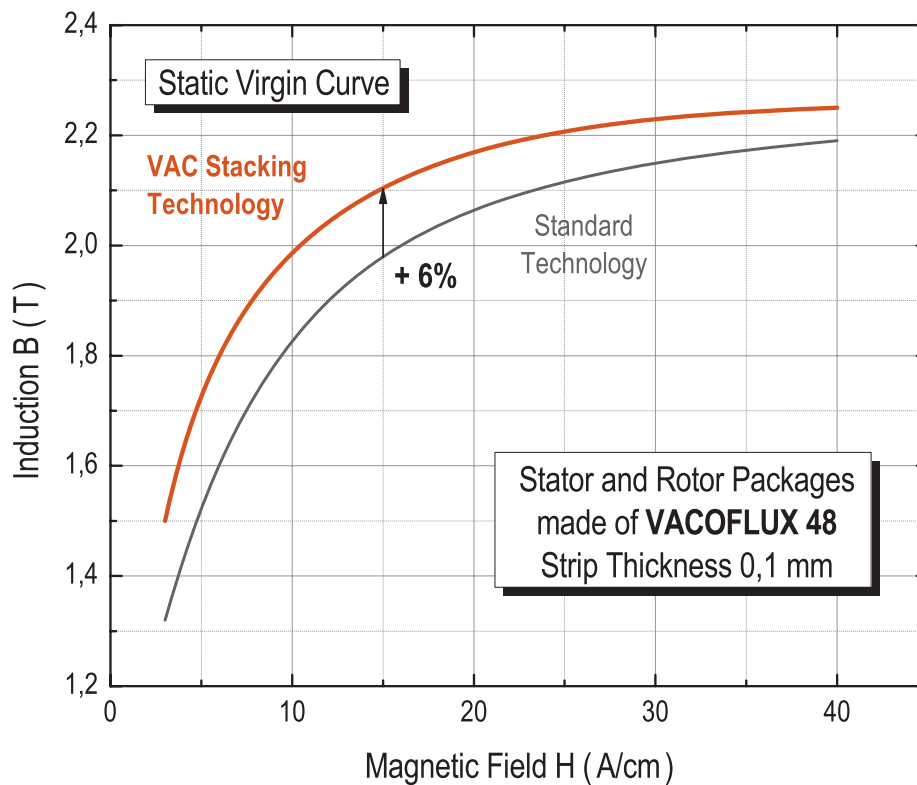


APPLICATION NOTES

VAC LAMINATIONS & ASSEMBLIES FOR MOTOR AND GENERATOR APPLICATIONS

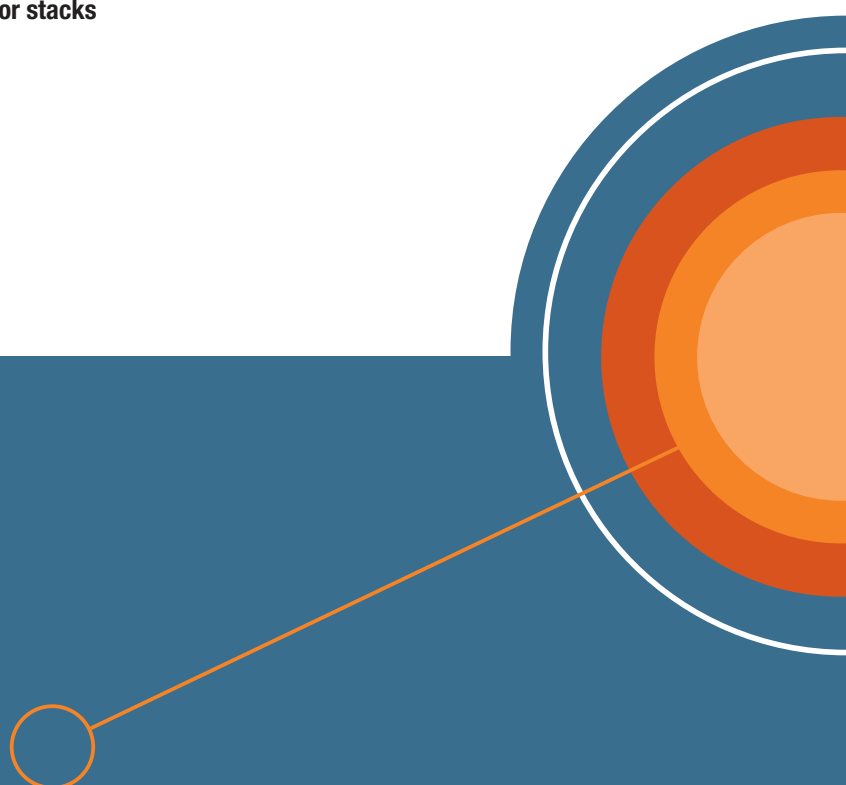
- Unique combination of high performance materials and optimized processing technologies
- Highest saturation and lowest losses combined with optimum filling factors
- Wide range of production technologies
- Comprehensive product range from sheets over laminations and parts to finished, heat-treated rotor & stator packages
- Customized solutions from the material production to the “ready-to-use” laminations & assemblies

