



## frperc KTP case study

Award winning Knowledge Transfer Partnership (KTP) project at frperc

### Project outline



Ian Wood came to frperc when he realised he needed their expertise on a project he had been working on for some time. The KTP project that grew out of this meeting and developed through the determination, enterprise and dedication of Adande, his new company, and frperc produced an award-winning commercial product.

It is often a chance remark or fleeting thought that triggers the best ideas. This was the case with Ian, MD of Allied Design and Engineering, a small off shore gas consultancy in Lowestoft. Early in 2000 whilst chatting to friends in his local pub he heard the landlord agonising about how he was going to cater for a wedding party that weekend. 'How am I going to keep the Champagne chilled, the dessert frozen and the cheese at just the right temperature with only the one fridge' he was worrying. It was

only later as Ian really began to think about what had been said, that he began to consider; was there really no way that someone could maintain several foods at their ideal conditions within one refrigerator? Further research indicated that no one produced such a refrigerator. During this research it also became clear to Ian that most refrigerators had an inherent design flaw, that when the refrigerator door was opened all the air fell out and was replaced by warm ambient air, which warmed the food.

Combining these two ideas, Ian came up with the concept of the VariCool refrigerator.

The VariCool would store food within 4 independently controlled drawers that, when opened, would keep the cold air inside the refrigerator. Each drawer would be able to operate at the desired temperature, allowing users flexibility between chilled, frozen or ambient storage. The drawer units would be fully insulated and sealed to prevent airborne contamination of odours or bacteria and a datalogging system would record temperatures for comprehensive due diligence and food safety records.

Further ideas quickly followed. Not only would each drawer have its own microclimate it would also be possible to remove the drawers and use them as insulated boxes, enabling food to be maintained at the correct temperature during storage or transport.

After discussing the concept with local caterers, Ian was sure that his idea was a winner. He could also see markets for the unit in biomedical, domestic and supermarket storage. Applied Design and Engineering's work in the off shore gas industry was reducing and

the company needed a new focus. Reborn as Adande (Applied Design and Engineering) Refrigeration and funded by the directors and a bank loan the process of developing the VariCool began.

Ian realised that technical guidance was essential to develop the equipment and sought professional help. He very quickly located and teamed up with frperc. Early discussions and consultancy confirmed VariCool as a viable idea and rapidly identified that this was not a short-term project, but that several years' development would be required to produce a commercial piece of equipment. frperc suggested applying for a TCS (Teaching Company Scheme), now KTP, a flexible government backed scheme where companies can obtain help from research providers and partial funding to employ a recent graduate for up to two years. frperc already had a great deal of experience with KTPs, having previously completed five successful TCS schemes with refrigeration manufacturers and food suppliers.

## Project results

Within six months the KTP had been approved and a graduate employed at Adande. Work began immediately to develop the first VariCool unit (Mark I unit), with staff from frperc travelling on a regular basis to help and advise on developments. The Mark I unit was based on a conventional refrigeration system as at this stage the main development work was focused on the design of the drawers and control of the system. During the KTP, three Mark I units were built and were installed into catering premises and tested to determine how well they operated in a busy commercial kitchen. Since the end of the KTP, the Mark I unit has been further developed and is now being produced and sold by Adande.

After the Mark I unit was developed into an effective product suitable for limited production and sales, Adande began design and development of the VariCool refrigerator. This unit was based around a novel refrigeration system using capillary tube expansion and a low-pressure receiver, which is currently being patented. The unit underwent extensive testing and development during the KTP before being produced commercially by Adande. The VariCool unit has advantages over the original unit in terms of reduced production costs, ease of manufacture and improved performance.

## Project outcome

Adande has developed further refrigerator models since the completion of the KTP in November 2003 and has maintained links with frperc for ongoing advice and independent testing. The VariCool range developed after the first production units were sold includes models with a variable number of drawers, slim line units and units with varied drawer sizes, suitable for differing product requirements.

Adande has grown very rapidly since the end of the KTP from a company with 5 employees to a company employing 15 people as production and sales of the VariCool commenced.

The graduate employed by the KTP became an essential member of the development team and has since been recruited by Adande. The development of the product and the identification of potential markets for the product have directly contributed to the company securing substantial second round Venture Capital funding.

## Awards

Adande were awarded the European Award for 'Distinguished Development Design 2003' by The European FCSI (Foodservice Consultants Society International) for the VariCool refrigerator shortly after the end of the KTP. To find more information on the award, use the following link to the frperc news item.

They have received further endorsement of their product from numerous satisfied customers who have found that VariCool has transformed the way in which they store and handle food in kitchens.

The KTP managers also thought that this was a project that deserved special praise and nominated Adande and frperc for one of their top 2004 awards, presented in London in December 2004.

## Acknowledgement

This Partnership received financial support from the Knowledge Transfer Partnerships programme (KTP). KTP aims to help businesses to improve their competitiveness and productivity through the better use of knowledge, technology and skills that reside within the UK knowledge base. KTP is funded by the Technology Strategy Board along with the other government funding organisations

## Contacts

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