SOLARDOME®
for growing schools

CASE STUDY – LANCASTER UNIVERSITY

Solardome® glasshouses aid important environmental research

For over a quarter of a century, the Air Pollution and Climate Change Unit (APCCU) at Lancaster University has been one of Europe's leading centres of research on the effects of air pollutants, UV-B radiation and CO^2 concentrations on plants.

Pivotal to the success and validity of their research has been a suite of 20 Solardome® glasshouses. These 4.5m/15ft diameter domes have been particularly important in enabling large-scale experiments to be carried out on trees and other perennial species which are grown under natural light and ambient temperatures and can be exposed to closely controlled pollution regimes for several consecutive seasons.

Dr James Heath, Research Associate from Lancaster University, explained: "The Solardome® glasshouses enable us to grow plants in long-term, large-scale experiments under natural light and daily or seasonal patterns. At the same time, we are able to control the composition of the atmosphere inside the domes. This makes them a much more realistic alternative to highly controlled, small scale laboratory experiments. They have been used to investigate the effects of various air pollutants on plant health, and more recently the effects of rising atmospheric CO^2 concentrations on plant growth and soil carbon storage."

Describing the suitability of the glasshouses for this kind of research, he continued: "The main reason the domes are so suitable for this is their shape. By having one fan drive air through inlets around the base, and a central extractor fan at the top, we can get a good mixing of air throughout the whole dome which means that, for example, atmospheric CO^2 concentrations can be accurately controlled simply by introducing small quantities of CO^2 into the inlet air flow. There is no need for complex feedback controls. The constant airflow also keeps air temperatures and humidity levels close to those outside. Another advantage is that wherever the sun is in the sky, it shines straight through the glass rather than hitting it at an angle and being reflected off, thereby creating an authentic atmosphere. "

Due to the success of the existing suite of Solardome® glasshouses, Lancaster University is now applying to fund another set of domes for ongoing research. The existing Solardome® glasshouses will continue to function with very little maintenance, meaning that the University can concentrate on its research with no worry that the facility will fail.

For more details, please contact
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