the dietary energy losses in the dung; about 15% of the GE in the feed is lost in the dung.

Metabolisable energy (ME)

This is a modified version of DE, taking into account energy losses through faeces, urine and gases. Energy lost through urine and gases are relatively small, unless very high protein feeds are fed. In practice ME is difficult to measure so approximations are usually made, based on ME being around 96% of the DE.

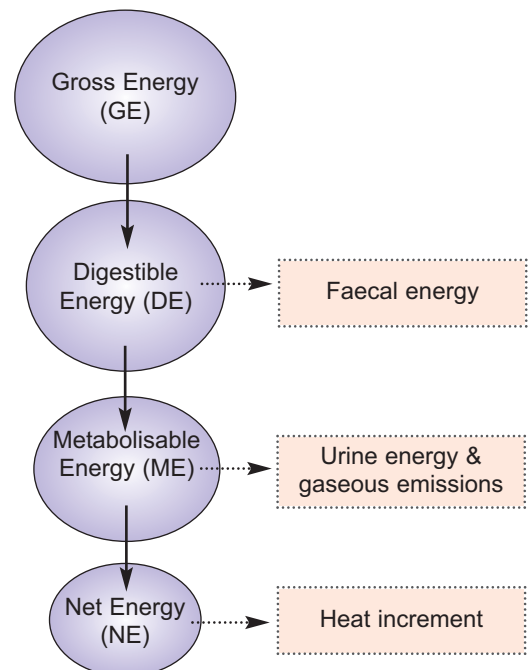
Net energy (NE)

This measures the productive value of feed energy better than DE. Net energy is the energy left for growth, milk production and reproduction, after accounting for all energy losses.

Not only does it account for faecal, urinary and gaseous losses, but importantly NE estimates the biggest energy loss by the pig, heat.

In comparison with DE, NE typically results in pig feed formulations that are lower in fibre and protein, and higher in starch and fat; it therefore alters the relative contributions of raw materials in a formulation.

Until about 10 years ago DE was the most common system used in the UK and most producers and nutritionists still refer to DE values. However when feeds are formulated the majority of nutritionists now accept the benefits of the NE system, which in consequence is widely used.



Looking at energy levels in pig feed

Units of energy are measured in Mega Joules per Kilogram or MJ/kg. The type of energy is then stated afterward. So commonly in this country it will be MJ/kg DE.

Energy is supplied by the starches and fats contained in the pig feed. These sit alongside protein, fibre and vitamins and minerals, and of course water, to create a balanced diet.

| High in energy | High in protein | Low in energy high in fibre |
|----------------|------------------|-----------------------------|
| Soya | Soya bean meal | Citrus pulp |
| Maize | Fishmeal | Sugar beet pulp |
| Wheat | Skim milk powder | Distillers grains |
| Barley | Potato meal | Bran |
| Oats | Peas | Straw |
| Potatoes | Beans | Wheatings / Middlings |
| Whey powder | Rape seed meal | |
| Fishmeal | | |

Where can energy intake go wrong?

Liquid feed can contain a lower energy level than that calculated on paper. This is due to the fermentation process. Fermentation can result in significant energy losses.

Sick pigs will use the energy from feed to fight their infections/illnesses, as the energy goes to fuel the immune system.

Excess heating of some starches can create retrograde starch. This is indigestible to pigs and can be found in things such as bakery by-products. Retrograde starch can also pass down into the hind gut as undigested particles, acting as a substrate for bacteria to grow on, leading to diarrhoea.

What energy levels should you be looking at?

| Category of pig | Weight range | Energy levels required (MJ/kg) | Your unit? |
|-----------------|--------------|--------------------------------|------------|
| Weaner | above 12 kg | >14.3 - 15 | |
| Grower | above 20 kg | >14.2 - 14.5 | |
| Finisher | above 60 kg | >13.6 - 14 | |
| Dry sow | | ~13 | |
| Lactating sow | | >14 | |