



Kingspan[®]
Environmental

Solar Thermal & Kingspan Solar

The Kingspan Group

Energy independent buildings for a sustainable future



Kingspan PLC

Where we operate

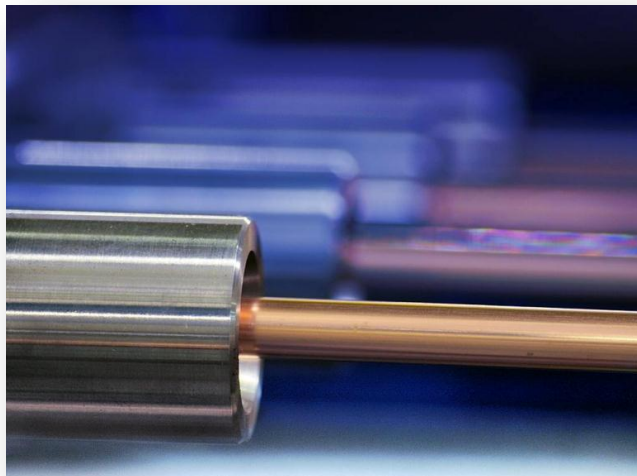




Fully Automated Production

Manufacturing

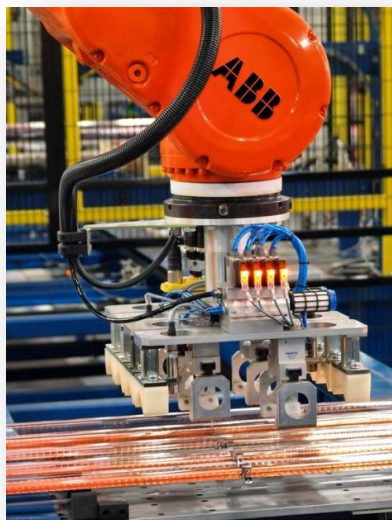
High tech leak testing equipment



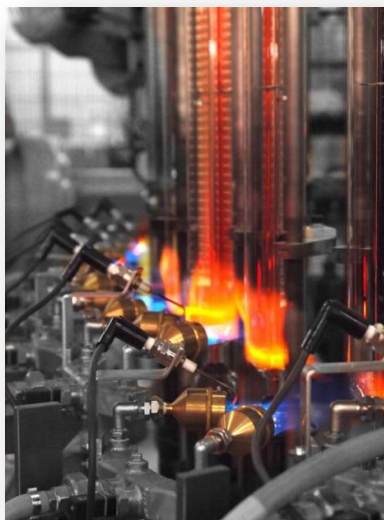
State of the art machinery



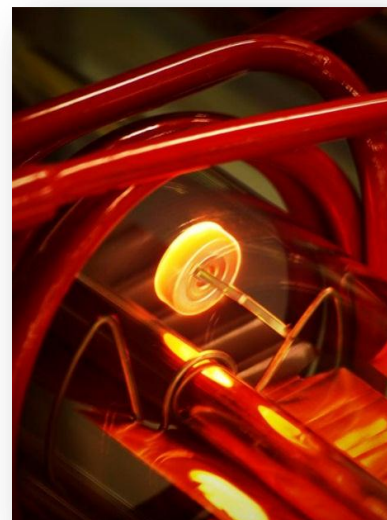
Automated Handling



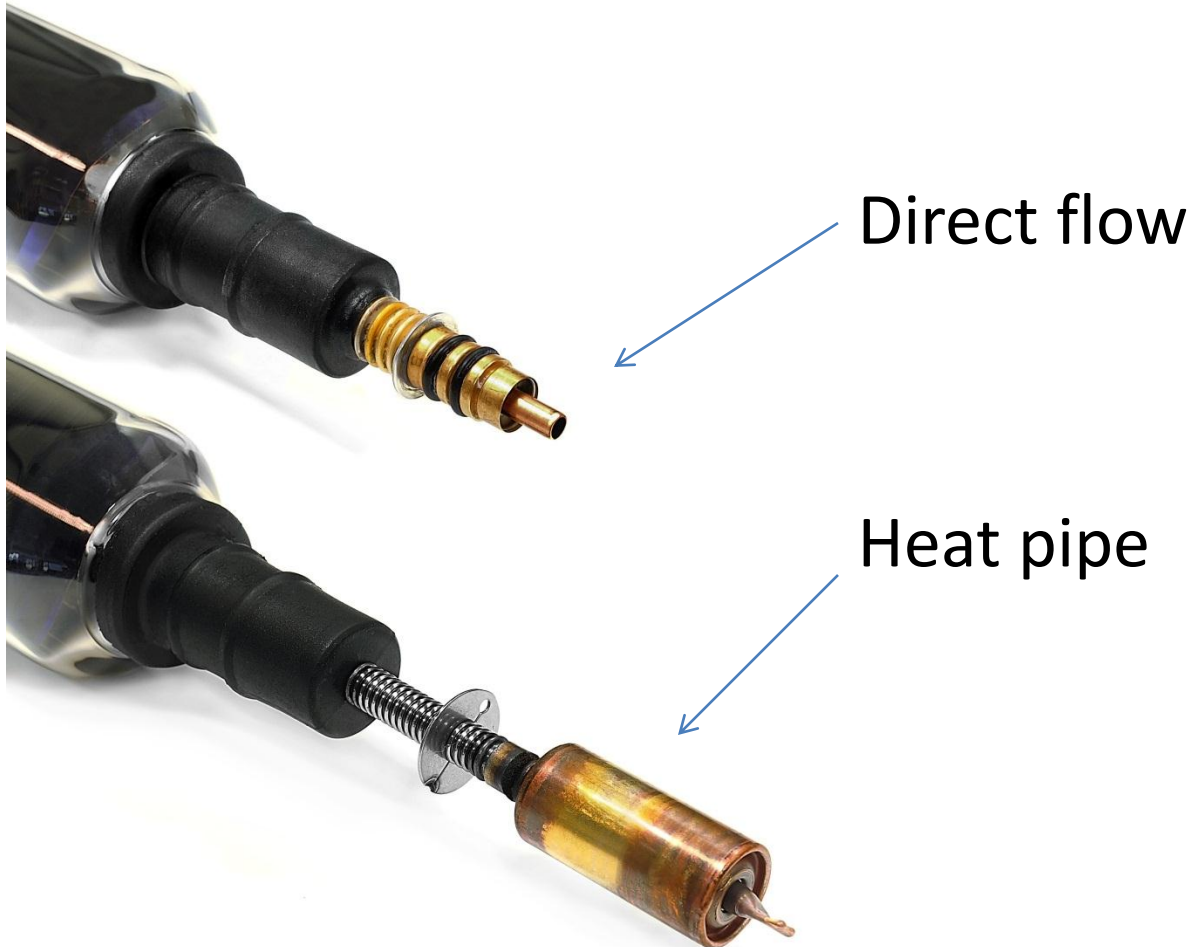
Perfected Techniques



Advanced Vacuum Technology



Tubes - two basic Principles





The Latest Innovation

VARISOL

Next Generation Thermomax Direct Flow Technology

Taking the versatility of Thermomax DF technology a step further

A world first in solar thermal technology



2 key differences to Thermomax

- It's completely **modular**
- It uses **polymer** materials

The use of High Performance Polymer materials allows the vacuum tubes to simply '**click-fit**' together to create collectors of varying sizes

A Breakthrough in Material Science

Using High Performance Polymers for the first time in solar thermal technology, brings an additional benefit of **savings in cost and the environment.**



Unique High Performance Polymers (HPP)

No copper (on DF), no aluminium, no brass and no silver solder which means no brazing or welding

Removes high cost energy intensive materials, skilled labour, high cost/high energy processes and reduces manufacturing time & costs – vastly reducing the use of fossil fuels.

Volatility in International Metal Prices

Since 2009 Aluminium has doubled and Copper has trebled in Price. The use of Polymers rather than these metals, offsets our Reliance on the volatile Metal Markets.

The worlds first completely modular vacuum tube solar collector and a completely new concept in the solar thermal market.



