

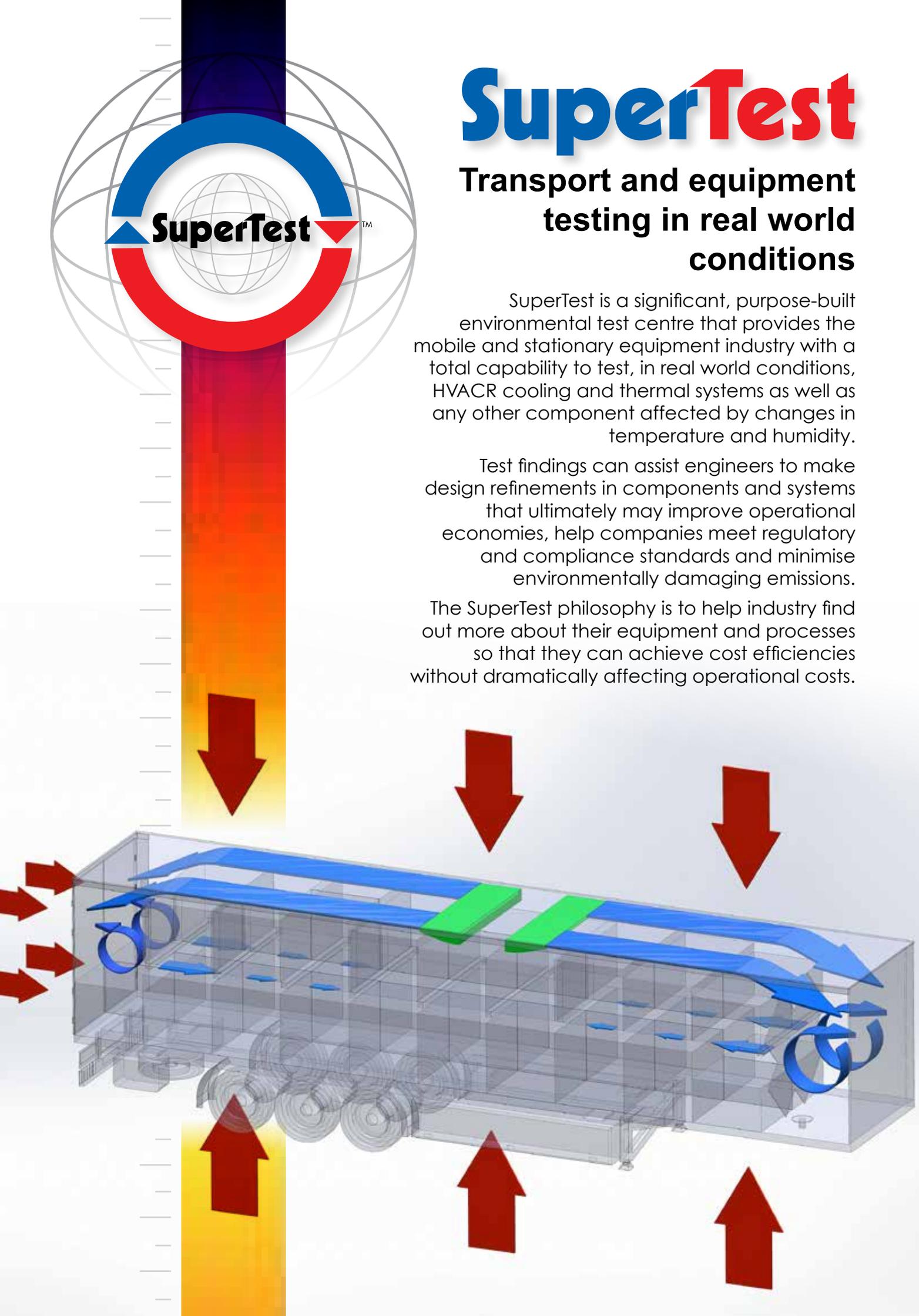
SuperTest

Transport and equipment testing in real world conditions

SuperTest is a significant, purpose-built environmental test centre that provides the mobile and stationary equipment industry with a total capability to test, in real world conditions, HVACR cooling and thermal systems as well as any other component affected by changes in temperature and humidity.

