

COMBINED HEAT AND POWER (CHP) FOR FOOD AND DRINK PROCESSING.

Cutting costs for animal feed and pet food processors.

Looking to cut down on your energy bills?
Have a look at our guide to how CHP can boost
the efficiency of your processing plant.

BUILT FOR IT.



What is CHP?

CHP stands for Combined Heat and Power and is sometimes known as cogeneration. It involves generating electricity while capturing the huge amounts of heat that is wasted in conventional power plants.

By taking advantage of this waste heat, CHP plants can reach efficiencies of more than 80%, while coal- and gas-fired plants struggle to achieve more than 40%.

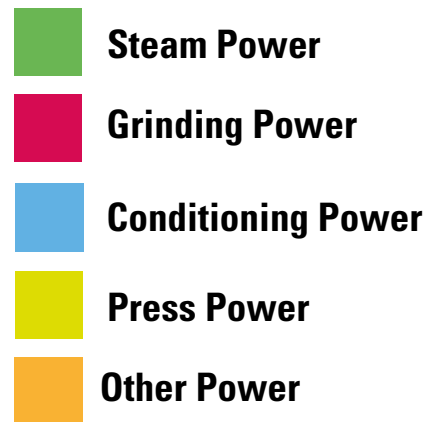
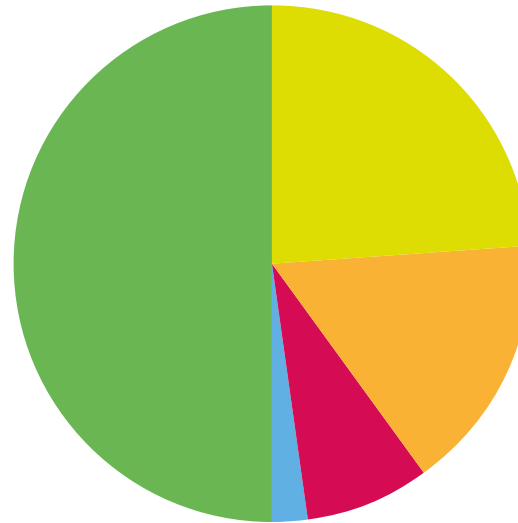
FACT – There are well over 2,000 CHP schemes installed in the UK, with the capacity to generate 6,170MWe of electricity and 22,225MWth of heat.

FACT – The average efficiency of UK CHP schemes is 70%

Energy use in animal feed production^[4]



Energy use in a typical animal feed mill^[4]



Animal feed and pet food demands

The UK is well known as a nation of animal-lovers, which naturally means that it's a huge consumer of animal feed. Every single day we feed around 17 million dogs and cats, as well as more than four million birds, lizards, rabbits and other pets^[1]

The number of animals we feed gets even bigger when we take a look at the farmyards and fields. Every year the poultry sector raises 875 million chickens^[2], and the government estimates that the UK is currently home to more than 36 million cows, pigs and sheep^[3].

Of course, many farm animals are fed on grass and hay, but these are often supplanted with specialist feed. Producing all this food requires a huge amount of both raw materials and energy.

According to a report from the Carbon Trust^[4] the UK animal feed industry produces over 18 million tonnes of food each year, consuming a staggering two Terawatt hours of energy in the process and emitting approximately 620,000 tonnes of CO₂.

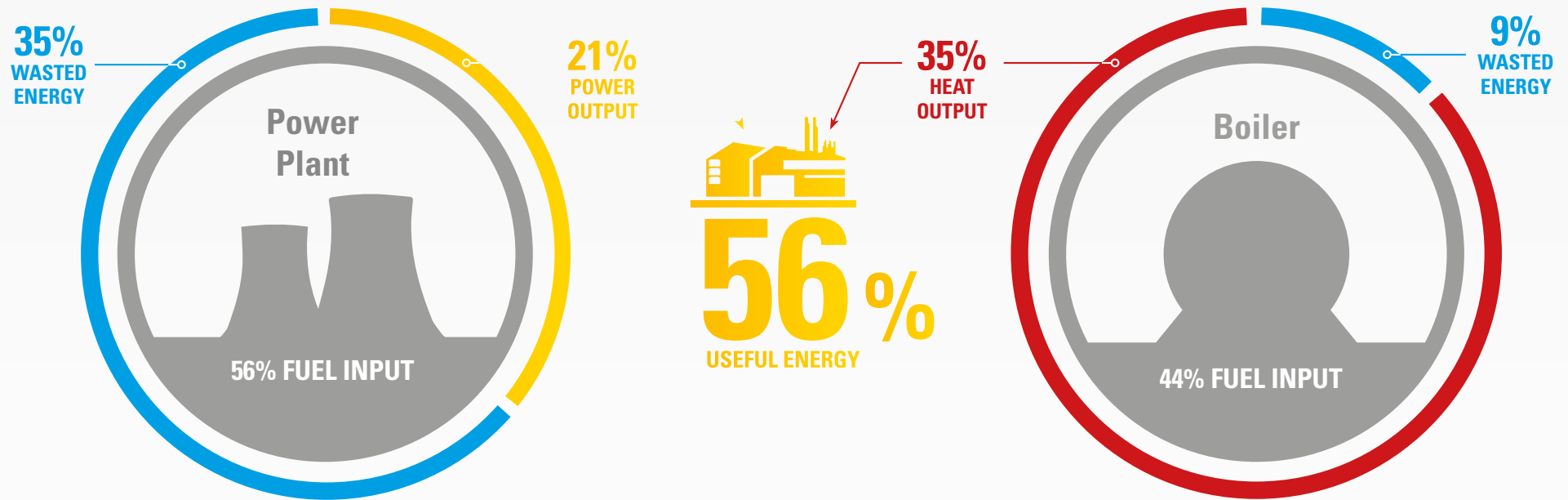
A typical feed mill producing 250,000 tonnes of feed per year can expect to spend £750,000 a year on energy. Plants will use large amounts of electricity to run processing equipment, but also heat and steam to bake kibble and pellets, as well as helping to extrude the products.