Kingspan Solar Innovation

Installation couldn't be easier



1 Insert Varisol tube



2 Rotate down



3 Click into position



- Rapid Installation with 'Click Fit' Technology
- Fits Into Difficult Locations
- Exactly Sized to Meet Demand (e.g. 26 tubes)
- Collector size from 1-150 tubes

The Evolution of Solar Energy



VARISOL^{HP}

Benefits for Everyone

Benefits to Distributors and Installers

Added convenience

- Improved stock control
- Not tying up capital in manifolds that may not be used
- Easy installation – the lightweight tubes click together, easily and quickly, with no special lifting equipment required

Benefits To End User

A more accessible product

- Variable size of Collector : Flexibility to fit most locations where solar was not an option before
- Sized exactly to the customers needs : Only pay for what you need
- Improved aesthetics on larger collectors

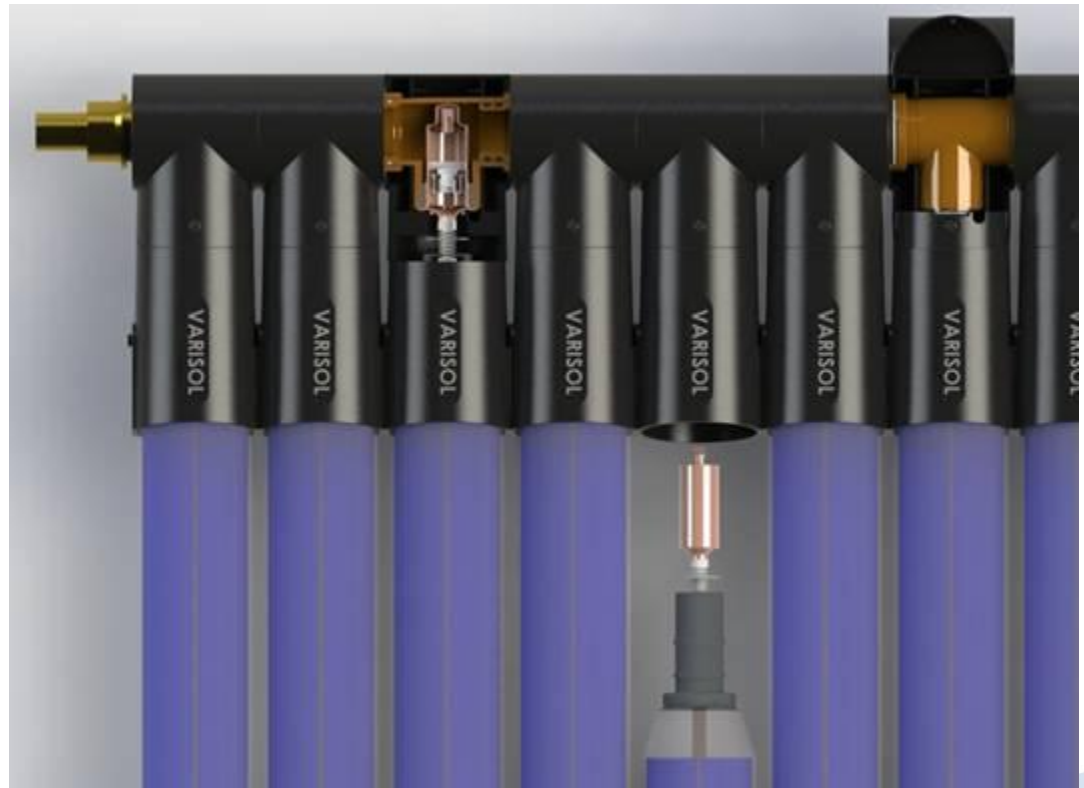


Building on the success of the Varisol DF Kingspan Renewables introduces the Varisol HP

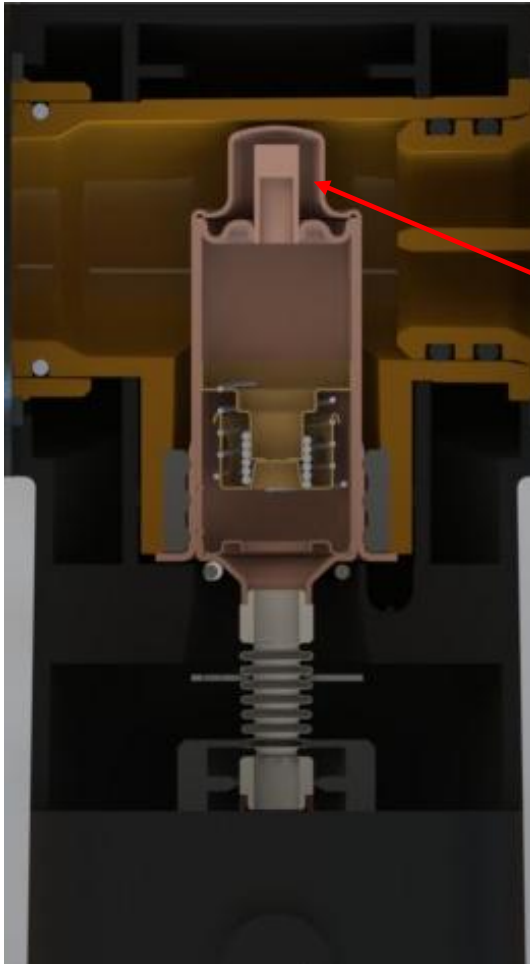
Incorporating all the features previously mentioned for Varisol DF plus the benefits of **Heat Pipe** technology