Test findings can assist engineers to make design refinements in components and systems that ultimately may improve operational economies, help companies meet regulatory and compliance standards and minimise environmentally damaging emissions.

The SuperTest philosophy is to help industry find out more about their equipment and processes so that they can achieve cost efficiencies without dramatically affecting operational costs.



SuperTest

SuperTest is a series of rooms with 'steady state condition', meaning there can be little interference from outside heat.

Temperatures in all rooms can be controlled from + 55°C to -10°C suitable for K value analysis and testing.

The main environmental chamber can take a full size trailer, an A or B size, up to 20 metres long, or a full size bus.

Technically, the largest known registered vehicle in Australia will fit through its unique, trafficable, insulated split barn doors.

Test results are collected, analysed and distributed using the most advanced Alhborn data acquisition hardware and software, as used by most German vehicle manufacturers.

This is supported by Flir thermal imagery cameras and software, Eltek data loggers and a WinControl operating system.

Capacity – Australia's biggest registered trailer



The only facility of its kind in Australasia – accessible and affordable

Growing world concerns about wastage of food and other perishables through inadequate technologies or poor processes stimulated the long established, Queensland based, SuperCool Group to design and develop SuperTest. This facility has positioned the Group at the forefront of sustainable technologies that can help the transport and refrigeration industries – mobile, stationary and commercial – to operate more efficiently and effectively.

SuperTest brings into practical service the 35-year background of key SuperCool leaders and staff in retail and wholesale mobile refrigeration, air conditioning and solution design.

The team is considered one of Australasia's most knowledgeable and passionate in the understanding and study of the physical properties of heat, energy and thermal efficiencies.

There is no other matching testing facility currently available in Australia, particularly one which is accessible and affordable to industry.



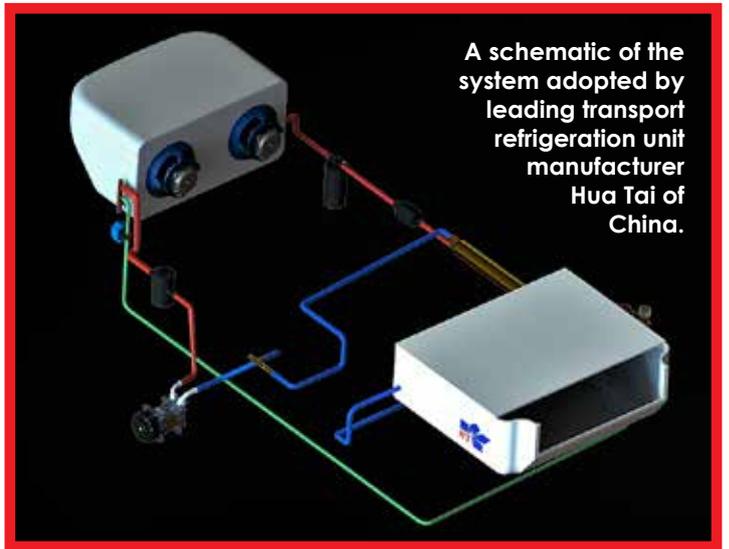
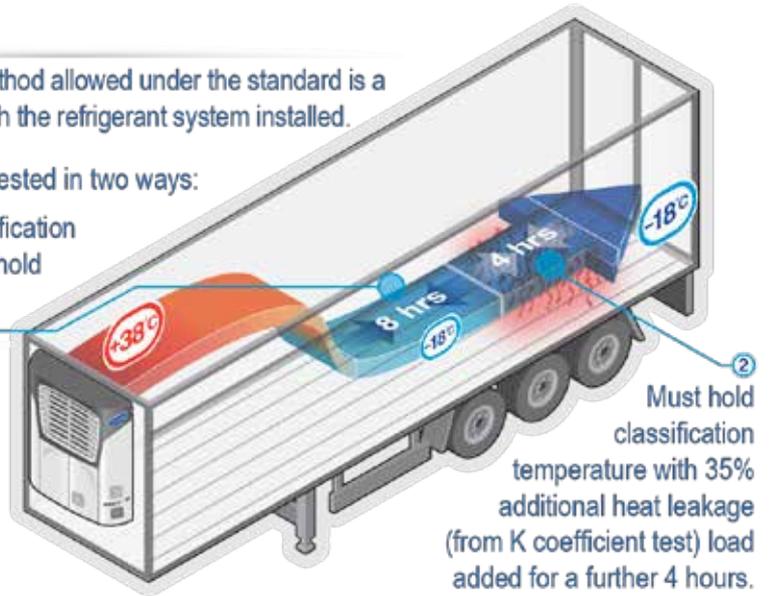
Industry sectors that can benefit

