

Particle foam processing using radio frequency technology

Kurtz Wave Foamer RF-C

Steam-free sintering technology

Foams produced by molding are used for example in packaging for electrical appliances, bicycle and motorcycle helmets, armrests in cars and many other applications. In the production process, foamed plastic beads are sintered using steam in order to form components. The choice of materials is therefore limited to those that can be joined within the temperature and pressure range of classic steam molding processes (between 1-8 bar), for example polystyrene (PS), polypropylene (PP) or thermoplastic polyurethane (TPU).

A new technology uses radio frequency instead of steam to sinter the foam beads. This significantly increases the range of applications, as materials with melting points of more than 240°C can be used. One such processing unit is now available at Fraunhofer ICT, and is extending the institute's research in the field of foaming technologies. The new technology offers the possibility of sintering thermoplastic foam particles to components using radio frequency rather than steam. The radio waves are introduced directly into the material. This leads to a high energy efficiency compared to the conventional processing of particle foams. It will open up new applications for insulation materials in construction, and for materials that meet demanding packaging requirements, as well as new foams in the mobility sector.

Radio frequency molding machine (Kurtz Wave Foamer).



Our offer

- Characterization and analysis of polymers with regard to their suitability for radio frequency processing
- Process optimization for the production of particle foam components
- Material and formulation development to improve processability using RF technology
- Hybridization of foam components (different density, injection molding, foils, insert components, ...)
- Materials: e.g. EPET, ETPU, EPLA, EPS, EPP, EPE

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