Dry connection for easy of installation and maintenance

Fast thermal reaction times to changeable weather conditions



Further Breakthroughs in Material Science



A copper pocket is over-moulded into the polymer header to house the condenser and ensure a **dry connection** of the tubes.

Varisol HP collectors contain a **unique temperature limitation device** for system protection

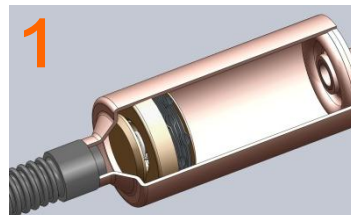
Note: – this limits the collector temperature during stagnation but is not an anti-stagnation device

The limitation mechanism is found inside the condenser – there are 2 types available:

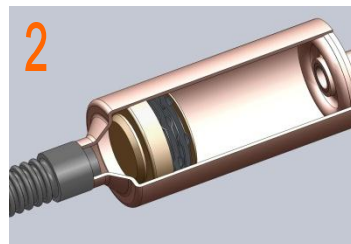
1. Snap disk to limit temperature to 135°C
Used occasionally on process heat installations.

2. New snap disk for limiting the temperature to 95°C
Used on most domestic and commercial installations.

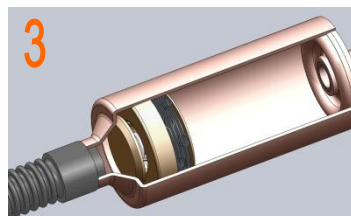
Snap Disk Operation



The device is open and heat transfer occurs until the condenser reaches 95°C



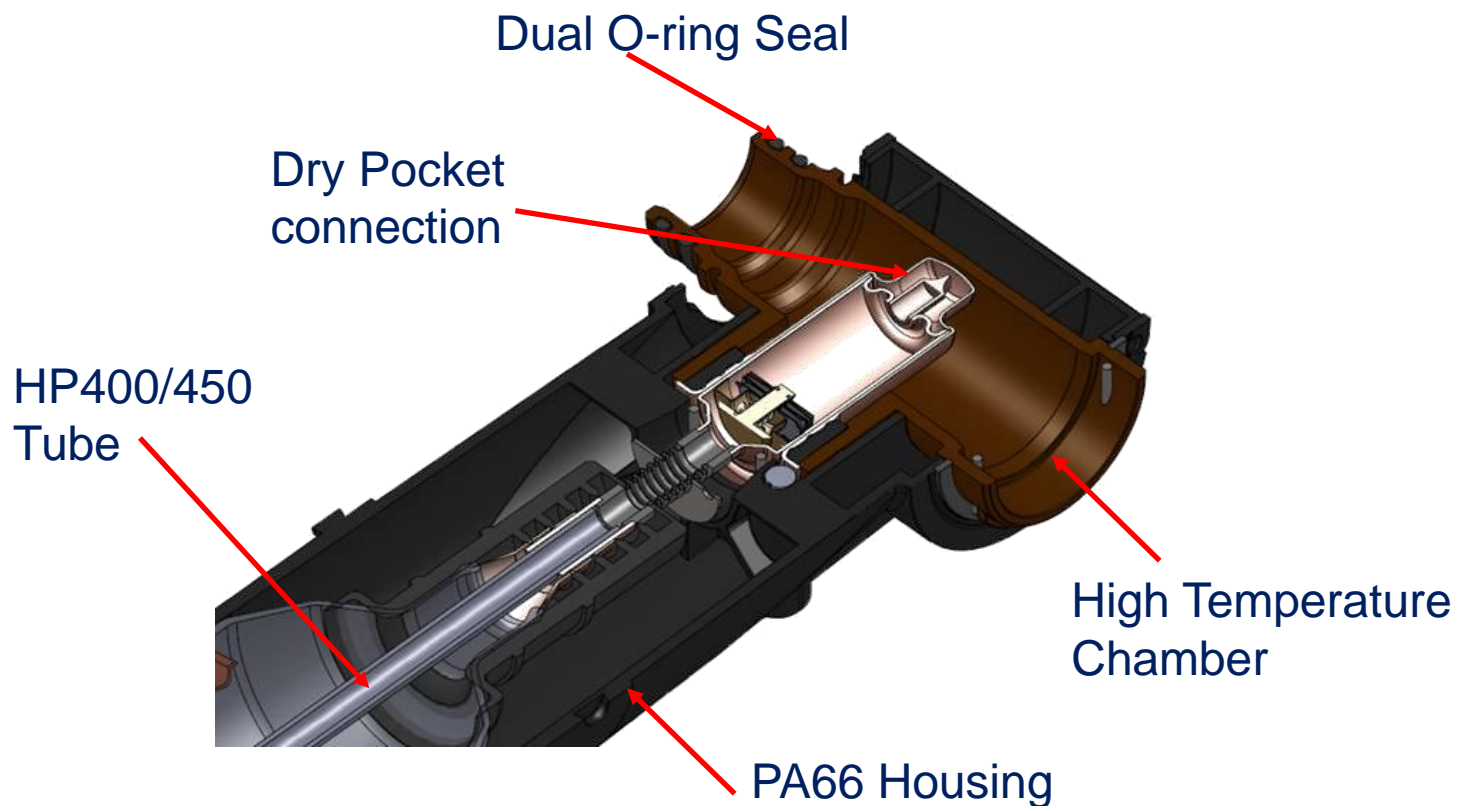
Snap disks operate and close the device, stopping heat transfer into condenser



