portfolio, chances are, if it's meant to move, Rushlift are already keeping it moving. We do not restrict our thinking when it comes to what is and isn't considered GSE. We are driven by our customers' needs and we will source any equipment necessary to get the job done."

Big PCA orders for Cavotec

Engineering group Cavotec has been awarded two big orders for its innovative Sub-freezing DX-Boost pre-conditioned air technology for cooling aircraft at the Presidential Flight Hangar at Abu Dhabi International airport, as well as at the Oman Air MRO facility at Muscat International airport.

The Abu Dhabi International order is a turnkey project, which will see the Group design, supply, install, test and commission the Sub-freezing DX-Boost PCA system, 400Hz converters, pop-up pit and hatch pit systems.

The second order is for the supply of Sub-freezing DX-Boost PCA units and pop-up systems for PCA and 400Hz, and includes an additional number of hatch pit systems for other services, all of which are earmarked for Muscat International.

"These landmark projects are excellent references for our Sub-freezing DX-Boost cooling technology, and further demonstrates our ability to offer all the necessary technical expertise to deliver complex turnkey solutions to major industry players," commented Ottonel Popesco, Cavotec's CEO.

Cavotec INET's Sub-freezing DX-Boost systems cool aircraft quickly and efficiently by supplying PCA at sub-zero temperatures. The technology meets the strict criteria and demanding environmental conditions of both Muscat airport and Abu Dhabi airport, where temperatures frequently exceed 45°C. DX-boost PCA units enable the fast and efficient cooling of aircraft without the use of on-board auxiliary power units, thereby reducing emissions.

Cavotec recently commissioned an example of its cooling system at the Boeing MRO Facility Nagpur in India. This project was something of an industry benchmark with Cavotec's application delivering pre-conditioned dry air at temperatures lower than -10°C at the Boeing MRO hangar. It should be noted that the supplier has worked closely with the likes of Airbus and other aircraft manufacturers for many years in developing advanced GSE.

A long-standing relationship with Larsen and Toubro has added another highlight, with Cavotec recently having been awarded the contract to supply 108 electrical and 400Hz pit systems for the prestigious Midfield Terminal Project at Abu Dhabi International.

These recent projects at Muscat airport and Abu Dhabi airport build on a sequence of orders awarded to the Group over the past few months. These include an order from Airbus in the US, where Cavotec will supply a complete 400Hz electrical power supply system, including converters, distribution boards and pit systems, for the aircraft manufacturer's new production facility in Mobile, Alabama. Additionally in the US, Cavotec will supply a number of 400Hz electric power supply units for Chicago O'Hare's Terminal 5 development.

Cavotec has also been awarded an order with Chinese aircraft manufacturer, Shanxi, for a number of pit systems and related matériel for a final assembly line. Also in China, the Group has been awarded a major project with Hainan Airlines to supply 16 utility pit systems for the airline's maintenance hangar at Haikou airport on Hainan Island.

Finally, for the first phase of a new development at Moscow Domodedovo airport, Cavotec is supplying 19 hydrant pits along with related vault access covers and high/low-point pit systems.

FAME, not blame

Regular readers will know that the use of biodiesel in ground transport has been growing proportionately over the last few years. With that trend, though, has come a headache for jet fuel suppliers and aero engine manufacturers.

Quite often the two fuels are transported in the same multi-product pipeline and distribution systems, which contributes to cross-contamination. Biodiesel is made up of a bio-component called FAME (Fatty Acid Methyl Ester), traces of which can adhere to pipe and tank walls as the biodiesel passes through. These traces can then be released through the passage of the following product, which can of course be jet fuel. If adsorbed in enough concentrations, FAME can impact the thermal stability and freezing point of jet fuel, which could result in engine operability problems and possible engine flame-out.

Up till now, the maximum FAME contamination in jet fuel was set at 5 parts per million (ppm) but after a number of years of research and testing by fuel and engine experts, fuel certification body ASTM raised that limit to 50 ppm.

FAME itself derives from vegetable oils, animal fats or waste cooking oils through a process known as transesterification, in which a glyceride reacts with an alcohol in the presence of a catalyst to form a mixture of fatty acids esters as well as an alcohol. What's interesting in this context is that FAME, in chemical terms, is quite a different molecule compared to those found in jet fuel. Further, FAME also has a very variable composition, and is certainly not manufactured to aerospace standards.

All the while that fuel is transported through pipelines (as opposed to bowsers), the two liquids are going to come into contact with one another. However, all the while pipeline transportation remains the cheaper option, that scenario seems unlikely to alter.

But are industry analysts over reacting? Tests have shown that jet fuel quality was not impaired when an incidence of 400 ppm of biodiesel were registered, which is much higher than the working "safe" limit of 5ppm.

If the jury is out on that one, then remember that there are other contenders, waiting in the wings. Notable amongst these is green diesel which, the experts say, has much to commend it

Greener taxi-ing?

One might be forgiven for thinking that, with the advent of the electric pushback tractor and developments such as the TaxiBot, that there was little scope left for innovation. However, that is clearly not the case. A small engineering office, that of anyTRACS, was actually founded in 2008 with the aim of developing and commercialising the jetTRACS system.

Two people, Andreas Becker and Eckhard Bergerhoff, first discussed the idea of an alternative procedure to an aircraft taxi-ing out under its own power in 2007; a patent was applied for in the following year.

The idea behind jetTRACS is both the conservation of fuel and the reduction of CO_2 during the taxi-ing procedure. As readers know, airlines benefit most by saving fuel costs when they can reduce the run time of aircraft engines. Allied to this is the fact that airports have to provide a large number of towing vehicles for carrier use. With this in mind, the pair added another goal, that of finding a solution that would allow airports to participate in, and benefit from, the advantages of a completely different towing system.

Compared to other systems, jetTRACS includes a hybrid drivetrain, so it is basically possible to operate the system without fossil fuels, which translates into zero emissions.

But there is more to this innovation: the fully automated jetTRACS system eliminates the human factor during the pushback and taxi-ing processes, and thus has the potential to avoid the incidence of accidents that can occur during this tricky ramp procedure.