



High hopes for new mobile fridge recycling plant

Smart response to a logistical nightmare

It may sound too good to be true, but an innovative mobile recycling concept for fridges can be expected to save up to 60% of the operational costs when compared to treatment in a modern stationary facility, according to Dr Viktor Haefeli of Switzerland-based Smart Resources. Together with Untha Recycling Technology of Germany, Haefeli has built a sophisticated plant-on-wheels which, in Europe alone, has the potential to reduce discarded fridge transportation by an estimated 40 million kilometres per year.

From the outside, it looks like a truck. From the inside, it is a 'state-of-the-art', compact recycling plant, designed for on-the-spot processing of refrigerators. Thanks to the mobile Smart Fridge Recycling

concept, it is no longer necessary to ship loads of discarded fridges over hundreds of kilometres for treatment in a far-away stationary facility; this means saving millions in both energy and labour costs. 'And this is only one major

benefit,' states Dr Viktor Haefeli of Switzerland-based Smart Resources.

Haefeli developed the mobile facility together with Untha Recycling Technology (URT) of Germany, an engineering company with over twenty years' experience in fridge processing.

'The change needed'

Mobile fridge recycling itself is not new. Over the past 10 to 15 years, several mobile concepts have been launched - most notably in Europe - in a bid to reduce the growing fridge mountain. However, according to Haefeli, most of the mobile plants currently in operation are 'not efficient enough anymore'.

The introduction of the Smart Fridge Recycling plant will bring 'the change needed', claims Peter Hessler, managing director and partner





Peter Hessler: 'The plant is able to split the treatment into refrigerators containing VFCs and those containing VHCs.'

of URT, who has been working in the field of plant design and equipment supply to fridge disposal facilities for 25 years. 'What makes our concept innovative is that the plant is able to split the treatment into refrigerators containing VFCs (volatile fluorocarbons) and those containing VHCs (volatile hydrocarbons) whereas existing concepts are treating VHC- and VFC-isolated fridges in a similar way,' he explains. The key to separate treatment is a measuring instrument developed by URT for the analytical detection of the foam blowing agents, the engineer points out.

Lot of money and energy involved

According to Haefeli, mobile recycling is the best solution for countries and regions in which fridge recycling is still underdeveloped. 'Southern Italy, for instance, does not have such an infrastructure,' he notes by way of example. 'All the discarded fridges have to be transported to the north for dismantling in stationary facilities. As a consequence, there is a lot of money and energy involved in logistics.'

And what is true for parts of Italy also applies not only to other countries in the Mediterranean - such as Greece, Turkey, Spain, Portugal and France - but also to the UK and Eastern European states. Haefeli argues: 'Every region that lacks recycling capacity and where transportation distances are long, combined with other cost-reduction potential, could seriously benefit.' Conversely, mobile solutions are less interesting for countries such as the Netherlands and Germany that have 'enough capacity,' he adds.

Reducing the carbon footprint

A mobile Smart Fridge Recycling plant provides a 'massive' reduction in carbon dioxide emis-

sions when compared to a state-of-the-art stationary facility, according to Haefeli. To illustrate his point, he has mapped out the potential impact of the mobile solution on his home country of Switzerland where some 400 000 fridges are recycled each year. Carbon dioxide emissions would be reduced 'by five times' or by 6550 tonnes per year, Haefeli calculates, while the logistics reduction potential equals '1 million kilometres'.

Haefeli has also looked to the larger scale. For the whole of the EU, where some 16 million fridges are recycled every year, the potential reduction of the carbon footprint would be 40 times greater, or an estimated 262 000 tonnes per year. From the logistics angle, a total of 40 million kilometres could be saved, he figures.

Saving money too

Apart from the major environmental benefits, Haefeli reckons the Smart Fridge Recycling concept can be expected to save 'up to 60%' of the operational costs when compared to a stationary plant. 'Clearly, there are enormous cost savings when you look at transportation,' he says. 'The average domestic fridge has a volume of 0.5 m³. The material fractions after recycling have a volume of only 0.07 m³, which means that there is a huge additional efficiency potential of over 85% in logistics.'

In addition, savings in energy consumption equate to 'over 50%' while the lack of requirement for infrastructure associated with a stationary plant saves major labour and maintenance costs.



Dr Viktor Haefeli: 'There are some serious projects in which we are involved.'

Spreading the good news

According to Peter Hessler, URT can deliver a state-of-the-art mobile plant for approximately Euro 2 million (US\$ 2.66 million), adding that handling an average of 100 000 fridges per annum will provide a return of investment in 'less than four years'.

Now that the mobile Smart Fridge Recycling plant project has completed its development and refining stages, Haefeli and URT are spreading the good news and seeking out customers for their concept. There are 'some serious projects in which we are involved,' confirms Haefeli, who expects the first unit to be ready to hit the road 'some time in 2015'. □

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Let's go mobile, says Haefeli

For recycling, 'the best technology available' is brought together in a mobile plant so that fridges can be processed on the spot. Dr Viktor Haefeli explains how this works:

- As a first step, the fridges are separated into those containing VFCs and the rest through a 'secure' industrial process and by infrared analysis. After that, all gases and liquids (oil, VHCs and VFCs) are removed from the cooling circuit. Then, the compressor and the inserts are removed.
- As a result, you have a fridge body with VHC blowing agent, VFC insulated with rock wool or expanded polystyrene. All the VFC-marked fridges are separated and delivered to a state-of-the-art VFC fridge recycling plant. All other fridges go directly to the mobile Smart Fridge Recycling plant where they are fed into the second recycling stage.
- The recycling equipment is installed on a truck trailer. The VHC fridge bodies are introduced into a four-shaft shredder. (The shredding, sorting technology and through-put are the same as in a modern stationary fridge recycling plant.)

