



***Energy International Systems Ltd.***

***Presentation to***

**TTL “Sustainable Snow Production Event”**

***30<sup>th</sup> April 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***



**SUPER**

**VSI**

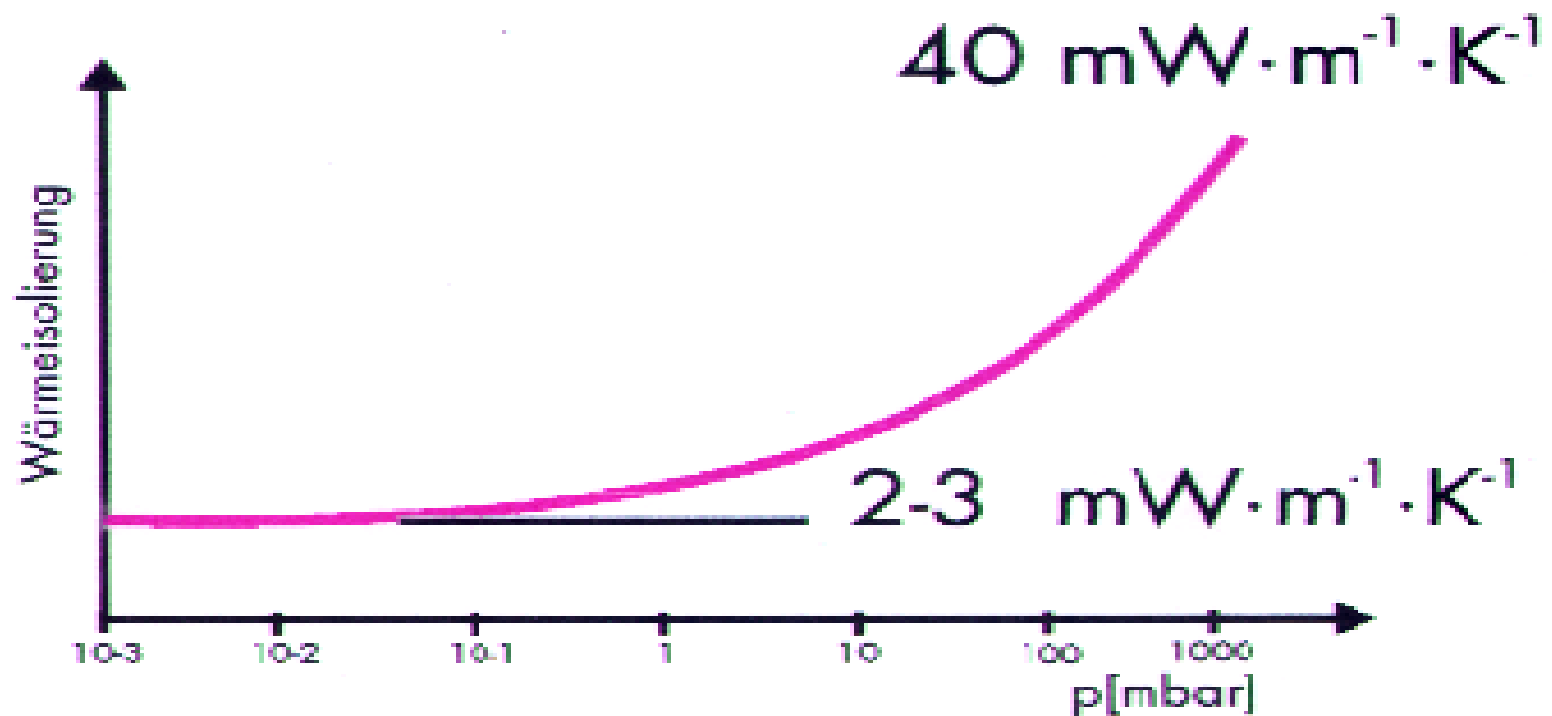
