Energy International Systems Ltd.

Presentation to

5th Anniversary of TTL

1st February 2010

Given by Fred Best: Technical Director

Energy International Systems Group Ltd

EIS Technologies - *A new perspective on renewable energy generation and application...*

- *EIS 500 Vacuum Super Insulation (VSI)*
- *EIS ThermoTech® Thermal Battery*
- *EIS 1000 Solar Thermal Panel*
- *EIS SolMax® Special Coating*
- *EIS ThermoTech® Solar Thermal Desalination Unit*
- *EIS ThermoTech® Dendritic Generator*
- *EIS ThermoTech® Non-Electric Air Conditioning Unit*
- *EIS ThermoTech® Energy System*

EIS

SUPER VSI

SuperLine Ltd.

We will now look at Vacuum Super Insulation one of the key elements of the Energy System

EIS 500 Vacuum Super Insulation – Key Features

- A thermal insulation panel which lets virtually no heat to pass through it.
- The product has a patented edge that helps to improve the overall efficiency.
- It is both very light and very strong.
- It is much thinner than other forms of insulation.
- It is highly cost effective and has a useful life expectancy of more than 100 years.

EIS 500 Vacuum Super Insulation – Key Benefits

- It keeps things warm
- It keeps things cold too
- In summary it can contain thermal energy and prevent it escaping from or intruding into a temperature controlled environment
- In general it saves energy
- It considerably reduces CO_2 production wherever it is used

EIS 500 Vacuum Super Insulation – Advantages over Alternatives

Plastic Foams (Polystyrene, Polyurethane, Phenolic, etc)

- Most plastic foam materials melt at less than 120°C, the VSI will not melt and will currently withstand temperatures up to 600°C **(Withstands higher temperatures)**

- Most plastic foam material would need to be about 250 mm thick to meet the new 2016 building standards; the VSI would be only 25 mm to achieve the same or better standard **(Thinner)**

- Most plastic foam material will have little or no inherent strength and will need additional support; the VSI is very strong in its own right. **(Stronger)**

EIS 500 Vacuum Super Insulation – Advantages over Alternatives

Fibres (Glass and Mineral wools)

- Most types of fibre material would need to be over 300 mm thick to meet the new 2016 building standards; the VSI would be only 25 mm to achieve the same or better standard **(Thinner)**

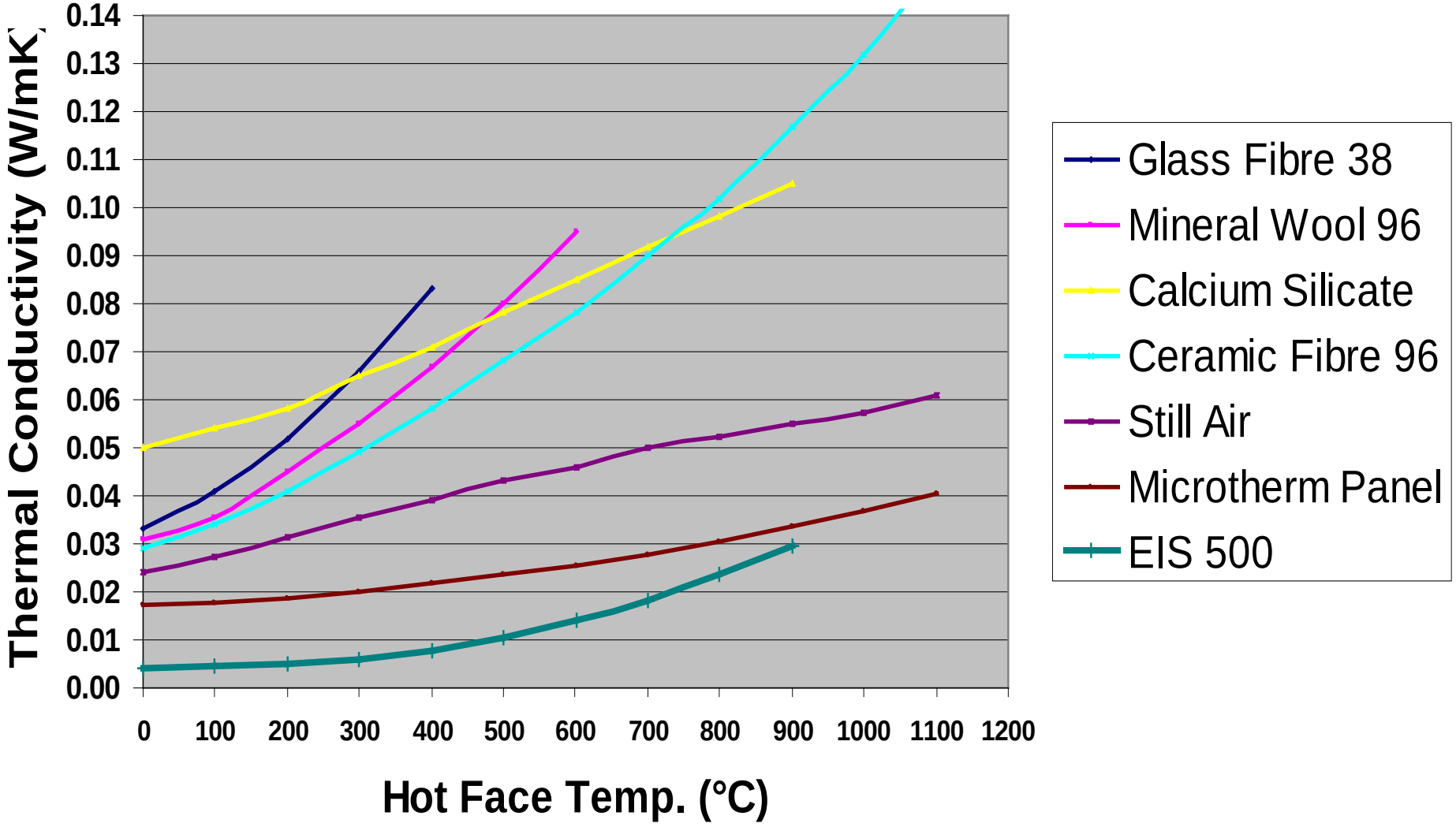
- Most types of fibre material will have little or no inherent strength and will need additional support; the VSI is very strong in its own right. **(Stronger)**

