



## Explosive development of LED lamps in households

*The recent completion of the sale of conventional reflector light bulbs has raised a broad debate on quality, price and light bulb substitution. After a few years, the enormous development of LED lamps for households has significantly exceeded initial expectations and makes the substitution of lamps easier.*

Until very recently, LED lamps designed for households (LED bulbs) were too expensive for the average consumer. The typical price for an LED bulb was upwards of CZK 600. While initial economic predictions suggested that the price of LED bulbs would halve in 2016, in reality many LED bulbs that can substitute for 40–75W bulbs can be found in shops today for as little as CZK 100–250. As can be seen, the speed of the price decrease has accelerated significantly.

The sheer range of LED lamps is also surprising. Originally there was just one type of LED lamp which emitted light to one side only and therefore provided little illumination. Substituting a conventional bulb for a LED bulb was thus quite problematic. Today, manufacturers offer a number of lamps which emit light in all directions, just like conventional lamps. Design LED bulbs are also available on the market now and are becoming more and more popular. Visually, they look a lot like light bulbs and contain surface or strips of light emitting diodes in the bulb so the diodes may easily be confused with a conventional light bulb.

Not only have the prices and design of LED bulbs exceeded initial expectations, but LED bulbs with higher efficacy are offered every year. A few years ago a relatively strict energy efficiency class A++ was set up and seemed to be unattainable. However, several

products of this class are now available on the market, as A++ has become quite common. In addition, it can be assumed that the efficacy will continue to increase and that performance above 100 lm/W will not be unusual.

Nevertheless, the explosive development of LED bulbs does not automatically mean that buying a new LED bulb will guarantee high-quality and long-lasting illumination. The boom in LED bulbs has brought about an unconsolidated market with a wide range of quality. A set of basic criteria can help when choosing a quality LED bulb:

- sufficient information about lamps at the point of sale,
- lifespan over 25,000 hours,
- no less than 25,000 switching cycles,
- colour temperatures 2,700–3,200 K,
- colour rendering of minimum 80 and
- energy class at least A+.

All these details have to be stated on the lamp packaging. Customers should pay special attention when they find extremely low priced LED bulbs. It is also advisable to choose the right bulb according to tests such as Premiumlight or dTest.

Unfortunately, not many types of LED bulbs can fully substitute 100W light bulbs. For bulbs over 100W it is still advisable to opt for a compact lamp.

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## The end of mercury vapour lamps

*In April 2015, a prohibition on placing mercury vapour lamps on the EU market came into effect. The prohibition did not raise any interest of media, public and just a little interest of professionals.*

Mercury vapour lamps, which have a higher efficacy and longer lifespan than light bulbs, were one of the first types of discharge lamp to spread all over the world. But as the light created by mercury vapour lamps is not of sufficient quality, they were used primarily for lighting large spaces (street lighting and industry) after World War II. From the end of the 1950s, Tesla was involved in the production of mercury vapour lamps in Czechoslovakia. Even today, the sharp green-blue light of vapour lamp can be seen in some villages and factory halls.



The withdrawal of vapour lamps and of direct high-pressure sodium lamps from the market was pushed through by European Regulation No. 245/2009. As a consequence, the need emerged to replace luminaires and to modernise long-standing and obsolete lighting. The aim of Regulation No. 245/2009 is to improve lighting efficacy in commerce and industry. The prohibition of vapour lamps is hardly noticeable in the Czech Republic, as vapour lamps account for only about 4% of street lighting, as opposed to the relatively high percentage in Germany or Sweden. Primarily energy companies using obsolete lighting systems should consider replacing vapour lamps, giving them a good opportunity to reduce their operating costs

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