



LIGHTFOOT DEFENCE

MILITARY REFRIGERATION SOLUTIONS SINCE 1885

DOCUMENT REFERENCE NUMBER LDL 09

Technical Standards of Application Operation.

Lightfoot Defence Limited have built a machine using BS EN 378 parts 1-4 2016 that will reclaim waste R245fa refrigerant back to virgin quality so it can be re-used instead of being disposed of by incineration. It is capable of reclaiming 30kg of waste R245fa in an 8 hour working day period.

The machine is situated in D3 workshop at the Lightfoot Defence site and is operated by 1 person. The machines envelope of operation is within a 2m³ area and it weighs 500kg.

Waste R245fa is received from a company from a dedicate batch of receiver cylinders and inputted to the machine. The waste gets cleaned by passing through a coarse refrigerant filter/drier system. The R245fa then flows into a tank inside the machine where it is heated so it will boil off. The pressure in this vessel is always under 1 barg and the temperature is approximately 23⁰C.

The vapour is then collected by a compressor and passed on to be condensed back to a liquid and then stored in a second tank, the temperature in this tank is 25⁰C and the pressure 1 barg.

When there is enough liquid in the second tank the liquid is then drawn through a fine filter and outputted into a stainless-steel cylinder that is part of a dedicated batch.

The stainless-steel cylinder contents are tested at a third-party laboratory premises for quality and purity. Once it has passed the quality and purity test it is sent back to the company that provided the waste R245fa in the first place for them to re-use. The cycle of sending waste back continues with pure quality refrigerant being sent back.

The machine is CE marked and has been built to the appropriate standards required in BS EN 1-4 2016 and other regulations such as Low voltage regulations, the machinery directive and the pressure vessel regulations. There is a regular maintenance and monitoring program to keep the machine operating at peak condition.

At no point in the machine processes is there any R245fa emissions to atmosphere as either a vapour or a liquid. Frequent leak testing is carried out to ensure this. If any leak is found, the Fluorinated Gases (F-Gas) regulations state it must be fixed as soon as possible. The machine will be stopped, the source of the leak found, rectified, tested and the machine will be recommissioned in accordance with the procedures stated in BS EN378 parts 1-4 2016.

Where any R245fa is rendered or deemed too dirty to reclaim, it is sent to a licenced waste disposal facility in a waste recovery cylinder for correct disposal. (Disposal is not carried out at or by Lightfoot Defence Ltd).

Lightfoot Defence Ltd employs suitably qualified and experienced refrigeration engineers who work to industry best practises and regulations. The company is certified by REFCOM to handle refrigerant to the F-Gas regulations. The company is an accredited ISO9000:2015 company for Quality Management Systems and audited by LRQA.