

## The perfect machine for every packaging



**The MULTIVAC Group**, with its headquarters in Wolfertschwenden in Bavaria, is a leading global manufacturer of holistic packaging solutions for all types of food products, life science and healthcare products as well as consumer goods and industrial goods. As a multinational company with more than 85 branches, the company sets standards as a global player with reference to technology, efficiency and reliability in the field of packaging solutions and it relies on Bender's electrical safety technology while doing so.

**For MULTIVAC packaging solutions the protection of goods and the preservation of their quality have the highest priority.** For this purpose it is necessary to guarantee that in-house production is entirely failsafe, also true of the associated electrical safety features, and these characteristics must be monitored.

MULTIVAC is supplied via nine transformer stations at the Wolfertschwenden location by the regional electricity supplier Lechwerke AG. In 2016, the peak load was approx. 2.7 MW.

The monitoring of the electrical supply at MULTIVAC for the production facilities, training building, robot-controlled high-bay warehouses and data centres has

occurred with Bender's residual current technology, which is sensitive to all current types, since 2010. A dedicated IT system was also set up for the test centres in the laboratory area.

### Monitoring of the currents via a CEP bridge

MULTIVAC's objective is to have no stray currents in the system. In order to achieve this for the new electrical supply networks, the monitoring starts in the low-voltage main distribution board (LVMD) on the central earthing point (CEP). The currents are monitored directly on the CEP bridge for limit values by means of a type W35 pulse current sensitive

“MULTIVAC provides **flexible and intelligent solutions** for packaging operations.”

## Objective achieved

measuring current transformer from Bender. Continuous current monitoring of the foundation earth electrode to the main earthing busbar occurs at the same time.

It must be ensured that the earthing of all transformer star points occur centrally at just one earthing point (CEP) in the LVMD. The PEN conductors from the transformer star point must be insulated against earth over their complete course.

The PEN rail must be clearly marked as such and the PEN conductor may only be connected to the protective earth (PE) in the CEP. Only 3-pole switching devices may be used in the feed as the PEN conductor may not be switched. The outputs can be equipped with 4-pole switching devices.

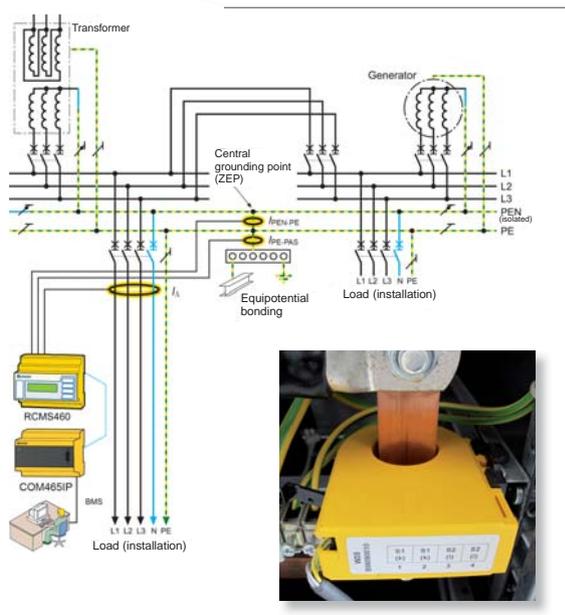
Undesirable N-PE bridges and stray currents in the electrical systems are identified immediately thanks to the continuous measurements of the CEP. Interference sources can be located by means of the timely documentation of limit value violations in the plus or minus range. A COM465IP type gateway transfers all measured values and alarm messages from an RCMS460 residual current monitor to the VDU work station.

## Monitoring of electrical systems

At MULTIVAC, important electrical systems are measured directly at the outputs in the LVMD via AC/DC sensitive measuring current transformers of type W120AB. The measured values generated by the transformers are also passed on to the work station and recorded.

