

is also a small component at the supply frequency itself, which can increase as the lamp ages (see Figure 1.19(b)). The 100 Hz modulation in light output is not perceptible by the great majority of people, and the light appears steady. Incandescent lamps only show a small modulation because of thermal inertia; discharge lamps can show a modulation between 17 and 100 per cent.

If lamps with a large modulation are used to light rotating machinery, coincidence between the modulation frequency and the frequency of rotation may cause moving parts to appear stationary. This is called the stroboscopic effect, and can be dangerous (see section 3.6.1, Selection of lamp characteristics).

Light modulation at lower frequencies (about 50 Hz or less), which is visible to most people, is called flicker. Flicker is a source of both discomfort and distraction, and may even cause epileptic seizures in some people. Sensitivity to flicker varies widely between individuals. The perceptibility of flicker is influenced by the frequency and amplitude of the modulation and the area

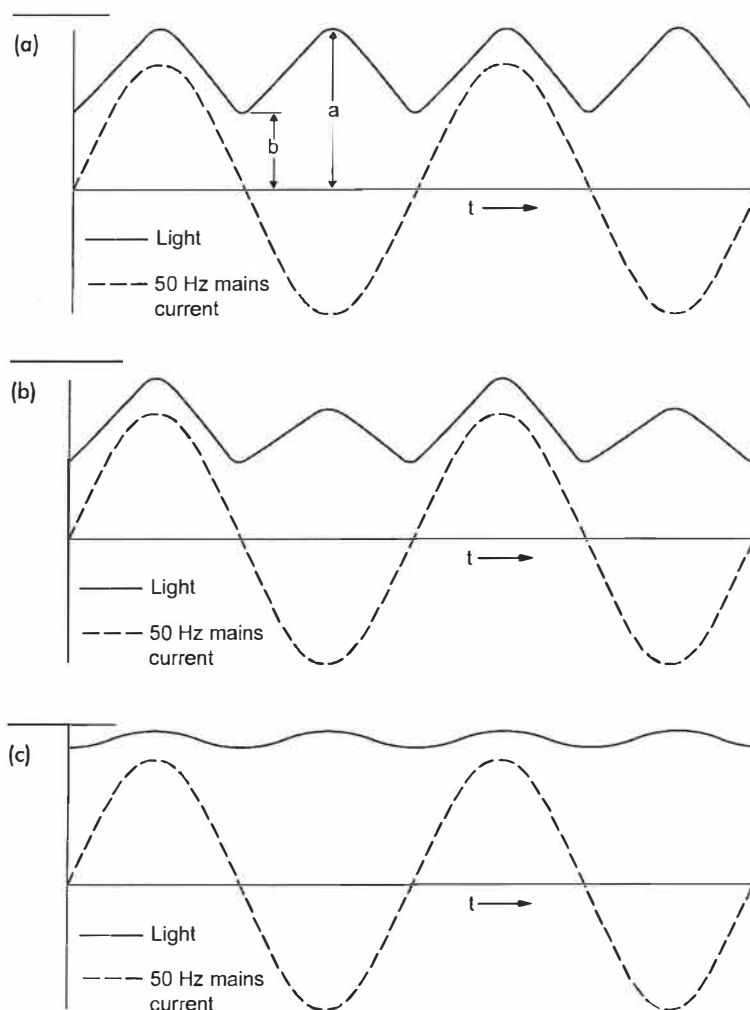


Figure 1.19 Light modulation. (a) 100 Hz light output waveform from typical fluorescent lamp operating on conventional wire wound control gear; (b) changes in electrode characteristics at the end of life can produce 50 Hz ripple on 100 Hz output waveform; (c) 7 per cent modulation of 100 Hz light output of fluorescent lamp operating on high frequency electronic ballast connected to 50 Hz mains supply. The high frequency lamp current is not shown