- Most types of fibre material will tend to settle over time; the VSI remains very stable and will not normally be affected by moisture. **(Maintains physical properties better)**

EIS 500 Vacuum Super Insulation – Potential Applications (continued)

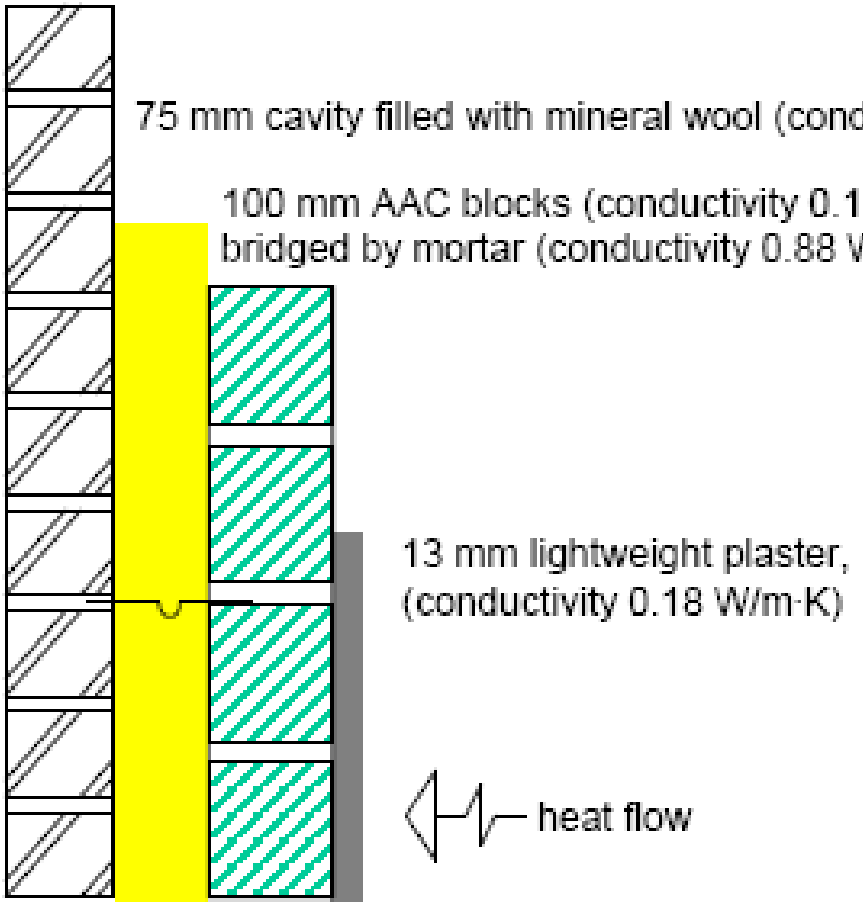
- Loft insulation – panels could be manufactured to fit into the roof space
- Forward bases for military operations – field hospitals and accommodation
- Temporary housing in disaster areas – again the panels are both light and strong and would be suitable for transportation
- Ovens would become more efficient and would reach operating temperature more quickly if they were to use VSI panels

