Novel meat-grinder plates

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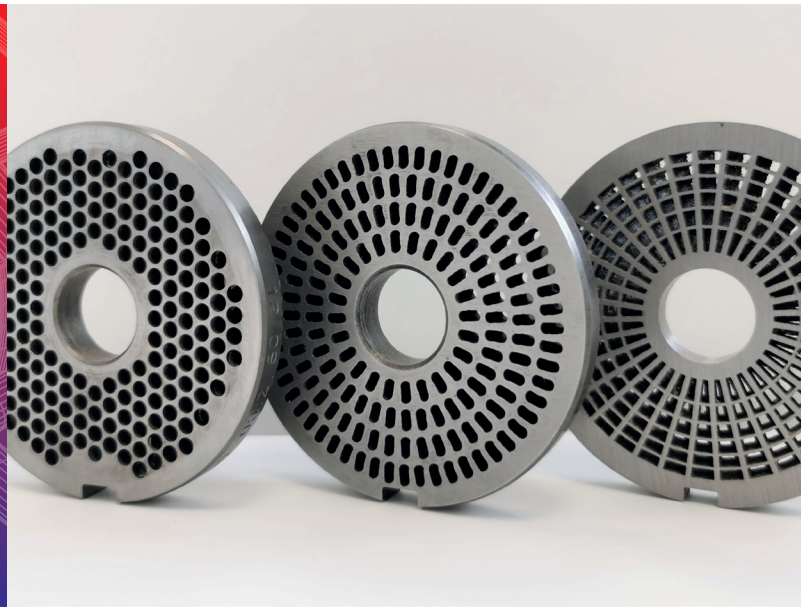

3D-printed meat-grinder plates

Increased meat-cutting efficiency through wear-resistant meat-grinder plates designed with novel passage geometries and made of HSS

Background

As a result of established manufacturing processes (especially when it comes to drilling), meat-grinder plates have remained almost unchanged. However, resulting manufacturing restrictions are increasingly preventing advancements in the mincing process. Changes to grinder plates that would adapt them to the cutting process have so far not been realized or have only been implemented at disproportionately high costs. This is where 3D printing offers completely new perspectives.

Results

In the project, grinder plates with novel “passage channels” were developed. These have a curved shape and taper from the entry side to the exit side. The curved shape promotes the entry of the raw material into the openings of the grinder plates and the tapering promotes its fixation. The raw material is thus prevented from slipping back, and is then cut more efficiently by the rotating knife.

A series of grinder-plate patterns with passage channels adapted to the specific cutting process was successfully manufactured using high-speed steel (HSS) and 3D printing (LPBF).

The novel grinder plates increased throughput by around 10%. Production indicators such as stability and deflection also show a marked improvement, leading to expectations of increased wear protection and longer service life of the grinder plates. Practice tests with prominent industry partners from the meat sector have confirmed these results.

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