

# Climate Change Fund Case Study

## Air Source Heat Pumps: The Place Theatre



*The Place Theatre, Bradgate Road*



*Outdoor ASHP Unit*

In September 2012, **The Bedford Players Trust** was successfully awarded **£7,710** from the Mayor's Climate Change Fund (50% match-funding) to install **air source heat pumps** at **The Place Theatre**.

### **How Air Source Heat Pumps Work:**

An air source heat pump (ASHP) transfers heat from outside to inside a building, or vice versa. Heat from the air, which is constantly being renewed naturally, is absorbed at low temperature into a fluid. This fluid then passes through a compressor where its temperature is increased. Warm air is then pumped into the building through a fan. ASHPs can get heat from the air even when the temperature is as low as  $-15^{\circ}\text{C}$ .

The pump needs electricity to run, but this electrical energy should be less than the heat it produces. For every unit of electricity used by the pump, between two and three units of heat are produced.



*Control Panel*



*Indoor ASHP Unit*

Four ASHP units were installed at The Place Theatre. One in the entrance foyer area (pictured above, right) which replaced two electric fan heaters, one in the Green Room (backstage dressing area) and two in the main theatre area. The control panels for the ASHPs are set at a suitable temperature (see photo above showing the Green Room control panel - set at 20°C) and are locked so they cannot be changed easily by users, reducing energy wastage.

### **Benefits:**

The building's users have benefitted from an increase in comfort due to the controllable, efficient heating system, which has contributed to the increased usage of the building by 20-25% over the last twelve months, to a total of 42 weeks a year. Despite this increase in usage, the building's gas consumption has reduced along with its electricity consumption, despite the use of electricity to run the ASHPs, the longer programme and the summer use of the ASHPs. In place of the use of electric fans, the ASHPs were run in reverse, to provide cool air for the building during the hot summer, allowing the building to continue to be used.

### **Savings:**

- 7,656 kWh of gas
- 1,242 kWh of electricity
- 2.06 tonnes of CO<sub>2</sub> (approximately)
- £679 in energy costs