

New office tower for Süddeutscher Verlag in Munich

## Highest safety specifications

The completion of Süddeutscher Verlag's office tower has added a striking and unusual structure to the Munich skyline. The modern building services engineering and countless complex electronic loads place high demands on solutions for trouble-free and safe operation of the power supply system. At the same time there is a need for cost-optimised strategies to operate and maintain these solutions. These requirements have been met in impressive fashion thanks to sophisticated monitoring concepts and proven technology for electrical safety.

Although the Süddeutscher Verlag office tower was "only" just under 100 m high when it was completed in 2008 instead of the originally announced 145 m, it represents a striking landmark on Munich's eastern skyline. The reduction of the structure's height by almost a third and the relatively long preliminary



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TECHNICAL APPLICATION



planning stage were the result of a referendum right in the middle of the planning process which specified a maximum height of 100 m for new-build properties in metropolitan Munich. The architects and planners responded magnificently to this unexpected hurdle.

The office tower picks up the clear lines of classic modern architecture and fits in its immediate surroundings with striking coherence. Of particular note is the harmony with the printing works built on the same site in 1985. The outcome, together with large, park-like grounds featuring clear lines, is a collection of buildings which is both functionally and aesthetically compelling. Süddeutscher Verlag publishes a string of titles, including Süddeutsche Zeitung, the daily newspaper which enjoys both a national and an international reputation.

### Rising complexity

The 27-floor new building features the latest in technology and offers some 32,000 m<sup>2</sup> of space for around 1850 employees. The air-conditioning, in particular, in the office tower calls on state-of-the-art concepts. A decentralised air-conditioning system ensures that temperature and fresh-air levels can be individually set in each room and significantly cuts energy costs compared with a centralised air-conditioning system. Despite the higher installation costs and complex power supply system for the cooling and heating equipment and their control systems, this design has proven to be cost-effective.

There is a high expectation on modern office buildings to ensure a constant and reliable power supply. The steadily rising microisation of electronic components, the increasing use of full-scale air-conditioning by electrical systems and the increase in radio cells is making electrical loads as a whole, and computer mains parts in particular, more susceptible to faults. It was all the more important for the planners, therefore, to ensure a conscientiously guaranteed and reliably monitored supply system.

### Bespoke monitoring concept ...

The building's power supply is provided by four transformers (20 kVA/400V) with an output of 1000 kVA per transformer. In the event of a failure in the public power supply, a powerful emergency generating set is available. An appropriate, optimised residual current monitoring concept for monitoring the electrical loads and office workstations in the building was drawn up in consultation with CBP, Munich City Utilities, the operator and Bender's Munich Engineering Office.

As a result of the building's structural design, the decision was taken to use two independent monitoring lines. **Line 1** monitors the office tower including the safety lighting; this uses 16 x RCMS460-D4-2 and one FTC470XET. **Line 2** monitors the atrium and all the ancillary buildings. Here 9 x RCMS460-D4-2 and one FTC470XET are used. The RCMS460-D4-2 was chosen because the four power inputs 9-12 have a measuring range of 0 - 125 A which is needed to supply power to the N-conductor.

A central earthing point (CEP) was created for the four transformers (1000 kVA each) in Munich City Utilities' low-voltage distribution centre (substation). The limit values of the CEP (IPEN-PE) are constantly monitored by means of the residual current monitoring system. The main equipotential bonding (IPE-PAS) and the main building earth are also permanently monitored.

### ... with added value

Constant monitoring of the CEP proved extremely helpful during commissioning of the systems and units since this enabled connection errors and transpositions of PE and N-conductors to be identified and rectified at the test stage, which nullified the need for a lengthy and laborious troubleshooting process.

The individual floors are supplied via a 1000 A bus-bar system. The individual floors each have two sub-distribution boards which are connected in parallel to a supply cable (I = 65 A). Metering points are located on each floor to record the residual current and determine the N-conductor current.



Power to the safety lighting is primarily provided by the general power supply network. In the event of a supply failure, the system is supplied with direct voltage. The rated residual operating current is monitored at the respective sub-distribution boards (28 off) with approx. 3.5 kW per distribution board. All feeders from the low-voltage distribution system are monitored by means of residual current monitoring systems.

### Safe savings

Every operator of an electrical system is obliged to have it safety-tested at regular intervals (visual inspection, measurement, functional test) The relevant test requirements are set out in the applicable standard, DIN VDE 0105-100 , "Operation of electrical installations". Bender's RCMS system means that regular measurements of insulation resistances no longer need to be carried out. TÜV Southern Germany has therefore issued the following statement relating to Süddeutscher Verlag's office tower: "The above building's power installation incorporates residual current measurement systems. Consequently, the measurement of insulation resistances in the monitored system can be omitted" (source: TÜV certificate dated 21.9.2009).

This demonstrates once again that appropriate, forward-looking planning and implementation alongside reliable personal and plant safety can deliver substantial cost savings. Bender's planning expertise and residual current monitoring systems enable every advantage to be used.

### RCM TECHNOLOGY SYMPOSIUM 2011

Next year Bender will be running the RCM Technology Symposium 2011 in Süddeutscher Verlag's office tower. In addition to a practical presentation and explanation of the monitoring concept, the agenda will include reports by RCM users on their experience, assessments by experts and other topics. There will be an opportunity for discussion with Bender staff throughout the event. If you would like to be informed about the date of the event at an early stage, please contact Reinhard Piehl from our Munich Engineering Office ([reinhard.piehl@bender-de.com](mailto:reinhard.piehl@bender-de.com)). ■

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