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## Improving heating-based components with foam

Open-pore metal foams offer greater heat transfer

The energy efficiency of heat exchangers, convectors and cooling elements can be improved even further. Open-pore structures made of metal foam, which have good thermal conductivity and a large surface, offer interesting possibilities here. The BINE Projektinfo brochure entitled "Metal foam – a material for heat engineering" (11/2016) presents the development work for these materials. The aim is to optimise the manufacturing process, reduce costs and test the materials on test rigs. The material properties of the different alloys will be recorded in a database.

A liquid or gas circulates within many heating technology components to provide a heat transfer medium. In contrast to the meandering tube bundles or fins previously usually deployed in the components, open-pore metal foams have the advantage that they have a greater surface. This facilitates the transfer of large amounts of heat. The metal foams can be made with cell widths between 0.3 and 5 mm. The production begins with open-cell polyurethane foams. These are cast in a liquid ceramic suspension. The plastic inside is then burnt by heating. The resulting mould can be filled with various metal alloys using precision casting or powder metallurgical processes.

Open-pore metal foams can be used, for example, in car radiators, high-performance evaporators and latent heat storage systems. The Fraunhofer Institute for Manufacturing Technology and Advanced Materials in Dresden is carrying out the research in collaboration with industrial partners.

The BINE Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at [www.bine.info](http://www.bine.info) or by calling +49 (0)228 92379-0. The brochure cover and an additional image can also be downloaded from the press section in this web portal.

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