Thermal Conductivity of the VSI EIS 500 and other Insulation Materials



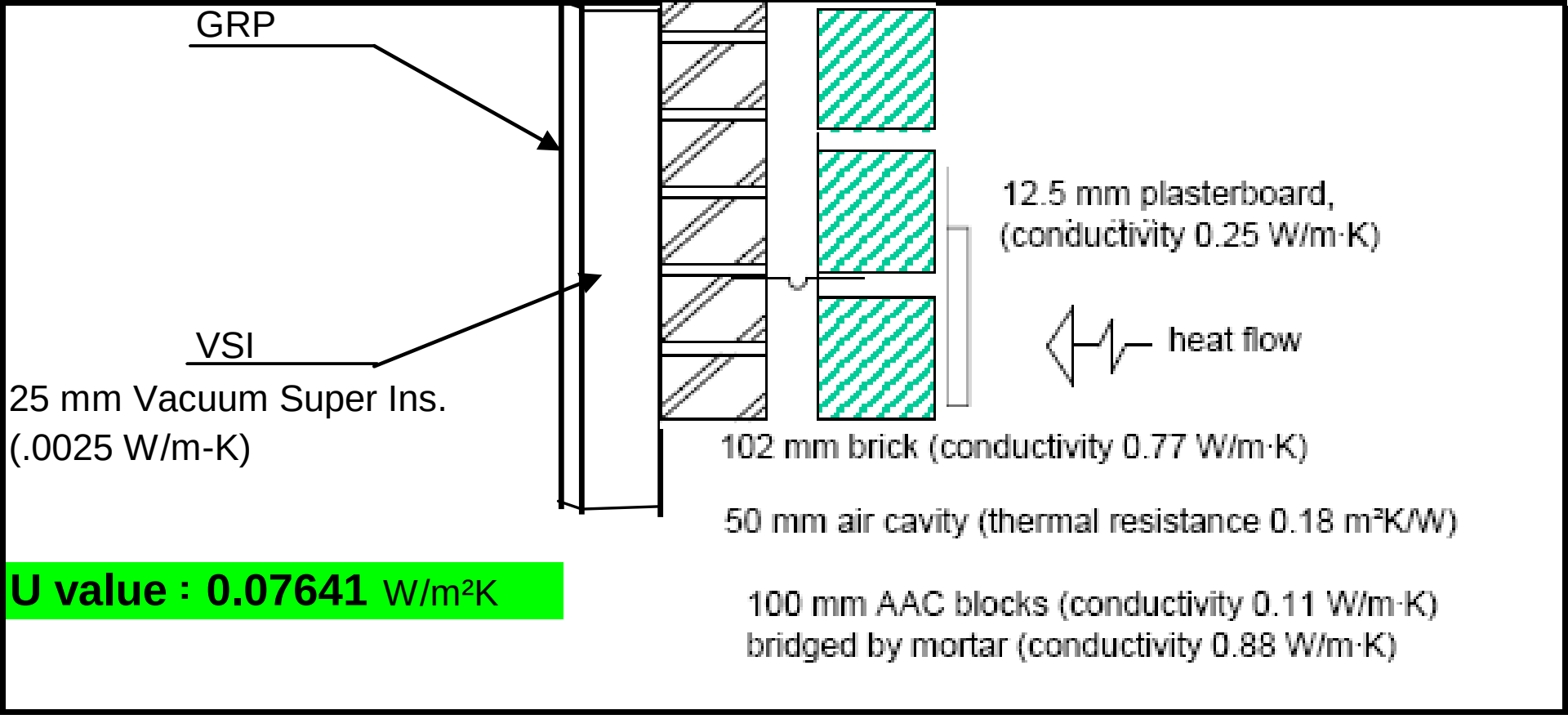
5. Insulated cavity wall with metal wall ties

In this example[e)] an insulated cavity wall has stainless steel double triangle wall ties penetrating the insulation layer. The construction consists of outer leaf brickwork, a cavity filled with mineral wool batts, 100 mm of AAC blockwork and 13 mm of lightweight plaster. The wall ties are spaced 900 mm horizontally and 450 mm vertically.



Total thickness	290 mm

U value : 0.32389 W/m²K



U value : 0.07641 W/m²K

By applying the VSI to the outside of an existing building this will reduce the thermal losses through that part of the fabric by typically over 76%. This enables other technologies to be utilised and reduces the overall cost significantly.

New build enables completely new designs to be considered, with enhanced reductions in energy consumption in all aspects of the build.