Device re-opens as temperature falls below 95°C, reactivating heat transfer

Materials

New HP400/HP450 tubes are used for the Varisol HP

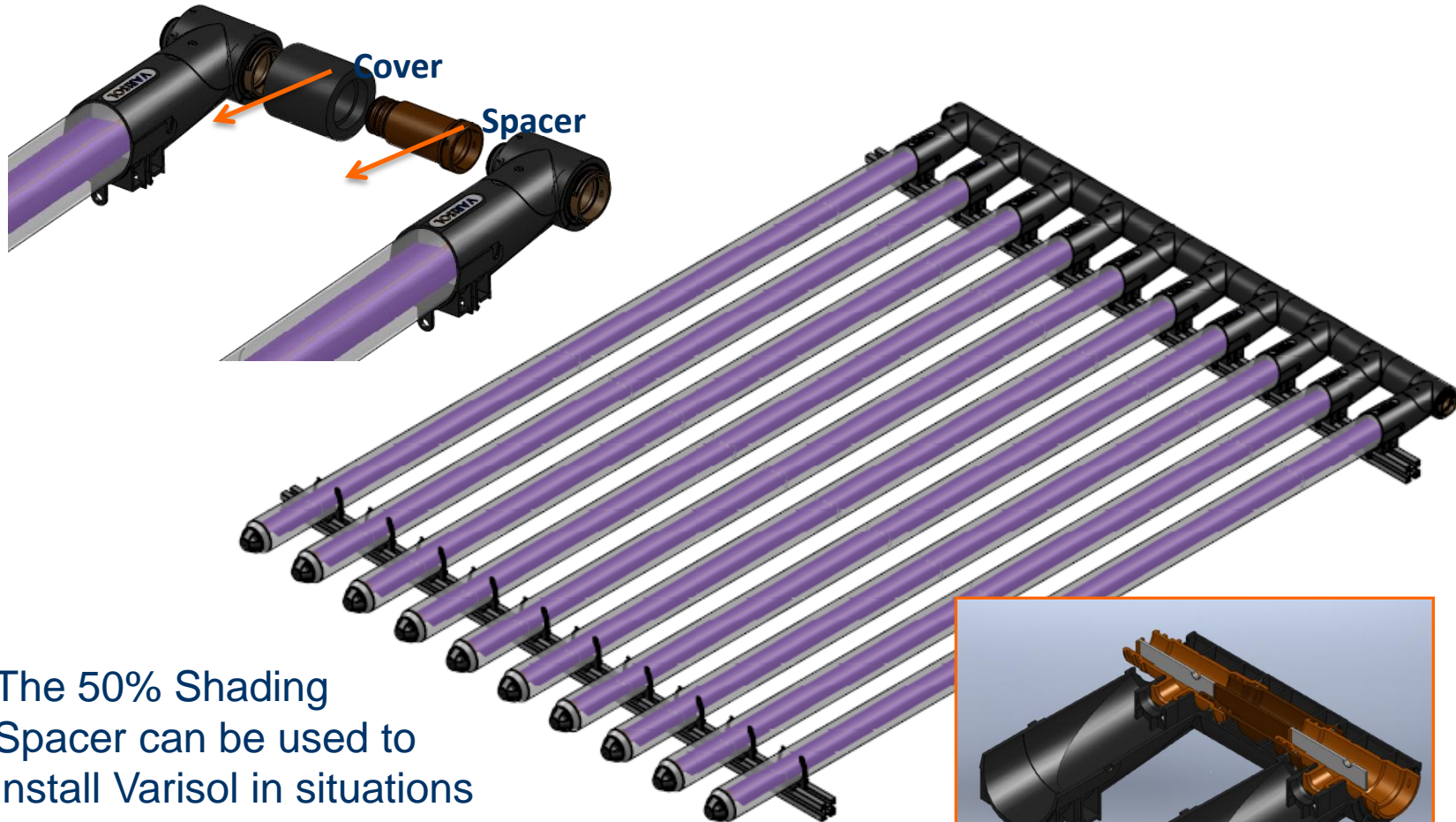




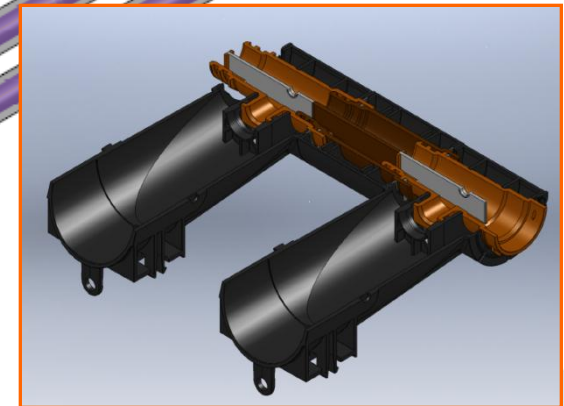
VARISOL

Accessories

50% Shading Spacer



The 50% Shading Spacer can be used to install Varisol in situations where light can be allowed to travel through the collector - in conservatories for example.