The exact demands will vary from site to site based on its size, the technology used and exactly what the plant is producing, but virtually every single one will require significant amounts of both heat and electricity for long periods of time.

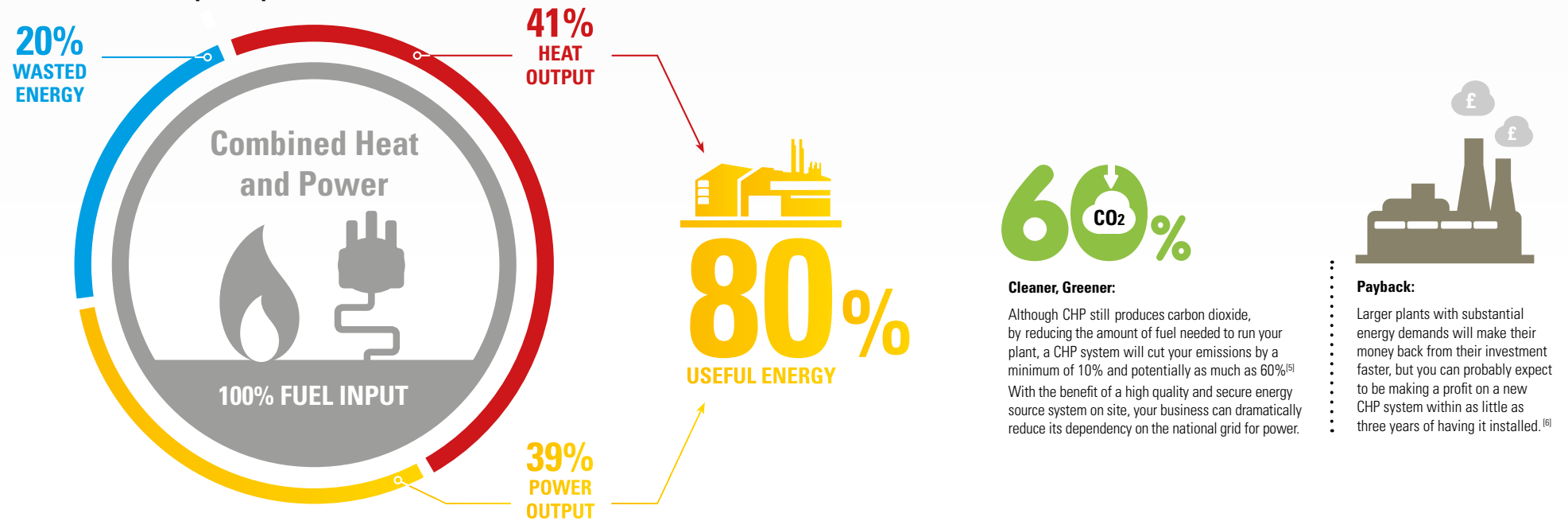
The Carbon Trust says that the typical heat to power ratio for an animal feed mill is around 1:1, and this high, regular demand for both heating and power makes the animal feed industry an ideal candidate to take advantage of CHP.

Output for CHP compared to conventional power plants

Conventional boiler power plant



Combined heat and power plant



Trigeneration:

As well as producing heat, CHP technology can also provide extremely efficient cooling through a process known as Trigeneration, or Combined Cooling. This can eliminate the need to run energy-intensive electrical refrigeration systems.

The exact savings this can offer will depend on several factors, such as the size of the operation and

the products being processed. Even basic animal feed mills will need cooling during the pressing process, but sites that produce wet dog and cat food will need more cooling equipment and as such are ideally positioned to take advantage of trigeneration.

How do I know if CHP is right for my plant?

1. Know your annual heat and power requirements

One of the best ways to do this is to carry out a full energy audit. Since processing plants usually run for long, regular periods the demand for both heat and power is high and steady - perfect conditions for running an efficient CHP system.

2. Work out how much you currently pay for both heat and electricity generation

Knowing your billing figures will allow you or a consultant to put together a precise cost comparison for different CHP systems.



3. Determine what size system you need

In most sectors that have constant, steady demand it is advised that CHP systems be sized to only provide the baseline heat. Otherwise you risk producing more heat than is needed, reducing the system's efficiency.

4. Contact a reputable supplier

CHP systems are a major investment and so working with a skilled, experienced supplier is vital. The cheapest purchase price may not necessarily deliver the cost effective operation over an extended period, and it's important that you secure an operations' and maintenance contract at the time of installation.

Industry example: ^[4]

Customer  Typical animal feed site	Product Biomass CHP solution providing 1MW of heat and 200kW of power	Capital Cost  £5m	Annual Net Savings ~£1m per year Payback Period ~4-5 Years
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About Finning:

Finning has a global reputation for developing CHP solutions that are durable, economic and reliable.

As well as providing high-quality systems and maintenance contracts, we offer a free feasibility service assessment to help you determine if the technology is right for you. To take advantage of this offer, visit <http://www.finningpower.co.uk/applications/chp/assessment.aspx>

References

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