

## CALCULATING THERMAL RETURNS

### A comparison of heat gain through cold room insulation panels with PIR versus a Non-PIR core.

With newer insulation technologies hitting the market, thermal benefits of using a proven PIR system have been brought into question and improved performance gains are being claimed across the industry for these newer (Non-PIR core) technologies. But with little real world proof to back them up, Is PIR old news or does it still have the legs to take on a new challenger? The following independent report gives fresh insight...

### PRODUCTS

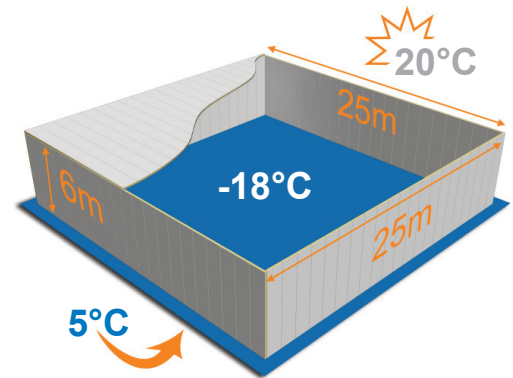
The table below provides basic information about the tested panels:

	175mm PIR	150mm Non-PIR	150mm PIR
Thermal Conductivity (lambda λ, W/mK)	0.02038	0.018	0.02038
Thermal Transmittance (U, W/m²K)	0.11	0.12	0.13

### COMPARISON

The comparison has been carried out for a frozen food cold store as follows:

- Internal store conditions: -18°C and 85% relative humidity.
- Store size: 25m long by 25m wide by 6m high.
- Temperature external to the cold room: +20°C.
- Underfloor Temperature: 5°C
- U Value of Floor: 0.28 W/m²K.



### RESULTS

	175mm PIR	150mm Non-PIR	150mm PIR
Heat Gain (kW)	9.146	9.611	10.077
Annual Energy Use (kWh)	35214	37149	39084
Annual Cost (£)	4226	4458	4690
Annual Energy Difference	1935 kWh saving	=	1935 kWh increase
Annual Cost Difference	£232 (5% saving)	=	£232 (5% increase)

### VERDICT

The differences in energy and running costs between the old and new systems are seen as negligible with the overall U value of a product proving the driving force and returning lower energy costs. Any declarations up to 20% decrease in Lambda values will not correlate into 20% energy savings. Combined with an uplift in the capital cost of utilising the Non-PIR insulation, it would take approximately 15 years for return on investment (ROI).

**PIR products are here to stay.**

