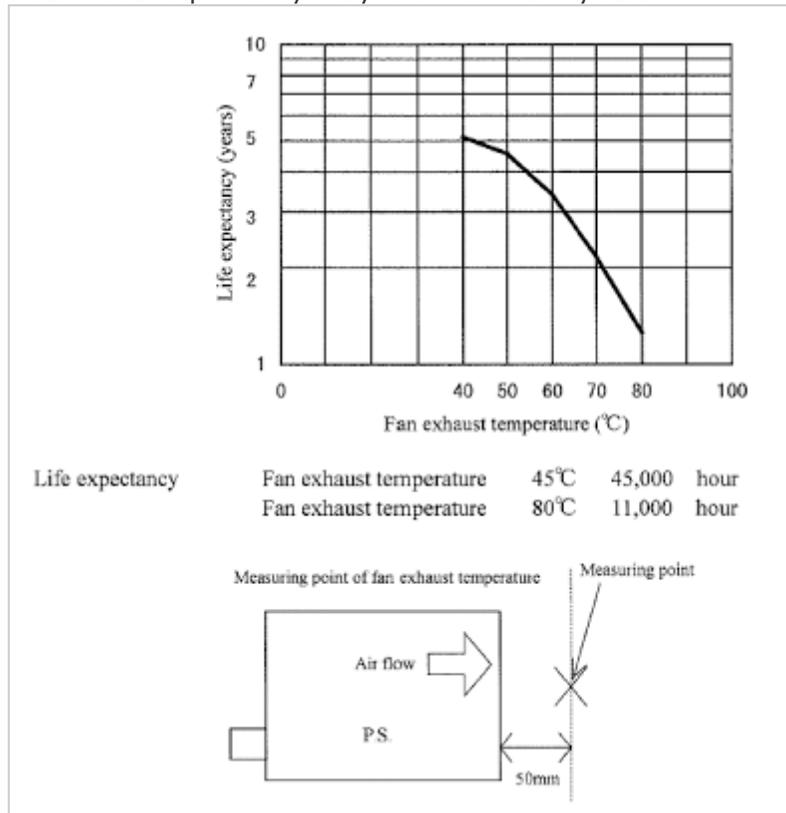


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Maximizing the Life of Power Supply Fans

The vast majority of medium to high-power AC-DC power supplies have integral fans that are required to keep their internal components at safe operating temperatures. Since fans are electro-mechanical devices they are subject to wear out faster than any other component in the power supply.

The chart and diagram below illustrate this very well. As can be seen from the chart, if a power supply's fan is operated with a high exhaust air temperature at perhaps 80°C (176°F) its life expectancy may be as short as 1.5 years. However, by reducing the exhaust air temperature (as measured 2-inches away) to perhaps 40°C (104°F) the fan's life expectancy may now exceed 5 years.



Obviously the requirements of a specific application may require different operating temperatures. However, whenever possible, lowering the operating temperature of the power supply will increase the life of the fan as well as the components within the supply. Also, by derating a power supply below its maximum power rating will have a direct effect on its internally generated heat and, therefore, its exhausted air temperature, which will extend the life of its fan.

Positioning the power supply so cooler air is drawn in through the power supply from outside of the system will also help.

Also, a power supply fan's life will naturally be extended if the supply is turned off when not needed. Some of the newer fans are thermally controlled so they turn on and off automatically. There are also variable-speed fans that increase or decrease the fan's speed depending upon the sensed ambient temperature or the load required of the power supply. These have the advantage of extending the fan's life as well as reducing the audible noise when the load current is low.

Another important factor for fan life maximization is to keep the area around the power supply (inlet and outlet) as free of dust and dirt as possible. Dust, metal and chemical particulates can sometimes kill a fan quicker than high temperatures.

If a fan starts making squeaking sounds, it's a good indication that it should be replaced very soon, before

it freezes up. Fan replacements should only be done by qualified electronic technicians who are familiar with the high voltages that can exist within power supplies even after the AC power is removed.

Posted by [Power Guy](#)