

## Lighting - Time to turn up the lux...

- With the days getting shorter, a workforce under pressure and increasing energy costs now is the time to reap the benefits of upgrading your lighting. Here we look at some of the benefits, key considerations and the options available....

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### Benefits

#### SAFETY

It may seem obvious, but being able to see clearly in all working areas at all times of day or night

- reduces accidents
- saves time
- reduces mistakes.

This is important for everybody, but particularly for older workers, inexperienced workers or people who are tired or working under pressure. If you often have to use a torch or your phone light, can't find the light switch or have to strain your eyes to see details, it is time to think about improving the lighting in that area.

#### COW COMFORT

The ideal lighting for milking cows living inside makes it summer all year round. There are big gains in animal health, conception and yields to be had by improving lighting, particularly in combination with ventilation, to reproduce the cows' favourite time of year.

#### ENERGY USE AND MAINTENANCE

Natural light is free. So the easiest way to reduce energy use is to maximise natural light and ventilation in the design of the barn. Look at using light ridges and open sided barns with curtains. Then move onto low energy, low maintenance options to increase light levels when daylight stops. LED lights meet these criteria and are now widely recognised as the best solution for lighting stock sheds.

### Considerations for different areas

#### MILKING HERD

Good, clear, natural light for 16 hours a day and eight hours of either very dim light or darkness has been shown to minimise stress and maximise cow productivity.

A good working light level is around 100 lux. However, studies have shown that enhancing the light levels to 200 lux in the daylight hours can improve yields by up to 6%. In practice this is very difficult to measure because improved lighting is usually implemented as part of other changes. Anecdotally, our customers have all seen improved animal health and conception rates when they enhance their lighting level.

Ideally, lights in cubicle sheds will:

- Be dimmable – with one set of lights and switches the light level can be easily raised at night for animal identification and treatment if needed
- Switch on and off instantly, with no flickering
- Produce no ultraviolet light so they don't attract flies
- Give a clear, natural coloured light which allows dairy workers to see the cows clearly and identify welfare issues quickly.

LED lights have all these features and are usually the best option.

Having the right lights in the right place for the layout of your shed is the key to maximising the benefits. Your lighting supplier should be able to give you a lighting plan showing the effect of different lighting arrangements. There is always a trade-off



between the cost and benefit of installing extra lights. We have found, for example, that in a standard barn layout, lighting the centre feed passage gives ideal light over 80% of the barn. To get the same light level right to outside edges increases the cost significantly for only 20% of the benefit. Some customers have noticed that the cows like to have this choice of light, which may decrease stress levels.

#### DRY COW AREA

Studies have found providing shorter daylight hours in the dry cow area, possibly mimicking the natural cycle of cows drying off in the winter months, gives better results. Lights with a timer will allow you to set the best lighting levels for the time of year and the status of the cows.

#### WORKING AREAS – PARLOURS AND HANDLING AREAS

Good, clear accessible light in your working areas is often overlooked, but is vital for the safety, comfort and productivity of your operators.

Milkers, vets, AI technicians and equipment engineers will all appreciate good, clear lighting with easily accessible controls.

#### CALVING PENS

Dim lights, mimicking moonlight, in calving pens are great for creating a low stress environment when things are going well, but you need to have quick and easy access to quality working light when intervention is needed. Here dimmable lights are ideal; one light, one switch, no searching around for portable lights and spare sockets.

#### OUTDOORS

Don't forget the working areas outside your stock buildings. Good floodlights covering your feed loading areas, outdoor hutches and yard make working in the winter safer and easier, as well as deterring unwanted visitors.

### Product considerations

#### LED LIGHTS

LED lights give instant, even flicker-free natural colour light. They use 70% less energy than conventional lights, and burn up to 50,000 hours, nearly five years continuous use, before they need to be changed.

LED lights work with dimming and timing controllers to minimise energy costs and provide the optimum light for your cows all year round.

Not all LED lights are equal. Choose good quality lights that are designed for use in an agricultural environment. They should:

- Be water-proof, dust-proof, vibration and shock-proof and IP 65 rated
- Have aluminium casings that dissipate heat and minimise dust, with strong simple fixings and a safety chain.

#### LIGHT RIDGES

Light ridges sit on the apex of the building, letting in natural light and venting stale, warm air. They come in different shapes and sizes and can be used on both new-builds and refurbishments.

#### OPEN SIDED BUILDINGS WITH PROTECTIVE CURTAINS

A well designed shed will make the most of all natural light and ventilation.

Open sided barns, with curtains to provide weather protection when it is needed, can maximise the natural light and ventilation. The curtains can be operated manually or respond automatically to a weather station on the roof which measures the rain, wind and temperature and adjusts the curtain height accordingly.

The best curtains are translucent from the inside, providing good light levels even when closed. Light coloured surfaces will reflect the light and increase the lighting levels.

#### Practical checklist

- Consider improving light and ventilation together as part of the building design or refurbishment – the solutions are often the same.
- Maximise natural light first – it's free.
- Identify the areas that would benefit most from improvement and start there – it may just be one or two LED lights in the handling areas rather than a whole shed.
- For larger areas get a lighting plan from an experienced person who understands cows.
- Buy good quality lights designed for agricultural use.
- Include switch positions, dimmers and controllers in the plan; they can make all the difference.



Top: Airkoe-light-ridge-curtain.

Below: Intershape LED lights.

