

GOOD PRACTICES IN SME

Replacing computers



Designed by freepik

The following document was developed using European Union financing as part of the “Technical support for the promotion of energy audits and energy efficiency investments in small and medium-sized enterprises in Poland”. The opinions presented in this document should not be treated as the official stance of the European Union.

The project was financed by the European Union as part of Structural Reform Support Programme (SRSP) and realized by the Polish National Energy Conservation Agency (KAPE SA) in cooperation with the European Commission on behalf of the Ministry of Climate and Environment.

Types of computers

At their workstations employees most often use desktop computers or laptops. Laptops are considered more energy efficient while maintaining relatively similar components (CPU, RAM, graphic cards, HDD and SSD memory), which affect their speed and computing power and are more expensive. Desktop computers are also cheaper to repair and more reliable, however they do take up more space. Laptop computers have the advantage of being portable and working on battery power.

Energy consumption comparison

Depending on the installed components, the average computer had between 60 and 250 W of power. Add to this, the energy consumed by the display, which depending on the technology, class, and display size and can be between 19 W and 40 W for 17" to 19" LCD displays. For comparison 20" to 24" LCD displays can consume as much as 72 W. The power consumption of an old 17" CRT monitor can be as high as 100 W; however, they are hardly used anymore. An average laptop consumes 15 – 45 W including the built-in display.

Computer and display modes

An important factor for computer and display energy efficient is their configuration. It should be noted, that contrary to popular opinion, turning screensavers do not affect display energy consumption significantly. To significantly decrease the display's energy consumption, they should be configured to enter stand-by mode after a couple of minutes of inactivity. Modern LCD displays often enter stand-by together with the computer. Additional software for laptops often enables changing the energy consumption settings. The computer should run in economy mode unless demanding operations are performed.

It should also be remembered that some processes can prevent entering stand-by mode. This could be an open network folder in the file explorer, MS PowerPoint's SlideShow mode or a graphically intensive screen saver.

The last issue concerning computers is turning them off outside office hours. Even in stand-by mode a computer can consume as much as 6. Using a special power board is good practice.

Energy performance classes



LCD displays are included in energy performance classes similar to household appliances. Computers and laptops use a different label scheme. The US EPA - Environmental Protection Agency introduced the Energy Star scheme in 2009. It classifies computers and laptops according to their energy consumption which is presented below.

Desktop Computers:

- Category A – no more than 148 kWh/year
- Category B – no more than 175 kWh/year
- Category C – no more than 209 kWh/year
- Category D – no more than 234 kWh/year

Laptops and tablets:

- Category A – no more than 40 kWh/year
- Category B – no more than 53 kWh/year
- Category C – no more than 88,5 kWh/year

Power supply

An important issue concerning energy efficient desktops, laptops and displays is the performance of the power supply and its power rating. This has been investigated by Ecos Consulting, which introduced the 80Plus programme. Its aim is encouraging computer and power supply producers to increase power supply efficiency. A customer looking to buy an energy efficient power supply can be sure that products with the 80Plus logo are very efficient. The guidelines of the 80Plus programme require that the power supply is at least 80% efficient under 20, 50 i 100% load. Due to large support in the US the programme has become a sign for advanced power supply technology and ecological friendliness.



The requirements, which a power supply must fulfil to receive a 80Plus correspond to the following classes.

80 PLUS Certification	230V EU Internal Non-Redundant				230V Internal Redundant			
	% of Rated Load	10%	20%	50%	100%	10%	20%	50%
80 PLUS	---	82%	85% / PFC .90	82%	---			
80 PLUS Bronze	---	85%	88% / PFC .90	85%	---	81%	85% / PFC .90	81%
80 PLUS Silver	---	87%	90% / PFC .90	87%	---	85%	89% / PFC .90	85%
80 PLUS Gold	---	90%	92% / PFC .90	89%	---	88%	92% / PFC .90	88%
80 PLUS Platinum	---	92%	94% / PFC .90	90%	---	90%	94% / PFC .95	91%
80 PLUS Titanium	90%	94% / PFC .95	96%	94%	90%	94% / PFC .95	96%	91%

Source: KAPE based on:

https://www.energystar.gov/products/office_equipment/computers

<https://www.it.northwestern.edu/hardware/eco/stats.html>

<https://michaelbluejay.com/electricity/computers.html>

<https://business.directenergy.com/blog/2017/november/laptops-vs-desktops-energy-efficiency>

<https://www.bijlibachao.com/appliances/laptop-and-desktop-energy-comparison.html>

<https://proline.pl/?n=certyfikat-80plus-kilka-przydatnych-informacji>