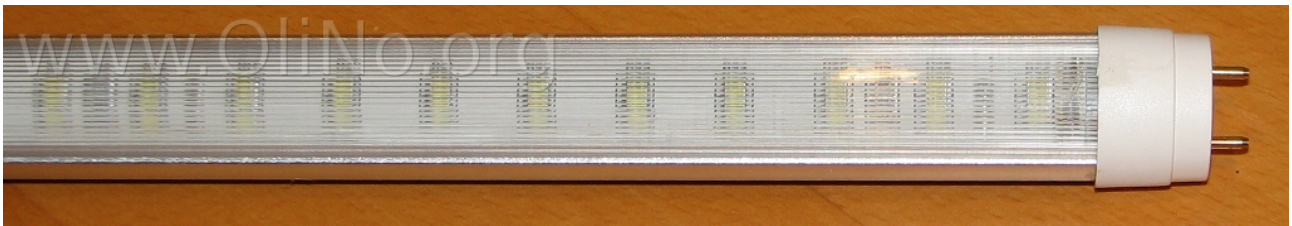


Lamp measurement report – 10 April 09 for LedLightEurope

LLE T8-LedTL 25W 1500mm Nat White

Power factor measurements



Lamp measurement report – 10 April 09 for LedLightEurope

Measurement and Conclusions

The led tube light of Led Light Europe is measured to determine its power factor. This light consists of a led-tube and a separate power unit.

The current through the complete lamp and the voltage over the lamp is measured. The measurement is done very fast, and gives the form of the voltage and the current. From this data, the power P consumed can be determined as well as the power factor.

The acquisition speed is 1,000 samples per second, and an accurate voltage measurement leads to a stable power factor up to two digits.

A measurement has been done during the warm up of the lamp, and also a measurement has been done when the lamp voltage was varied.

The conclusions of these measurements are that the consumer power P [W] and the power factor PF [-] do (almost) not depend on the warming up of the tube nor on the lamp voltage value.

Also, the power factor is high, close to the maximum value of 1.0. Measuring the current waveform shows that the current has almost the same phase and form as the voltage.

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Power Supply Unit

The used PSU is a black box. It can handle input voltages from 100 - 240 V and takes care of an output current of 810 mA, which is what the leds need.



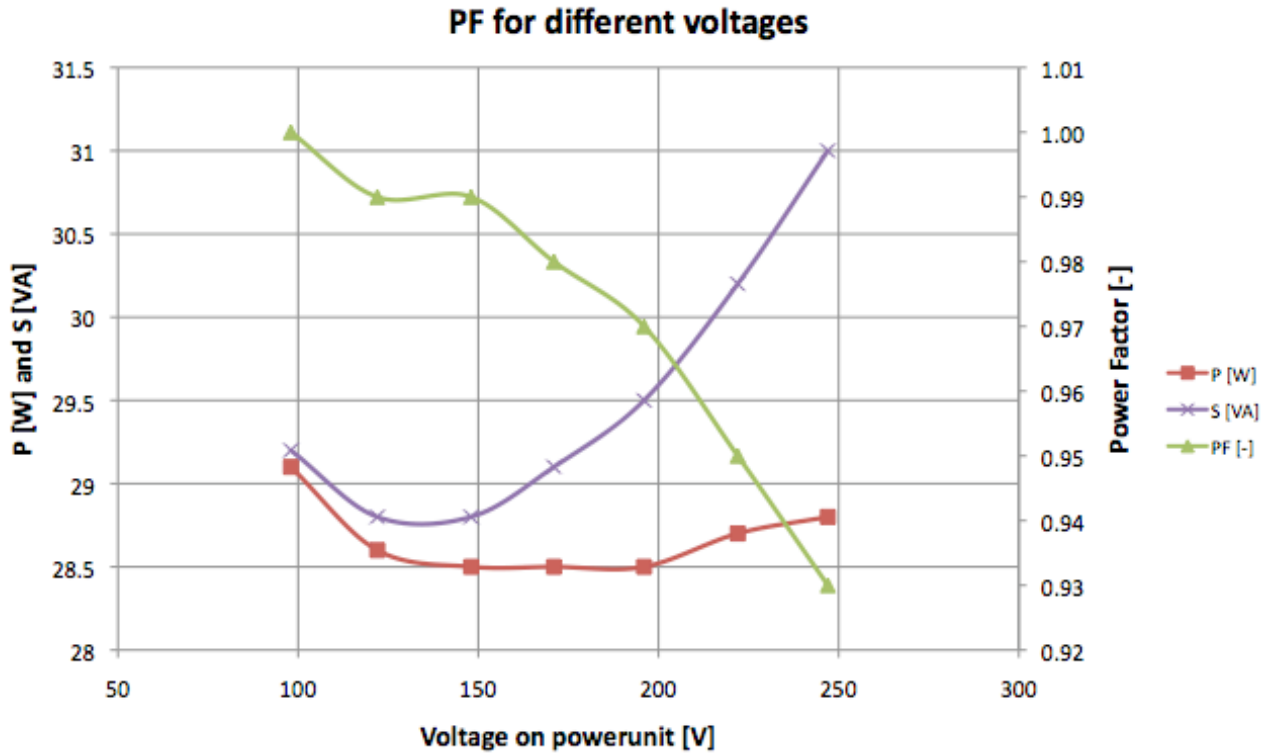
The PSU used for the led tube light, is not build in the tube but put externally