SuperTest has had a huge impact on industry sectors that, until now, have lacked the ability to accurately measure the performance, capacity, durability and efficiency of cooling and heating systems in controlled environments capable of generating variable environmental conditions.

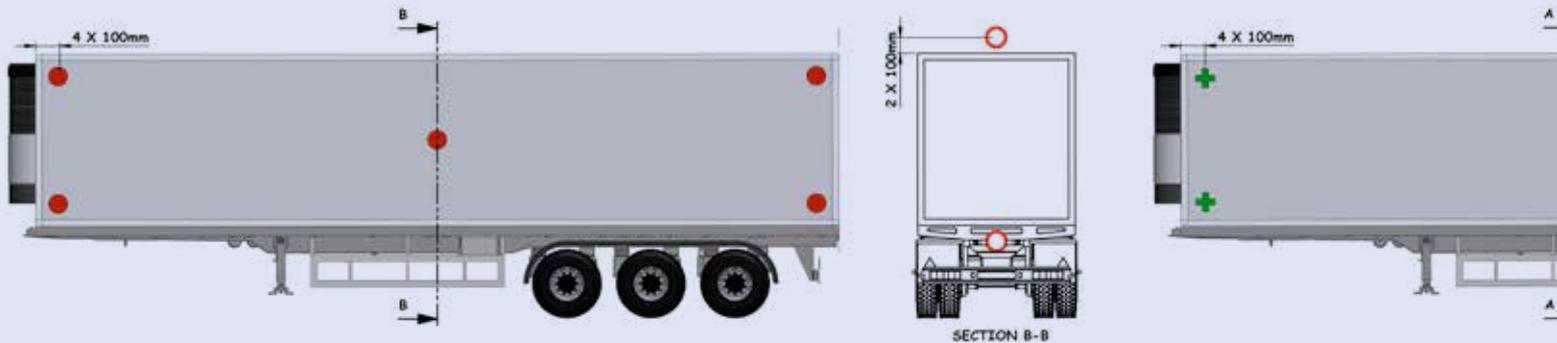
SuperTest has supplanted the now closed Food Science Division of the CSIRO in North Ryde NSW, which recognised SuperTest as the only possible facility in Australia capable of detailed food and vehicle testing.

- Automotive
- Transport
- Refrigeration
- Trailer/truck manufacturing
- Heavy machinery
- Food manufacturing
- Military
- Marine

- Most practical test method allowed under the standard is a new body or trailer with the refrigerant system installed.
- Body and system is tested in two ways:
 - ① Must reach classification temperature and hold for 8 hours.



