

Title (en)

Method for manufacturing epoxy resin-embedded windings for transformers.

Title (de)

Verfahren zur Herstellung in Giessharz eingebetteter Wicklungen für Transformatoren.

Title (fr)

Procédé pour la fabrication d'enroulements noyés dans de la résine moulable pour transformateurs.

Publication

EP 0172494 A1 19860226 (DE)

Application

EP 85109937 A 19850807

Priority

DE 3430586 A 19840820

Abstract (en)

1. Method for manufacturing coils, embedded in cast resin, for transformers, - according to which, spools (1), lying one behind another in the axial direction, of the coil are wound each for itself and independently of one another, - according to which, one insulating material mat respectively, serves, in a radial direction, as a brace (2, 3) between an inner casing (5) of the casting mould and the spools (1), as well as between the spools (1) and an outer casing (6) of the casting mould, - according to which, the spools (1) are fixed in an axial direction by frictional contact on the inner brace (2), - according to which, the inner (5) and the outer casing (6) of the casting mould are fixed between mould walls (10), - according to which, casting with a horizontal mould in an evacuated chamber, follows through a slit (8), parallel to the axis, in the outer casing (6) of the casting mould, and - according to which, the hardening of the cast resin mass follows, at least partly, in the mould with increased temperature and with atmospheric or higher pressure, characterised in that, - the insulating material mats comprise fabric of non-twisted loose glass fibre bundles (15, 16), crossed and impregnated with hardenable artificial resin, - individual threads (17), twisted in themselves, of shrinkable artificial resin are worked into this fabric along zig-zag lines lying substantially in the fabric plane, - the twisted threads (17) in the insulating material mat shrink, during the hardening of the artificial resin mass, introduced through the impregnating, before the insulating material mat is brought into the casting mould, and telescope the glass fibre bundles (15, 16) at their intersections, lying in the points of the zig-zag line, to form knotlike swellings, and in that, - these swellings clamp the spools (1) in the casting mould.

Abstract (de)

Zur Herstellung des Gießharz Umgusses für derartige Transformatorwicklungen dienen üblicherweise Isolierstoffmatten als Abstandshalter (2, 3) in radialer Richtung zwischen einem inneren Mantel (5) der Gießform und den Spulen (1) sowie zwischen den Spulen (1) und einem äußeren Mantel (6) der Gießform, indem diese Abstandshalter (2, 3) die Spulen (1) durch Kraftschluß fixieren. Erfindungsgemäß bestehen die Isolierstoffmatten aus Gewebe aus unverdrillten, lockeren, mit aushärtbarem Kunstharz getränkten Glasfaserbündeln (15, 16) und sind einzelne, in sich verdrehte Fäden (17) aus schrumpffähigem Kunstharz entlang von im wesentlichen in der Gewebeebene liegenden Zick-Zack-Linien in dieses Gewebe eingearbeitet, so daß die verdrehten Fäden (17) in der Isolierstoffmatte schrumpfen und die Glasfaserbündel zu knotenähnlichen Verdickungen zusammenschieben, die die Spulen (1) in der Gießform einklemmen. Die Verwendung der erfindungsgemäß gestalteten Isolierstoffmatten ermöglicht eine besonders wirtschaftliche Herstellung von in Gießharz eingebetteten Transformatorwicklungen für Leistungstransformatoren mit Nennspannungen von 10 kV und mehr sowie bis zu Nennleistungen von mehr als 10 MVA.

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