



## **SCHLEIFENBAUER WHITE PAPER**

### **Total Cost of Ownership (TCO)**

TCO is a very important parameter in today's business models. Not just the purchase price of the PDU matters, also the costs of installation and running costs throughout the entire life time have to be taken into consideration.

So what exactly are the costs of running a PDU in a data centre during its life cycle?

- 1) **Purchase cost.** These are dependent on the configurations you require.  
Schleifenbauer PDUs are not the cheapest around. This is a result of the high standards we set for the individual components inside the PDUs. This results in a better MBTF (mean Time Between Failures), less energy consumption and a longer life expectancy.
- 2) **Installation cost:** To set up an IP based PDU (most of the Schleifenbauer competition) is a time consuming and cumbersome process; you need an engineer to do a proper IP configuration of the PDU. This involves obtaining IP-addresses from the network manager, configuring the right IP-address, net mask and gateway in the PDU through a serial cable or over the network. Furthermore you need to set SNMP parameters if you use an SNMP based network management system. If all this is done, you need to install the PDU in the cabinet and connect a TCP/IP drop cable to the nearest IP-switch on which you consume an IP-port. This switch could be at the far end of a row of cabinets. Installing a cable through, under or above a row of filled cabinets may take quite some time.  
Schleifenbauer PDUs can be installed without any configuration in a cabinet. Just install a CAT5 cable to the nearest Schleifenbauer PDU and you are 'in business'.
- 3) **Power consumption costs:** This is a particular cost that hardly ever is taken into consideration. However, the money involved in the usage of a PDU is quite substantial as our short calculations will show.  
There are several parts in a PDU that consume energy:
  - 1) the power lead. The Schleifenbauer power lead is as long as you need it to be. So there is no access length, nor do you need to use cable extenders to connect your PDU to the power outlet in case the standard lead is just too short.  
Schleifenbauer uses oversized cable widths. This means that a 16A PDU always has 2,5mm<sup>2</sup> wires and 32A applications have 6mm<sup>2</sup> (instead of the minimal amount of 1,5mm<sup>2</sup> and 4mm<sup>2</sup> that is prescribed in the 'Low Voltage Directive'). This over-sizing can save up to € 150 during the life cycle of the PDU (10 yrs) plus it reduces the fire hazard by keeping it cool. Please review our white paper on this particular topic.
  - 2) the electronic components. Schleifenbauer has made great effort to minimize the power consumption of the PDU. Especially in PDUs with outlet switching we have been able to create extreme power savings. A typical relays will take up 1 Watt of power during its entire life. We used state-of-the-art bistable relays that only consume power during a cycle moment which saves considerable amounts of energy.  
The printed circuit assembly (PCA) for energy measurements is low-power designed as well. A Schleifenbauer PDU may take as little as 1-3 Watts where



a comparable PDU of the competition can take up to 15 Watts. A waste of 10 watts minimum which need to be cooled, hence a 15 Watt unnecessary power consumption.

- 4) **Failure costs:** The new Schleifenbauer PDU has been designed to meet the highest standards for availability. It is virtually impossible to create a power outage with the Schleifenbauer PDU. The worst case scenario would be a problem in the electronics which might lead to loss of information and control over the outlet switches. Although this does not compromise the power delivery it is an unwanted situation that needs to be corrected. The Schleifenbauer warranty states that the PDU will be replaced UPFRONT so that you will have a spare PDU at hand during your next maintenance window. This will save you a secondary replacement (putting the repaired unit back in place) or the need to store spare units yourself.

Below we show you a table with all additional the costs involved in the deployment of PDU's

TCO additional to Schleifenbauer PDU TCO			
TCO in 5 years		min cost	max cost
IP configuration	15-30 min. @ € 60,00/hr	€ 15,00	€ 30,00
IP network port	€25 - €75 per port	€ 25,00	€ 75,00
Maintenance cost IP network port	€10 - €50 per port per year	€ 50,00	€ 250,00
Physical installation cost	15 - 30 min. @ € 40,00/hr	€ 10,00	€ 20,00
energy loss in power lead	between 15 -70 euro (see white paper on power lead)	€ 15,00	€ 75,00
energy loss in electronics	7W - 15W over 5 yr period (@ € 0,16/kWh) savings are higher in switched versions	€ 75,00	€ 155,00
Failure costs	not taken into the equation		
<b>Total additional cost compared to Schleifenbauer PDU</b>		€ 190,00	€ 605,00