THE CSIRO REPORT

During November 2020 Engas Pty Ltd commissioned the CSIRO (Commonwealth Science and Industrial Research Organisation) to independently verify (in their laboratory in Newcastle, N. S. W.) the reduction in electrical input power and the increase in energy efficiency of its Engas M60 Hydrocarbon Refrigerant when used to replace R410a in airconditioning equipment.

The CSIRO reported the following:

1) Within the introduction there are three main areas where changes have occurred.

Electrical input power

The report states ***"used less electrical input power (- 36.5% cooling and – 33.0% heating)*** *than with R410a.*

This is a massive reduction in electricity consumption – basically trimming over a 3rd off of the running costs.

2) Efficiency

The report states ***"had higher efficiency (+32.5% EER and + 28.4% COP)*** *than with R410a.*

This means that you get more kilowatts (Kw) of cooling out for each kw of electricity in. So before (with R410a) if you were consuming 1 kw/hr of electricity – the output (as per the test results) you were getting 2.56 kw of cooling out. Whereas after you were getting 3.4 kw of cooling out – meaning your cooling costs (and heating) were reduced by about 30% average for both cooling and heating.

Engas also has another independent report (Engas Independent Trial Report Indonesia) – carried out under "normal" conditions. (Field test conditions)

Conclusion

Both the CSIRO Test and the Independent Indonesia Test were conducted on wall mounted reverse cycle split system air conditioners with a rated capacity of 5.0 kilowatts of cooling. Both tests were for a refrigerant conversion from R410a to Engas M60.

The CSIRO report found the following:

1) When operating on Engas M60 the unit used less electrical input power (-36.5% cooling and – 33.0% heating) than with R410a.
2) When operating on Engas M60 the unit had higher efficiency (+32.5% EER and + 28.4% COP) than with R410a.
3) There was a small loss of capacity

The Engas Independent Trial Report Indonesia found the following;

1) Engas M60 hydrocarbon retrofitting shows a potential of electricity savings of 33.3%.
2) The saving of 33.3% was while maintaining the same AC performance with the previous refrigerant. (No loss of capacity)
3) The Indonesia Tests were carried out on two Daikin A C Units.

The CSIRO Report was a **Commercial in Confidence Report** for Engas Pty Ltd.

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Australia's National
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COOLING/HEATING CAPACITY OF ENGAS M60 REFRIGERANT IN MITSUBISHI DXK18ZMA AIRCONDITIONER

Author: *Mark Peristy*

Report Date: *January 2021*

Date of Tests: *08/12/2020 to 11/01/2021*

Client: Engas Pty Ltd

Commercial in Confidence

NATA Accredited Laboratory
Number: 165
Corporate Site No 24767
Accredited for compliance with
ISO/IEC 17025 - Testing