***SuperLine Ltd.***



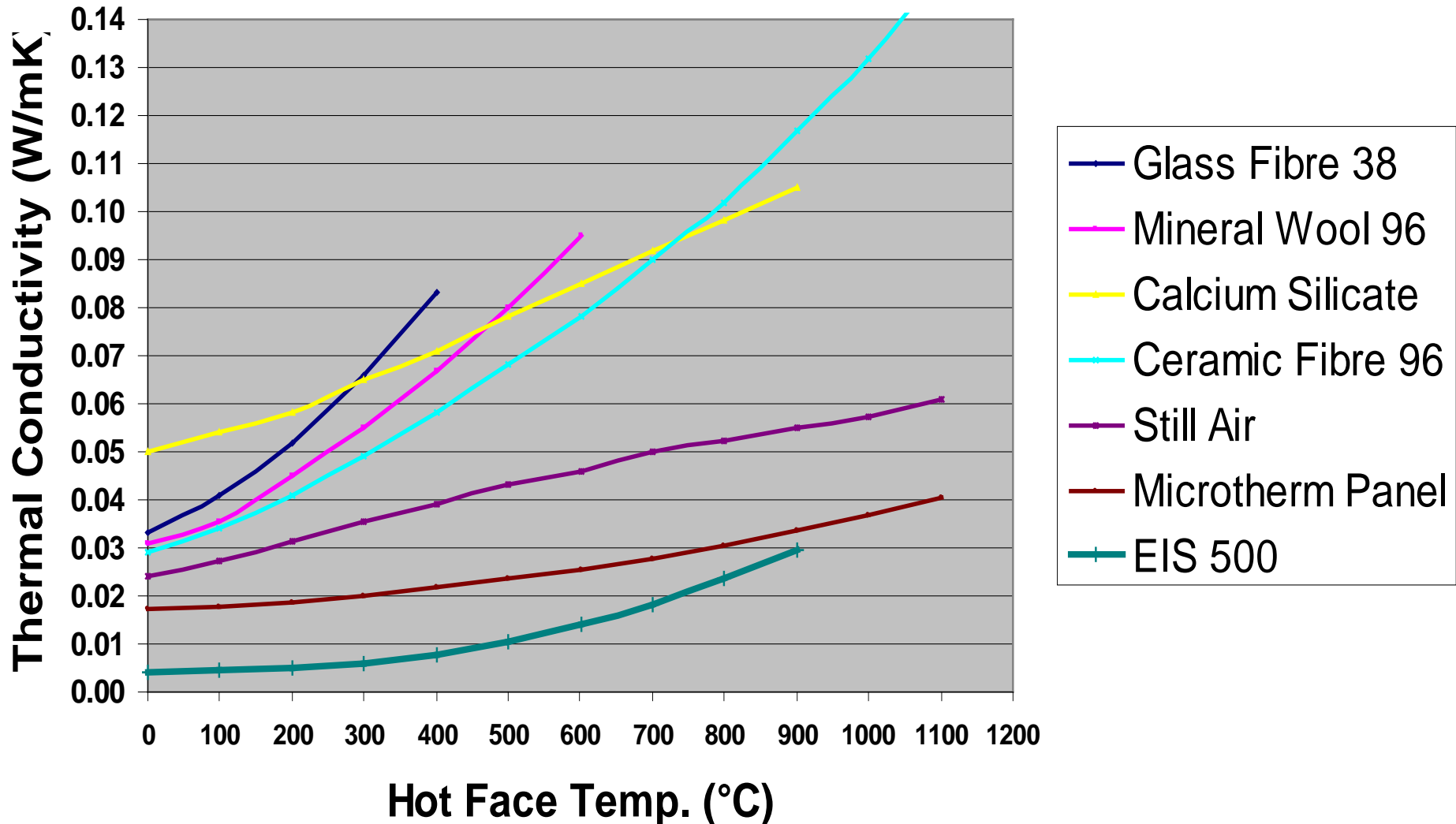
*We will now look at Vacuum Super Insulation one of the key elements of the Energy System and how this could be applied to Snow Production.*

