



RF Cooking of Ham

Ham production is an important process in the industrial meat and food production with high added value and significant relevance to trade of processed foods inside the EU. Though modern production machinery has been introduced, the thermal unit operation is still a conventional hot water tub or steam-cooker, requiring up to 12 hours cooking times. Therefore large-scale production units consume ample floor space and high amounts of energy. Radio frequency heating (rf-heating) can significantly reduce cooking times and offers possible energy and space savings, increased yield and quality. Partner Fraunhofer IVV has developed rf-heating process with water immersion, where the water acts as a dielectric transfer medium to achieve an intense electric field in the whole food volume providing a uniform, rapid and efficient heating. The process has successfully been applied on pilot scale to boil large sausages, reducing cooking time from 200 minutes to about 20 minutes. Aim of the project is to further develop the rf-heating technology towards cooking of large ham pieces. It will bear technical solutions for an innovative and safe process for industrial scale ham cooking with improved product quality, better yield, and less time, space, and energy requirement.

The planned work comprises: development of the technology to heat large ham units, in particular formed ham in vacuum packages, on small pilot scale; investigation of the influence of ham size and shape, of salt content and distribution, of fat layers and muscle structure on heating performance; evaluation of microbiological safety and stability, including a safety analysis of the process; evaluation of sensory and instrumental quality, including quality comparison to conventionally cooked ham; estimation of economic feasibility.

The project will generate the base for an industrial implementation of the novel technology, which will help European ham producers to improve sustainability, quality and competitiveness of their production.