

Title (en)

HIGH-MODE MICROWAVE RESONATOR FOR THE HIGH-TEMPERATURE TREATMENT OF MATERIALS

Title (de)

HOCHMODIGER MIKROWELLENRESONATOR FÜR DIE HOCHTEMPERATURBEHANDLUNG VON WERKSTOFFEN

Title (fr)

RESONATEUR A HYPERFREQUENCES A MODE DE FONCTIONNEMENT ELEVE POUR TRAITEMENT DE MATERIAUX A HAUTE TEMPERATURE

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Application

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Abstract (en)

[origin: DE19633245C1] The invention concerns a furnace for sintering material, said furnace being an overdimensioned microwave resonator. The design of the resonator interior permits a homogeneous field-distribution of the microwave coupled-in obliquely via a front face. Numerical calculations, the MIRA code, have established the optimum resonator geometry to be that with a hexagonal cross-section. In this geometry, the microwave is coupled in such that the beam axis of the coupling-in beam part is divided symmetrically at the closest edge of two abutting wall segments. In this way, the microwave beam is widened for the first time here and is then always widened each time it is reflected. Field magnifications in the resonator are thus prevented, and the field distribution in almost the entire resonator volume is largely homogeneous. The prerequisite for uniform heating of the sinter material introduced into the resonator is thus satisfied. A field distribution which is similar but not quite as good can be attained with a resonator having octagonal geometry. Cross-sections of an even higher order converge rapidly into cylindrical geometry which is affected by caustics.

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