

Effectiveness of Various Energy Efficiency Measures in a Typical Kingston Home

Generic Kingston house – Victorian, Edwardian or 1930's ...

- Semi-detached with two to three bedrooms
- 9” solid brick walls
- Wood suspended ground floor
- Original wood doors
- Open chimneys
- 100 mm loft insulation
- uPVC windows with basic double glazing

The Measures

- Increase loft insulation from 100 mm to 300 mm
- Add external wall insulation
- Add fitted carpets with insulating underlay
- Add underfloor insulation
- Upgrade windows with double or triple glazing with low-e glass, optimum gaps and argon infill
- Change doors
- Reduce excessive air leakage down to a safe level
- Replace boiler with Air Source Heat Pump
- Add solar PV and a battery

Methodology

- Calculate heat losses (watts) on a cold day using CIBSE “Domestic Heating Design Guide”
- Calculate heat losses in original state
- Calculate reduction in heat losses for each efficiency measure
- Assess cost of each efficiency measure
- Calculate value in terms of £ per watt saved
- Assess upheaval of each measure
- Rank results with star-ratings

Results – more stars the better

Measure	Effect on Consumption	Cost	Cost Effectiveness	Lack of Upheaval
Extra loft insulation	*	*****	****	*****
External wall insulation	***	*	**	***
Fitted carpets	*	****	**	****
Underfloor insulation	*	*	*	*
Upgrade windows	*	***	*	***
Upgrade doors	*	*****	*	*****
Reduce air leakage	***	****	*****	***
Install heat pump	*****	*	*****	***
Add Solar PV and battery	***	*	**	****