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Power factor measurements

The power factor is measured during warm up of the tube.



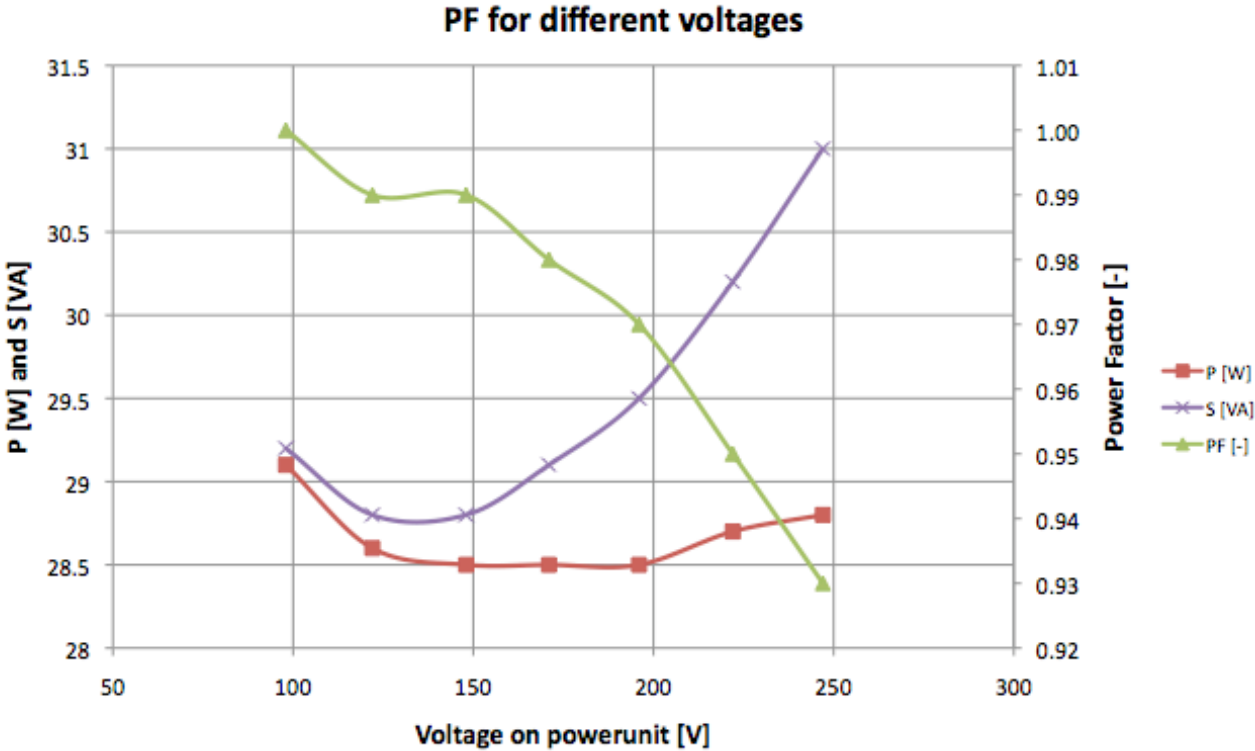
PF, S and P during the warming up of the tube.

