

Technology and equipment for production of soft magnetic materials based on iron powder

Belarus research institute offers new method and equipment for synthesis of metallic powder used to produce soft magnetic materials with better properties. The technology reduces production costs of soft magnetic materials in 1.5-2 times compared to existing methods. The institute seeks cooperation with industrial partners for license agreement, commercial agreement with technical assistance or joint venture agreement and R&D institutions for research cooperation agreement.

Belarus scientific institute developed new method and equipment for synthesis of metallic powder, which is then used to produce soft magnetic materials with new properties. Produced materials can be used as replacement for electromagnetic steel. In comparison to electromagnetic steel the soft magnetic materials have no eddy current losses at high frequencies due to electrical insulation of individual iron particles in the ferrite layer. The advantages for low frequency (50 Hz) applications are high linearity of magnetic characteristic and thermal stability. The manufacturing of parts using powder metallurgy means non-waste production and lower cost of finished products. Typical applications of soft magnetic materials incl. electric motors, transformers, broadband electromagnetic screens, etc. Specification of powder synthesis equipment: * Particle size: 40-150 micrometers * Average thickness of ferrite layer: 1-3 nanometers, compared to ca. 1 micrometer competitor * Working temperature: 150-200 C, compared to ca. 1000 C competitor * Productivity of single plant: 50 kg/h (scalable). Parameters of offered soft magnetic materials based on iron powder: * Magnetic saturation induction: up to 2.1 T, compared to 1.7 T competitor * Working frequency: 100 Hz - 1 MHz, compared to 50-100Hz competitor * Low electromagnetic losses. Density of components manufactured by moulding powder under 0.5-0.6 GPa pressure is 7.3-7.5 g/cm³. The institute seeks cooperation with industrial partners for license agreement, commercial agreement with technical assistance or joint venture agreement. R&D organisation interested in improving the technology and equipment for production of soft magnetic materials based on iron powder under research cooperation agreement.

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