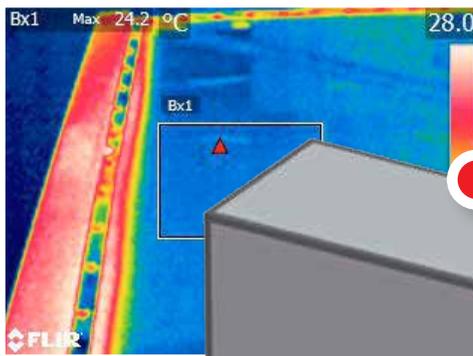
A rooftop unit for a large bus undergoes performance and capacity tests to determine the most efficient compressor capacity



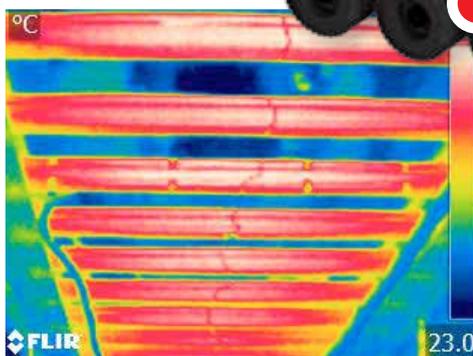
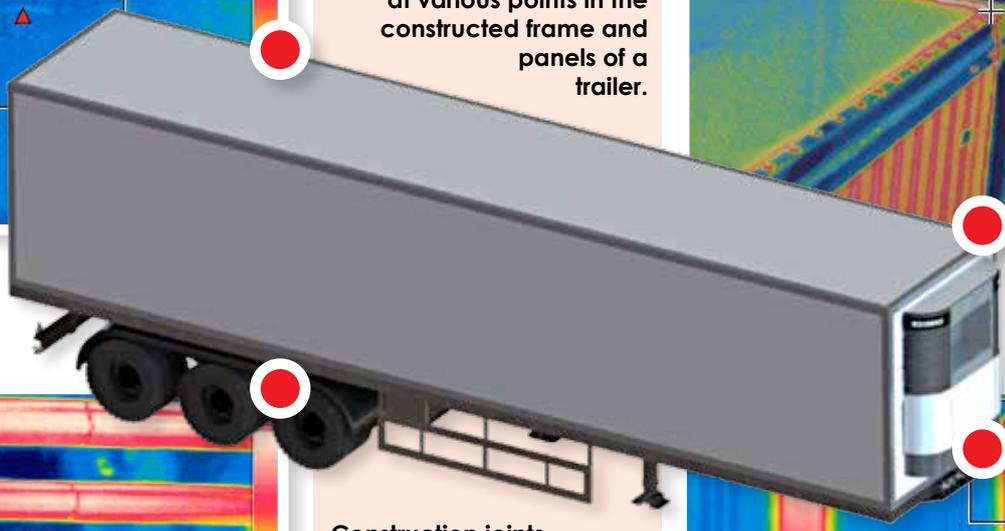
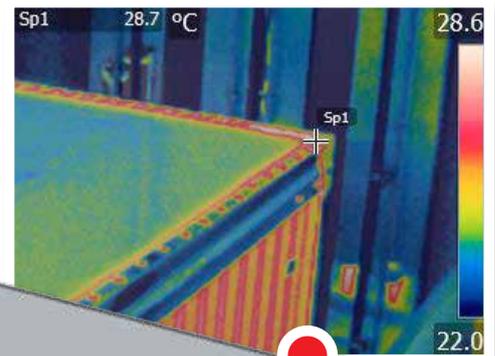
Scientific evidence in data and test reports

SuperTest delivers accurate data and test reports to provide scientific evidence related to the performance of cooling and heating systems in various real-life environmental conditions.

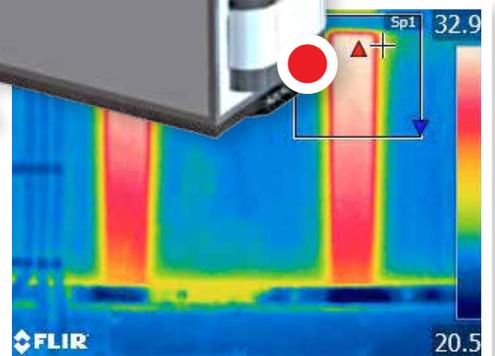
This level of testing is critical to those sectors that manage the carriage and cold storage of food and perishables, pharmaceuticals, medical supplies, information technologies and passengers where accurate and consistent temperature control is required to comply with accepted safety standards.