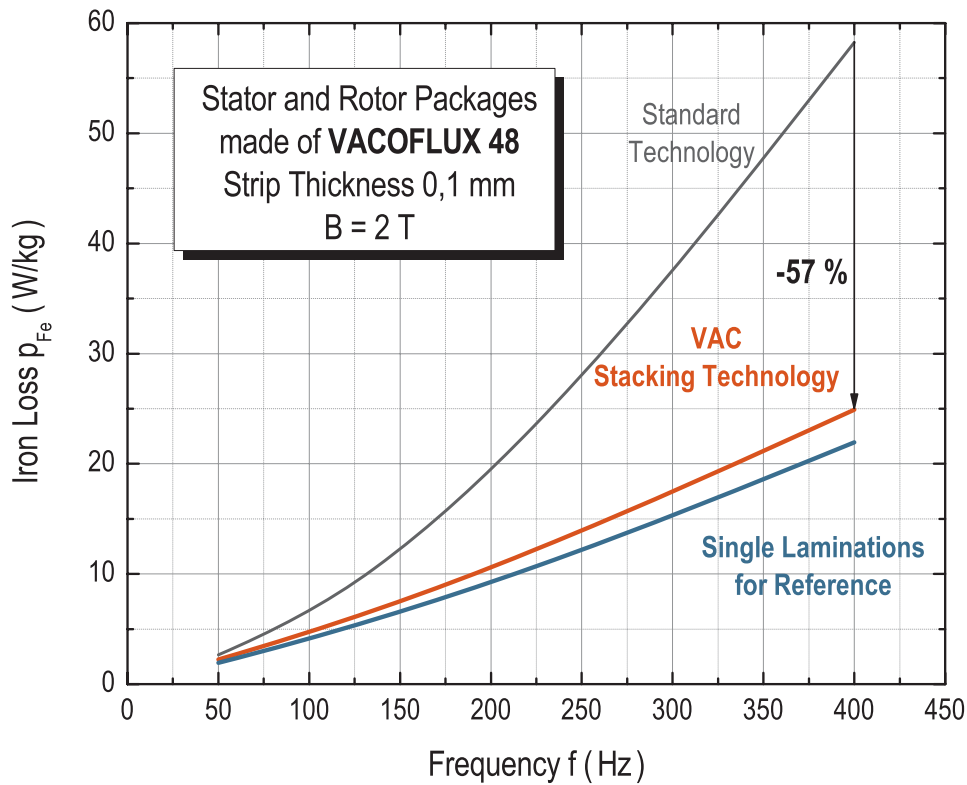




The combination of VAC's product range of soft magnetic Nickel-Iron (e.g. PERMENORM®, MEGAPERM®) and Cobalt-Iron (VACOFLUX®, VACODUR®) alloys with optimized processing technologies warrant outstanding properties:

- Maximum package densities for highest induction values:
e.g. glued lamination stacks made of VACOFLUX 48, strip thickness 0,1 mm:
typical package density 98 %
- Various production methods to achieve thinnest isolation layers with excellent electrical resistivity
e.g. combination of isolation and oxidation layer in a thickness range of a **few micrometer**
- Precise stacking and low geometrical tolerances avoiding magnetic deterioration and expensive mechanical finishing
e.g. no grinding necessary
- Processing capabilities meet highest requirements on mechanic and magnetic properties
e.g. high strength values for **fast rotating rotor stacks**



