

# Retort future for charcoal

Alan Waters tries out a more efficient method for making charcoal products

## Retorts

### Exeter Retort

Charcoal Compost, Devon  
01392 431454 carboncompost.co.uk

### Pressvess Retort

Pressvess, West Mids  
01384 400088  
pressvess.co.uk

### Biochar Kiln 1

Carbon Gold, E.Sussex  
07712673507  
carbongold.com

### Coppice Stove

Black Mountain Woodfuels  
Llandeilo  
blackmountainwoodfuels.co.uk

The Exeter Retort is designed to be mobile so it could be shared between a number of woodland enterprises or sites. Notice how little smoke is being produced with the retort up and running



The Exeter Retort filled with lengths of small diameter branchwood (right) ready to be lit. Initially steam is produced by the heat (above), but as the temperature rises so volatile gases are emitted and are burnt off inside the fire chamber. The retort takes material it would be difficult to manage (top) in metal ring kilns



made by Robby Webster, which was large and heavy and not very mobile.

Today, to the best of my knowledge, there are two mobile retorts on the market (other than 50 gallon drum types) that are sturdily made and are easily manoeuvred into position. They are made by Carbon Gold in East Sussex, and The Carbon Compost Company in Exeter. Both companies have designed their retorts to make fines for biochar.

Having seen both in action I have opted for the Exeter retort. The designers and makers of this retort, Robin Rawle and Geoff Self, offered to bring it to my site in October for a demonstration. With plenty of other charcoal burners attending, and Don Kelley whose knowledge of retorts is extensive, we loaded with low grade hazel and beech. The first attempt proved unsuccessful, due to appalling weather conditions which interfered with the thermostat, thus giving us a false reading of the temperature inside. This was soon rectified by a replacement and the second burn gave us a 100% success rate. The charcoal was of a high quality, and clean, with no brown ends in site!

## The Pressvess retort

A big double charcoal burner opens up new markets for using wood waste

The new Pressvess Charcoal Retort is a twin-oven kiln that can be used to convert wood, straw or other materials, as a potential material for biochar. Inside the main casing are two main barrels, protected by insulating fleece. In the centre (with a wall of fire bricks either side), is the burning chamber, where you light a fire. The barrels are stacked with wood (or straw), and the doors sealed. Once the kilns reach about 300° the volatile gases begin to escape, through the pipes at the bottom. By capping these pipes (below right), the gases are redirected into the fire chamber where they burn, raising the temperature to about 600°. If you get the burn right there are few emissions and you produce consistent charcoal in large quantities.

Though the kilns were pioneered by charcoal producers, Four Seasons Fuel from Sussex, they need high throughput to justify the investment. Which is why Forest Research are studying their use for filtering and the Glasshouse Project from West Midlands may be able to use such a system as part of their centre for people with learning difficulties, to provide work experience with such a kiln.

Details Visit [pressvess.co.uk](http://pressvess.co.uk) to find out more.



Once the temperature in the kilns reaches 300° the gases begin to escape through pipes underneath the kiln. By capping these pipes volatile gases are redirected into the fire chamber to raise the heat to 600°



The Exeter Retort is easy to handle, and can be towed on a compact trailer from site to site. This allows both time and diesel savings because it can be towed to the wood stacks rather than the present method of hauling the wood to the kiln site. Another huge saving is made by improving the wood to charcoal conversion rate from 7:1 to 4:1, with each burn effectively taking 19 hours from loading to emptying versus 48 hours with the metal ring kilns. Another big advantage, especially for us, is the opportunity to use low grade hazel cut to 2m lengths of which we have a lot!

Now it is December and Robin and Geoff have kindly brought the Exeter Retort back to my site for a few weeks of tests and trials. In 2012 I am hoping to run a course of charcoal burning using a traditional earth kiln, a metal ring kiln and the retort. This should provide some interesting results. Watch this space!

Details Alan and Jo Waters run WildWood Charcoal & Coppice Products ([coppice-products.co.uk](http://coppice-products.co.uk)) in West Sussex.



Tim Smith checking the temperature in one of the Pressvess kilns. Notice the lack of smoke coming out of the chimneys. Retorts produce much less pollution