Installation Tool



The installation tool has 2 purposes -

1



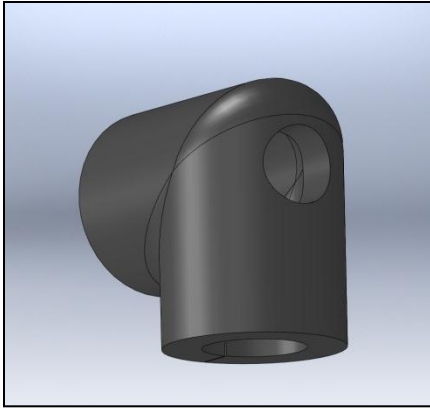
To help find the correct angle for the tube to be inserted

2

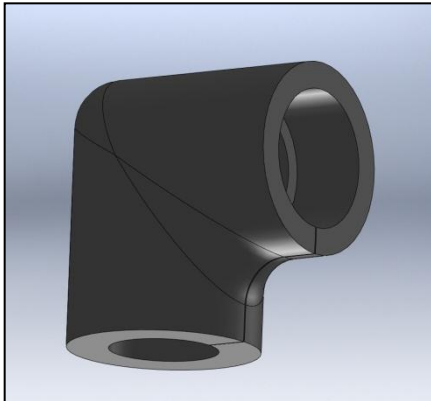


To remove tubes that have been inserted into the rail

End Caps



Foam end caps are available to cover pipe connections, giving a much neater finish to the installation



Kingspan SOLAR

Thank you for your time