



## Construction of a new computer centre with redundant power feed

**For more than 30 years KSV Koblenzer Steuerungs- und Verteilungsbau GmbH** has planned, designed and realised power distribution systems, medium voltage installations, industrial automation applications, building services management systems, as well as control systems and process data display systems.

For the construction of a new computer centre, KSV is planning and designing the building automation; during this process, KSV is integrating all the power, heating, ventilation, air conditioning and cooling systems. The organisation is also implementing the data display system for the building automation.

The computer centre, designed for expansion, has a total floor area of 1,500 m<sup>2</sup> on two floors with space for approx. 145 racks in the maximum configuration. Currently there are only racks on the first floor; the second floor is intended as a reserve. The real heart of the computer centre, that is the building services, is on the ground floor.



### ▶▶▶ Power system

The power consumption of the computer centre is defined as 600 kW in the maximum configuration. For this purpose the power supply in the building comprises a fully redundant layout up to the load and therefore offers a high degree of availability and reliability in accordance with the current state-of-the-art. Each zone of the power supply can be electrically isolated to undertake work. These days modern IT (Information Technology) equipment generally has a redundant power feed such that continued supply is ensured on the electrical isolation of one path.

On the failure of the general power supply to the IT distribution area in the computer room, the battery-backed UPS system can continue to provide power for 15 minutes. To bridge longer-term failures in the general power supply, a diesel backup generator will take over the supply of the IT area. This emergency power system provides 1.500 kVA and has enough fuel in three underground tanks for 72 hours. If necessary these three fuel tanks can be re-fuelled during operation.

### Heating and air conditioning system

The waste heat produced by the servers is utilised by a modern heat pump to heat the WC, the workshop or the utilities room. Due to this heating concept the heat pump operates highly efficiently and therefore saves energy.

### Cooling system

Like the power system, the cooling system also has a fully redundant layout. The cooling is distributed via two separate distribution systems and each system is configured for only 70 % of the maximum rating, such that there are adequate reserves.

Two compact chillers in the central building services area provide the cooling. Each of the chillers has a cooling capacity of 350 kW. Cold water pumps feed the glycol-water mixture to the recirculating air cooling equipment that cools the server rooms. Again all pumps here are duplicated and can also be adapted to the cooling demand. Should, nevertheless, the cooling capacity be inadequate, an additional third chiller can be installed.

### Electrical safety thanks to ATICS®

All of the cooling system, which is vitally important for the computer centre, is controlled via a switch cabinet with redundant power feed. To achieve the required high availability, the power supplies to the controller must be equipped with automatic change-over to ensure continuous function. For this purpose KSV uses proven technology from Bender in the form of the switching device „ATICS®-4-80A-DIO“.

The switching devices in the ATICS® series contain all the necessary functions to change-over between two independent supply lines. They were designed





Transfer switching device of the ATICS® series in use

in strict accordance with the guidelines for functional safety as per IEC 61508. This aspect ensures safety in relation to hazards due to malfunctions as per the requirements in accordance with "Safety Integrity Level" SIL2. As such ATICS® switching devices are predestined for usage in safety-related installations and meet all the requirements for configuring a safety power supply in accordance with DIN EN 61508 in computer centres.

The integration of the power section and electronics in one flat, compact device significantly reduces the amount of space required in the switch cabinet and minimises the wiring effort. Switching devices in the ATICS® series communicate with alarm devices via the BMS bus interface and in this way can easily be integrated into the building services management system and data display system.

KSV selected the ATICS® switching device not least due to its small dimensions and its excellent communication features.



Transfer switching device ATICS®

## Building services management system

All operating signals and error signals from all the systems installed are integrated into the building automation. At the same time, in this way the installation can be better monitored and optimised in relation to energy efficiency. During this process the building automation acquires data from the power, heating, ventilation, air conditioning, and cooling systems in the form of all their signals and measured values. For this purpose controllers are used in the related switch cabinets; these controllers acquire and process the relevant data.

With the aid of the building automation and data display system, the sections of the installation can be displayed in a simplified and clear manner for the customer. Finally, after more than three months of commissioning, KSV has provided its customer with a computer centre with a total of 1,100 data points and 50 screens in the data display system. ■

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