Advanced thermal imaging pinpoints heat leakages at various points in the constructed frame and panels of a trailer.

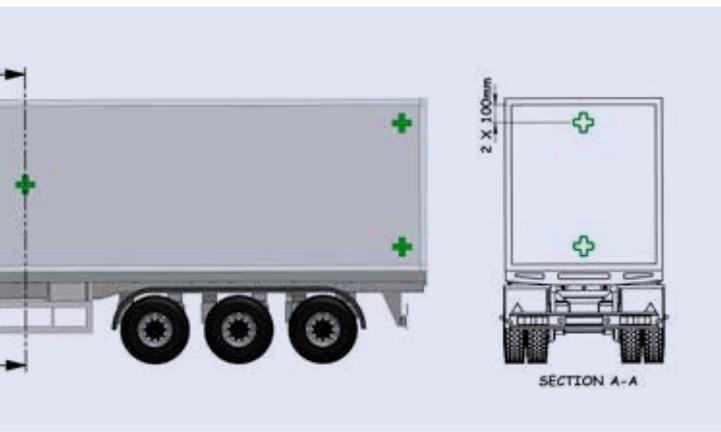


Construction joints of the highest standard will leak a certain amount of heat so thermal imagery data is helpful for trailer designers to minimise this.



By commissioning performance testing of refrigeration and air conditioning components when assembled as a unit in replicated environmental conditions, engineers and system designers are able

to make modifications and improvements before committing to heavy manufacturing investment and which might ultimately result in huge savings for the company.

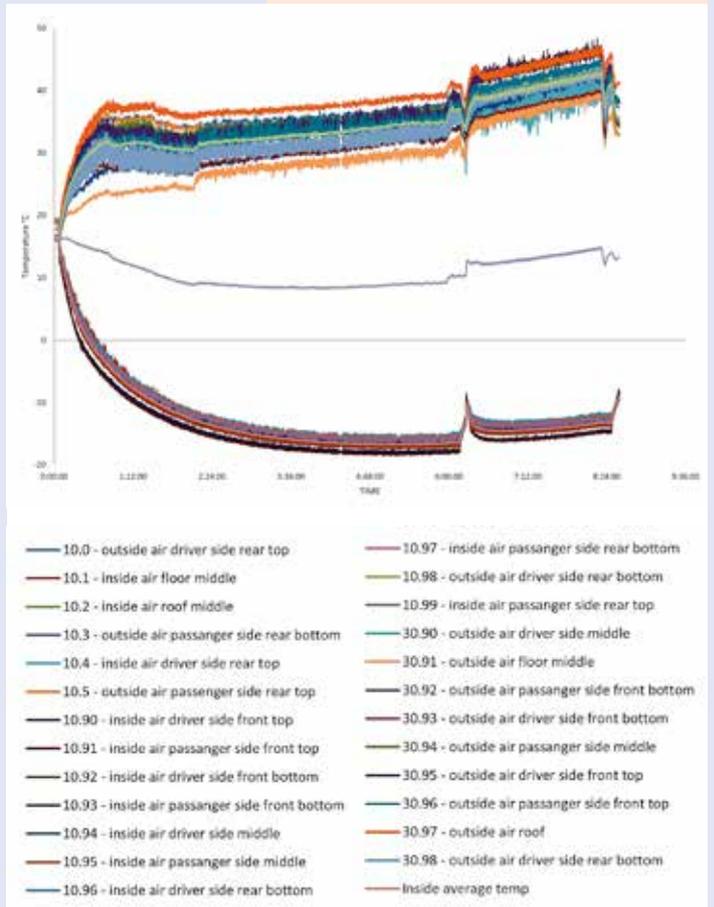
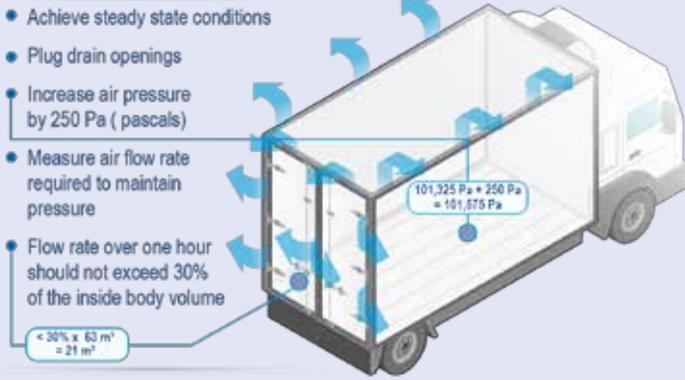


