

ROUGH TRANSLATION

The Utah Biomass Resource Group
ie shorter UBRG develops, coordinates
and supports bioenergy and biomass
the enhancement of Utah.

UBRG is the local university (USU Utah
State University), managed by the organization
and will be funded primarily from the University and
other sponsors.

UBRG's latest invention is based on a movable
pyrolysis of months

Text Christian Lankinen

The carbon emissions under control with wood swarf?

UTAH DEVELOPMENT

MOBILE pyrolysis

Utah in the United States state of dry biomass is collected
After logging into large piles and burned in a fire hazard due.

The Utah Biomass Resource Group (UBRG) developed in co-operation
With Amro Energy mobile way to take advantage of poor quality
wood waste while reducing carbon emissions. The use of the device would be
Finland, too.

dampen the biomass is almost oxygen-free conditions.

The device is installed in a truck-trailer,

which is capable of handling 20 tons

biomass per day. As a result of the process

oil 50, 25 and 25 of the green coal synthesis gas,

which can be used machine

heating the biomass. Thermal imaging

can be adjusted between 300 -700 centigrade degrees.

However, -Useimmiten we drive the machine

Between 350-450 degrees, says UBRG

founder and director Darren McAvoy.

- The oil can be burned to such a one,

but usually requires processing. Traditional

fuel boilers can be little effort

change the wood oil at current. We study

adhesives and plastics manufacturing wood oil,

like many other companies around the

the world.

The rotary kiln

accelerate the pyrolysis

There are already a number of currently moving

pyrolysis. How utahilainen

The present invention differs from other similar devices?

- Our patented technology is based on

a rotary kiln which is heated from outside, says Darren McAvoy. - This enables faster and more complete pyrolysis. Many other systems Amro Energy's Ralph Coates and Rom Gardner 'pyrolysisrekan' on the front.

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By dry biomass is gasified volatiles anoxic or oxygen-poor conditions, some at a temperature of hundreds of degrees, systems use a heated screw cylinder inside.

Amro energy-owned prototype will cost about \$ 500 000. The company is interested in sell and develop device more broadly, but demand at least not yet had.

Professor of Natural Resources Center (LUKE) Kari Tiilikkala according to mobile pyrolysis are well suited to Finland, where transport distances are long. Pyrolysis may also be Tiilikkala part of decentralized energy production, as well as maintenance of liquidity.

VTT Ltd's senior researcher Vesa Arpiainen believes that mobile pyrolysis must be in continuous operation in order to the production efficiency can be increased.

Pyrolyysilaitetutkimus proceeds in Finland

Finland has been studied in two funded by Tekes project, the slow pyrolysis use. The main raw material for trials, was a birch wood. VTT coordinated projects studied various products the formation and quality of the various hiiltoretorteilla, developed and built VTT input function koehalliluokan and hiiltotestilaite made technical and economic calculations. MTT Agrifood Research Finland to investigate the use of liquid products, for example. repellents and the use of the improver torrefaction and composting. University of Helsinki Lahti Unit investigated products

impact on the environment.

Europe mobile pyrolysis

Development is only the beginning. VTT Oy, a leading researcher Leena Fagernäs of the year

At the beginning of 2015 launched a new four-year EU project Mobile Flip. It will be developed portable processing equipment, which of biomass can be processed to their places of origin in the vicinity. The project is coordinated VTT and the project has involved six research organizations, four SMEs and two large companies. Finland project the participation of VTT, LUKE, and Raussi Energy Ltd.

As one study of slow pyrolysis process.

Removable and continuous tree

Green coal BRIEF BASIC COURSE

Green coal is a biomass artificially coal produced. It is

is obtained by pyrolysis, or dry distillation.

usually less than 700 ° C. Less than 300 ° C

the regasification process called Torrefied.

It does not gasify biomass one or carbonize as far as at higher temperatures,

but the purpose is mainly to improve Torrefied

The energy density of the material and prepare so use of energy

The use of the world's coal is currently

6.6 billion tons, and usage is growing

on. In 2010, the combustion of coal

consisted of 43 energy production (fossil fuel) carbon dioxide emissions.

EU countries are committed to CO2 emissions reduction (20-20-20 targets)

and the replacement of coal with renewable fuels is key targets

gaining access. Finnish Torrecilla Ltd

offers a solution that refines

biohiilipellettiä wood chips, which have unlimited

The European market for coal fired power plants.

Slow pyrolysis (charring, distillation)

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hidaspYROLYSILAITTEISTO are designed, constructed

and during the demonstration on the project Raussi Energy and VTT's co-operation.

The suitability of the products, ie distillates and hot coals fertilizer preparations, plant protection products and low-quality activated carbon the use of applications such as suodatinhiileksi, examined in collaboration with Luke, VTT and Raussi among energy.

The Finns participating in a wide-ranging the development of products and other processes.

In addition to slow pyrolysis to be developed techniques are pelletizing, märkähiilto, Roasting (torrefaction) and various technologies related to the drying of biomass.

Units can be bio-based products chemicals, fertilizers, insignia materials or intermediate products intended for further processing. The project has a total budget of 10 million EUR.

Green coal is sold to Sweden

Kari Tiilikkala according biocarbon commercialization has already begun. City of Stockholm For example, last year bought a 20 truckloads green coal from Finland. Liquids

Commercialization is slow in Europe, where the regulation for limiting and even preventing commercialization of products. Outside Europe For example, wood vinegar (puutisle, puuetikka) market is large and Growth fierce. Profitable business has the potential, as long as the gas energy are used for local decentralized energy production as well as fluids that the coal is found markets.

Slow pyrolysis liquid product formed contains distillate and tar. Tar Free Distillate is a promising and marketable the product range of commercial applications, such as in plant protection, for example repellent molluscs as well as in the fight against certain herbicides, Fagernäs emphasizes.

the wood is heated to the absence of air slowly 450-500 ° C. Traditionally, hardwood using the main product of

carbon (35-40 p) and the by-product liquids (distillate and tar, a total of 40-45 wt), and gases (15-25 p). Slow pyrolysis the carbon generated is used in Finland today mainly barbecues. The use of coal biocarbon for other purposes, such as land improvement, is still quite new in Finland.

Nopeapyrolyysissä temperature of about 450-550 ° C and the delay time is very short (less than seconds to a few seconds). Nopeapyrolyysin The main product is a liquid, yield depending on the wood raw material, 60-75 wt and the main target is the fuel usage. It is considered as a promising alternative to fossil fuel for various industrial processes.

In Finland, the Joensuu biomass power plant to take advantage of fast pyrolysis to produce bio-oil.

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