Open Forum 88 1983: Energy Research at the OU

Clip: Alternative Technology Group

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Transcript:

**Godfrey Boyle:**

Well, the Wind Power Project is the largest of a range of projects which the Alternative Technology Group's been carrying out over the last few years. We've been looking at technologies which are ecologically sound and which conserve natural resources, basically. We have for instance been looking at the grid-linking of small-scale wind turbines to provide electricity on a horticultural smallholding, and now that we have this facility on the campus we can now do most of our wind energy research work here at the OU.

**Derek Taylor:**

At the moment we are evaluating a low-cost rotor which we've developed in ATG, which is a – what is known as a sail foil rotor. It's a type of sail wing design, essentially it consists of a streamline leading edge and then a rigid trailing edge, over which we pull a polyester fabric sock – and when the wind blows across it, it forms itself into a efficient aerofoil which is fairly simple to manufacture.

We are also evaluating a control system which varies the magnetising effect in the alternator. As this is an experimental research facility, we've designed the test rig so we can keep it on the ground when we're not doing any testing. This actually has a hinge at the base of the tower so we can pull it up into the air very quickly with two people pulling on the winch.

This particular rotor is a 4-metre diameter machine which is designed to generate 2 kilowatts at a wind speed of 10 metres per second. The test facility itself is equipped to measure wind speed via these masts around the wind turbine, and on the wind turbine itself we measure the shaft torque, the RPMs, and the electrical power. And all the instrumentation is held in this hut here.

This gives us the RPM, and also we can work out what the position of the blade is as it is rotating, which is the shaft angle... and this gives the angle of yaw, in other words the direction in relation to compass bearing. The other device actually measures wind speed in metres per second, and the data logger stores the data onto tape, which we then take over to the mainframe computer and analyse. We also have a Commodore computer, which is used to control the wind turbine.

Well, the wind turbine which I've been showing you today is of the horizontal axis type of design, and we've been looking at ways of actually reducing the cost of that by maybe using new blades and that kind of thing. But we're also looking at radically new, different types of wind turbines and just recently we've developed a vertical axis type of design, which means that the shaft is pointing up in the air, and the windmill can take winds from any direction.

The main benefit from it comes from the fact we only need a short tower for any size of windmill, and also we can get all the rotating, generating equipment at ground level. So we think there's a lot of benefits from this new approach, and that's what we're hoping to develop into much greater depth in the future – and we hope to build a large machine based on this design some time next year.