Range of test services

Air conditioning and refrigeration equipment

- Performance and capacity testing of compressors used in transport air conditioning and refrigeration
- Pre-production testing that measures the effects on compressors and other components by a wide range of simulated real world conditions over long periods of time in order to validate the acute degree of durability demanded by customers
- Performance and capacity testing of refrigerants (including R134a, R404a, R407 and R1234yf) relative to their applications in recommended systems as specified by manufacturers
- Efficiency testing of compressors connected to different makes of air conditioning and refrigeration systems
- Access to Australia's only test environments that can simulate a wide variety of ambient conditions in individual test rooms in which humidity and temperature can be manipulated.

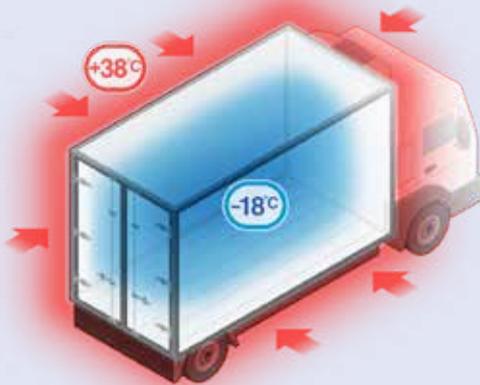




HEAT LEAKAGE

① K coefficient of 1.5
 = 1.5 X 56 x 122.58
 = 10,296.72 watts
 = 10.30 kW

② K coefficient of 0.8
 = 0.8 X 56 x 122.58
 = 5,491.58 watts
 = 5.49 kW



K Value

Vehicle bodies and trailers

