



Netpower –G3- DC UPS 380V – Uninterruptible Power for Data Centers

World leading system based on emerging DC (Direct Current) standards

The energy consumption for data centers throughout the world is growing steadily. At the same time we are experiencing that the reliability and accessibility of public grids is not improving. In order to address these problems manufacturers within the IT and power industry now have developed uninterruptible power systems based on 380 V DC.

By keeping the AC (Alternating Current) outside the data center and instead base the uninterruptible power supply on DC your electrical power becomes much more reliable and free from disturbances, and you avoid the energy-consuming conversions back and forth between AC and DC.

Our UPS system secures stable operation and gives considerable cost savings compared to traditional solutions:

- 10-30 % energy savings, benefitting the environment (CO₂).
- Reduced need for cooling.
- Fewer components mean lower maintenance costs.
- No need for over dimensioning the UPS for start-up or peak loads (such peaks are handled by the batteries).
- Modular and flexible design “pay as you grow”, which keeps the investment costs at a minimum and keeps the equipment operating at maximum efficiency.
- Higher voltage means less use of copper in the power cables.
- Our DC UPS has a considerable smaller footprint than standard equipments.
- Easy-to-use software supervises the system, generates alarms and displays the system status (battery condition, temperature etc.).
- Very efficient photovoltaic power regulators (99 % efficiency) offer full integration of solar power into the system.

Lower your energy consumption and obtain safer operation!



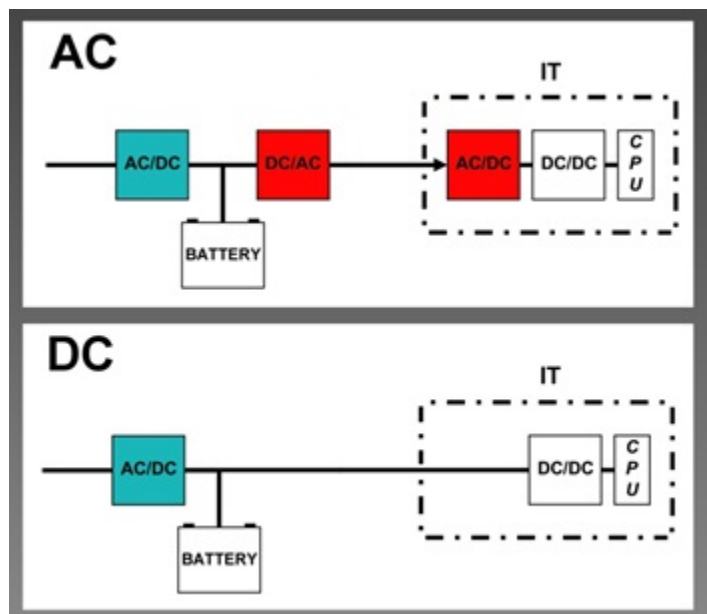
DC in Telecommunications and in Data Centers

DC has always been used in telecom switches because of its high accessibility and reliability. Telecom installations use low voltage (48 V). When computer user organizations started clustering modern computers into separate data centers and started designing solutions for common uninterruptible power to all equipment in these centers, it was no longer possible to use low voltage, because the distance between the source of the power and the IT equipment would require too much copper to connect the two. In addition, the power supply units of the computers were not designed to be powered by 48 V. The result of this became today's awkward solution in which the power from the batteries is converted to 220 V AC only for transporting the power from the UPS to the computers in the room. This has led to a number of undesired consequences affecting reliability and energy efficiency. The fact that the industry now has agreed on a standard voltage of 380 V for DC solutions is leading to rapid development towards optimization of the power supply in data centers by using the advantages of 380 V DC.

This illustration shows how the incoming AC power in a traditional system is first rectified to charge the batteries and how this power is then converted back to AC and then in the IT equipment immediately rectified again.

The new technology gives a much cleaner and less complicated solution.

All IT equipment operates solely on DC. Therefore it makes no sense at all to convert the power from the batteries to AC before feeding it into the computer. This has now been made obvious to the computer manufacturers and they are beginning to offer power supply units (PSUs) optimized for 380V DC.



Netpower's solutions

Netpower is a Swedish company developing and installing infrastructure to provide data centers and other installations with DC based power using the new 380V DC standard. We are world-leading within the area and we own a number of patents. Our employees have long-time experience and deep knowledge within the field. We are actively engaging ourselves in international organizations for standardization and knowledge sharing.

For several years our systems have been in operation in Swedish and international companies and public organizations. Our systems have aroused great interest worldwide and they are often referred to as leading examples of DC technology solutions.

Products and Services

We offer a complete set of products to build all infrastructure needed to power a data center. Our solution consists of a DC UPS cabinet including supervisory computer, batteries, power distribution unit, cables, fuses, etc. Our UPS systems are modularly designed, and all critical units like rectifiers are of plug-in type. The power distribution unit contains fuses, connectors, and kWh meters for individual measuring of the energy consumption of different users.

Easy-to-use software supervises the system and generates alarms when needed. We also offer our extensive and deep knowledge for customizing our solutions and for other services within the area of power supply and climate-smart energy.

Integrating PV energy

Our uniquely designed photovoltaic (solar) regulator is integrated directly into our system as a plug-in unit. The efficiency of the regulator is extremely high (99%) and it automatically makes sure that the PV power is always maximized and energy from the grid is only used when the energy from the sun is insufficient to feed your load.

This gives you additional opportunities for profiling as a green IT installation. During summer seasons an installation even in the far north of the globe can often operate without using any power from the grid.



Netpower and the Swedish Energy Agency

The Swedish Energy Agency was voted “Green Innovator 2010” and operates a solution based on our UPS integrated with solar energy in its data center in Eskilstuna.

“Within the Energy Agency we have a vision of a sustainable energy system, and that we shall live as we learn and be one the most energy efficient government agencies in Sweden.”.



“In my role as IT manager I have for a long time strived to make our IT operation as energy efficient as possible” says Björn Lundkvist, CIO.

“We have decreased the energy consumption in our data center by virtualizing all servers, using blade server technology, and by running all servers and storage units on DC power. When I became aware of the potential of Netpower’s UPS solution, we took an additional step to make our data center more efficient. Netpower also gave us the possibility to get ‘free’ DC power from PV panels on our roof with the highest possible efficiency”.

“Since 2007 we have decreased our use of energy by 45% in the data center in spite of the fact that the number of systems and servers has increased by 300%”.

Netpower and Karlstad city

Karlstad city runs its IT operation via DC powered equipment in the Sätterstrand Data Center at Hammarö and at their Data Center in Karlstad. Karlstad city was rewarded “Best IT city 2013”!



“When I learnt about the advantages of DC power and that it was commercially available I became very interested” says Michael Wikstrand, IT operations manager at Karlstad city.

“We are planning to run more and more of our equipment on DC power in the future. It is estimated that server operation with DC can cut costs by 30 % within a few years. That is a lot of money for a small city like ours.”

About Netpower Labs AB

For us at Netpower Labs it is vital that we can offer you the power system you need! Our long experience and not the least the high requirements we put on ourselves, together with the new generation of DC systems, will offer you power supply solutions that fulfill your requirements on flexibility, economy and reliability.

We have worked with DC systems for many years and our list of references is long, our first live installations were made as early as 2006 and they still operate without problems.