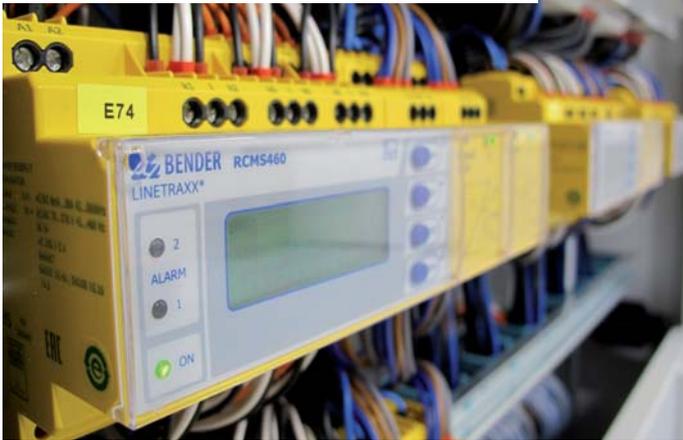


Fig. 1  
Measurement CEP



AC/DC sensitive measurement for load installations

## TECHNICAL APPLICATION



A-feed data centre



IT distributor with transformer 6.3 kVA



### Monitoring of the final circuits in data centres

Each final circuit for the power supply of the racks in a data centre is continuously monitored for residual current. If the residual current in the final circuit exceeds 25 mA, the RCMS460 triggers a fault message in the data centre by switching a collector contact. The message is provided acoustically via a signal (horn) and also visually via an indicator light. The fault is also reported directly to the electrical staff.

The responsible master electrician at MULTIVAC summarises the criteria which are decisive for MULTIVAC for the installation of Bender residual current technology as follows:

- Electrical safety for man and machine
- High level of availability of the power supply
- Reduction of EMC interferences
- Transfer and visualisation of measured values at the work station.

### IT system for the final circuits in the laboratory

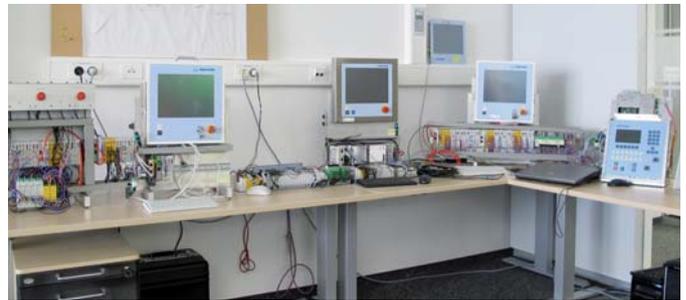
A small unearthed system (IT system) was constructed in the laboratory area for the supply of the 16 A final circuits with a transformer of 6.3 kVA. The installed insulation monitoring device ISOMETER® isoMED427 with integrated load and temperature monitoring reports to an MK2430 alarm indicator and test combination if the response values are exceeded.

One significant advantage of the IT system is the highest possible level of availability. For activity in the electrical laboratory this means:

- **No shutdown after the first fault**
- Improved operational reliability
- Greater economic efficiency
- Increased fire protection
- Higher earthing resistance
- Continuous monitoring of the power supply
- No system shutdown necessary in the event of periodic verification ( $R_{iso}$ ).

As MULTIVAC will be building a new company building in the near future, Bender residual current technology is also envisaged here on the basis of good experience. ■

*Reinhard Piehl, TB Munich*



Laboratory IT system supply and MK2430 indicator unit



## INFO

### The IT system: inherently safe – small difference, big impact

connection between earth and the star point of the transformer which supplies the system. This connection exists in the earthed system but not in the unearthed system.

What is the big difference regarding the impact, given that there is only a small difference in the implementation?

If a person touches a live conductive enclosure in an intact unearthed system, nothing will happen.

Why is this the case?

A current does indeed flow but it is very small as it is dependent on leakage capacitances and the enclosure is earthed. With an earthed system, a closed circuit is set up in advance and then, to a certain degree, we just wait for the fault to occur. If in this case a person touches a live conductive enclosure, a fault current would immediately flow through the person without a circuit breaker due to the low-resistance connection to the supply transformer. It is necessary to check the required protective technology on a regular basis in order to ensure it will work at a given moment.

**– But how frequently is that actually done?**