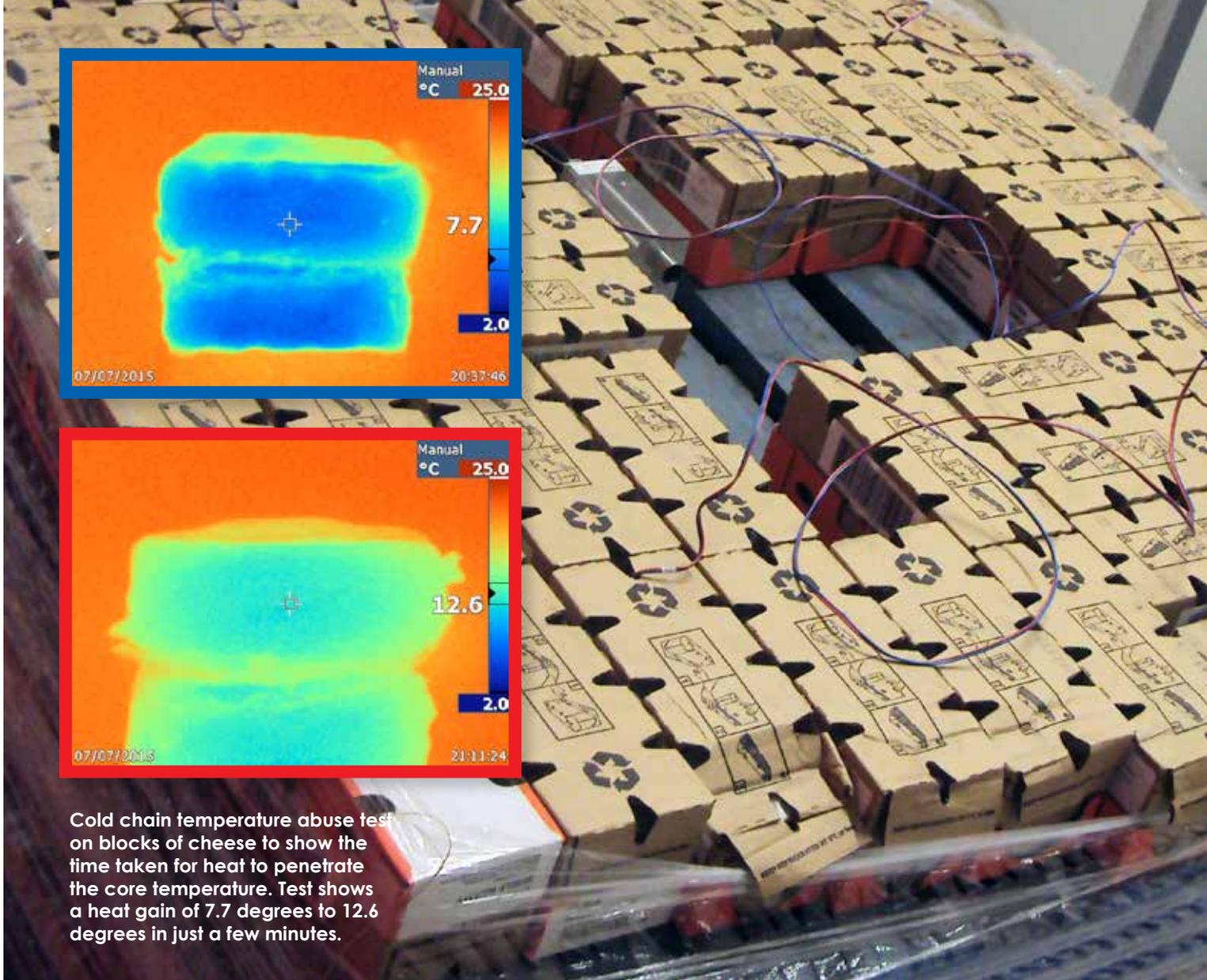
- K value* testing and analysis for vehicle bodies and trailers up to 26 metres long, conforming to Australian Standards such as AS4982
- Refrigerating power and performance testing of systems fitted to any vehicle body up to 26 metres long, conforming to Australian Standards such as AS4982.

- Testing the thermal efficiency of vehicle cabins in a range of ambient conditions combined with the ability to measure heat flux through specific materials used in the construction of vehicle cabins and bodies
- Testing the thermal efficiency of heat flux in materials measured in R value*

Category	Outside air temperature	Mean inside air temperature
A	+38°C	+12°C
B	+38°C	0°C
C	+38°C	-18°C
D	+38°C	-28°C

***K value** is thermal conductivity or a value of the amount of heat, in watts, that is transferred into a truck or trailer body through leakage or failure of construction materials

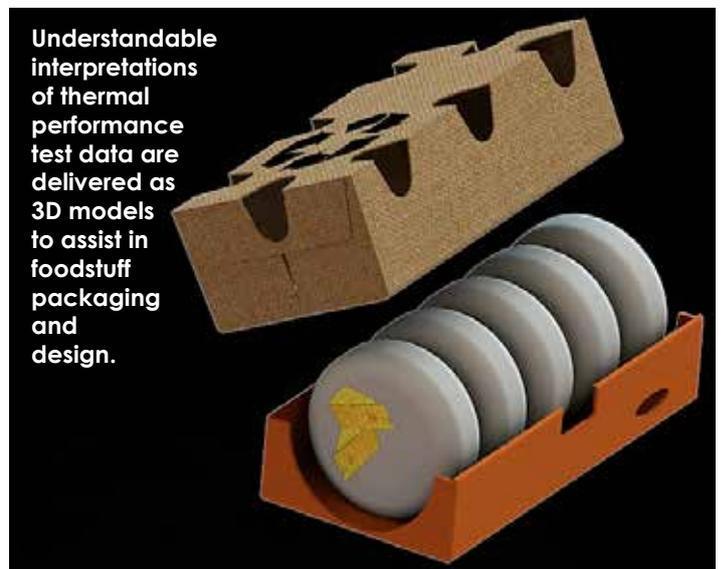
***R value** is a unit of thermal resistance for a particular material or insulated panel. R values are given typically as square metre kelvin per watt or m²·K/W



