

COOLER CABS

Any British truck driver that found themselves in southern Europe this summer will have experienced some pretty uncomfortable nights, due to the high temperatures the region has experienced. Peter Shakespeare finds out how to stay cool in the cab



Keeping cool in the cab while parked up can be achieved if the vehicle's in-dash air conditioning system is on, but this requires the engine to be idling, which is not an option for nine-plus hours every day. So what is the solution for breaks and overnight?

Standalone cab parking coolers are designed for this exact purpose, to keep a cab cool while the driver is resting or asleep in their bunk. There are two types. The evaporative parking cooler draws in hot air from outside the cab through a wet filter. This causes the water to evaporate, which cools the air, and this is blown into the cab. The other option is a small standalone sealed compressor-driven air conditioning unit. These work on the same principle as any air conditioner and use a refrigerant gas to cool the air drawn through them.

In terms of cost, gas refrigerant-based parking coolers range in price from around £1,100 to £2,400+ depending on specification. Evaporative coolers, with water tank, retail for around £700 plus VAT.

Both the evaporative cooler and most compressor-driven parking coolers are designed to run with the vehicle engine off. But their power requirements vary considerably. Roof- or cab-back-mounted evaporative coolers consume between 0.4 to 4 Amp-hours of electricity, while air conditioners can use more than double that: anything between 10.5 to 25 Amp-hours, depending on the specification of the unit. Some higher-powered units (2kW-plus) will use up to 64 Amp-hours of electricity to operate at full capacity, which requires uprated batteries and the vehicle engine to provide power from a higher-capacity alternator to charge them.

COOL WATER

Compared to air conditioners' Carnot engine cycle, evaporative coolers - swamp coolers, as they are known in the USA - take advantage of the moisture-carrying ability of hot air. When air is dry - low humidity - the air has the capacity to readily absorb water vapour. As the warm air passes over saturated pads in the cooling unit,

it evaporates the water in the pads. In doing so, its temperature is quickly reduced and its humidity increases. In hot dry climates, this can work effectively, but if humidity is over 50%, the air doesn't absorb water as readily and the cooling effect is reduced.

This means with an evaporative cooler the cab windows ideally need to be partially open to enable the cooler air to displace the warmer air in the cab, allowing it to flow out. If parked in locations where there is a potential security threat, having the cab windows open overnight isn't ideal.

Also, while swamp coolers work well in a house with large volumes of air circulating, they aren't as effective in small space, like a truck cab, so can struggle to maintain a comfortable in-cab temperature if the outside temperature is very high.

Brazilian manufacturer Resfri Ar says its evaporative cooler can reduce in-cab air temperature between 2-6°C compared with the outside air temperature. Evaporative coolers also require additional water tanks - typically 10 to 12-litres - located either on the

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cab roof behind the spoiler, or on the cab rear to supply water to the filter pads fitted in the cooling unit. These coolers use a significant amount of water. This could be an issue if there isn't a readily available supply to refill the tank.



ANOTHER VIEW

Webasto withdrew its evaporative cooling unit, NiteCool TTC100, from the UK market in 2017, reports Jon Jennings, UK market manager, truck and aftermarket dealers. He says: “Evaporative cooling units are less expensive and only require a small amount of electricity to run them, but very humid air can also lead to electronic component damage on top of the potential for cab corrosion.”

He continued: “The higher humidity levels found in the UK, even in hot weather, compared to southern Europe, meant additional moisture in the cab, from the water vapour-laden air blown into the cab. That could accelerate corrosion in the cab and leave fusty smell on trim fabrics. Webasto now only offers true compressor-driven refrigerant gas air conditioners. The latest product offering from Webasto [available since 2018] is the Cool Top RTE16 parking cooler, rated at 1.6kW.”

Webasto says its compressor-driven parking coolers consume 23 Amp-hours of electricity. They will run off standard 24V vehicle batteries and don't require additional batteries to be fitted. Depending on power rating, some other makes do require a second bank of batteries, or uprated 120 Amp-hour vehicle batteries. Most compressor-driven parking coolers have in-built battery protection, so will cut out if battery charge levels drop to

a point below which they cannot restart the vehicle's engine.

Commercial vehicle OEMs offer parking cooling systems as factory fit cost options or aftermarket retrofits. Dirna Bergstrom manufactures both types of parking coolers, and they are offered by DAF through its TRP parts business and by Scania. Eberspacher manufactures the Cooltronic range, which is offered by MAN. Other parking cooler manufacturers include Colven (Viesa) and Dometic, which, in addition to compressor-driven air conditioners, specialises in evaporative coolers for trucks, vans and motorhomes. And there is also the Chinese Actec Max range of air conditioners. Plus, British aftermarket truck accessories specialist Kuda sells the Italian Indel B range of compressor driven parking coolers.

CARE

As cab parking coolers are small compact units - typically 800mm x 600mm x 200mm weighing around 25kg for a 1.6kW unit - they are very low-maintenance. Some have hermetically-sealed compressor air conditioning systems using a small volume of pre-filled R134a refrigerant gas.

Webasto recommends some simple monthly checks, such as running the unit even in winter to keep internal components lubricated, keeping air intakes clean and free of debris and an annual safety check of electronic components. He adds that should the Webasto unit develop a major fault, given the cost of repairing a sealed unit, it is more cost-effective to replace it with a new one. According to information on OEM and parking cooler distributors' websites, truck dealerships or dealer networks have the ability to fit and maintain parking coolers with the correct installation kit.

Parking coolers are ideally suited for drivers on international work, but more recently Webasto says it has fitted units in day cabs in the UK, where loading times in warm weather offer the potential of frequent engine idling to run the engine-driven air conditioning.

Whatever the justification to fit a parking cooler, the device is not expensive in the long run and will save diesel fuel and more importantly help protect the environment. But considering the large range of options, especially with compressor-driven units, it is worth studying the spec and fitting requirements carefully. **TE**