
ESSEX FURUKAWA INNOVATES TO INCREASE EFFICIENCY

Electric motor technology development and innovation is increasing at OEMs and suppliers in parallel to the growing demand of hybrid and electrical vehicles. The Directive 2009/125/EC for ErP (Energy-related-Products), also known as Eco-Design, establishes a framework directive for the setting of eco-design requirements for all energy using products especially home appliances. These developments request from the winding wires new properties to increase efficiency performances and reliability of the winding. High mechanical wires MAGNETEMP® 220 HP by ESSEX FURUKAWA will help our customers to reach unexpected performances by increasing the copper filling factor with higher winding pressure or reduced insulation thickness.

Properties

Magnetemp® 220 HP exhibits high level performances such as:

- very high flexibility
- high abrasion resistance
- low friction resistance
- high dielectrical performances after winding
- thermal class 220

Insulation

Magnetemp® 220 HP is insulated with new high performance polyamide-imide

Application

Magnetemp® 220 HP is designed for all applications needing

- high copper density to reach high efficiency thanks to higher insertion pressure or reduced overall dimension
- special design with sharp angles due to reduced space for the winding
- high reliability
- high thermal resistance
- high chemical resistance

Magnetemp® 220 HP specially fits to

- automotive traction motors
- all winding demanding space reduction
- home appliances needing to fulfil ErP directives

More globally **Magnetemp® 220 HP** can be used each time high performances are requested.

Production range

The standards are:

- Diameter: consult ESSEX FURUKAWA
- Thickness: Grade 1 and Grade 2 or intermediate
- Color: Natural

Dielectrical Properties

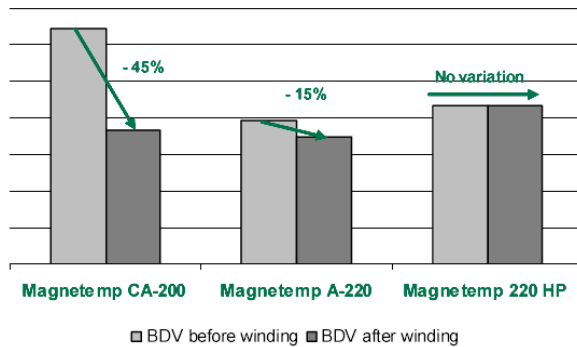
Dielectrical performances of **Magnetemp® 220 HP** vs **Magnetemp® CA-200** AND **Magnetemp® A-220** have been compared.

Procedure:

- motors with 1,25mm wires have been wound and unwound
- BDV have been measured according IEC 60851-5
- insulation thickness have been reduced by 15% for **Magnetemp® 220 HP** and **Magnetemp® A-220** compared to **Magnetemp® CA-200**.

The force needed to insert the wire is reduced with new **Magnetemp® 220 HP**.

MAGNETEMP® HP-220

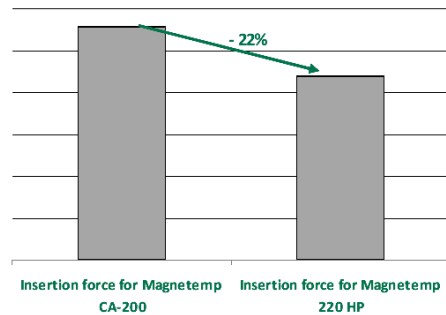


Results:
No loss due to the winding with Magnetemp® 220 HP

Values after winding are at the same level and even better for Magnetemp® 220 HP with 15% less insulation than Magnetemp® CA-200

Insertion properties

The force needed to insert the wire is reduced with new Magnetemp® 220 HP.

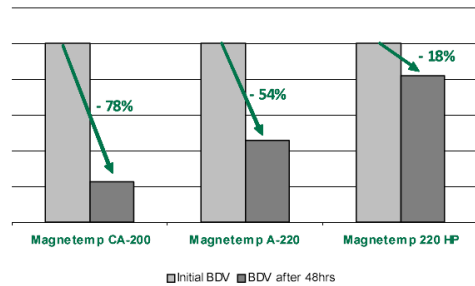


Results:
As the force to insert Magnetemp® 220 HP is reduced, the wire is less stressed and elongated meaning less mechanical damages

As it is easier to insert Magnetemp® 220 HP compared to standard Magnetemp® CA-200 the tension can be increased to put more copper without more damages.

Thermal properties

Special winding have been exposed to 260°C during 48 hours and BVD loss has been measured before and after the thermal ageing



Results:
Thanks to its enhanced flexibility, the Magnetemp® 220 HP is more resistant to thermal ageing after winding than standard Magnetemp® CA-200 and standard Magnetemp® A-220