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COMMENTS RELEVANT to TASK 6 REPORT.

(1). There is a major flaw in this study. The matter of lamp life is ignored.

With any construction, including a fixed voltage and a fixed wattage, of a tungsten filament lamp, conventional or halogen, it is possible to design a filament which will give almost any light output. But as the light output is increased the life will decrease.

Thus manufacturers will strive to achieve the highest light output consistent with a commercially acceptable life. Adding extra technology, such as IRC increases manufacturing costs, and to obtain a selling price acceptable to customers, the manufacturer will generally have to offer a longer operating life than that of the product being replaced. This is a perfectly logical approach.

In the case of Non Directional lamps, (Regulation 244/2009) the life of the tungsten lamps being superseded is, on average, 1000 hours. Table 5 of Annex II - for lamps other than CFLs, requires a life of  $\geq 1000$  hours at Stage 1, and  $\geq 2000$  at Stage 5. Lamps on retail sale from the major manufacturers are currently offering 2000 hours to justify selling at £1.99 - four or five times the price of the lamps they replace.

Referring to Table 2 on page 8 of the Task 6 Report, the authors list a series of tests on commercial IRC lamps from Osram and Philips, but say nothing about claimed lives. I was unable to find the reference numbers in current online catalogues, but found others which were apparently the same types. In these cases the IRC lamps had claimed lives of 5000 hours. This compares with 3000 hours quoted for the types which do not have the IRC coating.

If any judgement, or graphical plots, are made using efficacy for lamps with different lives, the data is likely to be misleading.

The table also includes a prototype DSI lamp with significantly higher lumens per watt than the commercial products. Until a substantial number of these prototypes have been tested it will not be known what can be claimed for average life. ***In these circumstances the results can be misleading and should not be included.***

In this report only low voltage lamps with beam angles of about 36 degrees were tested and only one sample of each.

***With the lack of consideration of lives or range of beam angles available, the extrapolation to cover performance requirements generally is not justified.***

(2) Mention is made of the difficulty in finding IRC lamps for 230V operation, and some very valid reasons why these are difficult to produce are given.. In Lot 19 - Domestic Lighting Final Report 6.1.1.4 p481, mention is made of the importance of a compact filament design to give a good beam in reflector types. A compact filament will result in high voltage gradients, but the filling gas must not break down, thus the use xenon which benefits the performance of low voltage lamps will probably have to be used in a lower proportion and mixed with nitrogen, so is not likely to be so effective.

Lot 19 Domestic Lighting - Final Report also reports on non directional 230V halogen lamps claimed to contain xenon (in 6.1.10 on p 188)

"Recently not only linear (R7s) and compact (G9) Xenon filled HL-MV lamps were introduced on the market but also replacement lamps for GLS (see Figure 6-2), providing 30% energy saving compared to an IEC 60064 standard GLS (60W, 620 lm, 1000 h)".

For non directional lamps a compact filament is not a requirement, and a design suitable for Xenon (and IRC) may be easier to achieve.

**There is a major error in part of the statement:** "IEC 60064 standard GLS (60W, 620 lm, 1000 h)." IEC 60064 is the same as EN 60064 and BS EN 60064 and does indeed cover European GLS lamps with a life of 1000 hours. However, it requires a minimum rated lumen value for 230V 60W lamps of 710 lumens, not 620. Indeed an individual lamp with 620 lumens would be penalised.

Table 6.7 (p189) quotes a 42 W lamp where the lumen value is 620, so this is not a satisfactory replacement for an ordinary 60W. EC Regulation 244/2009 requires the lumen value of a halogen lamp which claims to be a replacement for a 60W to be 702. (Annex II table 6)

Clear, non directional lamps from well known manufacturers are in the shops now claiming 42 Watts equivalent to a 60 W GLS, but with only 630 lumens and 70W equivalent to a 100W GLS, but with only 1200 lumens, (when BS EN 60064 requires 1340 and EC Reg 244/2009 - 1326 lumens.)

***It seems that the first stage of improved technology for tungsten halogen lamps is not delivering, and the prospects for the second stage, especially in 230V versions look bleak.***

Regards  
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