

Comment from Deutsches Kupferinstitut Berufsverband
(www.kupferinstitut.de)

My concern relates to halogen lamp transformers:

I suppose that ELV halogen lamps have become so popular only because they represent directional light sources, in which respect they outperform generic general purpose incandescent lamps, while being hardly any more efficient than these, nor having a convincing lifetime expectancy. Fortunately these halogen lamps (usually 12V) can in part be replaced with 12V LED lamps with a compatible fixture (GU4, GU5.3). In the foreseeable future there will be more and more LED lamps available, providing an increasingly adequate replacement for 12V halogen incandescent lamps, but often electronic transformers are not compatible with the new LED lamps. This problem usually does not intrinsically arise from the lamp but from the transformer. For some reason the stabilisation of the output voltage often fails when the electronic transformer is loaded less than $\approx 50\%$, but when replacing the halogen lamps with LED lamps some 70% ... 75% of energy savings are achieved. This drastic reduction in transformer output power may cause the lamps to cease working or to blink. Therefore it is better to provide halogen lighting installations with conventional 50Hz transformers, whereas the usual models with stacked cores of low grade magnetic steel laminations exhibit another disadvantage in so far as their efficiencies are fairly low at low load. The optimal choice are transformers with toroidal wound cores, whose efficiencies are particularly high at part load, peaking at around 25% of the rated load. These transformers could power sets of halogen lamps now, as long as private customers are not yet perfectly satisfied with the performance, colour or price of LEDs but guarantee easiest possible shift to LEDs and ever since the optimal energy efficiency of a lighting installation with directional light sources. Please see our measurement results in attached plot. Also note as an aside that the voltage regulation of both smaller units under test was mediocre, while on either of the bigger samples it was excellent. This finding, too, is symptomatic for the behaviour of such plant.