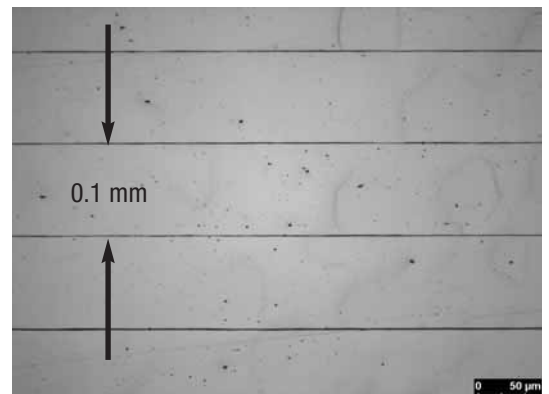


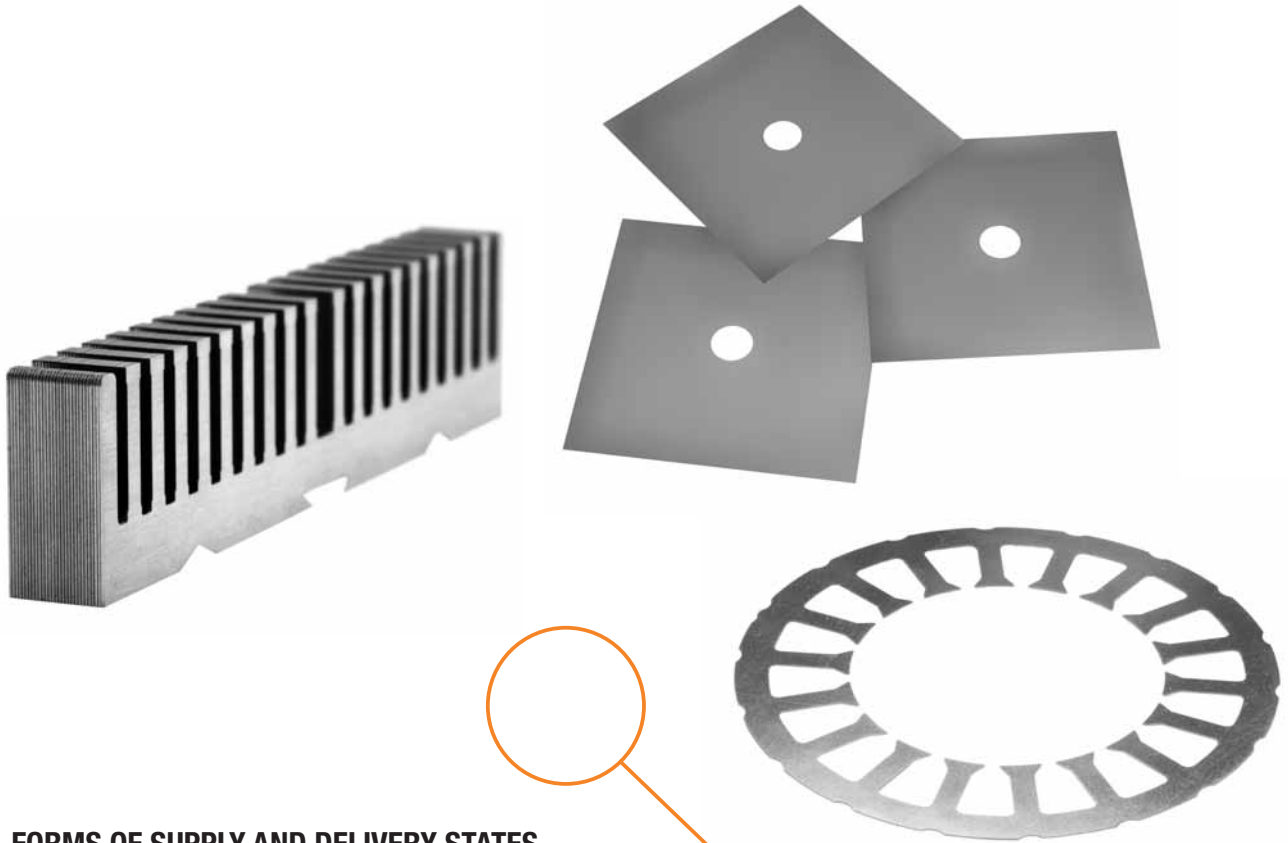
VAC can offer glued lamination assemblies, combining the advantage of thinnest material thicknesses, e.g. 0.1 mm, with highest filling factors. As shown on the picture the gluing and isolation area is in the range of a view microns, offering best electric resistivity and a very homogeneous allocation of the glue inside the lamination stack.

The involved production technologies lead to:

- improved soft magnetic properties
- significant reduction of electric losses
- precise stacking and low geometrical tolerances
- filling factor of $\approx 98\%$

The combination of our production technologies and our high end soft magnetic materials, like our VACOFLUX or VACODUR alloys, takes the applications of our customers to the edge of Technology and Market Leadership.





FORMS OF SUPPLY AND DELIVERY STATES

- Sheets (with and w/o coatings, oxidation, heat treatment)
- Laminations and Parts (stamped, laser- or wire-cut)
- Finished assemblies (interlocked, glued or laser welded)

VAC's laminations and assemblies are in use where highest requirements are needed and standard solutions fail.

They offer benefits in several markets like:

- Aircraft
- Automation
- Automotive
- Medical

Materials

VAC is also supplying semi-finished products like strips, rods and wires for motor and generator applications. Please see our separate leaflet.

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