The consumed power P, as well as the apparent power S and the resulting power factor are all very stable during the warmup period. See the scale values, the PF varies in between 0.94 and 0.95 which is due to rounding the values.

After that the lamp voltage is varied over the allowable range.



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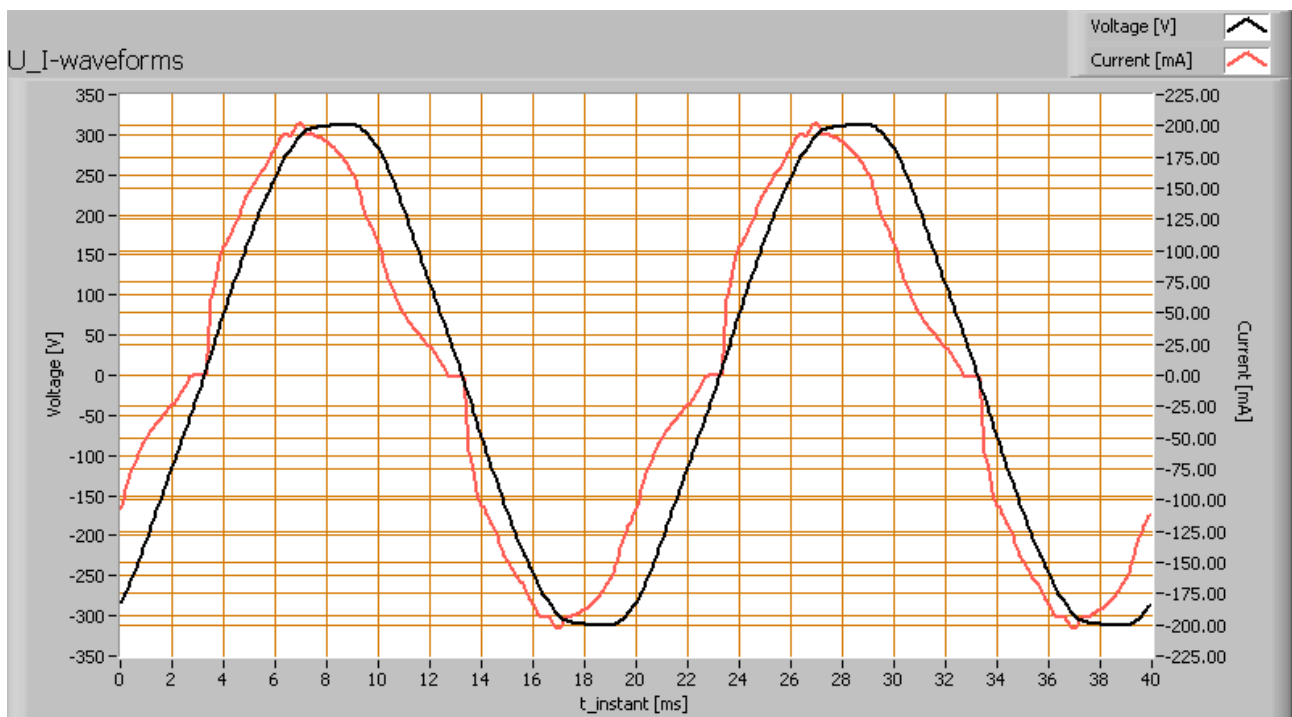
PF, S and P at different lamp voltages.

