

# SETTING THE STANDARDS IN COMPACT DESIGN

NEW TECHNOLOGIES CHANGE THE WORLD. ELECTRICITY REPRESENTS LIFE AND WE NEED IT AROUND US ALL THE TIME.

One of the keys to responsible use of energy is its efficient distribution so, quite rightly, energy distribution and control systems call for safe, reliable and rational solutions. Fuse technology fulfils these needs – a world without fuses is a world without safety. The protective function of the fuse can avert major injury or damage to both humans and property.

## THE NH FUSE

According to DIN Standard 0636, Part 1, the purpose of the NH<sup>1</sup> fuse-link is to safely disconnect short-circuit currents and overload currents. Combined with switch-disconnectors (IEC 60947-3) in a movable fuse-holder, they are also used for the occasional connection and disconnection of operational equipment or parts of systems. The contact blade of the fuse then becomes a movable contact piece.

The high currents occurring in a fault are safely limited by the irreversible destruction of the fuse. Apart from costing less, fusible links primarily provide a faster and more effective current-limiting effect than rated-current-level circuit breakers. The same can also be said at higher short-circuit currents. The voltage of the arc burning in silica sand rises rapidly above the level of the source mains voltage and effectively limits the current as a result (DC arc-extinguishing principle). Since the ensuing short circuit forces are proportional to the square of this current, the dynamic load on connected operational equipment is substantially lower. Contact-gap failure can be ruled out thanks to the fail-safe behaviour of the fusible link.

Steady development of the fusible link has led to some decisive technical progress in the past few years alone. Fuses have been optimised to suit the particular situation, and



NH fuse switch-disconnectors and in-line fuse switch-disconnectors designed to take NH fuses

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reliability and resistance to ageing have been improved. Present-day technology, moreover, offers the further advantages of different characteristics variants, high selectivity, narrower tolerances, and lower power loss. As a result, NH fuse technology is now widely used in switchgear and control-system construction, especially in load circuits above 100 amps. This standard in NH fuse technology is internationally recognised and employed.

## SPACE-SAVING DISTRIBUTION OF ENERGY

Almost every present-day distribution board or cabinet uses busbars to distribute electrical energy. 40mm system busbars take up the least amount of space in distributing currents of up to 360 amps in systems with a low number of loads. Applications of this kind are mainly to be found in meter distribution cabinets and consumer distribution boards.



Switchgear with central in-feed and 60mm busbar system



NH in-line fuse switch-disconnectors on an 185mm system

The 60mm busbar system is most frequently used in switchgear and control-system construction. With busbars measuring up to 30 x 10mm (to DIN 46433) for currents up to 630 amps and special cross-sections of up to 1140mm<sup>2</sup>

for currents up to 2500 amps, this system meets most requirements in the area of low-voltage energy distribution. The system's double-T and triple-T sections provide fastening and contact planes of 30 x 10mm. The 60mm system being the

most widely used, it also includes the broadest range of products. Flat busbars measuring 12 x 5mm to 30 x 10mm for currents from 200 to 630 amps mount directly on universal busbar supports without any extra parts. Connection without drilling makes for easy, reliable and speedy contacting of different types of conductor with cross-sections from 1.5mm<sup>2</sup> to 300mm<sup>2</sup>. All of the most commonly used fuses and circuit-breakers just snap onto the busbar, usually without screw connection. A good example would be in the adapter technology for switchgear, D/D0 bus-mounting fuse-elements, D0 bus-mounting switch-disconnectors and NH bus-mounting fuse switch-disconnectors. These devices fit onto all widths of busbar by means of a latching unit and an externally-sprung contact, mechanically fastened and safely connected electrically in just the one operation.

Currents of up to 1250 amps can be distributed over busbars measuring up to 60 x 10mm in systems having a centre-to-centre busbar spacing of 100mm. A busbar centre-to-centre spacing of 185, based on up to 120 x 10mm busbars, allows construction of systems up to 2100 amps, or even up to 2500 amps using the special sections described above. These systems are used for high-capacity energy distribution with high short-circuit strengths of at least 100kA.

On top of fast, easy mounting with no need for drilling, the particular advantages of busbar system technology are double use of the busbar compartment, a saving on busbar terminals and wiring material, and clearly recognisable assignment of load feeders.

Nowadays, utmost protection in systems and devices would be inconceivable without a fuse. With Wohner busbar systems and individual components, you can rely on this safe and swift way of supplying energy to the customer – anywhere in the world. ■

<sup>1</sup> NH stands for the German word off low-voltage HBC fuse

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