Power plant identification system for RWE

Flexible, durable, and efficient labelling with KKS

Precise and permanent labelling of all equipment plays a crucial role in power plants, where mistakes could have unforeseeable consequences. The power station identification system ‘KKS’ defines the rules for labelling. For the actual labelling, RWE Power AG uses marking solutions based on UV-LED printers (Figure 1, lead image).

A power plant places heavy demands on a broad range of labelling and marking functions. Since the early 1980s, the power station identification system (abbreviated ‘KKS’ from the German Kraftwerk-Kennzeichensystem) has helped plant builders and power station operators clearly label and identify equipment. KKS labels, which consist of combinations of 15 to 17 letters and numbers, are defined in VGB directives B105 and B106. Aggregates and equipment are coded and labelled on this basis.

Plant documentation and occupational safety

RWE Power AG operates four power plants with 100 employees in the Rhenish lignite mining area: Frimmersdorf, Neurath, Niederaussem, and Weisweiler, with a gross total generation capacity of more than 10 gigawatts. At the four locations, the higher-level department is responsible for central documentation of all the power plants in line with the KKS.
The KKS clearly assigns procedural components to control functions. The coding of over 250,000 pieces of equipment further ensures efficient and central data storage of resource-specific data as well as central warehousing throughout the life cycle of the deployed components. Clear labelling of aggregates and equipment is also highly relevant for occupational safety. Confusing one piece of electrical equipment for another could result in serious harm to the plant and personnel.

**Decision in favour of an environmentally friendly printing system**

Beginning in 2009, the control engineering in power plant blocks D and E at the Neurath power plant was modernised to increase the efficiency and flexibility of the blocks. A large number of master cables had to be relabelled in the process. In searching for a suitable printing system, the responsible department decided in favour of the Bluemark LED system from Phoenix Contact. Lower energy consumption and quiet operation were important factors in the decision. With the follow-up model, the Bluemark CLED, it is now possible to print up to 120 labels per hour in an environmentally friendly manner. A clear cable label contains not only the source and the target, but also the KKS number and the cable type. In accordance with DIN EN 62491, cables must be labelled on both ends, at a minimum (Figure 2).

**Bar code for rapid identification**

Print quality was another important requirement, apart from a predefined label size designed to fit the label holders already installed in the power plant block. All the procedural labels in the power plant fleet of RWE Power AG in the Rhenish lignite mining area have a barcode in addition to a KKS code and a short text. The barcode

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**Figure 2** - Cable labelling in line with the KKS: The label documents the KKS code, the source, the goal, and the cable type.

**Figure 3** - Barcode recognition: Imprinting errors would make identification much more difficult on site.
can be used for mobile maintenance, for example, for a notification of claim. The harsh conditions prevalent in a power plant make print quality and temperature resistance top priorities for durable and long-lasting labels (Figure 3).

Once the development work at the Neurath plant had been completed, RWE Power AG decided to use the printing system at the plants in Niederaussem and Weisweiler, too. These sites called for other accessories in addition to printers and labels: from label holders and coloured labels to mounting components (Figure 4).

Apart from the Bluemark CLED unicard printer, RWE also uses a thermotransfer printer for applications such as adhesive markings for load-switch labelling. And white is not the only colour that RWE uses in its power plant labels for procedural aggregates and equipment; it also uses violet (Ex Zone), yellow (SIL), and orange (Protection).

Suppliers join in

In the meantime, other RWE suppliers such as Siemens AG have also begun to use the power station identification solution from the company based in Blomberg. “The identification system from Phoenix Contact allows us to label our substations quickly and flexibly in line with RWE standards,” explains Patrick Schmidt, Project Manager in the Power and Gas business area at Siemens AG in Essen, having just placed KKS labels from Phoenix Contact on several substations at the power plant in Weisweiler. “We make use of the labels standardised by RWE here as well.”

When the department looks back at its labelling project, cost aspects are eagerly mentioned. It was possible to reduce both material and personnel costs thanks in part to Clip Project, a higher-level print control program featuring an open interface for easy exchange of data with the higher-level plant documentation system. Labelling is sure to become increasingly
important in the future due to increasing cost pressure in the sector and the resulting increase in efficiency.

Pressing ahead with RFID integration

Phoenix Contact will continue to work towards optimising the KKS program. The company presented its new KKS holder at the 2015 Hannover Messe. This special label holder for labelling power stations and plants can be mounted in many different ways and enables labels to be rapidly attached to holders by means of snap-in tongues. Personnel costs for assembling the labels can be reduced even further as a result. It is also possible to use plastic rivets to attach the labels even more securely in areas subject to high mechanical stress. Furthermore, Phoenix Contact is working to integrate RFID technology into plant labelling to promote a paperless workplace and highly efficient maintenance management processes.

Additional information:
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