The PSU does its work well: little variations seen in all three parameters, when the lamp voltage is varied over the entire range of values from 100 - 250 V. The power factor remains high, between 0.93 and 1.0.

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Current- and voltage form

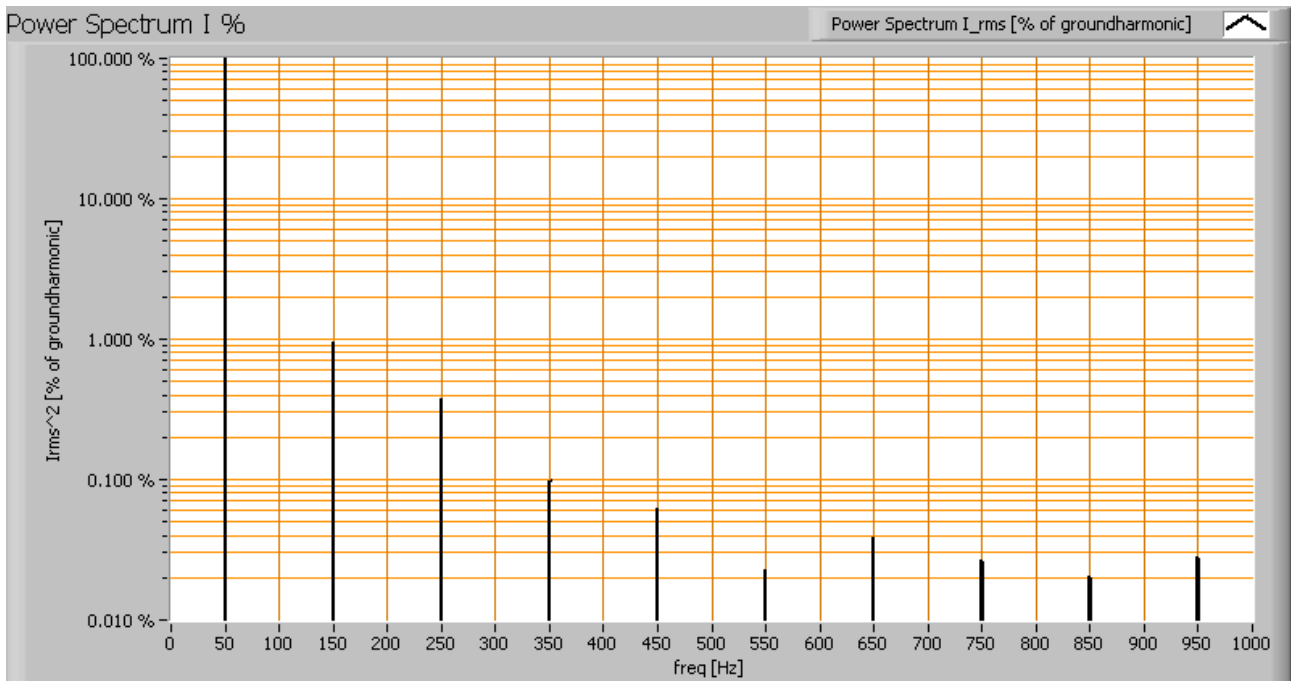
The current and voltage are measured with a high sample frequency. The values are plotted in a graph, enabling to see their form. This form remains mainly the same for all tested lamp voltages.



Form of current and voltage when the led tube is fed with 227 V AC power.

The voltage form is a nice sine, and the current form is almost a sine. This current's phase is also close (a little bit leading) to that of the voltage, resulting in a power factor close to 1.

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Harmonic content of the current.

Little harmonic content, showing that the PSU is well adapted to the led tube.

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