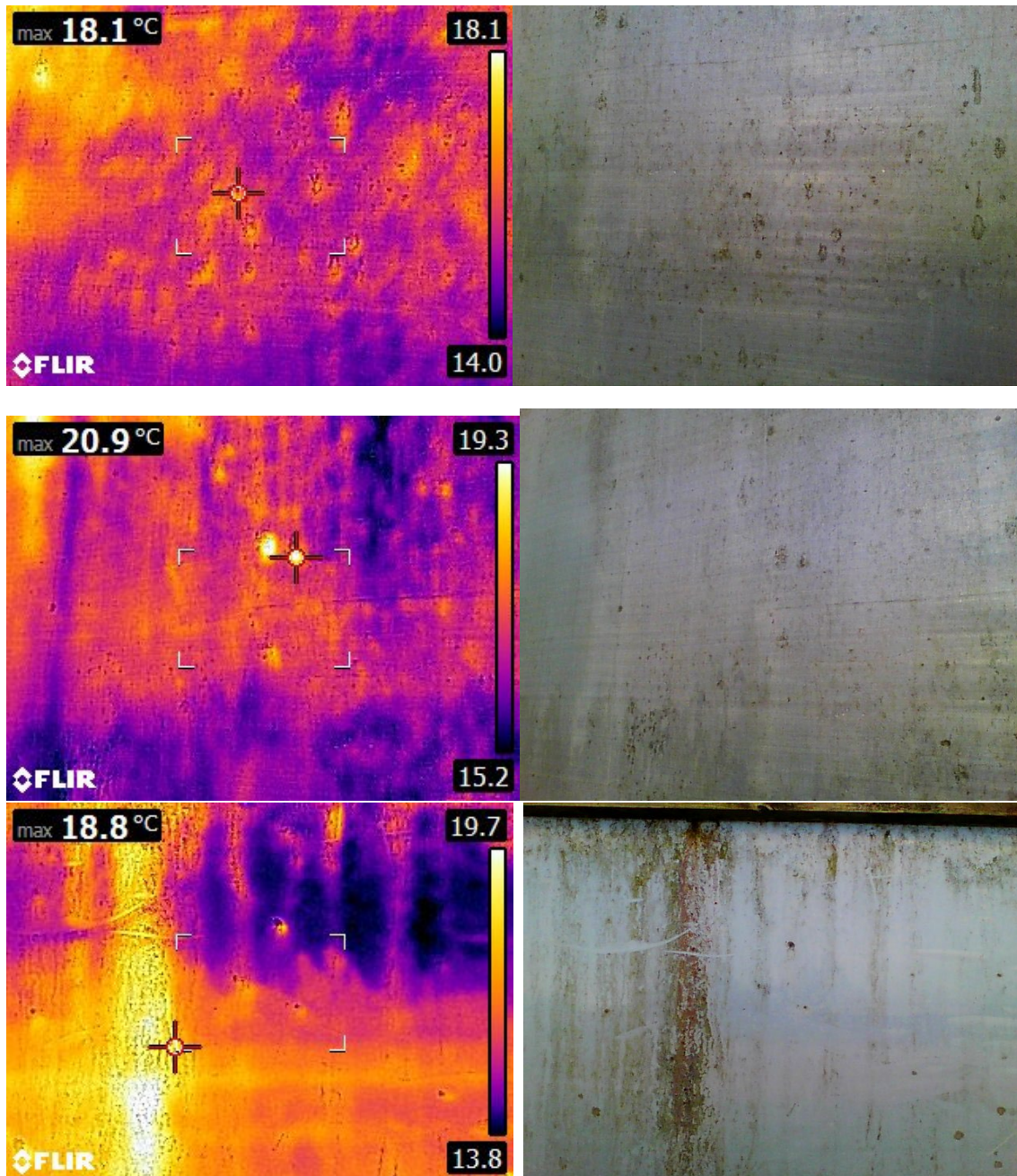
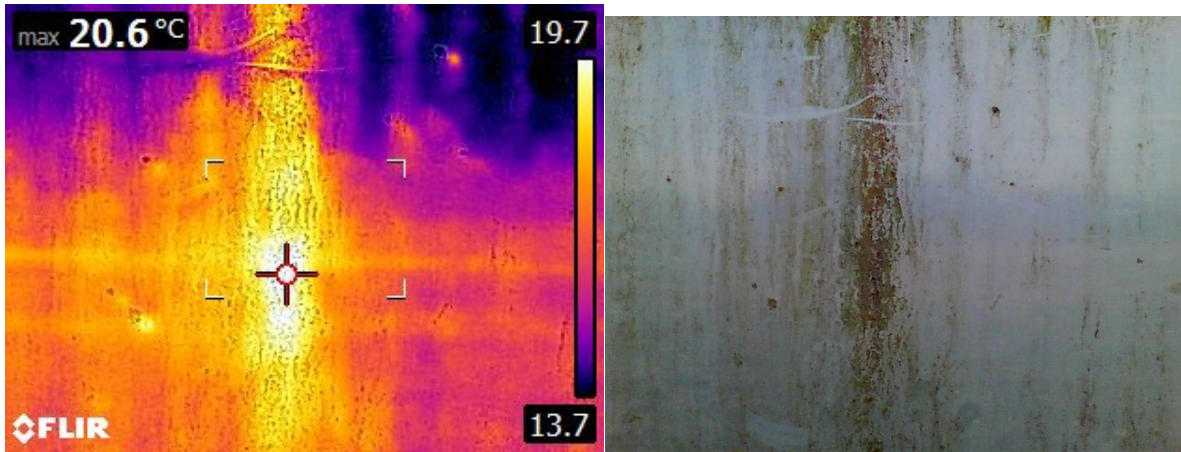


## Article 5: Dirty greenhouse walls and the effect on heat loss

One of the issues noticed while conducting this thermal imaging study was how hot spots were observed where dirt and grime had been allowed to build up on plastic sheets. This indicates that the build up of dirt and grime holds higher temperatures than the rest of the plastic sheets, which causes more heat to be transferred through the plastic.

Figure 15 below shows four different examples of dirty plastic sheets and the hot spots that are created as a result.





*Figure 1: Examples of the higher surface temperatures held because of the build-up of grime on the plastic skin*

From the examples above, it is clear that the dirty areas are significantly brighter and are being held at a higher temperature than the rest of the plastic. For twin skin plastic, this is not as much of an issue due to the air gap between the plastic sheets creating the most heat retention.

However with single skin plastic, this can cause a reasonable impact. If the dirty hot spots are being held at a temperature 2°C higher than the remainder of the greenhouse, then if a 10,000m<sup>2</sup> greenhouse is 10% covered in grime, this site will need to burn around 10 additional tonnes of coal per year, or 250GJ of natural gas, with an associated cost of \$4,500.00 and \$6,000.00 respectively.

Ends