

# Make Innovation HAPPEN

**MIH Knowledge Article:  
Is Scotland market-ready for 3-D printed  
food?**



Scotland  
A LAND OF  
food and drink

SCOTLAND  
IT'S TIME TO INSPIRE



Food printing technology is evolving, reinventing everything from pasta to chocolate, and with many predicting that 3D printers are the future of the domestic kitchen, what do Scottish companies need to know to get in the game?

In recent years 3D printing has grown popular across many business sectors, helping businesses to experiment with materials, customise products, speed up processes and reduce costs.

In the food and drink industry using 3D technology allows manufacturers to experiment with food shapes and texture. With computer technology, chefs can create intricate sugar sculptures, patterned chocolates, and latticed pastry.

When 3D printed food is ready for the commercial market, it's going to have an impact on many parts of the food and drink sector.

## **Restaurants and 3D printed food**

Food ink is a pop-up restaurant that's travelled the globe turning consumers on to 3D printed food. Not only does the restaurant print the food it serves, it also prints the chairs and tables the customers use. Earlier this year, influential chef, Jan Smink, opened Smink - the first restaurant in the Netherlands to have 3D printed food on its menu. This gives the chef a permanent base to experiment further with food printing technology.

More restaurants and home kitchens could follow suit and adopt the tech. Professional chefs would get to unleash their creativity on their customers, and home chefs would have the ability to personalise their food.

## **Pasta printing technology**

It's thought that the long-term aim of companies developing 3D food printers, is to turn them into kitchen devices that are as commonplace as other kitchen appliances. In the meantime, a few food brands are experimenting with the tech that's already available.

Pasta company, Barilla, is a pioneer of 3D printed pasta. The company adds value to its product line by designing complex, printable pasta shapes that are impossible to produce any other way.

Barilla is currently experimenting with different types of 3D printed pasta including: gluten-free, whole-grain and vegetable varieties. The aim is to develop its pasta printer so customers themselves might be able to customise their own pasta shapes in the future.

## **Health, nutrition and 3D food printers**

Food printing can also help consumers personalise and customise their food, helping them to lead healthier lifestyles.

By using 3D printing tech, personalised meals could deliver exact doses of calories, vitamins and minerals for each individual customer.

## Massachusetts Institute of Technology's printed pasta

Customised, on-demand production could reduce food waste, shipping and storage space costs. Researchers at Massachusetts Institute of Technology (MIT) are working on printed pasta that changes shape when it comes into contact with water. This means that sheets could be stacked, so the pasta takes up less space, making transportation cheaper.

The flat pasta sheets consist of gelatin and starch, and would be transformed into 3D pasta shapes by adding water, as gelatin naturally expands when it absorbs water. The MIT team are looking at developing more starch-heavy gelatin films that are closer to real pasta. They're concentrating on improving texture and flavour, and believe that these tech advances will allow the consumer to order the exact shape, size and flavour of pasta they want.

## Meat ink technology

Researchers from red meat organisation, Meat and Livestock Australia, are investigating 3D printed meat opportunities. Researchers claim it could help maximise carcass value for secondary cuts, trim and by-products.

Meat ink would be printed layer upon layer, creating new shapes of meat products. This could increase the value of low-value meat cuts, and could see producers being able to offer new meat products to emerging markets.

## Business growth opportunities

Although 3D printed food is not widely available on the market yet, the technology is moving towards fuller commercialisation.

In its present incarnation, food printing is expensive and time consuming. But engineers working in the space are hoping the new technology will progress quickly, making this a perfect time for Scottish food and drink companies to start investigating its potential.

If you want to understand more about food printing technology in Scotland, our innovation support team can help. We work with businesses to improve processes, workforces, and product development. If you want to become more innovative we're here to support this innovation and help your business grow.

# Innovation support for Scottish food and drink companies

Make Innovation Happen is a single source of innovation support for businesses involved in the Scottish food and drink supply chain.

Scotland Food & Drink, Scottish Enterprise and Highlands & Islands Enterprise work in partnership across academia, the public sector and the industry to deliver a comprehensive innovation support service.

Make Innovation Happen can help your business by providing:

- [Access to 'connectors'](#), who can offer support, advice and mentoring, as well as direction to appropriate support
- Ideas and insights on how to innovate through articles and events
- Funding through the [Collaborative Innovation Fund](#)
- Help to access other innovation services provided by Scottish Government, [Scottish Enterprise](#), Highlands & Islands Enterprise, Interface and others

To find out more about the support available, please get in touch with the Make Innovation Happen team:

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