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Wire & CABLE ASIA 线缆亚洲

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科技新闻

电力电缆电阻测量


Burster – 电阻测量解决方案放置在实验室内

如果需要理想监测高压电缆的单线生产，在绞线机上就要直接进行质量控制。

Burster测量电缆长度内部的电阻精度达到0.1%。机器操作人员能够根据测量结果调整压缩头，从而优化电缆的截面。

生产单股电线或电力电缆的最佳质量控制直接在绞线机上进行测试。组件Resistomat® 2304、夹紧装置2382A和升降台能够在生产过程中实现样品长度的测量，但也需短暂停止绞线机。机器指南的选项，根据测量结果调整压缩机，以优化电缆直径。

由于绞线机与测量系统相结合，整个生产过程都在监督之中，因此符合ISO 9002标准的要求。单次测量值可记录在电脑里，或直接在打印机上打印出来。

ISO 9002生产级别验证是先进的，与之关联的ISO 9003高端产品级别验证，在批量生产之后(应用Resistomat® 2304和夹紧装置2382L)。

在进行测量之前，捻线机必须停止，升降台携同测量盆上升到与试样接触。限位开关让其到达很高的位置。在距离1,000毫米处弹簧安装在隐藏的龙头上，开始接触电缆。整个测量过程中，电缆置于温度控制的水浴内。循环泵保证水浴内的温度均匀分布，并重新循环水，流经舱壁。水浴加热，恒温器让其保持设定的温度，尽可能与测试对象温度接近。

因此，你能获得一段短暂的温度持平的时间和快速精确的测量值。水温测定利用精确的Pt 100传感器。该水温对于温度补偿来说是必要的，Resistomat®在20 °C下计算值。

Burster系列1240校准电阻器设计用于校准和测试电阻表。每个电阻都提供制造商测试证书。根据要求，电阻可交付DKD校准证书。此证书符合国际标准，显示的物理单位与国际 SI体系保持一致。

由于导电电缆的温度直径影响测量结果，测量的水浴温度和Resistomat® 2304所显示的温度也必须进行检查。拥有DKD证书的校准温度计正适合此用途。不需要特殊终端来确定通过导电电缆的测量电流线路。通过一端压缩头和另一端的拉伸绞盘，电流直接经由电缆。带有测量盆的升降台安装在两台机器部件之间。

当然，一个先决条件是必须履行正确的测量方法：拉伸绞盘和导缆装置，以及紧随其后的缠绕装置必须不得进行电气连接，压缩头上的其余机器零部件，以及电气连接的电阻都必须足够高，以至于对要测量的电缆截面来说作为分流而显得微不足道。换句话说，此电阻应该比压缩头和拉伸绞盘之间的电阻大1,000倍。

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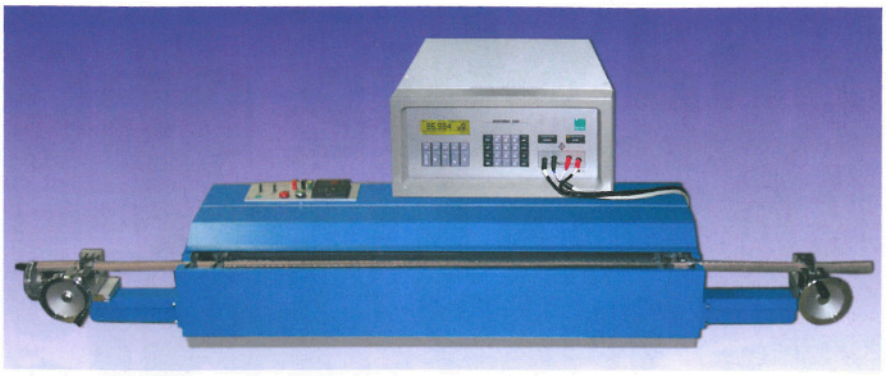

▲ *Burster – the solution for wire resistance measurement in the laboratory*

Wire resistance measurement

TO ideally monitor the production of single wires for high-tension cables, quality control must be performed directly in the stranding machine.

Burster allows line resistances to be measured to an accuracy of 0.1% inside the production of a cable length. The machine operator is able to adjust the compacting head in accordance with the measurement results, optimising the cable's cross-section.

The optimal quality control for production of singular wires and power cables is done with a test directly in the stranding machine. The components Resistomat® 2304, the clamping device 2382A and a lifting table make a measurement of a sample length possible during production, however only with a temporary stop of the stranding machine.

The production process is supervised and therefore fulfils the requirements of ISO 9002 due to the integration of the measurement system in the stranding machine. The single measurement values can be registered on a PC or by direct print-out on a printer.

The ISO 9002 – verification level production – is advanced, of course, in relation to the ISO 9003 – verification level end product – where the testing is effected on meter probes after the production of the batch (with Resistomat® 2304 and clamping device 2382L).

Before a measurement can be done, the twisting machine must stop and the lifting platform carrying the measurement basin rises to make contact with the specimen. The exact high position is reached by limit switches. The contact to the cable happens with spring mounted potential taps at a distance of 1,000mm. During the whole measurement the cable is inside a temperature-controlled water bath. A circulation pump ensures an even distribution of temperature in the water bath and re-circulates the water flowing out through the bulkheads.

The water bath is heated and maintained by a thermostat at a set temperature as close as possible to that of the test object.

Burster's series 1240 of calibration resistors are designed for calibrating and testing the resistance meter. As the temperature of the conducting cable directly influences the measurement result, the temperature of the water bath measured and displayed by the Resistomat® 2304 must also be checked. A calibrated thermometer with DKD Certificate can be used for this purpose.

Of course, one prerequisite must be fulfilled for measurements to proceed correctly: the drawing winch as well as the cable guides and winding units following it must not be electrically linked with the remaining machine components on the side of the compacting head, or the resistance of the electrical link must be high enough to render it insignificant as a shunt to the cable section which is to be measured.

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