Cold chain temperature abuse test on blocks of cheese to show the time taken for heat to penetrate the core temperature. Test shows a heat gain of 7.7 degrees to 12.6 degrees in just a few minutes.

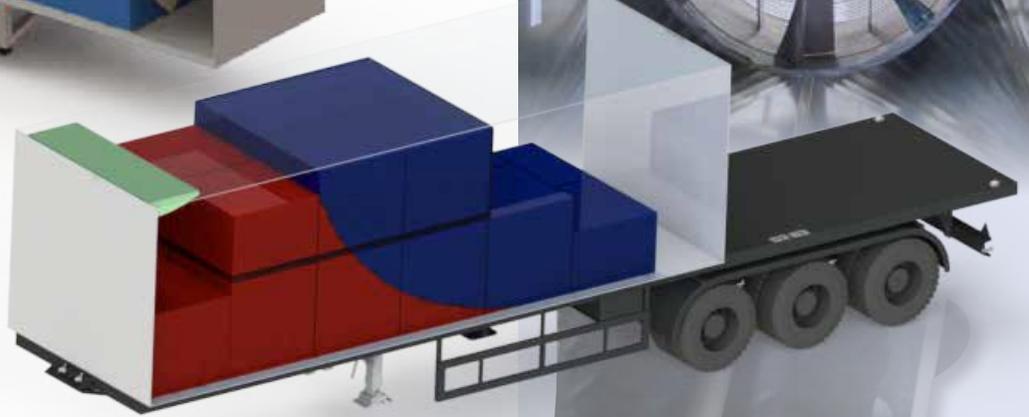
Cold chain processes

- Simulation of cold chain processes in transport to include multiple door opening and delivery intervals and their effects on good and poor practices in the delivery process
- Mapping of real world journeys to include identifying temperature rise and fall during various stages of the cold chain. Tests reveal specific areas of temperature abuse and when refrigerated products are affected adversely according to the location, ambient temperature and delivery point in which the vehicle is operating
- Measuring of airflow in fully loaded bodies and trailers to determine the effectiveness of the refrigeration unit, and the impact of body construction and load configuration on the ability of products to maintain correct temperature
- Determining the optimum refrigeration unit settings to meet specific cold chain process requirements as an aid to customers as well as refrigeration unit manufacturers.





SuperTest reports cover detailed food and trailer packing in the cold chain for maximum cold airflow efficiency.



Calibration and products

Component calibration

- Annual Certificate of Calibration for verification of temperature of food, pharmaceuticals or any product in cold chain transport, covering Ebro and most popular makes of thermometers
- Calibration testing for any type of temperature probe

Product testing

- Measuring the thermal conductivity of food products to determine their ability to maintain temperature in the cold chain in a variety of conditions
- Measuring the effects of packaging, wrapping and stacking in the refrigerated trailer or body on the ability of a specific product to maintain its correct temperature in the cold chain.



SuperTest

A division of the



HEAD OFFICE - AUSTRALIA

14 Motorway Circuit Ormeau, Queensland 4208
Phone: +61 7 5549 4000 Fax: +61 7 5549 4044
Email: sales@supercool.com.au
Website: www.supercool.com.au

HONG KONG

Unit 1109, 11F, Manhattan Centre, 8 Kwai Cheong Rd, Kwai Chung, N.T., Hong Kong
Phone: (852) 2422 0180 Fax: (852) 2422 0680
Email: sales@supercool.com.au
Website: www.supercool.com.au