



Waste Management

Waste Incineration

Jane Van Hool:

One obvious solution to household waste, is to burn it.

Today's incineration is a sophisticated, highly technical process, which deals with rubbish on a massive scale.

Grabber Driver:

Each five ton grab load, holds the equivalent to five households' waste per year.

Most important to us, is actually mixing the waste up. It's not just a case of dropping it straight in, it has to be mixed, so that the guy on the panel, can control the fires better.

What would happen if we didn't mix it, is we would get a very fast burn on some loads, and a very slow burn on other loads, and then the steam load will be up and down.

Jane Van Hool:

Steam is the key to all this. It means that as well as disposing of the rubbish, you can get energy out of it too. Steam is produced from the heat released during incineration. It's used to drive massive turbines, which generate electricity.

This plant at Tyseley in Birmingham, generates enough electricity every year to power over twenty five thousand homes.

Doug Barlow:

Steam produced by the incineration process comes to the turbine, the turbine drives the generator, which produces between twenty eight and thirty megawatts, which is then fed into the local electricity network.

Stuart Sim:

In effect it's a power station fuelled by waste. We're recovering value from the waste, as well as disposing of the waste.

We're a fairly central facility here to the city of Birmingham so, we're meeting what we call the proximity principle, which is trying to dispose of the waste, as near to the point of arising as possible.

Were we not doing that, the waste would have to be going to land fills outside the city boundaries, and as they get filled up, you're obviously having to take it further and further away, with obviously the environmental impact of the transport within the city to do that.

So, if the waste was going to land fill, this domestic waste, is putrescible, it will decompose, it will generate methane. Methane's a very powerful greenhouse gas, so incinerating the waste actually, has far less impact in terms of greenhouse effect, Than land filling the waste, and we are now, one of the most tightly regulated process industries there are, operating to very high standards, and indeed higher standards than conventional fossil fuel power stations.

Jane Van Hool:

Today's emissions are analysed to the last micro particle, with all the power of technology.

Man

Say everything's nice and stable well within limits.

Man

Good, HCL nine, that's not, that's fine okay. Thanks.

Jane Van Hool:

The advantage of modern incineration, is that the whole process is totally controllable. The removal of dioxin starts in the combustion chamber. As each load is burned, the temperature is kept at a minimum of eighty hundred and fifty degrees centigrade, for at least two seconds. This means that most of the dioxins are destroyed. As the gases from the incineration leave the combustion chamber and start to cool down, some dioxins may reform. To remove these, along with any heavy metals present, activated carbon is injected here, in these massive reactor towers. Acids and other particulates, are also dealt with.

Doug Barlow

As the gases leave the incinerator, they come along with ducting here, into the quench reactor tower, it's at this point that the lime and the carbon is added to remove the acids from the gases, and then it passes from the reactor tower, through into the filter house here. and this is to remove the dust and particulates from the gases, before they're released through the ducting there, and into the chimney.

Interviewer

So when it gets to the chimney, it's clean, it's okay to release into the atmosphere?

Doug Barlow

Yes, all the acids have been removed, all the particulates have been removed, and, as you move up the chimney you can see the point there, we have a continuous emissions monitoring, which checks to make sure that there are no releases to atmosphere, and then it passes up the chimney, and look you can see there's no visible plume.

Jane Van Hool:

Tisley uses rubbish as fuel to generate electricity for the local network, but there is a way to get more than three times as much energy out of the waste you burn. Europe is leading the way.

Prof. Andrew Porteous, OU

A third of Stockholm is heated by it's waste, a third of central Paris is heated by it's waste. Practically every major city, and quite a lot of small ones too, in the continent and in Scandinavia, have district heating plants, whether generate electricity, and steam or hot water for heating.

Jane Van Hool:

District heating is gradually gaining currency in Britain. In Sheffield, the hot water produced by the local incinerator, is piped all over the city, to provide cheap heating for public buildings and homes. Local participation is important. For district heating to be economically viable, a large number of institutions in the community have to sign up for it. But once this hurdle is overcome, public opinion tends to be very positive, especially if the community gets something out of it. This sports centre in Sheffield, is designed specifically to tap into the growing network of district heating pipes in the city centre. So for the relatively small price of laying a few pipes in the ground, the infrastructure for a whole new system of green heating can be set up. Every time a building is connected, a conventional boiler is switched off, which means less use of fossil fuels, and less greenhouse gases being produced.