

ENERGY RECOVERY TECHNOLOGY THAT DOES NOT COST THE EARTH

Dext Heat Recovery is a pioneering company, founded with the intention to produce a more practical commercial heat recovery system than the conventional models already out there. The company was formed by a meeting of minds between Commercial Director Neil Bracewell and Technical Director Dr Gareth Evans. They explained more to Hannah Barnett.

Heat recovery units from Dext allow the customer to pay for heat once but use it twice. The company specialises in two pioneering products, both offering a cost-effective way for a restaurant to boost its bottom line while simultaneously reducing its carbon emissions.

The company's initial offering, the DexTherm kitchen heat recovery panel works like a solar thermal panel within the kitchen. It absorbs heat and transfers it to the storage cylinder to pre-heat water for hygiene purposes.

Now, after six years of development, the company has pioneered the DexThermic Dirty Air Heat Exchanger. ▾



nology, the way you can recover the heat, has never been able to handle the grease. We have developed a bespoke product that can."

DexThermic in development

There is already a DexThermic panel in over 400 Nando's restaurants across the UK, and the new DexThermic is now set to be installed at branches nationwide too. This is following a successful trial at Nando's in Parrs Wood, Manchester.

The Dext team collaborated with Nando's to develop the DexThermic. It works by sitting in the building's exhaust air vent and capturing the wasted heat to warm the restaurant for a second time.

The machine captures the already-paid-for heat released during cooking and that emitted by general restaurant activity like customer body warmth and lighting. It sends the recovered heat back through the heating and hot water system using

"We've created a novel product that is able to recover heat from contaminated greasy air extracts," said Technical Director Dr Gareth Evans. "It works by utilising a heat pump to provide heating and hot water for the establishment. This has never been attempted before because the core tech-

high-performance Daikin Hydrocube heat pump technology and the warm extract air stream as the heat source.

The unique selling point of the DexThermic comes from its Fluid Fin Panel (FFP), which amplifies the thermal path between the air and heat recovery fluid, while maintaining high heat recovery rates and minimising physical obstructions within the airstream. The clever design of the machine reflects wider technological progress.

"The DexThermic was designed by creating a number of scenarios inside a computer," explained Dr Evans. "And once we found optimal scenarios, we made a prototype version and tested it. It's become much easier to do in the last ten years because computer technology has advanced so much."

The system at Parrs Wood successfully used recovered energy to provide space heating and hot water for the entire restaurant, without the need for gas or electric heating. In the UK's coldest winter months, it worked in conjunction with the existing heating system to improve efficiency.

The DexThermic delivers such significant savings, running at an impressive 300% efficiency, that it pays for itself in less than two years. According to data gathered at Parrs Wood, the branch should see savings of 608MW over five years.

Funding and collaboration

Dext has got to where it is through several funding sources, including Knowledge Transfer Partnerships and Sheffield Hallam University. The company has also forged strong alliances with some well-established



suppliers, which have become crucial to the success of the product.

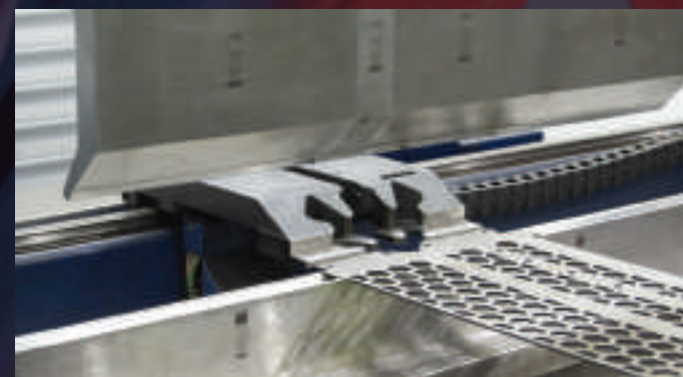
"The DexThermic saves money, but it obviously costs money to produce," said Dr Evans. "We needed to find a way of making that work. So, we got the support of Grundfos, the biggest pump manufacturer in the world, and Daikin, one of the biggest air conditioning companies in the world. Now we are really starting to gain traction, and these collaborations give us credibility as a new company."

The company also received some early funding for the DexThermic from a UK Innovate project, allowing it to make use



of academic resources and build an R&D facility to work towards a solution that would be mass-manufacturable.

"The UKI funding gave us a full set of algorithms and understanding of how the product works," explained Dr Evans. "Because we designed it in a lab, on a computer, before we made it a reality,



and then re-tested it against the computer design.

"I know exactly how the system works and I can demonstrate to clients how much energy they are going to save. And that's helpful for working with other businesses at a high level. Directors and CEOs are not interested in the circuits in the machine, they just want to know how much it is going to save them. I think for us, as a business, that gives us the real edge."

Sharing the knowledge

A collaborative approach is vital for a small company with big goals. Dext intends to integrate its product throughout the hospitality industry, and beyond. This will

mean providing the relevant training and promoting best practice methods to ensure the system works as efficiently and effectively as possible.

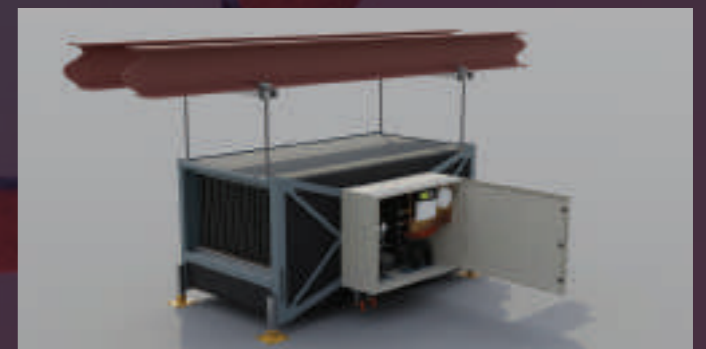
An ethos that encourages sharing the technology widely is one way that distinguishes Dext from the small amount of competition that exists in the heat recovery field. "We do have one competitor," explained Neil Bracewell, Commercial Director. "But they are just offering the product as a heat exchanger. As engineers, we install the entire system. Our goal is to work with end-users: it's just a case of passing the knowledge on. Once engineers in the field understand what we are doing, they become our sales team."

As early adopters and dedicated supporters of the technology, Nando's is proving to be a valuable continuing partner, while Dext develops a network of businesses that stand to benefit from the product.

"The Nando's sustainability team talk to other sustainability teams, from Mitchell and Butler, McDonalds or KFC," said Mr Bracewell. "And we are part of that network. You can't lock these ideas into one industry or one chain - they need to be shared. And that sort of thinking is what Nando's, and Dext, is all about."

Built on excellence in engineering, via a blend of practical experience and academic achievement from Mr Bracewell and Dr Evans respectively, Dext keeps pushing forward. The intention remains to spread the technology as widely as possible and by doing so, in a small way, make the world a better place.

"We are excited by design and innovation," concluded Dr Evans. "But we are also



doing this because of the environmental perspective. We are not going down the green-washing route. This is one of the reasons that Neil and I bonded ten years ago; we both care.

"We want this technology to be everywhere in the world. Obviously, we're only two guys, and there are the seven billion of us on the planet, so it will be a journey. And along that journey, businesses or entities or people may get on and off as the technology continues to progress. What we are doing now is creating the framework to take the product everywhere." ■