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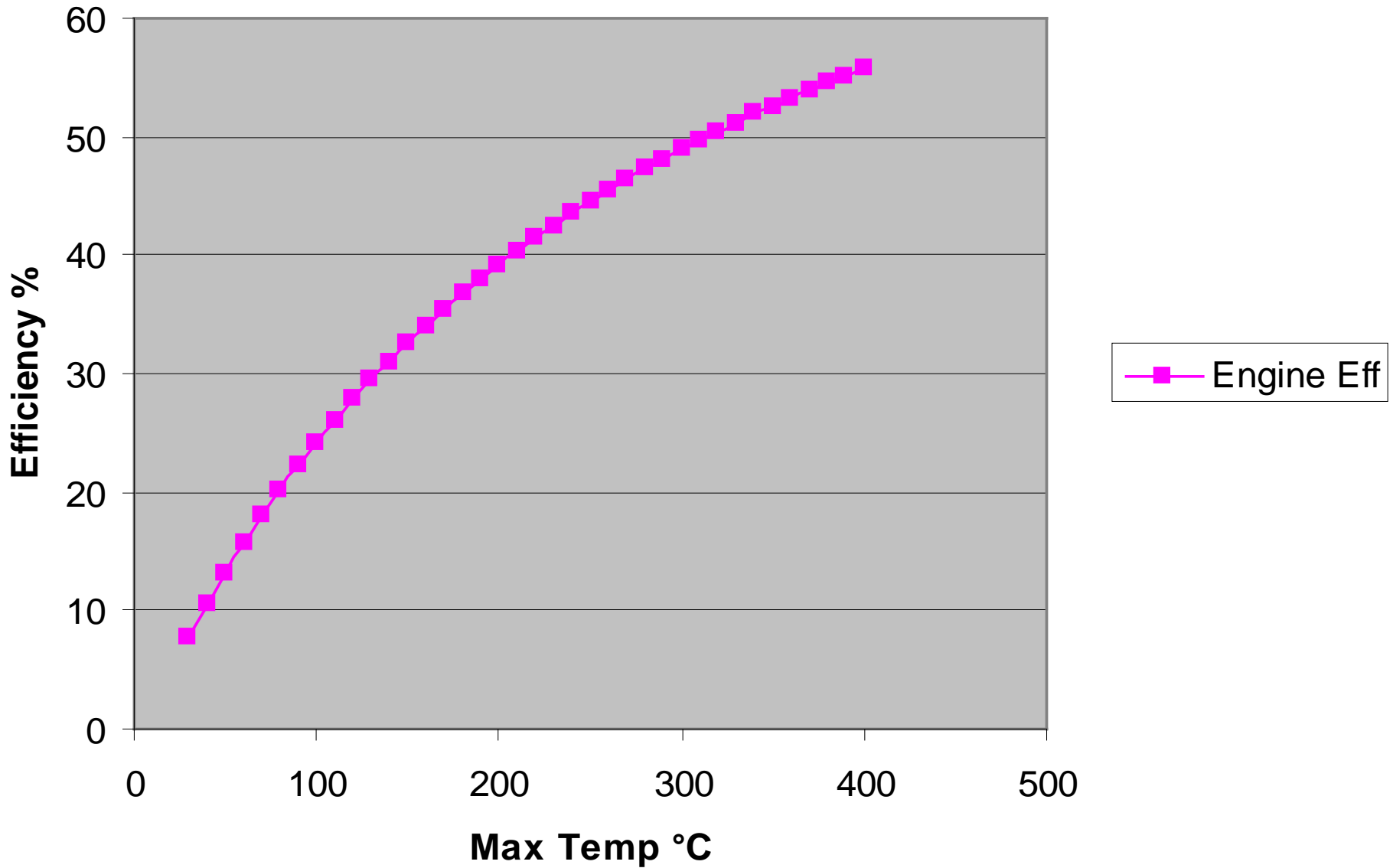
# VAKUUMISOLATION mit Fasern



# Thermal Conductivity of the VSI EIS 500 and other Insulation Materials



# Typical Efficiency of Engine @ 5°C



# Thermal Energy Storage

- The VSI Technology enables thermal energy to be stored for long periods at high temperatures.
- Typical PCM will store about 40 times more energy per litre than water would at the melting point of the PCM; eg. 245 kJ/litre @ 117°C
- PCM will usually store this energy at normal atmospheric pressures.
- PCM is available in a wide range of materials, from Salts, Hydrates, Eutectics, Waxes and Paraffins.

# Energy Needed to make Snow

- Early indications are that the total input of energy per cubic meter of DG generated snow will be between 0.25 kWh and 1.0 kWh.
- Most of the energy requirements are for the movement of air and therefore it is difficult to predict precisely at this stage.
- It can be seen that even if larger amounts of energy are needed that super efficient Solar Thermal collectors, storage systems and other devices using the VSI Technology make it possible for the DG Snow maker to be self powering.





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**EIS 500 Vacuum Super Insulation (VSI)**

## ***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.



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**EIS 500 Vacuum Super Insulation (VSI)**

## ***EIS 500 Vacuum Super Insulation – Key Benefits***

- It keeps things hot
- It keeps things cold too
- It can contain thermal energy and prevent it escaping from or intruding into a temperature controlled environment
- It saves energy
- It considerably reduces CO<sub>2</sub> production wherever it is used

