

Out of Africa

From the dust and deprivation of the poorest parts of Africa to the rather damper, greener environs of the west of Scotland, David Osborne's professional life could hardly be more diverse right now.

Between fixing boilers and installing bathrooms throughout Ayrshire, David spends his time liaising with international aid agencies, the armed forces, various African government departments and multi-national firms all of whom have shown an interest in an ingenious device developed and launched by the thirty-five-year-old plumber earlier this year.

Now, with the first of his 'Jompy Water Boilers' ready to hit the shelves in leading Kenyan supermarket Uchumi - together with positive feedback from the nation's president Mr Mwai Kibaki, and international media attention – David's dedication and determination is beginning to pay off.

"It has been an incredible journey to reach this stage," explains David who spent his early years in South Africa before returning to Scotland. "The potential for the Jompy is truly global, with particular relevance to communities where firewood is the main energy source. As well as much of Africa, this is case throughout many parts of Asia and India as well as South America. This is especially crucial where safe drinking water is not readily accessible - an estimated 1.1 billion people globally have no access to any type of improved drinking water. Then there are the military and camping markets as well as various uses in industry and process."

It all began in 2006 when David and wife Claire took a trip to Zimbabwe during their honeymoon in South Africa. A conversation with a family friend regarding the apparent lack of use of solar power in Africa – despite the blazing sun - led to a bet by David that he could come up with a way to make solar accessible, affordable and easy to use for the millions of Africans without plumbed water supplies.

From scribbles on a napkin, the idea grew and when the couple returned home to Scotland, their domestic plumbing business, Celsius Plumbing & Heating, soon had a new division dedicated to developing water heating devices for the African market. Last year they launched their first product, the Celsius Solar Water Tank, a solar powered water heater, now available in Kenya, Malawi and South Africa.

Now, the Jompy Water Boiler has been developed for use on direct heat sources such as gas or solid fuel fires (the most common heat source in the majority of homes in the developing world), with its solar capability enabling users to employ both or either method.

“The Jompy takes the cultural norm of heating water for cooking, cleaning, washing and drinking requirements in a pan over a fire, and significantly speeds up the process,” explains David. “By boiling water around four times quicker than traditional methods, it will enable households to use their fuel more efficiently, ultimately reducing household wood smoke and positively impacting on the environment. Plus the solar capability is a way to introduce the concept of renewable energy to very traditional, conservative communities who may be resistant to abandoning the age-old tried and tested ways.”



Designed to sit directly on top of a charcoal burner (known as a Jiko), wood fire or gas stove, the frying-pan-shaped device draws water through a narrow tube into its tightly coiled piping. Here the cold water is heated and is then dispersed through an outlet pipe. Apart from the fire, all that is required are two containers, such as a

bucket for the cold water and a pan for the hot. Its flat surface also means that cooking pots can sit on top of the Jompy, effectively enabling simultaneous cooking and water heating over one fire. The recommended retail price has been set at an affordable 3900 Kenyan Shillings (32GBP) per unit.

Following testing by the Durban Water Authority and Glasgow Biological Centre, the Jompy made its debut at the Nairobi International Trade Fair in October, grabbing significant interest from many quarters, including senior government ministers. Meanwhile, various international aid agencies are speaking to David and Claire regarding how they might exploit the Jompy's simple, effective approach to heating water in disaster-hit regions, whilst the military are also considering its use for their own operations.

“For these organisations, speed is the key,” explains David. “To make safe water from an unsure or unsafe source, a four minute rolling boil is recommended. Bringing 4 litres to the boil and rolling for 4 minutes will take the Jompy around 7 minutes in total. The traditional method of putting a pan on the fire would take the same quantity around 25minutes.”

This combined with the clear convenience, affordability and safety features, it's no surprise that David and Claire have also attracted interest from major multi-national detergent companies, and are now investigating links with the lucrative outdoors/camping market, barbecue manufacturers and leading brands supplying cookware and utensils.



The jompy

It's all a far cry from those last days at Cumnock Academy when David heard he'd earned a plumbing apprenticeship with Robert J Andrew, and began to soak up the knowledge and experience of many of the best plumbers in Ayrshire. Setting up in business for himself with the launch of Celsius in 1999, he has since partnered with Andrew McRoberts of Gas Safe Services and works closely with Steven Docherty of SAS Kitchens & Bathrooms in West Kilbride.

"I've been incredibly fortunate to firstly have the opportunity learn the trade from someone as accomplished as Mr Andrew, and then to team up with Andrew McRoberts who has been a great mentor throughout. Plus, Claire's background in finance and the world of stock broking has been invaluable.

"Whilst I thoroughly enjoy building the plumbing side of the business here in Scotland, Celsius Solar is such an amazing opportunity to not only develop commercially successful technology but also to make a real difference to the lives of millions across the world. Plus, it's not every day you hear that the President of Kenya has complimented your work as being a good thing, economical and just what his country needed!"

- Weighing 1.4kg and with a water capacity of 1.2litres, the Jompy will boil 1litre of water every 45-60 seconds depending on fuel source
- When using a Jompy to heat water and cook at the same time, households can save up to 60% on fuel use
- Last year, electricity prices in Africa rose by around 66%, making solid fuel heating all the more attractive to low income households
- Only 25% of sub-Saharan Africans have access to electricity - CSIS
- More than half of the world's population still cooks with wood, dung, coal or agricultural residues on simple stoves or fires – WHO 2009
- Most diarrhoeal deaths in the world (88%) are caused by unsafe water, sanitation or hygiene. Overall,...around 84% of them occur in children – WHO 2009
- According to WHO, 1.1billion people have no access to any type of improved drinking source of water, and about 2.6billion – half the developing world – lack even a simple 'improved' latrine.
- According to the World Health Organisation, around 1.8million people a year die due to wood smoke inhalation, and every day 5000 children die of diarrhoea due to unclean water sources
- The fourth leading risk factor cause of death in low income countries in 2004 was unsafe water, sanitation or hygiene – WHO 2009
- By effectively covering the open fire, the Jompy significantly reduces the heat signature, a key benefit for military applications