

A Bigger PICTURE



With energy efficient lighting a necessity, how does LED fit into the picture?

General service incandescent light bulbs have been banned by the government from the end of this year as part of a strategy to do away with a globe now considered inefficient. At Seemorelux, we invented and supplied an energy efficient lighting system to poultry farmers that saves up to 80% power with a lasting and satisfactory durability. After 24 years of service, there are thousands of these in countless poultry houses still operating, with some farmers choosing to continue installing the Seemorelux Classic in new projects.

A natural evolution

At last, it seems farmers are catching on to the modern trend of installing lighting with an even higher level of efficacy in terms of energy consumption. With this objective in mind, in 2007 we invented, developed and patented a luminaire that housed 2 x 13W PLC electronic lamps driven by a 50,000 hour HF Ballast with voltage and temperature protections built-in. This evolved into a luminaire with a 26W lamp and 100,000 hour Ballast with a 5 year conditional guarantee – and still with under/over voltage

protection and temperature protection. We now have many broiler and broiler breeder houses with Seemorelux Natural installed and working well with 92% energy saving 95% lux uniformity with only 40 Seemorelux Natural 26W HF burning only 1.5Amp at 5 Lux and 4Amp at 25-29 Lux, depending on whether a Chromadek or Technopol White ceiling is installed.

The rated life

Worldwide, the 'rated life' - being subject to environmental operating

conditions - of any light source is merely an indication at which point 50% of the lamps installed will remain burning. Does this then mean that in a house fitted with LEDs with a rated life of 25,000 hours, the farmer would find that after roughly 12,500 hours, the LEDs start blowing - and that by 25,000 hours, all the lights have blown?

The rated life of LEDs is based on tests conducted in a laboratory in an ambient of 25oC in an open lamp excluding an enclosure or luminaire. In the same room, LEDs when installed in a luminaire, would see the temperature rise above 25oC - even with the essential heat sink, normally a substantial aluminum one. Then, with a temperature rise of up to 40oC, what is the impact on a lamp with an ambient temperature rise of 60%? By how much is the LED lamp life shortened?

A clear advantage?

We believe the advantages of the Seemorelux Natural over LEDs are substantial.

The watertight luminaire operates safely at a room ambient of 45oC, which is well within the temperature control points as specified by the Ballast manufacturer, while any significant increase in ambient temperature above 25oC will reduce the LED life accordingly.

HF CFLs retain a maintained light output of 85% : 15% light-loss, while LEDs have a maintained light output of 70% : 30% light-loss. Lighting designs will require greater over-design with extra lamps to compensate for light-loss in the LED and maintained Lux needs.

The efficacy of the HF Ballast and CFL lamp in Seemorelux Natural delivers 10-20% more light with >83 lumens per Watt when the lamp hangs vertically.

The consumer should be aware that the Philips Lighting Manager responsible for OEMs like us advised that through ongoing R&D, the LED light output is doubled

every 18-24 months. In the same way that a farmer would not mix 60W and 100W lamps in a poultry house, so he wouldn't mix older obsolete LEDs with the new, double-the-light output, LEDs. The latter situation would result in having to remove all the older LEDs and replace all lights with the new, more powerful - and more expensive - LEDs.

Cost comparison LED vs HF natural lighting

For illustrative purposes, with errors and omissions excluded, the following tables indicate the cost difference between LED and HF (over 25,000 hours, calculated over 4 years).

LEDs 1st 4 years	LEDs 2nd 4 years		
276 X LED'S (new cost)	R 44000		
Replacement cost	R 9380	Replacement cost	R 36984
Eskom cost	R 12578	Eskom cost	R 12756
Installation cost	R 32000		
Total cost 1st 4 years	R 97958	Total cost 2nd 4 years	R 49740

Total cost over 8 years – R 147,698

High Frequency Seemorelux Natural 1st 4 years	2nd 4 years		
40 x HF SML Natural (new cost)	R 27840		
Replacement cost	R 1620	Replacement cost	R 2700
Eskom cost	R 16305	Eskom cost	R 16305
Installation cost	R 11000		
Total cost 1st 4 years	R 56765	Total cost 2nd 4 years	R 19005

Total cost over 8 years – R 75,770

Conclusion

The Seemorelux range of poultry house lighting will not include LED lamps until the LED has evolved in every respect necessary to provide the farmer with a more comprehensive, no-nonsense, LED luminaire and a fully evolved LED product. ■